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**U.S. Army Corps of Engineers
New England Division**

FINAL

CLOSURE REPORT
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS

DELIVERY ORDER No. 19
CONTRACT No. DACA33-91-D-0006

JULY 1994

ABB ABB Environmental
Services, Inc.

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**FINAL CLOSURE REPORT
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS**

Prepared for:

U.S. Army Corps of Engineers
New England Division
Waltham, Massachusetts
Contract DACA33-91-D-0006
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Prepared by:

ABB Environmental Services, Inc.
Wakefield, Massachusetts
Project Number 7143.00

JULY 1994

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EXECUTIVE SUMMARY

This closure report presents information and results of an underground storage tank removal and subsequent investigations, a resultant soil removal action and supplemental site investigation including a preliminary risk evaluation, and recommendations for future actions at Fort Devens Study Area 48.

Study Area 48 is situated in the southwest corner of Carey and St. Mihiel Streets in the northeast portion of the Main Post. The Study Area for the purposes of this report comprises both a portion of Building 202 and the former underground storage tank location immediately adjacent to and southeast of Building 202. Study Area 48 is bordered on the southeast and southwest sides by a flat gravel-surfaced yard and Carey Street and St. Mihiel Street to the northwest and northeast, respectively.

Study Area 48 is located on the edge of a terrace of glacial/deltaic or outwash sands. Borings advanced at the Study Area indicate the presence of sand, pebbles, and cobbles. Groundwater flow is to the north or northeast. Groundwater has been encountered at approximately 30 feet below ground surface.

Historically, Building 202 and an adjacent yard have been used principally for military vehicle maintenance and storage. Vehicle servicing no longer takes place inside the building, but vehicles are currently stored in the southwestern portion of the fenced-in yard. In 1989, a 1,000-gallon underground storage tank, located adjacent to Building 202, was removed along with approximately 100 cubic yards of petroleum-contaminated soil. This removal was supervised by Environmental Engineering & Geotechnics, Inc. (EG&G), as authorized by Alan Mechanical Services Corporation (EE&G), 1989; Appendix H). The tank had reportedly been used for the storage of waste oil. Soil removed during the tank excavation was disposed of at the Consolidated Landfill in Norridgewock, Maine. The excavation was lined with polyethylene and backfilled with clean soil. Confirmatory investigations and sampling indicated the presence of residual total petroleum hydrocarbons (916 ppm and 3,213 ppm) in the excavation, and total volatile organic compounds (headspace screening) in soil downgradient of the former tank.

Fort Devens was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act as amended by the

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Superfund Amendments and Reauthorization Act on December 21, 1989. 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, a Master Environmental Plan (Argonne National Laboratory, 1992) and an Enhanced Preliminary Assessment (Weston, 1992) were prepared. Due to the presence of the residual contamination, a portion of Building 202 and the adjacent former tank location were identified as Study Area 48 and targeted for further investigation and cleanup.

In 1991 Ecology and Environment performed investigation activities at Study Area 48 as part of the Group 1B Site Investigation. The investigation focused on characterization of the nature and extent of residual contamination in the vicinity of the former underground storage tank. Analytical results indicated the presence of total petroleum hydrocarbons (1,350 mg/kg) in one surface soil sample. In addition, certain metals were detected in groundwater samples at concentrations exceeding applicable standards. E&E attributed these elevated concentrations to the presence of particulate matter in the samples. The Site Investigation Report recommended that the residual petroleum contaminated soil be removed from the site.

In October 1992, United States Army Toxic and Hazardous Materials Agency prepared an Action Memorandum to document the decision to perform a soil removal action in the immediate vicinity of the former tank location at Study Area 48. In April and May 1993, Site Remediation Services, Inc., under contract to Corp of Engineers, removed approximately 150 tons of waste oil contaminated soil for subsequent disposal at Waste Management, Inc.'s, Rochester, New Hampshire facility. Excavation and soil removal was limited by the presence of Building 202 and concerns for the building's foundation integrity, and by the reach of the excavator. Results of confirmatory screening, analytical results, and observations made during excavation indicated that waste oil contamination at low levels remained in subsurface soils adjacent to and possibly beneath Building 202, and in soil below a depth of 20 feet in the immediate vicinity of the former tank. The excavation was backfilled with clean soil.

In 1993, ABB Environmental Services, Inc. was contracted by Corp of Engineers to perform a supplemental site investigation and preliminary risk evaluation in order to quantify remaining soil contamination at SA 48 and determine if and what further actions were warranted.

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Results of screening and laboratory analyses performed during this investigation confirmed the presence of total petroleum hydrocarbons at levels below the lowest state criteria in soil from within and immediately adjacent to the former tank excavation. Total petroleum hydrocarbon contamination was not detected in any other soil samples, including those from beneath Building 202 and those downgradient of the former excavation. Low concentrations of volatile organic compounds and semivolatile organic compounds detected in onsite soil samples were either attributed to laboratory-introduced contamination, or were present at concentrations well below their respective state and federal regulatory criteria.

Further, total petroleum hydrocarbons were not detected in any of the four groundwater samples. Low concentrations of volatile and semivolatile organic compounds detected in these samples are not considered attributable to leakage of the former underground storage tank.

Risk evaluations conducted using the supplemental site investigation field screening and confirmatory laboratory results qualitatively determined that the residual concentrations of UST-derived petroleum hydrocarbons and other detected contaminants at SA 48 pose no significant threat to human health or the environment. With the contamination related to the former leaking UST adequately characterized and removed, and in the absence of significant residual risk, the Army has recommended no further action for Study Area 48.

1.0 INTRODUCTION

This closure report has been 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. 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. An important aspect of BRAC actions is to determine environmental restoration requirements before property transfer can be considered. Contained within the report is a summary of activities conducted at Study Area (SA) 48 on the Main Post in support of this mission.

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 consists of assessments of the environmental status of SAs, specifies necessary investigations, and provides recommendations for response actions with the objective of identifying priorities for environmental restoration at Fort Devens. SA 48 was identified as a potential source of contamination in the MEP. The MEP has undergone subsequent revisions since its initiation in 1988.

SA 48 is situated in the southwest corner of Carey and St. Mihiel Streets in the northeast portion of the Main Post adjacent to Building 202 (Figures 1-1 and 1-2). The SA comprises both a portion of Building 202 and the former underground storage tank (UST) location immediately adjacent to and southeast of Building 202. Building 202 is bordered on the southeast and southwest sides by a flat gravel-surfaced yard and Carey Street and St. Mihiel Street to the northwest and northeast, respectively.

Building 202 and the associated yard were historically used principally for military vehicle maintenance, but have most recently been used by the 756th Engineering Company, U.S. Army Reserve for vehicle storage. Vehicle maintenance no longer takes place inside the building, but tractor-trailer trucks are currently stored in the southwestern portion of the fenced-in yard.

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SA 48 is located on the edge of a terrace of glacial/deltaic or outwash sands. Observed overburden soils consist of sand, pebbles, and cobbles, with few fines (clay and silt) and extend to a depth of at least 42 feet below ground surface. Groundwater is encountered at approximately 30 feet below ground surface and has been determined to flow generally in a north to northeast direction.

The following sections document the events leading from the discovery of contamination associated with SA 48, the response action recommendation and measures taken during a subsequent removal action, and a final post-removal investigation.

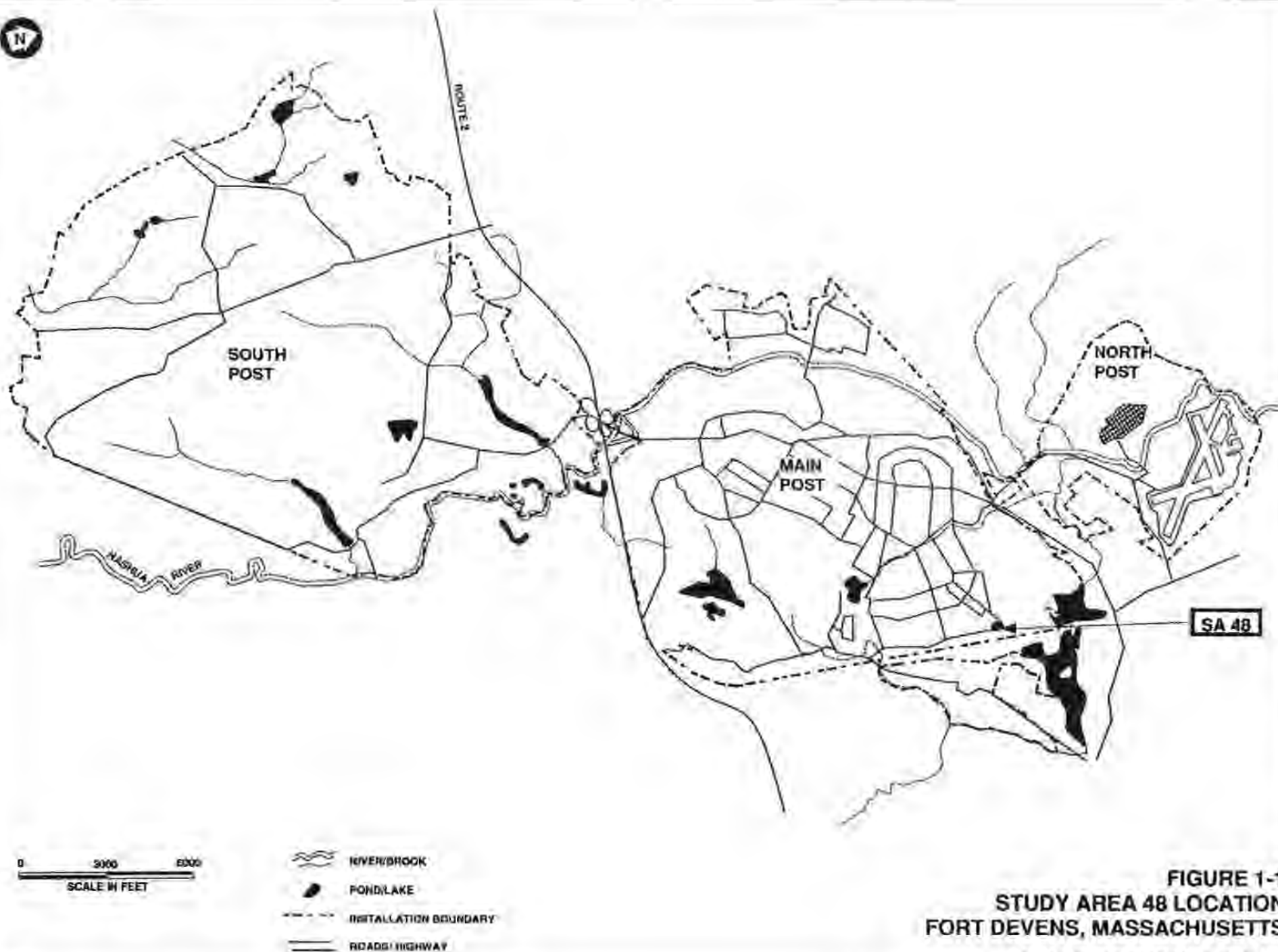


FIGURE 1-1
STUDY AREA 48 LOCATION
FORT DEVENS, MASSACHUSETTS

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MWB202-1



CAREY STREET

BUILDING 202

48B-93-06X

48B-93-05X

48B-93-01X

48M-93-04X

FORMER TANK LOCATION

48B-93-09X

48B-93-03X

ST. MIHIEL STREET

MWB202-2



KEY:



BORING LOCATION



MONITORING WELL LOCATION

MWB202-3



**FIGURE 1-2
SITE FEATURES
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS**

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2.0 PREVIOUS STUDIES AND REMOVAL EFFORTS

As part of the Fort Devens UST Management Program, a 1,000 gallon waste oil UST, in service since 1942, was identified (in 1988) at Building 202 and removed in February 1989. This tank was replaced by above-ground storage tanks.

2.1 TANK REMOVAL

The UST at Building 202 was used to store waste oil from vehicle servicing historically inside the building. Tank removal observations were documented in a report prepared by Environmental Engineering and Geotechnics, Inc. (EE&G), entitled "Tank Removal Monitoring Report", dated November 15, 1989 (Appendix H). The highlights of this removal effort are summarized below.

Three hundred gallons of product and approximately 80 gallons of sediment sludge were removed from the tank prior to excavation. The UST was then removed from the excavation. Contaminated soil, possibly resulting from a seam separation in the UST, was discovered on the excavation walls. Screening of the contaminated soil with a photoionization detector (PID) yielded total organic vapor (TOV) concentrations between 8.8 and 45.3 parts per million (ppm). Approximately 100 cubic yards of waste oil contaminated soil (TOV > 10ppm) was removed from the tank excavation. Stockpiled soil was removed by Enpro Services, Inc., of Newburyport, Massachusetts, and disposed of at the Consolidated Waste Services Facility (landfill) in Norridgewock, Maine under a hazardous waste manifest.

Nineteen samples of residual soil collected from the bottom and sides of the excavation were field screened for TOVs using a PID. PID readings ranged from 0.0 ppm to 10 ppm. While the excavation was open, two rounds of confirmatory sampling with laboratory analysis were conducted. During the first round, a composite soil sample was collected from the bottom of the tank excavation and submitted to LCC Institute of Water Research, Lubbock, Texas, for analysis for total petroleum hydrocarbon compounds (TPHC). Results of the first round analysis indicated the presence of TPHC at 916 ppm. This TPHC concentration exceeded the "limiting criteria of 50 ppm"; soils exceeding the limiting criteria would require corrective measures be taken, as reported in the Tank Removal

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SECTION 2

Monitoring Report. An additional composite sample was collected and submitted for TPHC analysis to confirm the presence of the elevated concentration. TPHC was detected at a concentration of 3,210 ppm in this second sample. The excavation was lined with plastic sheeting and backfilled.

In May 1989, EE&G advanced two soil borings (B-3 and B-4) to 32 feet below ground surface (BGS) near the former tank location (Figure 2-1). Geologic materials encountered consisted of sand, gravelly sand, and silty sand. The water table was encountered at 29 feet BGS. Soil samples were collected at five foot intervals to a depth of ten feet, and continuously sampled from 10 feet to the bottom of the borings. TOV screening concentrations were less than 0.5 ppm for all samples except the sample from the 18-20 foot interval in B-3, which yielded a reading of 150 ppm.

Based on results of the removal and investigation, the former UST location at Building 202 was subsequently listed in the MEP as SA 48 - Building 202 Leaking Underground Storage Tank Site. The MEP recommended that the extent of contamination be delineated through the installation of soil borings to characterize soil contamination and monitoring wells to characterize groundwater contamination if warranted.

2.2 SITE INVESTIGATION

In 1991, Ecology and Environment (E&E) was tasked to perform a site investigation at SA 48. As recommended in the MEP, the investigation was designed to further characterize soil contamination associated with the former UST and to assess the effects of residual soil contamination on groundwater conditions in the vicinity of the study area. The results of the investigation were presented in the Final Site Investigations Report, December 1992 (E&E, 1992). A single borehole (B202-BH1) was advanced close to the former tank location for the purpose of characterizing residual contamination there. The seven soil samples collected from various depths within the boring were analyzed for TPHC. Analytical results indicated the presence of TPHC (1,350 mg/kg) in only the surface soil sample.

Three additional soil borings were advanced for the purpose of installing groundwater monitoring wells. The three water table monitoring wells were

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installed cross-gradient (B202-1), downgradient (B202-2), and upgradient (B202-3) from the former tank location (Figure 1-2). Two rounds of groundwater samples were collected for laboratory analysis. The first round of samples (unfiltered) were analyzed for TPHC, target compound list (TCL) organics, target analyte list (TAL) inorganics, and cations/anions. No detectable TPHC was found in any Round 1 sample. Elevated inorganic analyte concentrations were observed, but were likely attributable to high turbidity. Elevated chloride and sodium were attributed to road deicing. The one organic compound detected (methylene chloride) was determined to be the result of laboratory contamination.

In the second round of groundwater sampling, explosive compounds were added to the list of analytes. TPHC was not detected in any of the Round 2 samples. Except for general decreases, no significant changes in inorganic analyte concentrations were noted in the unfiltered samples. An explosive compound, cyclonite, and a pesticide, aldrin, were both detected at low concentrations in the upgradient well (B202-3). Because of the location relative to the former tank location (ie. upgradient), these compounds were determined not to be associated with the UST release. The low concentrations of methylene chloride and chloroform detected in wells were again attributed to laboratory contamination. The trace concentration of trichloroethylene detected in the crossgradient well was also not determined to be related to a release from the former UST.

The SI concluded that no evidence of significant release of waste oil to groundwater or soil was observed. Downgradient groundwater quality indicated no effects from residual petroleum contamination observed in the soil around the former UST. However, because of the presence of TPHC in certain soil samples, E&E recommended that a removal action be performed at SA 48 on soil contaminated with residual TPHC.

2.3 SOIL REMOVAL ACTION

In October 1992, United States Army Toxic and Hazardous Materials Agency (USATHAMA) prepared an Action Memorandum to document the decision to perform soil removal actions at SA 48. The Action Memorandum indicated that soil would be removed from two areas. The first area was in the immediate vicinity of B202-BH1, and the second was in the immediate vicinity of the former tank (Figure 2-1). According to a memorandum entitled "Report of Field

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Activities", prepared for the NED Geotechnical Engineering Division (Schmidt, 1993; Appendix I), an excavation service contract was awarded to Site Remediation Services, Inc., by NED in November 1992. In April and May 1993, approximately 335 cubic yards (cy) of soil were excavated from the two areas identified in the Action Memorandum. Of that volume, approximately 150 tons was segregated as contaminated with waste oil.

Contaminated soil observed on the wall closest to Building 202 ("northwestern wall" of the excavation) during the removal suggested possible contaminant migration beneath the Building 202 foundation. Excavation and soil removal was limited laterally by the presence of Building 202 (concerns for the integrity of the building's foundation), and vertically by the reach limitation of the excavator. Results of confirmatory screening, analytical results, and observations made during excavation suggested that waste oil contamination remained in subsurface soils adjacent to and possibly beneath Building 202, and in soil beneath a depth of 20 feet in the immediate vicinity of the former tank. Figure 2-1 presents a summary of confirmatory TPHC screening results. Confirmatory samples collected from the excavation near Building 202 at the 4-foot, 15-foot, and 20 foot depths contained TPHC at 118 ppm, 4,320 ppm, and 2,130 ppm, respectively (E&E, 1993; Appendix J). Other confirmatory samples generally contained TPHC at less than the 50 ppm detection limit (Appendices I and J).

Excavation activities were suspended, the excavation was lined with polyethylene, and clean fill was added to bring the excavation up to grade. Two samples of the stockpiled contaminated soil were also collect by E&E personnel on May 13, 1993, and submitted for laboratory analysis for the full suite of TCLP analyte and RCRA characteristics (corrosivity, reactivity, and ignitability). Results are presented in Appendix A. On November 16, 1993, Webster Engineering Company of Dorchester, MA collected an additional seven soil samples from the stockpiled soil for further characterization in support of the soil disposal. One or more of the samples were analyzed for VOCs, PCBs, SVOCs, and TPH (both IR and GC/FID). Results are presented in Appendix A. On December 21, 1993, 132 tons of stockpiled soil from the April and May 1993 removal were transported by Merrimac Cartage, Inc. of North Andover, Massachusetts from the site under Bill of Lading Number BWSC-012A/B/C for disposal at Waste Managements' Rochester, New Hampshire, landfill. This removal was performed under COE-NED Contract No. DACA-33-C-0061 by Webster Engineering Co., Inc. Bills of lading and weight slips are included in Appendix B.

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A supplemental site investigation was recommended to characterize the extent of residual contamination associated with migration beneath the foundation and to provide confirmatory sampling results for the soil removal effort.



BUILDING 202

B-3

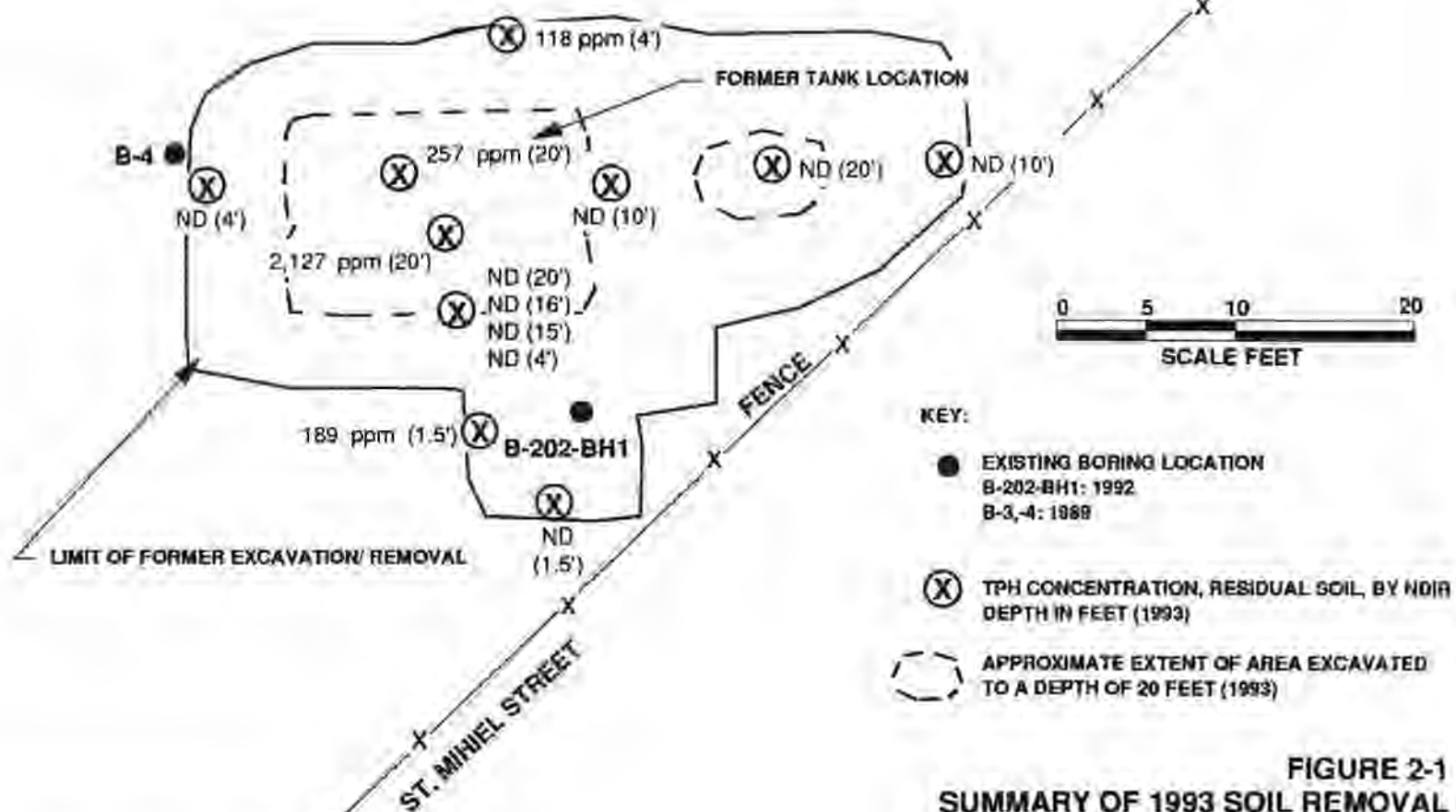


FIGURE 2-1
SUMMARY OF 1993 SOIL REMOVAL
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS

Note: Soil sample and boring locations are approximate.
Source of information: Schmidt, 1993; EE&G, 1989; E&E 1992.

3.0 SUPPLEMENTAL SITE INVESTIGATION

The New England Division of the U.S. Army Corps of Engineers (NED) was tasked with implementing the supplemental site investigation (SSI) and confirmatory sampling effort. In accordance with U.S. Army Corps of Engineers, New England Division (COE/NED), Contract No. DACA 33-91-D-0006, Delivery Order 19, ABB Environmental Services, Inc. (ABB-ES) conducted a Supplemental Site Investigation and Removal Site Evaluation at Study Area 48. The objective of this supplemental investigation was to evaluate residual soil and groundwater contamination in the vicinity of the former tank location at SA 48 and determine if and what further action is required.

The SSI included the installation of seven soil borings and one groundwater monitoring well, and soil and groundwater sampling and analysis. Soil samples were collected and field screened for TPHC by NDIR. Selected soil and groundwater samples were submitted for confirmatory laboratory analysis.

3.1 FIELD PROGRAM

Fieldwork was conducted between December 6, 1993, and January 11, 1994, in accordance with procedures presented in the SA 48 Final Work Plan dated November 1993 (ABB-ES, 1993a). The Final Work Plan was revised and republished in January 1994, subsequent to completion of field work. The plan was based on task requirements presented in the COE/NED Scope of Work dated August 6, 1993, and subsequently revised on August 12 and 19, 1993 (USCOE/NED, 1993). The existing Project Operation Plan (POP) for Fort Devens (ABB-ES, 1992) was incorporated by reference into the work plan.

3.1.1 Geophysical Survey Utility Clearance

Prior to any subsurface investigation, ground-penetrating radar (GPR) was used on the ground surface to locate buried utilities, tanks, and associated piping in preparation for the boring program, and to determine the extent of materials backfilled during previous removal actions. The survey was conducted in a reconnaissance mode (no formal grid) over the former excavations and in

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preselected boring locations. Boring clearance was done in conjunction with the review of utility maps of the SA 48 area.

3.1.2 Soil Borings

Soil borings were drilled at SA 48 in and around the former tank location (Figures 3-1 and 3-2) to characterize subsurface geologic materials, collect subsurface soil samples for chemical analysis, and in one case, install a monitoring well. Soil boring and monitoring well installation was performed by New Hampshire Boring of Londonderry, New Hampshire, under supervision of an ABB-ES geologist.

A total of seven borings (48B-93-01X through 48B-93-06X, and 48B-93-09X) were rotary drilled using 4- or 6-inch inside diameter (I.D.) hollow-stemmed augers (HSA). An additional two borings, proposed in the Scope of Work were deemed unnecessary because the first seven borings (and associated soil samples) adequately defined the extent of TPHC contamination. Four-inch augers were used for borings, and 6-inch augers were used for the boring in which a monitoring well was installed. Soil samples were collected at five-foot intervals down to the water table using a 2-inch I.D. split spoon sampler. The monitoring well boring (48B-93-04X) was advanced to 15 feet BGS in the former tank location. Soil samples were collected at five-foot intervals thereafter to a depth of 42 feet BGS. The soil analytical program is described fully in Section 3.2. Observations made during advancement of borings indicate the presence of sand and gravelly sand from the ground surface to at least 10 feet below the water table. Soil descriptions for each sample were logged in the field by an on-site geologist (Appendix C).

3.1.3 Groundwater Monitoring Wells

One monitoring well (48M-92-04X) was installed as part of the SA 48 investigation to provide a means of sampling groundwater and measuring water-table depth below the former UST location. The well was screened across the water table, which was encountered at approximately 30 feet BGS, in unconsolidated glacial sediments.

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A 10-foot-long, 4-inch I.D., Schedule 40 polyvinyl chloride (PVC), 0.010-inch machine-slotted well screen with threaded bottom plug was placed approximately four feet above the bottom of the boring. The well screen was installed from 28 feet to 38 feet BGS intersecting the 30 feet BGS water table as observed at the time of installation. A solid 4-inch ID Schedule 40 PVC riser was installed from the top of the screened interval to approximately 2 feet above the ground surface.

Filter sand was emplaced around the well screen and a 5-foot-thick bentonite-pellet seal was installed above the sandpack in the annulus around the riser. A cement-bentonite grout mixture was tremie-emplaced in the annulus from the top of the bentonite seal to the ground surface. Construction details are provided in the well completion diagram (Appendix C).

A 6-inch ID protective steel casing was installed approximately 2.5 feet into the grout with approximately 2.5 feet stick-up (above the ground), and the steel casing was provided with a locking cap. Four protective steel posts were installed around the well, and a 6-inch-thick pad of coarse gravel was installed around the protective casing to enhance surface drainage.

The newly installed well was developed with a dedicated submersible pump approximately 96 hours after well completion. Development was conducted to remove any foreign substances potentially introduced during drilling, to increase recharge efficiency of the well, and to reduce the turbidity of the groundwater in the well. During development, each well-volume of water removed was monitored for specific conductance, temperature, pH, and turbidity. The results of development water quality monitoring are provided in Appendix D.

3.1.5 Groundwater Sampling

Groundwater samples were collected from the newly installed monitoring well and the three pre-existing nearby wells for analysis of TCL volatile and semivolatile organics, TAL inorganics, and TPH. All wells were purged before sampling, using dedicated submersible pumps. Purging was considered complete when water equal to 5 well-volumes had been removed and when the monitored parameters (specific conductance, temperature, pH, and turbidity) varied by less than approximately 10 percent.

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Each sample was collected with a dedicated Teflon™ bailer. Samples to be analyzed for dissolved inorganic analytes were pumped through disposable 0.45-micron high-capacity in-line filters to remove suspended solids. Field sampling information was recorded on Groundwater Sample Field Data Record sheets (Appendix D) at each well.

3.1.6 Elevation and Location Survey

All new explorations (borings and well) and three pre-existing wells were surveyed by a registered (MA) professional land surveyor in the employ of Martinage Engineering Associates. Elevations were referenced to the National Geodetic Vertical Datum (NGVD) of 1929. They were measured to the nearest 0.01 foot for monitoring well casings and risers. Ground surface was measured to the nearest 0.1 foot. Horizontal locations were surveyed with reference to the Massachusetts Coordinate System grid to an accuracy of ± 1.0 foot.

3.1.7 Groundwater Flow

Water-level measurements were made in the three pre-existing wells and the one new well to determine groundwater flow directions. Measurements in the wells were made from surveyors' marks (typically at the top of the PVC risers), using electronic water-level meters. Water levels were measured to the nearest 0.01 foot and were referenced to the NGVD. The results of the groundwater elevation survey and interpreted flow directions are shown in Figure 3-1. The interpreted flow direction is in general agreement with flow directions presented in a previous site-wide groundwater study (ETA, 1993).

3.1.8 Decontamination

All drilling equipment was decontaminated before arriving and prior to leaving the installation, and before each new exploration location using high-pressure hot water. Miscellaneous tools, samplers, and certain monitoring probes were brushed off to remove any loose material, rinsed with potable water, and then were thoroughly scrubbed, triple-rinsed with potable water, and air-dried.

3.1.9 Investigation-Derived Waste

Wastes generated during the investigation included disposable personal protective equipment, drill cuttings, well development water, sampling purge water, and decontamination fluids.

Drill cuttings were isolated into separate piles for each 5-foot flight of augers for the purpose of testing for contamination. A soil headspace PID measurement was taken from each pile; and piles with associated headspace measurements at background were discarded at the drilling location. Piles with headspace measurements above background (or with overt evidence of contamination) were placed in drums, covered, labelled, and transported to a temporary storage area on-site for hazardous waste characteristics testing.

Well-development and pre-sampling purge water and decontamination fluids were collected in drums for the purpose of testing for contamination. A headspace measurement was made by PID on water from each drum. Drums with headspace values at background were discharged at the point of collection. Drums with headspace values above background (or with overt evidence of contamination) were covered, labeled, and transported to the temporary storage area to be tested for hazardous-waste characteristics.

3.2 ANALYTICAL PROGRAM

The SA 48 analytical program was based on both historical operations at Building 202 and on previous contaminant findings. The laboratory analytical program included analysis of soil and groundwater samples for TPHC using EPA Method 418.1, TCL volatile organic compounds by Method 8240, and TCL semivolatile organic compounds by Method 8270. Groundwater samples were also analyzed for dissolved and total TAL inorganics using Methods 6000/7000. Laboratory analyses for the TCL organics and TAL inorganics is considered approximately equivalent to USEPA analytical support Level III quality data.

A total of 41 soil samples were collected from the seven borings advanced during the supplemental investigation. Soil samples were screened in the ABB-ES[®] Fort Devens field laboratory for the presence of VOCs by headspace analysis using a photoionization detector (PID) and for TPHC by a non-dispersive infrared

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(NDIR) spectrophotometer. The field NDIR analyses for TPHC is considered approximately equivalent to USEPA analytical support Level II quality data. The soil sample from each boring which exhibited the highest TPHC concentration was submitted to a COE/MRD-certified laboratory for confirmatory analysis. If all samples from a boring contained TPHC at less than the detection limit (50 ppm), the following criteria were evaluated in selecting a sample for laboratory analysis: headspace VOCs, visual evidence of contamination and proximity to water table.

Coast-to-Coast Analytical Services, Inc. (CCAS), of Westbrook, Maine performed the laboratory analysis for SA 48. CCAS is certified by COE/MRD to perform the analyses specified for this investigation.

Various quality assurance/quality control practices, including a preliminary review of the laboratory data's useability, have been incorporated into the field and laboratory procedures. These are described in detail in Section 3.2.2.

3.2.1 Field Screening and Laboratory Results

Soil

TVOC and TPHC field screening results are presented in Figure 3-2. As illustrated, all PID readings were less than 3.9 ppm headspace. TPHC was detected in two samples at concentrations exceeding the NDIR instrument detection limit of 50ppm. TPHC was detected at 250 ppm in the sample from 15-17 foot interval in boring 48B-93-01X, and at 160 ppm in the 15-17 foot sample from boring 48M-93-04X. Boring 48B-93-01X is located adjacent to Building 202, between the building and the former tank location. Boring 48B-93-04 is located in the center of the former tank location. Visual evidence of contamination (slight oil sheen on split-spoon sample) was encountered only in boring 48B-93-01X, at the 15-17 foot interval.

Based on criteria detailed above, one soil sample from each of the borings was selected for submittal to the contractor laboratory for confirmatory analysis of TPHC, VOCs, and SVOCs. Selected samples and depth intervals are presented in Figure 3-2. The analytical results (detected compounds only) for each sample are

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summarized in Figure 3-3 and on Table 3-1. Agreement between TPHC screening and laboratory analytical results were generally good.

The confirmatory sample results indicated that TPHC was detected in the two samples from borings 48B-93-01X [100mg/kg (average of field sample and its duplicate)] and 48M-93-04X (180 mg/kg). TPHC was not detected in any other soil sample at concentrations above the quantitation limit (25mg/kg).

Three VOCs were detected in five of the seven soil samples. However, one of the compounds, methylene chloride, was also detected in the associated laboratory method blank, and is likely attributable to laboratory contamination. The other two compounds, 1,1,1-trichloroethane and 1,1,2,2-tetrachloroethane, were detected at concentrations less than the laboratory's practical quantitation level, and have been qualified (with a "J") by the laboratory as such. These compounds were present at estimated concentrations equal to or less than 4J ug/kg.

A total of three site-derived SVOCs were detected in samples from the following five borings: 48B-93-01X, -02X, -04X, -05X, and -06X. The compounds, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and butyl benzylphthalate, were detected at concentrations less than their sample quantitation level, and so the values are considered estimates. Di-n-butylphthalate was detected in five samples at concentrations ranging from 81J ug/kg to 130J ug/kg. Bis(2-ethylhexyl)phthalate was detected in three samples at concentrations from 49J to 360J ug/kg. Butyl benzylphthalate was detected in one sample at 190J ug/kg. A fourth SVOC, diethylphthalate, was detected at 2J ug/kg in the rinsate blank, but was not detected in any of the soil samples.

Groundwater

Groundwater analytical results are presented in summary form (hits only) on Figure 3-4 and Table 3-2, and in their entirety in Appendix F.

TPHC was not detected in groundwater samples from the four monitoring wells. One VOC, trichloroethylene (TCE), was detected in groundwater from one site monitoring wells. TCE was detected at 3J ug/l, below the sample quantitation limit, in the sample from monitoring well B202-1 as it was in the Round 2 SI sampling. Two other compounds (1,1,1-trichloroethane and methylene chloride)

SECTION 3

detected in groundwater samples were also detected in the laboratory method blank and so are not considered to have originated at the site.

SVOCs were detected in all groundwater samples. Samples from monitoring wells B202-1 and -2 located cross- and downgradient of the former tank location contained only phenol, at 17 ug/l and 11 ug/l, respectively. The sample from the upgradient well, B202-3, contained three SVOCs; phenol (12 ug/l), bis(2-ethylhexyl)phthalate (2J ug/l), and chrysene (8J ug/l). The sample from the well located in the former tank location, 48M-93-04X, contained phenol at 5J ug/l and bis(2-ethylhexyl)phthalate at J4 ug/l.

Both filtered and unfiltered groundwater samples from each well were analyzed for TAL inorganics. Six metals were detected in both the filtered and unfiltered sample from one or more wells: barium, calcium, magnesium, manganese, potassium, and sodium. Aluminum, iron, and nickel were detected in the unfiltered (total) sample, but, because of their absence in the filtered (dissolved) samples, were determined to be the result of suspended solids in the samples.

3.2.2 Analytical Data Quality Control

Method blanks were run at the laboratory to evaluate the potential for target analytes to be introduced during the processing and analysis of samples. One method blank was included in each analytical lot. Trace concentrations of methylene chloride, acetone, 2-hexanone, 1,1,1-trichloroethane, and 1,1,2,2-tetrachloroethane; and bis(2-ethylhexyl)phthalate and di-n-butylphthalate were collectively detected in the method blanks and represent laboratory contamination.

Quality control samples collected in the field included matrix spikes, matrix spike duplicates, rinsate blanks, trip blanks, and duplicate samples. Matrix spikes and matrix spike duplicates (MS/MSDs) were collected at a rate of one set per 20 samples, and were analyzed for the same parameters for which the field samples were analyzed. The samples designated as MS/MSDs were spiked at the laboratory with analytes that were requested for the regular field samples in order to determine matrix effects. No significant problems were identified with MS/MSD samples.

Triplicate samples of groundwater (48M-93-04X) and soil (48B-93-01X) were collected at the same rate as MS/MSDs to assess contract laboratory precision for a particular method and for quality assurance purposes. For each medium, one of the triplicate samples was considered the field sample, one was considered the contract laboratory duplicate sample, and one was considered the quality assurance (QA) duplicate sample. The first two samples were submitted to the contract laboratory for identical analyses. The QA duplicate sample was submitted to the Corps of Engineers/New England Division (NED) Environmental Laboratory in Hubbardston, Massachusetts, also for the same analyses.

The analytical results for the contract laboratory field and duplicate samples showed good comparability. The QA laboratory analytical results, and their comparison with the associated contract laboratory results, are presented in Appendix G. The QA lab results generally showed good agreement with the contract laboratory results, with the exception of the TPHC results in the soil sample. The QA laboratory reported 6,800 mg/kg TPHC, while the contract lab reported 90 mg/kg (field sample) and 110 mg/kg (duplicate) TPHC. The differences between the QA and contract laboratory results are reportedly due to: 1) sample mix-up at the COE/NED's (subcontracted) QA laboratory or; 2) the presence of non-petroleum-derived hydrocarbons in the QA sample which were not present in the field and duplicate samples (COE/NED, 1994). These conclusions are corroborated by: 1) the good correlation between the field screening (250 ppm), laboratory field sample (90 mg/kg), and duplicate laboratory sample (110 mg/kg) results and; 2) the general lack of petroleum-derived VOCs and SVOCs in the QA laboratory sample.

A rinsate (sampler) blank was collected in the field from a split spoon sampler to assess the effectiveness of decontamination procedures used at SA 48 on preventing cross contamination. The sample was analyzed for the full suite of analytes tested for at SA 48 (VOCs, SVOCs, and TPHC). TPHC was not detected in the sample, but methylene chloride, bis(2-ethylhexyl)phthalate, and diethylphthalate (all suspected laboratory contaminants) were detected at concentrations (estimated) below their respective quantitation limits. The results suggest that sampling equipment was adequately decontaminated between sampling events during the SA 48 SSI. This conclusion was substantiated by results of the rinsate duplicates analyzed by the NEDQA Laboratory.

SECTION 3

Three trip blanks were shipped with SA 48 samples during the SSI. The trip blanks were analyzed for VOCs to assess potential sample cross-contamination during shipment. Methylene chloride was detected at low concentrations in all three samples and a trace concentration ($1 \mu\text{g/L}$) of 1,1,1-trichloroethane was detected in one sample. It is unlikely that any cross-contamination occurred during sample shipping, given that these VOCs are suspected laboratory contaminants. Trip blanks submitted to the NED QA laboratory were also generally free of contaminants, except for trace amounts of acetone, methylene chloride, 2-hexanone, xylenes, and 1,1,1-trichloroethane (Appendix G).



MWB202-1



225.08

226

CAREY STREET

226.25

BUILDING 202

226.5

48B-93-06X

48B-93-05X

48B-93-01X

48B-93-02X

48M-93-04X

48B-93-09X

48B-93-03X

226.25

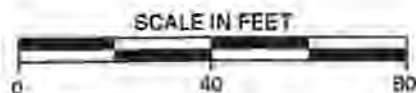
ST. MICHEL STREET

MWB202-2

226.08

226.74

MWB202-3



KEY:



BORING LOCATION



MONITORING WELL LOCATION

226.35

GROUNDWATER ELEVATION MEASURED JAN. 7-11, 1994 (FT. NGVD)

226.25

INFERRED WATER TABLE ELEVATION (FT. NGVD)



INFERRED GROUNDWATER FLOW DIRECTION

FIGURE 3-1
BORING LOCATIONS AND GROUNDWATER ELEVATIONS
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

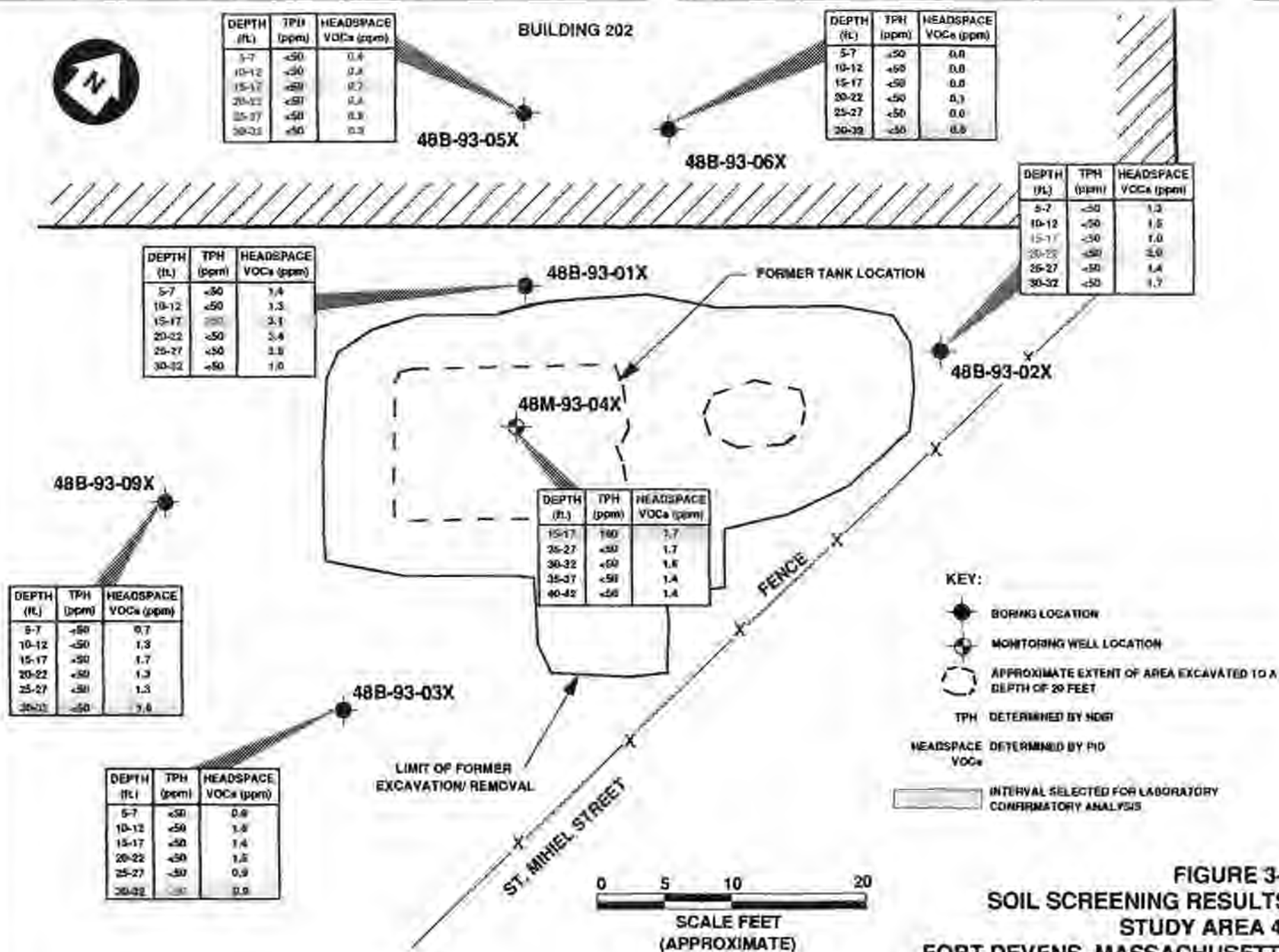


FIGURE 3-2
SOIL SCREENING RESULTS
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS

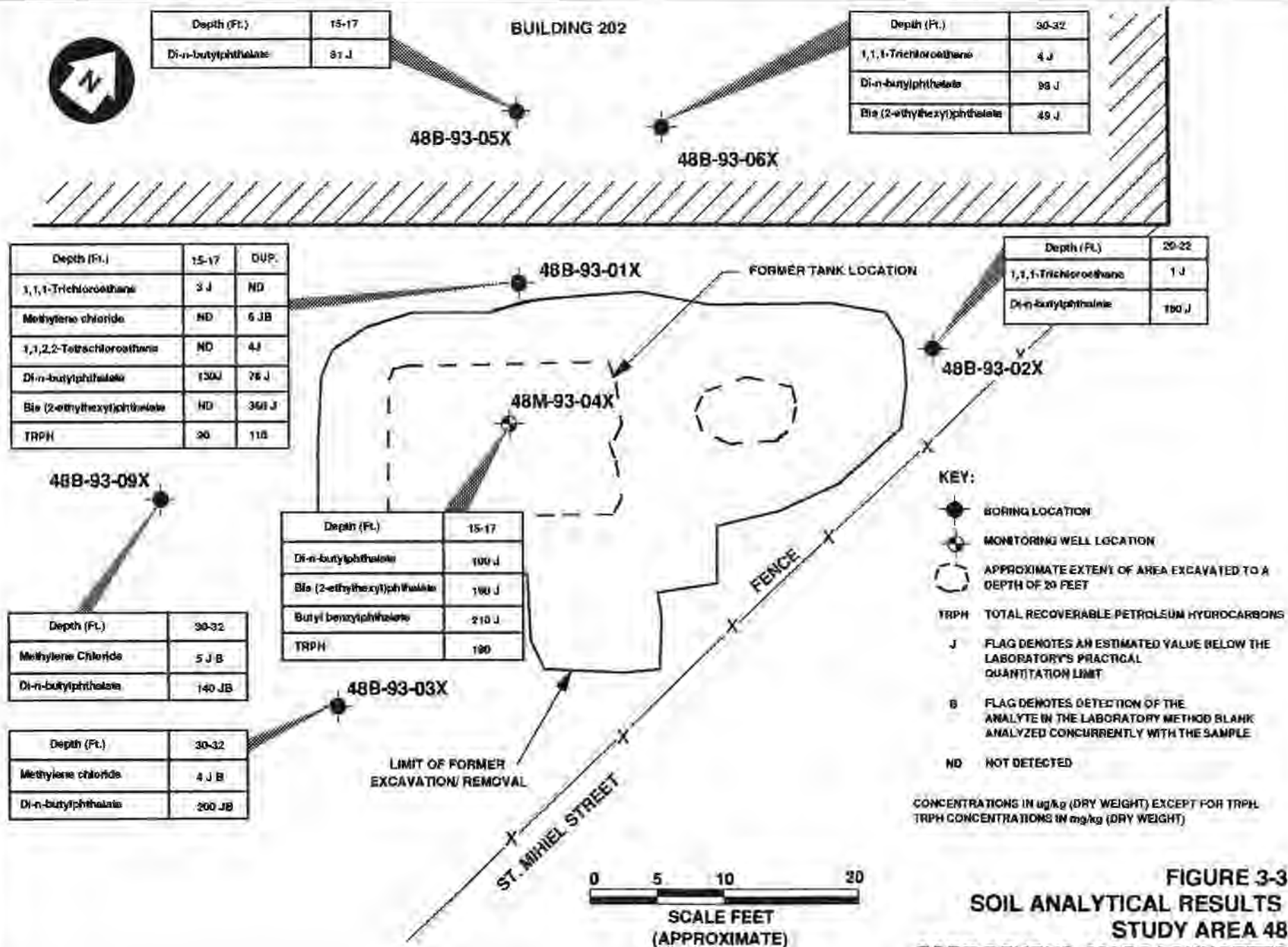


FIGURE 3-3
SOIL ANALYTICAL RESULTS
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS



MWB202-1

1,1,1-Trichloroethane	1 JB
Methylene Chloride	2 JB
Trichloroethene	3 J
Phenol	17
Barium	0.009/0.010
Calcium	14/14
Magnesium	1.8/1.8
Nickel	ND/0.042
Potassium	1.2/1.9
Sodium	53/92

CAREY STREET

Phenol	11
Barium	0.007/0.009
Calcium	11/11
Iron	ND/0.028
Magnesium	1.4/1.4
Potassium	1.1/1.2
Sodium	19/19

MWB202-2

BUILDING 202

48B-93-06X

48B-93-05X

48B-93-01X

48B-93-02X

48M-93-04X

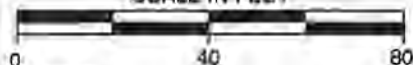
48B-93-09X

48B-93-03X

ST. MICHEL STREET

1,1,1-Trichloroethane	ND	1 JB
Methylene Chloride	3 JB	3 JB
Phenol	5 J	5 J
Bis(2-ethylhexyl)phthalate	4 J	1 J
Aluminum	ND/0.10	ND/0.11
Barium	ND/0.005	ND/ND
Calcium	9.0/9.0	8.4/8.6
Magnesium	1.1/1.1	1.0/1.1
Manganese	0.023/0.021	0.028/0.017
Potassium	1.5/1.6	1.2/1.1
Sodium	17/16	18/15

SCALE IN FEET



KEY:



BORING LOCATION



MONITORING WELL LOCATION

CONCENTRATIONS OF ORGANICS IN ug/L
CONCENTRATIONS OF INORGANICS IN mg/L VALUES
INDICATE DISSOLVED/TOTAL CONCENTRATIONS.

J FLAG DENOTES AN ESTIMATED VALUE BELOW THE
LABORATORY'S PRACTICAL
QUANTITATION LIMIT

B FLAG DENOTES DETECTION OF THE
ANALYTE IN THE LABORATORY METHOD BLANK
ANALYZED CONCURRENTLY WITH THE SAMPLE

ND NOT DETECTED

MWB202-3

1,1,1-Trichloroethane	1 JB
Methylene Chloride	3 JB
Phenol	12
Bis(2-ethylhexyl)phthalate	2 J
Chrysene	6 J
Aluminum	ND/0.13
Barium	0.005/ND
Calcium	19/17
Magnesium	2.2/1.9
Manganese	0.015/0.015
Potassium	1.1/1.4
Sodium	14/10

FIGURE 3-4
GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 48
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

**TABLE 3-1
ANALYTES IN SOIL
STUDY AREA 48**

**REMOVAL SITE EVALUATION
FORT DEVENS, MASSACHUSETTS**

ANALYTE	BORING	48B-93-01X	48B-93-01X	48B-93-02X	48B-93-03X
	SAMPLE ID	BX480115	BX481115	BX480220	BX480330
	DEPTH	15 FT	15 FT DUP	20 FT	30 FT
VOLATILE ORGANICS (ug/kg dry wt)					
1,1,1-TRICHLOROETHANE		3 J	< 6	1 J	< 6
METHYLENE CHLORIDE		< 12	6 JB	< 11	4 JB
1,1,2,2-TETRACHLOROETHANE		< 6	4 J	< 6	< 6
SEMIVOLATILE ORGANICS (ug/kg dry wt)					
DI-N-BUTYL PHTHALATE		130 J	76 J	180 J	200 JB
BIS(2-ETHYLHEXYL)PHTHALATE		< 400	360 J	< 360	< 400
BUTYL BENZYL PHTHALATE		< 400	< 360	< 360	< 400
DIETHYL PHTHALATE		< 400	< 360	< 360	< 400
OTHER (mg/kg dry wt)					
TOTAL PETROLEUM HYDROCARBONS		90	110	< 25	< 25

Notes:

J Flag denotes an estimated value less than the laboratory's Practical Quantitation Limit.

B Flag denotes detection of the analyte in the laboratory method blank analyzed concurrently with the sample.

< Indicates analyte not detected above sample quantitation limit.

**TABLE 3-1, continued
ANALYTES IN SOIL
STUDY AREA 48**

**REMOVAL SITE EVALUATION
FORT DEVENS, MASSACHUSETTS**

ANALYTE	BORING	48M-93-04X	48B-93-05X	48B-93-06X	48B-93-09X
	SAMPLE ID	BX480415	BX480515	BX480630	BX480930
	DEPTH	15 FT	15 FT	30 FT	30 FT
VOLATILE ORGANICS (ug/kg dry wt)					
1,1,1-TRICHLOROETHANE		< 6	< 6	4 J	< 6
METHYLENE CHLORIDE		< 11	< 11	< 12	5 JB
1,1,2,2-TETRACHLOROETHANE		< 6	< 6	< 6	< 6
SEMI-VOLATILE ORGANICS (ug/kg dry wt)					
DI-N-BUTYL PHTHALATE		100 J	81 J	99 J	140 JB
BIS(2-ETHYLHEXYL)PHTHALATE		190 J	< 360	49 J	< 400
BUTYL BENZYL PHTHALATE		210 J	< 360	< 400	< 400
DIETHYL PHTHALATE		< 360	< 360	< 400	< 400
OTHER (mg/kg dry wt)					
TOTAL PETROLEUM HYDROCARBONS		180	< 25	< 25	< 25

Notes:

J Flag denotes an estimated value less than the laboratory's Practical Quantitation Limit.

B Flag denotes detection of the analyte in the laboratory method blank analyzed concurrently with the sample.

< Indicates analyte not detected above sample quantitation limit.

**TABLE 3-2
ANALYTES IN GROUNDWATER
STUDY AREA 48**

**REMOVAL SITE EVALUATION
FORT DEVENS, MASSACHUSETTS**

ANALYTE	WELL	B202-1	B202-1	B202-2	B202-2	B202-3	B202-3
	SAMPLE ID	MX4801X1	MX4801X1	MX4802X1	MX4802X1	MX4803X1	MX4803X1
	BACKGROUND	FILTERED	UNFILTERED	FILTERED	UNFILTERED	FILTERED	UNFILTERED
VOLATILE ORGANICS (ug/L)							
1,1,1-TRICHLOROETHANE		NA	1 JB	NA	< 5	NA	1 JB
METHYLENE CHLORIDE		NA	2 JB	NA	< 10	NA	3 JB
TRICHLOROETHENE		NA	3 J	NA	< 5	NA	< 5
SEMIVOLATILE ORGANICS (ug/L)							
PHENOL		NA	17	NA	11	NA	12
BIS(2-ETHYLHEXYL)PHTHALATE		NA	< 10	NA	< 10	NA	2 J
CHRYSENE		NA	< 10	NA	< 10	NA	8 J
INORGANICS (ug/L)							
ALUMINUM	6870	< 100	< 100	< 100	< 100	< 100	130
BARIUM	39.6	9	10	7	9	5	< 5
CALCIUM	14700	14000	14000	11000	11000	19000	17000
IRON	9100	< 25	< 25	< 25	28	< 25	< 25
MAGNESIUM	3480	1800	1800	1400	1400	2200	1900
MANGANESE	291	< 5	< 5	< 5	< 5	18	15
NICKEL	34.3	< 40	42	< 40	< 40	< 40	< 40
POTASSIUM	2370	1200	1900	1100	1200	1100	1400
SODIUM	10800	31000	32000	19000	19000	14000	10000
OTHER (ug/L)							
TOTAL PETROLEUM HYDROCARBONS		NA	< 1.3	NA	< 1.2	NA	< 1.3

Notes:

J Flag denotes an estimated value less than the laboratory's Practical Quantitation Level.

B Flag denotes detection of the analyte in the laboratory method blank analyzed concurrently with the sample.

NA Not analyzed.

< Indicates analyte not detected above sample quantitation limit shown.

TABLE 3-2, continued
ANALYTES IN GROUNDWATER
STUDY AREA 48

REMOVAL SITE EVALUATION
FORT DEVENS, MASSACHUSETTS

ANALYTE	WELL	48M-93-04X	48M-93-04X	48M-93-04X DUP	48M-93-04X DUP
	SAMPLE ID	MX4804X1	MX4804X1	MX4811X1	MX4811X1
	BACKGROUND	FILTERED	UNFILTERED	FILTERED	UNFILTERED
VOLATILE ORGANICS (ug/L)					
1,1,1-TRICHLOROETHANE		NA	< 5	NA	1 JB
METHYLENE CHLORIDE		NA	3 JB	NA	3 JB
TRICHLOROETHENE		NA	< 5	NA	< 5
SEMIVOLATILE ORGANICS (ug/L)					
PHENOL		NA	5 J	NA	5 J
BIS(2-ETHYLHEXYL)PHTHALATE		NA	4 J	NA	1 J
CHRYSENE		NA	< 10	NA	< 11
INORGANICS (ug/L)					
ALUMINUM	6870	< 100	100	< 100	110
BARIUM	39.6	< 5	5	< 5	< 5
CALCIUM	14700	9000	9000	8400	8600
IRON	9100	< 25	< 25	< 25	< 25
MAGNESIUM	3480	1100	1100	1000	1100
MANGANESE	291	25	21	28	17
NICKEL	34.3	< 40	< 40	< 40	< 40
POTASSIUM	2370	1500	1600	1200	1100
SODIUM	10800	17000	16000	16000	15000
OTHER (ug/L)					
TOTAL PETROLEUM HYDROCARBONS		NA	< 1.1	NA	< 1

Notes:

J Flag denotes an estimated value less than the laboratory's Practical Quantitation Level.

B Flag denotes detection of the analyte in the laboratory method blank analyzed concurrently with the sample.

NA Not analyzed.

< Indicates analyte not detected above sample quantitation limit shown.

4.0 PRELIMINARY RISK EVALUATIONS

4.1 PRELIMINARY ECOLOGICAL RISK EVALUATION

For ecological risk, residual contamination in the form of low concentrations of TPHC and other organic compounds is located below the depth to which terrestrial receptors are likely to burrow or otherwise be exposed. Based on this lack of exposure pathways, no comparison of soil analyte concentrations to ecological benchmark reference values was conducted. No evidence of significant residual risk to ecological receptors was identified at SA 48.

4.2 PRELIMINARY HUMAN HEALTH RISK EVALUATION

The human health PRE presented in this section is based on the analytical data collected in the SSI and removal site evaluation, as this data is most representative of existing removal soil conditions (Tables 3-1 and 3-2). Soil samples collected from the excavator bucket during the removals are considered more representative of soil removed from the site and less representative of soil remaining at the site, and so were not considered during this PRE. The PRE is a screening-level evaluation of actual and potential risks that environmental contaminants may pose to human receptors in the area of SA 48. For this PRE, the future use of the SA 48 area is assumed to remain commercial/industrial.

The PRE Methodology has been described in detail in previous Fort Devens SI Reports for the Groups 3, 5, and 6 Study Areas (ABB-ES, 1993a) and the Groups 2, 7, and Historic Gas Stations Study Areas (ABB-ES, 1993b). A brief summary of the methodology used for the Public Health PRE is included in the following paragraphs.

For the Public Health PRE, the analytical data were compared to available public health guidelines, standards, and criteria for soil and groundwater. The most recent updates of standards and guidelines discussed in the Groups 3, 5, and 6 Study Areas (ABB-ES, 1993a) and the Groups 2, 7, and Historic Gas Stations Study Areas (ABB-ES, 1993b) are used in the SA 48 PRE, including:

SECTION 4

- USEPA Region III Risk-Based Concentration Table, Second Quarter, 1994 (USEPA, 1994), because no USEPA Region I standards are currently available;
- USEPA Office of Water publication entitled "Drinking Water Regulations and Health Advisories" (USEPA, 1993a);
- "Drinking Water Standards and Guidelines for Chemicals in Massachusetts Drinking Waters" (MADEP, 1993a)
- Method 1 Soil and Groundwater Standards in the Massachusetts Contingency Plan (MCP) (MADEP, 1993b).

For a Method 1 Risk Characterization under the MCP, compliance with the soil standards constitutes a demonstration of no significant health risk from exposure to oil or hazardous materials in soil. For this PRE, Method 1 S-2/GW-1 soil standards were used as screening guidelines along with the Region III Risk-Based concentrations. SA 48 subsurface soil is presumed to be Category S-2 soil, and SA 48 groundwater is assumed to be Category GW-1 groundwater under the MCP (MADEP, 1993b). Soil standards for GW-1 groundwater were selected based on the assumption that groundwater in the area represents a potentially productive aquifer.

4.2.1 Subsurface Soils

Table 4-1 presents summary statistics on the subsurface soil sampling locations at SA 48, as well as USEPA commercial/industrial risk-based soil concentrations and MADEP MCP S-2/GW-1 soil guidelines for comparison. With the exception of NDIR field TPHC data, no analytical data were available for the top 15 feet of soil, the interval typically evaluated in the Fort Devens PREs (ABB-ES, 1993b). This PRE includes an evaluation of the NDIR field TPHC data from the top 15 feet of soil at SA 48, as well as an evaluation of analytical data from the 15-17 foot interval.

All NDIR field screening TPHC data collected at SA 48 between 0 and 15 feet BGS were below detection limits (50 mg/kg) (see Figure 3-2). This detection limit concentration is well below 2500 mg/kg, the available standard/criteria for

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TPHC in soils (Table 4-1). It is also well below the S-1/GW-1 soil standard of 500 mg/kg, which is the most conservative MCP standard for TPHC. The maximum TPHC concentration in the 15-17 foot interval was 180 mg/kg. This concentration is also below all available standards and guidelines. Therefore, residual TPHC concentrations at Site 48 are not posing unacceptable risks to human receptors.

An assessment of the organic analyte data from the 15-17 foot interval shows the presence of three VOCs (1,1,1-trichloroethane, methylene chloride, and 1,1,2,2-tetrachloroethane). As discussed in Section 3.2.1, methylene chloride was found in the QA/QC blanks and is not thought to be a site-related contaminant. Three phthalate ester SVOCs were detected in the 15-17 foot interval (di-n-butylphthalate, butyl benzylphthalate, and bis(2-ethylhexyl)phthalate). The concentrations of all subsurface soil VOCs and SVOCs evaluated in this PRE are well below the available standard/guideline concentrations (Table 4-1).

4.2.2 Groundwater

Table 4-2 presents summary statistics on groundwater associated with SA 48 and drinking water standards/guidelines for comparison. All data reported in Table 4-2 are based on unfiltered samples. Six organic analytes were detected in SA 48 groundwater (methylene chloride, 1,1,1-trichloroethane, trichloroethene, phenol, bis(2-ethylhexyl)phthalate, and chrysene). Two of these organic analytes, methylene chloride and 1,1,1-trichloroethane, were associated with QA/QC blank contamination and were not evaluated in this PRE. Of the remaining four organic analytes in SA 48 groundwater, only chrysene (detected in 1/5 samples at an estimated concentration of 8 $\mu\text{g/L}$) exceeded its drinking water standard/guideline (0.2 $\mu\text{g/L}$). Chrysene was detected in the well upgradient of the former tank location, and so is not expected to have originated from the tank.

An assessment of the data for unfiltered groundwater at SA 48 indicates that calcium, nickel, and sodium were present at concentrations above the Fort Devens background levels. Of these three inorganic analytes, only sodium has a drinking water standard or guideline. The maximum concentration of sodium detected in SA 48 unfiltered groundwater (32,000 $\mu\text{g/L}$) is in excess of the sodium groundwater standard/guideline considered in this PRE (20,000 $\mu\text{g/L}$). The sodium guideline considered in this PRE is a notification guideline (rather than a health standard) for water supply users with sodium-restricted diets.

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The low concentrations (below applicable standards and guidelines) of residual contaminants in soil and groundwater from and downgradient of the former tank location suggest that no significant residual risks to human health exist as a result of leakage from the former tank.

TABLE 4-1
HUMAN HEALTH PRE EVALUATION OF SUBSURFACE SOIL
SA 48

PORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATIONS [a]		REGION III COMMERCIAL/INDUSTRIAL SOIL CONCENTRATION	MCP S-2/GW-1 STANDARD	MAXIMUM EXCEEDS GUIDELINE CONCENTRATION?
		AVERAGE	MAXIMUM			
ORGANICS (mg/kg)						
1,1,1-TRICHLOROETHANE	1/4	0.003	0.003	92,000	30	NO
1,1,2,2-TETRACHLOROETHANE	1/4	0.004	0.004	14	0.02	NO
DI-N-BUTYLPHTHALATE	4/4	0.09675	0.13	100,000	NA	NO
BUTYL BENZYL PHTHALATE	1/4	0.21	0.21	200,000	NA	NO
BIS(2-ETHYLHEXYL)PHTHALATE	2/4	0.275	0.36	200	100	NO
OTHER (mg/kg)						
TOTAL PETROLEUM HYDROCARBONS [b]	3/4	126.7	180	NA	2500	NO

Notes:

[a] Subsurface samples from 15-17 foot interval, borings 48B-93-01X, 48B-93-01X (DUP), 48M-93-04X, and 48B-93-05X.

[b] Field screening data presented in Figure 3-2.

NA = not available

mg/kg = milligrams per kilogram

MCP = Massachusetts Contingency Plan

TABLE 4-2
HUMAN HEALTH PRE EVALUATION OF GROUNDWATER
SA 48
SITE CLOSURE PLAN
FORT DEVENS, MA

ANALYTE	GROUNDWATER BACKGROUND CONCENTRATION (ug/L)	FREQUENCY OF DETECTION	DETECTED CONCENTRATIONS [a]		MAXIMUM EXCEEDS BACKGROUND?	DRINKING WATER STANDARD/GUIDELINE [b] (ug/L)	MAXIMUM EXCEEDS STANDARD/ GUIDELINE?
			AVERAGE (ug/L)	MAXIMUM (ug/L)			
ORGANICS							
TRICHLOROETHENE		1/5	3	3	-	5	NO
PHENOL		5/5	10	17	-	4000	NO
BIS(2-ETHYLHEXYL)PHTHALATE		3/5	2.3	4	-	6	NO
CHRYSENE		1/5	8	8	-	2	YES
INORGANICS							
ALUMINUM	6870	3/5	113.3	130	NO	50-200	NO
BARIUM	39.6	2/5	7	9	NO	2000	NO
CALCIUM	14700	5/5	11,920	17,000	YES	NA	-
IRON	9100	1/5	28	28	NO	300	NO
MAGNESIUM	3480	5/5	1,460	1,900	NO	NA	-
MANGANESE	291	3/5	17.66	21	NO	50	NO
NICKEL	34.3	1/5	42	42	YES	100	NO
POTASSIUM	2370	5/5	1,440	1,900	NO	NA	-
SODIUM	10800	5/5	18,400	32,000	YES	20,000	YES

Notes:

[a] Unfiltered samples from B202-1, B202-2, B202-3, 48M-93-04X, and 48M-93-04X (DUP).

[b] Includes the lower of either the USEPA or the MDEP drinking water standards, or if no federal standard is available, the Region III tap water concentration.

NA = not available

ug/L = micrograms per liter

- = not applicable

Shaded compounds exceed standard or guideline.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The objective of the SSI was to evaluate residual contamination associated with a reported leaking UST. Previous studies and removal efforts had identified residual contamination at the bottom of the UST excavation and adjacent to the Building 202 eastern wall. Consistent with earlier findings, total petroleum hydrocarbons were detected in soil samples collected during the SSI from the center of the former tank location, and in the sample collected adjacent to the building. The concentrations were, however, determined to be lower than the lowest applicable state TPHC concentration guidelines and are therefore presumed to pose no significant threat to human health. TPHC was not detected in soil samples collected from underneath Building 202, indicating that UST-derived contaminants have not migrated under the building.

Several organic compounds (both VOCs and SVOCs) were detected at levels below the laboratory's PQL in soil samples collected during the SSI. It is questionable whether these compounds were the result of releases from the UST, but all were at very low concentrations and none exhibited concentrations that pose unacceptable risks to human health or the environment.

The initial SI determined that groundwater flow beneath the site is towards the northeast or north-northeast. SSI data supports this assertion and monitoring well B202-2 was confirmed to be immediately downgradient of SA 48. B202-3 is located most nearly upgradient and B202-1 is located across gradient from SA 48.

TPHC was not detected in any site-related groundwater samples. VOCs and SVOCs detected in groundwater samples at, and downgradient of, the former tank location are present at concentrations which do not exceed applicable state and federal guidelines posing unacceptable health risks. Chrysene was detected in groundwater from the background well (B202-3) above the applicable drinking water standard. This compound was not present in on-site soil samples, nor was it detected in the on-site and downgradient wells, and so is not likely to have originated from the former UST.

With the exception of nickel (in one sample) and certain more highly water soluble elements such as calcium and sodium, maximum concentrations of metals detected in filtered and unfiltered samples were typically less than the Fort

SECTION 5

Devens statistical background concentrations (Table 4-2). The source of the soluble elements is likely road de-icing activities. Both the average and maximum detected concentration of sodium in groundwater exceed the Massachusetts drinking water guideline, which requires notification only. No other metals, including nickel, were detected in groundwater at concentrations that exceeded federal or state primary drinking water standards.

Inorganic contaminants detected in the samples from and downgradient of the former tank location were also commonly detected in both the upgradient and across-gradient samples, at comparable or higher concentrations. This contaminant distribution substantiates the inference groundwater and soils at the former tank location are not a source for the elevated inorganic concentrations detected.

Confirmatory data collected during the SSI has shown that contaminants associated with past releases from the former UST at SA 48 have been adequately characterized and that previous response actions successfully removed contamination in the immediate vicinity of the former UST. The PRE performed as part of this SSI identified no unacceptable risk to human health and the environment which is attributable to residual contaminants associated with releases from the leaking UST. Based on these findings, no further action is recommended at the Building 202 and UST area of SA 48.

REFERENCES

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- ABB Environmental Services, Inc. (ABB-ES), 1993a. Final Work Plan, SA 48 Fort Devens, MA; Supplemental Investigation and Removal Site Evaluation. November 1993, revised January 1994.
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- ABB Environmental Services, Inc. (ABB-ES), 1993c. *Final Site Investigation Report Groups 2, 7 and Historic Gas Stations*. Prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland. Portland, Maine: ABB-ES. May.
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- Environmental Engineering and Geotechnics, Inc. (EE&G), 1989. Tank Removal Monitoring Report for Building Locations 202, 602, 604, and 2517.
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- Massachusetts Department of Environmental Protection (MADEP), 1993a, "Drinking Water Standards and Guidelines for Chemicals in Massachusetts Drinking Waters"

ABB Environmental Services, Inc.

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- Massachusetts Department of Environmental Protection (MADEP), 1993b. "Revised Massachusetts Contingency Plan." 310 CMR 4.00 *et seq.*
- Schmidt, R. 1993. Report of Field Activity, Soil Removal at Study Area 48. U.S. Army Corps of Engineers, New England Division, June 1993.
- U.S. Army Corps of Engineers, New England Division (1993). Scope of Work for Supplemental Investigation, Study Area 48, Ft. Devens, Massachusetts, August 6, 1993, revised August 12 and 19, 1993.
- USEPA, 1993. Drinking Water Regulations and Health Advisories, Office of Water, Washington, D.C.
- USEPA, 1994. "Risk-Based Concentration Table, Second Quarter 1994." U.S. Environmental Protection Agency; Region III; Philadelphia, Pennsylvania; First Quarter.
- USATHAMA, 1993. Final Action Memorandum for Removal Actions at Study Area 15 (Landfill Number 11) and Study Area 48 (Building 202 Underground Storage Tank). U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), Aberdeen Proving Ground, Maryland, October.
- Weston, Roy F., Inc. (1992). Enhanced Preliminary Assessment, Fort Devens, Massachusetts, April 1992.
- Wojas, Marie, 1994. Telephone conversation between Ms. Marie Wojas, Chemist of Corps of Engineers, New England Division, and Herb Colby, ABB Environmental Services, Inc; Wakefield, MA; June 15, 1994.

APPENDIX A

WASTE CHARACTERIZATION RESULTS ON STOCKPILED SOIL

TO: Joe Polsinello, Webster Engineering
FR: Keith Davison, Ecology + Environment
DT: 15 Nov 1993

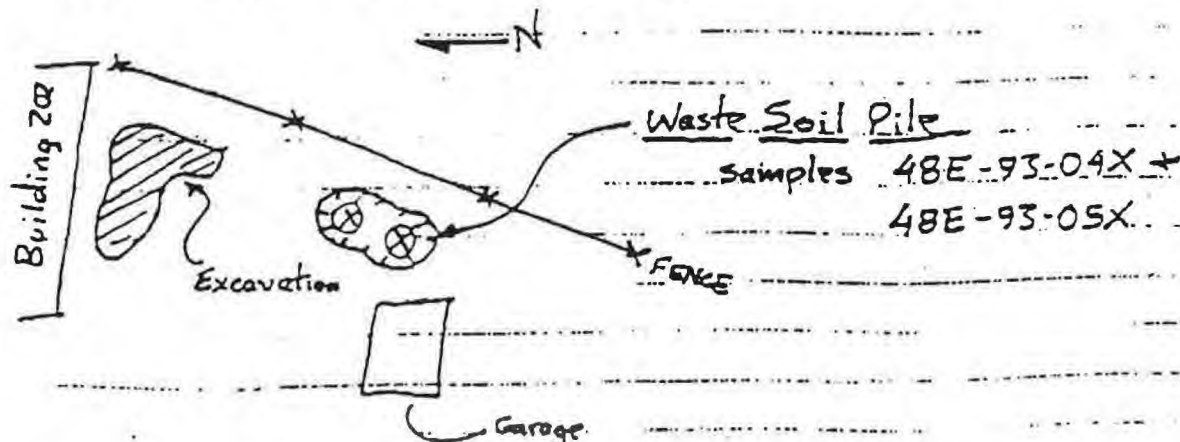
RE: Sampling For TCLP Analysis at Fort Devens SA 48

As per our conversation on 11.12.93, I am Faxing to you the lab results and chain-of-custody records for the TCLP samples collected from the excavated soil pile at SA 48.

Again, please note that in order to collect these two composite samples, between eight and sixteen discreet locations from the waste pile were sampled.

You told me that your information for SA15 is complete, so I am not including the lab report for that work.

Please give me a call if you have any additional questions about the TCLP sampling.



TELEFAX

Date: 4 JUNE 1993

From:



KEITH DAVISON
ecology and environment, inc.
1700 North Moore Street, Suite 1610
Arlington, Virginia 22209 USA
Telephone: (703) 522-6065
FAX: (703) 558-7850

Addressee:

CHARLES GEORGE, USAEC
ROSE SCHMIDT, COE

FAX Number:

Attention:

Reference:

SA 48 TCLP RESULTS
FORT DEVENS

Number of Pages: 3

Charlie + Rose,

Attached are ES+E's Draft Analytical
Results From the two waste pile soil samples
submitted for TCLP analysis. Waste piles
sampled were at SA 48 - Building 202 UST.

Keith Davison



Environmental
Science &
Engineering, Inc.

SA-48
Known - Waste Oil Tank

May 12, 1993
ESE # 3924065G-0400-3200

Keith Davison
Ecology and Environment
1700 N Moore St., Suite 1610
Arlington, Va. 22209

RE: Ft. Devens, Final TCLP Data for Army Total Environmental Program Support,
Contract # DAAAI5-90-D-0012.

Dear Mr. Davison:

Enclosed are the final data and QC reports for soil samples received at ESE from Ft. Devens. The samples were collected on May 13, 1993 for TPHC and TCLP analysis.

The samples were analyzed according to procedures specified in our subcontract agreement as applicable to the analytes of interest. The TCLP methods and the Total Petroleum Hydrocarbons (TPHC) followed procedures in Test Methods for Evaluating Solid Wastes, SW846, November, 1986. The methods utilized were not certified by USATHAMA due the type of analysis requested.

Thank you for letting ESE be of service to you and we hope we may continue to provide our professional services under this existing work authorization.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Joseph J. Vondrick
Sr. Project Scientist





ecology and environment, inc.

300 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 13676 TEL. 716/684-8200
Environmental Specialists in the Field

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Installation = DV

Project No.: UC1016		Project Name: FORT DEVENS / AOC 4B REMOVAL		Project Manager: R J KING		SECTION CODE: 95 5V		REMARKS	
Samples: (Signatures) Keith Davison				Field Team Leader: K DAVISON					
SITE STATION NUMBER TYPE	DATE	TIME	SAMPLE TYPE COM GAS AIR	SITE ID	SAMPLE INFORMATION EXPECTED COMPOUNDS (Concentration)	FIELD SAMPLING NO	STATION LOCATION DEPTH	NUMBER OF CON- TAINERS	
EXCV	5/13/93	1305		18E-93-01X	EX4801X1		NOT SENT - K.D.	1	
EXCV	5/13/93	1320		18E-93-02X				1	
EXCV	5/13/93	1025		18E-93-03X	EX4803X1		20'	1	TPHC (expected ~50 ppm)
EXCV	5/13/93	0905		18E-93-04X	EX4804X1		0'	2	TCLP/RCRA characteristics
EXCV	5/13/93	1105		18E-93-05X	EX4805X1		0'	2	TCLP/RCRA characteristics
EXCV	5/13/93	0835		18E-93-06X	EX4806X1		15'	1	TPHC (expected ~4,000 ppm)
All samples are composites Sample type = SO Date: 5/13/93									
Relinquished By: (Signature) Keith Davison		Date/Time: 5/13/93 1600		Received By: (Signature) FEDEX		Relinquished By: (Signature)		Date/Time:	
Relinquished By: (Signature)		Date/Time:		Received By: (Signature)		Relinquished By: (Signature)		Date/Time:	
Relinquished By: (Signature)		Date/Time:		Received For Laboratory By: (Signature)		Relinquished By: (Signature)		Date/Time:	
								Ship Via: FEDEX	
								RE/AL Number: 5873992073	
								Date: 5/15/93	

SAMPLE ID'S	48E-93-03X	48E-93-06X	48E-93-04X	48E-93-05X
PARAMETERS	STORET	DVIBS	DVIBS	DVIBS
UNITS	METHOD	214	215	216
DATE	05/13/93	05/13/93	05/13/93	05/13/93
TIME	10:25	08:35	09:05	11:05
SAMPLE TYPE	71999	SO	SO	SO
SITE TYPE 1	99759	EXCV	EXCV	EXCV
DEPTH	72015	20.0	15.0	0.0
FEEET	0			
SAMPLING TECHNIQUE	72005	C	C	C
INSTALLATION CODE	99720	DV	DV	DV
SAMPLE	0			
FIELD I.D.	29	EX4803X1	EX4806X1	ET4804X1
	0			
MOISTURE	70320	10.5	6.1	NRQ
WET WT	1			
HYDROCARBONS, PETROL	98233	<31.3	16100	NRQ
UG/G-DRY	1			
TCLP EXTRACTION -	97160	NRQ	NRQ	05/10/93
METALS	M			
TCLP EXTRACTION -	97160	NRQ	NRQ	05/10/93
PESTS	P			
TCLP EXTRACTION -	97160	NRQ	NRQ	05/10/93
BNAS	BNA			
TCLP EXTRACTION -	97160	NRQ	NRQ	05/10/93
VOAS	ZHE			
TCLP EXTRACTION -	97160	NRQ	NRQ	05/10/93
HERBS	H			
IGNITABILITY	99741	NRQ	NRQ	>60
DEG-C	1			
REACTIVITY	99342	NRQ	NRQ	0.0
	1			
CORROSIVITY, SW846	98724	NRQ	NRQ	NA
MM/YR	1			
PH, SOIL	99210	NRQ	NRQ	6.2
STD UNITS	1			

*Samples
 03X + 06X
 are from the
 excavation.*

*04X + 05X
 are from the
 soil stockpiles*

SAMPLE ID'S	40E-93-04X40E-93-05X		
PARAMETERS	STORET	DV1BT	DV1BT
UNITS	METHOD	9	10
DATE		05/18/93	05/18/93
TIME		11:00	11:00
SAMPLE TYPE	71999	SO	SO
SITE TYPE 1	99759	EXCV	EXCV
DEPTH	72015	0.0	0.0
FEET			
SAMPLING TECHNIQUE	72005	C	C
INSTALLATION CODE	99720	DV	DV
SAMPLE			
FIELD I.D.	29	ET4804X1	ET4805X1
ARSENIC	1002	<100	<100
UG/L			
BARIUM	1007	160	210
UG/L			
CADMIUM	1027	<5.0	<5.0
UG/L			
CHROMIUM	1034	<5.0	<5.0
UG/L			
LEAD	1051	<50	79
UG/L			
MERCURY	71900	<0.2	<0.2
UG/L			
SELENIUM	1147	<100	<100
UG/L			
SILVER	1077	<5.0	<5.0
UG/L			
BHC,G(LINDANE)	39340	<0.05	<0.05
UG/L			
CHLORDANE	39350	<0.3	<0.3
UG/L			
ENDRIN	39399	<0.05	<0.05
UG/L			
HEPTACHLOR	39410	<0.05	<0.05
UG/L			
HEPTACHLOR EPOXIDE	39420	<0.05	<0.05
UG/L			
TOXAPHENE	39400	<5.0	<5.0
UG/L			
METHOXYCHLOR	39480	<0.05	<0.05
UG/L			
2,4-D, TOTAL	39730	<0.2	<0.2
UG/L			
2,4,5-TP/SILVEX+DER.	39045	<0.2	<0.2
UG/L			
BENZENE	34030	<1.0	<1.0
UG/L			
CARBON TETRACHLORIDE	32102	<2.6	<2.6
UG/L			
CHLOROBENZENE	34301	<1.4	<1.4
UG/L			
CHLOROFORM	32106	<2.5	<2.5
UG/L			
1,2-DICHLOROETHANE	34531	<2.5	<2.5
UG/L			
1,1-DICHLOROETHYLENE	34501	<3.2	<3.2
UG/L			
METHYL ETHYL KETONE	01595	<10.0	<10.0
UG/L			
TETRACHLOROETHENE	34475	<1.9	<1.9
UG/L			
TRICHLOROETHENE	39100	<3.0	<3.0
UG/L			
VINYL CHLORIDE	39175	<4.6	<4.6
UG/L			

SAMPLE ID'S		48E-93-04X48E-93-05X		
PARAMETERS	STORET	DVIBT	DVIBT	
UNITS	METHOD	9	10	
DATE		05/18/93	05/18/93	
TIME		11:00	11:00	
2-METHYL PHENOL	99873	<2.0	<2.0	
UG/L	TCLP			
3-METHYL PHENOL	97206	<2.0	<2.0	
UG/L	TCLP			
4-METHYL PHENOL	99874	<2.0	<2.0	
UG/L	TCLP			
1,4-DICHLOROBENZENE	34571	<1.0	<1.0	
UG/L	TCLP			
2,4-DINITROTOLUENE	34611	<2.0	<2.0	
UG/L	TCLP			
HEXACHLOROBENZENE	39700	<1.0	<1.0	
UG/L	TCLP			
HEXACHLOROBUTADIENE	34391	<2.0	<2.0	
UG/L	TCLP			
HEXACHLOROETHANE	34396	<1.0	<1.0	
UG/L	TCLP			
NITROBENZENE	34447	<1.0	<1.0	
UG/L	TCLP			
PENTACHLOROPHENOL	39832	<10.0	<10.0	
UG/L	TCLP			
PYRIDINE	97208	<10.0	<10.0	
UG/L	TCLP			
2,4,5-TRICHL'PHENOL	77687	<3.0	<3.0	
UG/L	TCLP			
2,4,6-TRICHL'PHENOL	34621	<3.0	<3.0	
UG/L	TCLP			

QC SUMMARY

Method Blank (MB) Sample Summary

NAME	UNITS	STORE#	BATCH	SAMPLE	DATE	FOUND	C.D.L.	FOOTNOTES
MOISTURE	WGT WT	70320#1	G37558	MB#QC#1	05/26/93	<0.5	0.50	
MOISTURE	WGT WT			MB#QC#2		<0.5	0.50	
MOISTURE	WGT WT			MB#QC#3		<0.5	0.50	
HYDROCARBONS, PETROL	UG/G-DRY	90233#1	G37505	MB#THAMA#1	05/28/93	<20.0	1.6796	
IGNITABILITY	DEG-C	99741#1	G37496	MB#THAMA#1	05/25/93	>60	NDL	
REACTIVITY		99342#1	G37713	MB#THAMA#1	05/24/93	0.0	NDL	
PH, SOIL	STD UNITS	99218#1	G37750	MB#THAMA#1	06/01/93	0.0	NC	
ARSENIC	UG/L	1002#TCLP	G37596	MB#THAMA#1	05/27/93	<100	100	
ARSENIC	UG/L			MB#TCLP#1		<100	100	
BARIUM	UG/L	1007#TCLP		MB#THAMA#1		<25	25.0	
BARIUM	UG/L			MB#TCLP#1		40	25.0	
CADMIUM	UG/L	1027#TCLP		MB#THAMA#1		<5.0	5.0	
CADMIUM	UG/L			MB#TCLP#1		<5.0	5.0	
CHROMIUM	UG/L	1034#TCLP		MB#THAMA#1		<5.0	5.0	
CHROMIUM	UG/L			MB#TCLP#1		<5.0	5.0	
LEAD	UG/L	1051#TCLP		MB#THAMA#1		<50	50.0	
LEAD	UG/L			MB#TCLP#1		<50	50.0	
MERCURY	UG/L	71900#TCLP	G37593	MB#THAMA#1	05/26/93	<0.2	0.2	
MERCURY	UG/L			MB#THAMA#2		<0.2	0.2	
SELENIUM	UG/L	1147#TCLP	G37596	MB#THAMA#1	05/27/93	<100	100	
SELENIUM	UG/L			MB#TCLP#1		<100	100	
SILVER	UG/L	1077#TCLP		MB#THAMA#1		<5.0	5.0	
SILVER	UG/L			MB#TCLP#1		<5.0	5.0	
BHC, (G-LINDANE)	UG/L	39340#TCLP	G37637	MB#THAMA#1	05/26/93	<0.05	1	
CHLORDANE	UG/L	39350#TCLP		MB#THAMA#1		<0.3	5	
ENDRIN	UG/L	39390#TCLP		MB#THAMA#1		<0.05	1	
HEPTACHLOR	UG/L	39410#TCLP		MB#THAMA#1		<0.05	1	
HEPTACHLOR EPOXIDE	UG/L	39420#TCLP		MB#THAMA#1		<0.05	1	
TOXAPHENE	UG/L	39400#TCLP		MB#THAMA#1		<5.0	100	
METHOXYCHLOR	UG/L	39430#TCLP		MB#THAMA#1		<0.05	1	
2,4-D, TOTAL	UG/L	39730#TCLP	G37441	MB#THAMA#1	05/23/93	<0.2	2	
2,4,5-TP/SILVER+DER.	UG/L	39045#TCLP		MB#THAMA#1		<0.2	2	
BENZENE	UG/L	34030#TCLP	G37548	MB#THAMA#1	05/21/93	<1.0	1.0	
CARBON TETRACHLORIDE	UG/L	32102#TCLP		MB#THAMA#1		<2.6	2.6	
CHLOROBENZENE	UG/L	34301#TCLP		MB#THAMA#1		<1.4	1.4	
CHLOROFORM	UG/L	32106#TCLP		MB#THAMA#1		<2.5	2.5	
1,2-DICHLOROETHANE	UG/L	34531#TCLP		MB#THAMA#1		<2.5	2.5	
1,1-DICHLOROETHYLENE	UG/L	34501#TCLP		MB#THAMA#1		<3.2	3.2	
METHYL ETHYL KETONE	UG/L	31595#TCLP		MB#THAMA#1		<10.0	10	
TETRACHLOROETHENE	UG/L	34475#TCLP		MB#THAMA#1		<1.9	1.9	
TRICHLOROETHENE	UG/L	39190#TCLP		MB#THAMA#1		<3.0	3.0	
VINYL CHLORIDE	UG/L	39175#TCLP		MB#THAMA#1		<4.6	4.6	
2-METHYL PHENOL	UG/L	99073#TCLP	G37538	MB#THAMA#1	05/24/93	<2.0	2.0	
3-METHYL PHENOL	UG/L	97296#TCLP		MB#THAMA#1		<2.0	2.0	
4-METHYL PHENOL	UG/L	99074#TCLP		MB#THAMA#1		<2.0	2.0	
1,4-DICHLOROBENZENE	UG/L	34571#TCLP		MB#THAMA#1		<1.0	1.0	
2,4-DIMETHYLTOLUENE	UG/L	34611#TCLP		MB#THAMA#1		<2.0	2.0	
HEXACHLOROBENZENE	UG/L	39700#TCLP		MB#THAMA#1		<1.0	1.0	
HEXACHLOROBUTADIENE	UG/L	34391#TCLP		MB#THAMA#1		<2.0	2.0	
HEXACHLOROETHANE	UG/L	34396#TCLP		MB#THAMA#1		<1.0	1.0	
NITROBENZENE	UG/L	34447#TCLP		MB#THAMA#1		<1.0	1.0	
PENTACHLOROPHENOL	UG/L	99032#TCLP		MB#THAMA#1		<10.0	10	
PYRIDINE	UG/L	97200#TCLP		MB#THAMA#1		<10.0	10.0	

QC SUMMARY

Method Blank (MB) Sample Summary

NAME	UNITS	STOR#METH	BATCH	SAMPLE	DATE	FOUND	C.D.L.	FOOTNOTE
2,4,5-TRICHL'PHENOL	UG/L	77687#TCLP	G37538	MB#THAMA#1	05/24/93	<3.0	3.0	
2,4,6-TRICHL'PHENOL	UG/L	34621#TCLP		MB#THAMA#1		<3.0	3.0	

QC SUMMARY

Sample Matrix Spike (SPM) Recovery Summary

NAME	UNITS	STORE METH	BATCH	SAMPLE	DATE	TARGET	FOUND	REC'D	REC'D IT	UNSPICED
HYDROCARBONS, PETROL	UG/G-DRY	98233*	G37585	SPH1*DV185*214	05/28/93	1250	1170	93.6	76-122	18.4
HYDROCARBONS, PETROL	UG/G-DRY			SPH2*DV185*214		1250	1200	96.0	76-122	18.4
7SEMIC	UG/L	1882*TCLP	G37596	SPH1*DV18T*10	05/27/93	1000	1100	105.1	75-125	49
RIUM	UG/L	1887*TCLP		SPH2*DV18T*10		5000	4900	97.8	86-186	230
CADMIUM	UG/L	1827*TCLP		SPH1*DV18T*10		200	190	94.9	88-188	0.3
CHROMIUM	UG/L	1834*TCLP		SPH2*DV18T*10		1000	970	96.5	79-109	4.0
LEAD	UG/L	1851*TCLP		SPH1*DV18T*10		1000	920	92.1	75-109	29
MERCURY	UG/L	71908*TCLP	G37593	SPH2*DV18T*10	05/26/93	5.0	4.0	96.0	83-125	0.0
SELENIUM	UG/L	1147*TCLP	G37596	SPH1*DV18T*10	05/27/93	200	230	116.0	75-125	28
SILVER	UG/L	1877*TCLP		SPH2*DV18T*10		1000	950	95.0	73-107	0.4
BHC, G(LINDANE)	UG/L	39340*TCLP	G37637	SPH1*DV18T*10	05/25/93	3.0	1.6	53.3	43-145	0.0
ENDRIN	UG/L	39390*TCLP		SPH2*DV18T*10		3.0	2.1	70.0	35-155	0.0
HEPTACHLOR	UG/L	39410*TCLP		SPH1*DV18T*10		3.0	2.2	73.3	40-124	0.0
HEPTACHLOR EPOXIDE	UG/L	39420*TCLP		SPH2*DV18T*10		3.0	2.0	93.3	60-130	0.0
METHOXYCHLOR	UG/L	39480*TCLP		SPH1*DV18T*10		30	25	83.3	80-120	0.0
2,4-D, TOTAL	UG/L	39730*TCLP	G37441	SPH1*DV18T*9	05/22/93	2.3	2.1	92.9	9-119	0.0
2,4-D, TOTAL	UG/L			SPH2*DV18T*9		2.3	2.1	92.9	9-119	0.0
2,4,5-TP/SILVEX+DER.	UG/L	35045*TCLP		SPH1*DV18T*9		2.1	2.3	109.0	33-135	0.0
2,4,5-TP/SILVEX+DER.	UG/L			SPH2*DV18T*9		2.1	2.0	94.8	33-135	0.0
BENZENE	UG/L	34030*TCLP	G37548	SPH1*DV18T*10	05/21/93	50	52	104.0	37-151	0.0
BENZENE	UG/L			SPH2*DV18T*10		50	52	104.0	37-151	0.0
CARBON TETRACHLORIDE	UG/L	32102*TCLP		SPH1*DV18T*10		50	47	94.0	70-140	0.0
CARBON TETRACHLORIDE	UG/L			SPH2*DV18T*10		50	52	104.0	70-140	0.0
CHLOROBENZENE	UG/L	34301*TCLP		SPH1*DV18T*10		50	53	106.0	36-160	0.0
CHLOROBENZENE	UG/L			SPH2*DV18T*10		50	54	108.0	36-160	0.0
CHLOROFORM	UG/L	32106*TCLP		SPH1*DV18T*10		50	50	100.2	52-130	0.9
CHLOROFORM	UG/L			SPH2*DV18T*10		50	52	104.2	52-130	0.9
1,2-DICHLOROETHANE	UG/L	34531*TCLP		SPH1*DV18T*10		50	53	106.0	49-155	0.0
1,2-DICHLOROETHANE	UG/L			SPH2*DV18T*10		50	53	106.0	49-155	0.0
1,1-DICHLOROETHYLENE	UG/L	34501*TCLP		SPH1*DV18T*10		50	48	96.0	0-234	0.0
1,1-DICHLOROETHYLENE	UG/L			SPH2*DV18T*10		50	52	104.0	0-234	0.0
METHYL ETHYL KETONE	UG/L	31595*TCLP		SPH1*DV18T*10		100	110	110.0	50-150	0.0
METHYL ETHYL KETONE	UG/L			SPH2*DV18T*10		100	110	110.0	50-150	0.0
TETRACHLOROETHENE	UG/L	34475*TCLP		SPH1*DV18T*10		50	47	94.0	64-140	0.0
TETRACHLOROETHENE	UG/L			SPH2*DV18T*10		50	52	104.0	64-140	0.0
TRICHLOROETHENE	UG/L	39180*TCLP		SPH1*DV18T*10		50	51	102.0	71-157	0.0
TRICHLOROETHENE	UG/L			SPH2*DV18T*10		50	54	108.0	71-157	0.0
NYL CHLORIDE	UG/L	39175*TCLP		SPH1*DV18T*10		50	39	78.0	0-250	0.0
VINYL CHLORIDE	UG/L			SPH2*DV18T*10		50	44	88.0	0-250	0.0
2-METHYL PHENOL	UG/L	99073*TCLP	G37538	SPH1*DV18T*9	05/24/93	50	30	76.0	31-119	0.0
3-METHYL PHENOL	UG/L	97200*TCLP		SPH2*DV18T*9		100	66	66.0	31-119	0.0
4-METHYL PHENOL	UG/L	99074*TCLP		SPH1*DV18T*9		100	66	66.0	31-119	0.0
1,4-DICHLOROBENZENE	UG/L	34571*TCLP		SPH2*DV18T*9		50	39	78.0	20-124	0.0
2,4-DINITROTOLUENE	UG/L	34613*TCLP		SPH1*DV18T*9		50	43	86.0	39-139	0.0
HEXACHLOROBENZENE	UG/L	39700*TCLP		SPH2*DV18T*9		50	43	86.0	0-152	0.0
HEXACHLOROBUTADIENE	UG/L	34391*TCLP		SPH1*DV18T*9		50	36	72.0	24-116	0.0
HEXACHLOROETHANE	UG/L	34396*TCLP		SPH2*DV18T*9		50	34	68.0	41-113	0.0
NITROBENZENE	UG/L	34447*TCLP		SPH1*DV18T*9		50	42	84.0	34-100	0.0
PENTACHLOROPHENOL	UG/L	34032*TCLP		SPH2*DV18T*9		100	51	51.0	14-176	0.0
PYRIDINE	UG/L	97288*TCLP		SPH1*DV18T*9		50	35	70.0	50-150	0.0
2,4,5-TRICHL*PHENOL	UG/L	77607*TCLP		SPH2*DV18T*9		50	39	78.0	36-144	0.0
2,4,6-TRICHL*PHENOL	UG/L	34623*TCLP		SPH1*DV18T*9		50	41	82.0	36-144	0.0

QC SUMMARY

STORE#METHOD	Sample Matrix Spike Recovery NAME	Statistics Summary			
		N	MINIMUM	MAXIMUM	AVERAGE STANDARD DEVIATION
96233*1	HYDROCARBONS, PETROL	2	93.6	96.8	94.8 1.7
1002*TCPL	ARSENIC	1	105.1	105.1	105.1 0.0
1007*TCPL	BARIUM	1	97.8	97.8	97.8 0.0
27*TCPL	CADMIUM	1	94.9	94.9	94.9 0.0
34*TCPL	CHROMIUM	1	96.5	96.5	96.5 0.0
1051*TCPL	LEAD	1	92.1	92.1	92.1 0.0
71909*TCPL	MERCURY	1	96.8	96.8	96.8 0.0
1147*TCPL	SELENIUM	1	116.0	116.0	116.0 0.0
1077*TCPL	SILVER	1	95.8	95.8	95.8 0.0
39340*TCPL	BHC, G(LINDANE)	1	53.3	53.3	53.3 0.0
39390*TCPL	ENDRIN	1	70.8	70.8	70.8 0.0
39410*TCPL	HEPTACHLOR	1	73.3	73.3	73.3 0.0
39420*TCPL	HEPTACHLOR EPOXIDE	1	93.3	93.3	93.3 0.0
39480*TCPL	METHOXYCHLOR	1	83.3	83.3	83.3 0.0
39730*TCPL	2,4-D, TOTAL	2	92.9	92.9	92.9 0.0
39843*TCPL	2,4,5-TP/SILVEX+DER.	2	94.8	109.8	101.9 10.0
34030*TCPL	BENZENE	2	104.0	104.0	104.0 0.0
32102*TCPL	CARBON TETRACHLORIDE	2	94.8	104.0	99.8 7.1
34301*TCPL	CHLOROBENZENE	2	106.8	108.8	107.8 1.4
32106*TCPL	CHLOROFORM	2	100.2	104.2	102.2 2.0
34531*TCPL	1,2-DICHLOROETHANE	2	106.8	106.8	106.8 0.0
34561*TCPL	1,1-DICHLOROETHYLENE	2	96.8	104.8	100.8 5.7
81595*TCPL	METHYL ETHYL KETONE	2	110.8	118.8	110.8 0.0
34475*TCPL	TETRACHLOROETHENE	2	94.8	104.8	99.8 7.1
39180*TCPL	TRICHLOROETHENE	2	102.8	108.8	105.8 4.2
39175*TCPL	VINYL CHLORIDE	2	78.8	88.8	83.8 7.1
99873*TCPL	2-METHYL PHENOL	1	76.8	76.8	76.8 0.0
97286*TCPL	3-METHYL PHENOL	1	66.8	66.8	66.8 0.0
99874*TCPL	4-METHYL PHENOL	1	66.8	66.8	66.8 0.0
34571*TCPL	1,4-DICHLOROBENZENE	1	78.8	78.8	78.8 0.0
34611*TCPL	2,4-DINITROTOLUENE	1	86.8	86.8	86.8 0.0
39700*TCPL	HEXACHLOROBENZENE	1	86.8	86.8	86.8 0.0
34351*TCPL	HEXACHLOROBUTADIENE	1	72.8	72.8	72.8 0.0
34396*TCPL	HEXACHLOROTHANE	1	68.8	68.8	68.8 0.0
34447*TCPL	NITROBENZENE	1	84.8	84.8	84.8 0.0
39832*TCPL	PENTACHLOROPHENOL	1	51.8	51.8	51.8 0.0
97288*TCPL	PYRIDINE	1	78.8	78.8	78.8 0.0
7687*TCPL	2,4,5-TRICHL'PHENOL	1	78.8	78.8	78.8 0.0
4621*TCPL	2,4,6-TRICHL'PHENOL	1	82.8	82.8	82.8 0.0

WORK ORDER #: _____

DUE DATE : _____

COMPANY: Webster Engineering Co
ADDRESS: PO Box 275
Dorchester MA 02121
PHONE #: 617 265-5500 FAX #: 617 248-3054
P.O. #: DACA 33-95-0007
CLIENT CONTACT: Joseph Palsinello 617 326-1128
PROJECT ID/LOCATION: DACA 33-95-0007

FORT DEVENS ARIZ, 191A

SAMPLE TYPE

1. WATER
2. SOIL
3. SLUDGE
4. OIL
5. TISSUE
OTHER

CONTAINER TYPE

P - PLASTIC
G - GLASS
V - VOA

ANALYSES

P- PLASTIC
G- GLASS
V- VOA

VOC 8240
PCB 8080
EMI Vol 76, 8270
TPH (IR)
TPH GC/MS

[illegible]

RELINQUISHED BY:

DATE: 11 - 14 - 93

RECEIVED BY:

DATE: 11-16-92

TIME 2 = 45 - PM

TIME: 3 - 46 - PM

FURNISHED BY

DATE _____

RECEIVED BY:

DATE . . .

TIME 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

TIME

DATE: _____

DATE - -

TIME

TIME

METHOD OF SHIPMENT

SPECIAL INSTRUCTIONS:

☒ RUSH, DAY TURN AROUND
☐ ROUTINE

11/16/93

**E3I PRICE QUOTATION
FOR
WEBSTER ENGINEERING**

Requested on: November 16, 1993
Requested by: Joseph V. Polsinello
Telephone #: (617) 265-5500
Fax #: (617) 826-9332


E3I RFP #: 2462

**Project Description: Fort Devens; Soil Analysis
No. DACAB3-93-R-0007**

<u>Parameter</u>	<u>Method</u>	<u>Price (\$)/Sample</u>
VOA	Mod 8240	165
AEN	Mod 8270	320
PCB	Mod 8080	95
TPH (IR)	418.1	55
TPH GC/MS	Mod 8270	155

NOTES:

1. Turnaround time is one week with a 50% surcharge.
2. MS/MSD, spikes, duplicates, field blanks and trip blanks will be billed at unit price.
3. E3I will provide sample bottles, preservatives and coolers and assume the cost of ground transportation of these supplies to the client. Ground transportation can only be used with sufficient warning of request for supplies. Supplies sent via air transportation will be billed to the client.



Nicholas P. Corso
Executive Vice President

11-17-93

Date

TOTAL PETROLEUM HYDROCARBONS

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/23/93

<u>E3I ID:</u>	<u>Client ID:</u>	<u>Total Petroleum Hydrocarbons Dry Weight</u>
940259-1	X01 North	300 mg/kg
940259-2	X02 Center	180 mg/kg
S257,258,259	Soil Blank	< 25 mg/kg

"<" means that the parameter was not detected and that its concentration is less than the indicated value.

PETROLEUM HYDROCARBON FINGERPRINT RESULTS

Client ID:	X03 SOUTH	Date Extracted:	11/18/93
E3I ID:	940259-7	Date Analyzed:	11/21/93
		Dilution Factor:	1
Identification:	#6 Fuel Oil	Concentration:	57 mg/kg

Sample contained a mixture of petroleum compounds eluting over the size range of C14 to C32 hydrocarbons. The extracted 43 ion profile was similar to a #6 Fuel Oil standard. The quantitation range was 12 to 34 minutes. The match between the sample and #6 Fuel Oil standard was imperfect due to weathering of the sample and the presence of an early eluting peak in the sample. A mass spectrum is provided for the unknown compound eluting at 16.4 minutes.

Client ID:	SBLKZ6	Date Extracted:	11/18/93
E3I ID:	S258,259	Date Analyzed:	11/20/93
		Dilution Factor:	1
Identification:	None	Concentration:	< 10.0 mg/kg

Sample contained no petroleum compounds above the reporting limit.

Sample concentrations have been blank corrected for method related interferences.

EPI FORM 1A
 ANALYTICAL DATA SHEET

CLIENT SAMPLE NO.

XD7NORTH

Client Name: WEBSTER
 Client Project: 044W

EPI Sample ID: 940250-
 EPI File Name: H1080
 Associated Blank: H1077

Matrix: SOIL
 Level: GWA

Date Received: 11/17/93
 Date Extracted: / /
 Date Analyzed: 11/22/93

Sample wt/vol: 5.0 g
 % Moisture: 10

Dilution Factor: 1.0

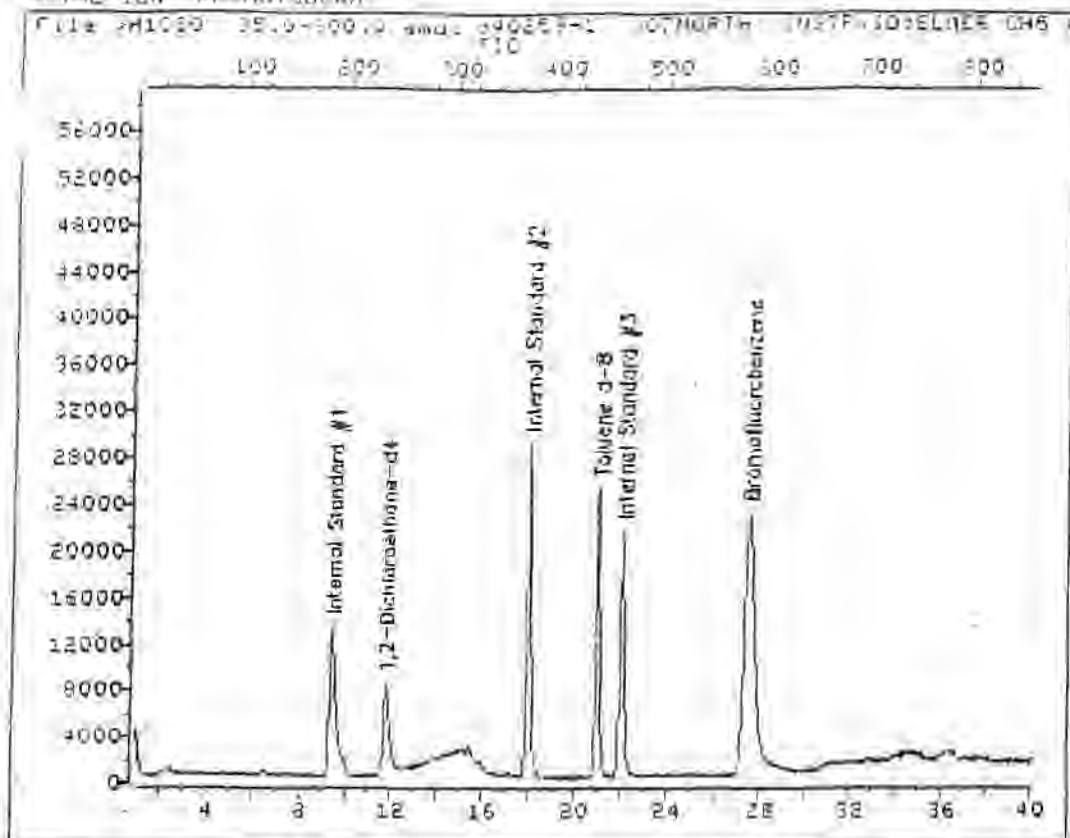
CAS NO. COMPOUND CONCENTRATION UNITS: ug/Kg 0

74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	6	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
78-93-3	2-Butanone	11	U
107-06-2	1,2-Dichloroethane	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-6	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-3	1,2-Dichloropropane	6	U
10061-01-6	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

QUALIFIERS

- U: Analysed for but not detected
- B: Found in associated blank as well as sample
- J: Estimated value, below quantitation limit

TOTAL ION CHROMATOGRAM



Mu
11-23-93

Data File: >H1080::D4

Quant Output File: >H1080::D2

Name: 940259-1 X07NORTH

Instrument ID: ELMER

Misc: INSTR.ID:ELMER CH5 WEB 5.0 G

Id File: ET-CLP::SC

Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624

Last Calibration: 930522 17:42

Last Qcal Time: 931122 10:34

Operator ID: VOA

Quant Time : 931122 15:20

Injected at: 931122 14:39

EPA FORM 1A
ANALYSIS DATA SHEET

(CLIENT SAMPLE NO)

X08500TH

Sample Name: VESFED
Client Project: GA4A

EPA Sample ID: 940259-2
EPA File Name: H1081
Associated Blank: H1077

Matrix: SOIL
Level: LOW

Date Received: 11/17/93
Date Extracted: / /
Date Analyzed: 11/22/93

Sample wt/vol: 5.0 g
% Moisture: 9.0

Dilution Factor: 1.0

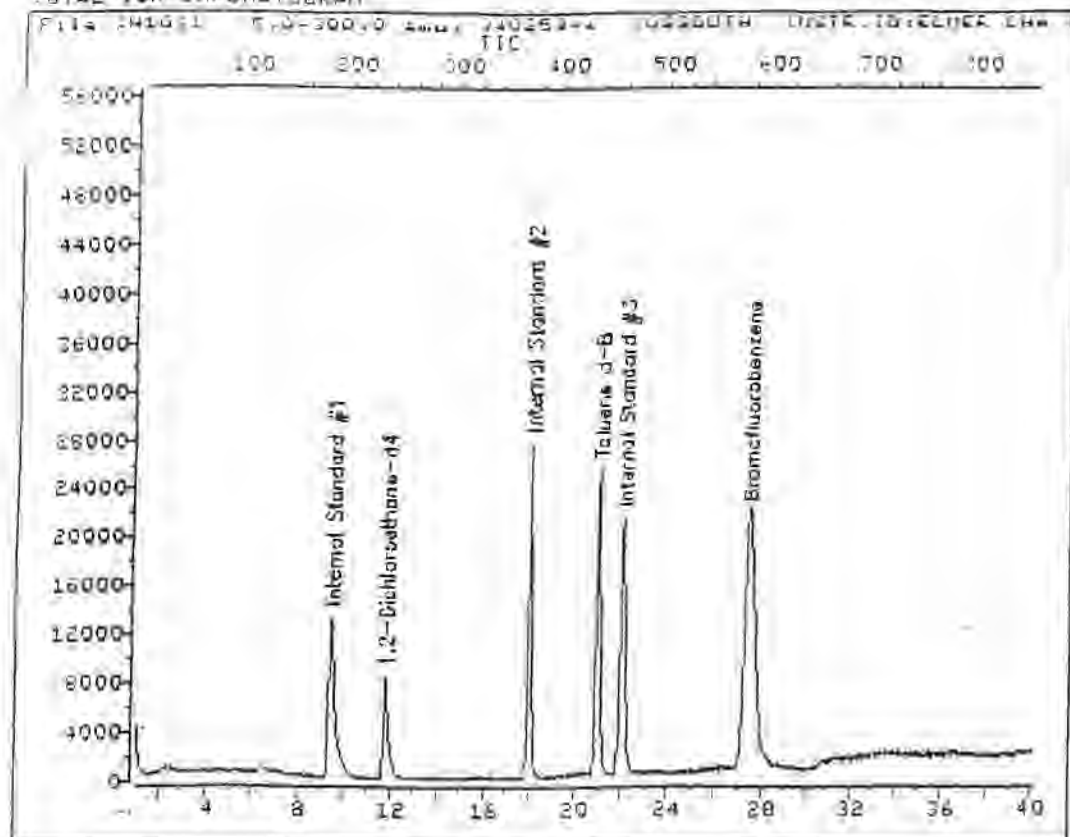
EPA NO. COMPOUND CONCENTRATION UNITS: ug/Kg Q

74-87-3	Chloromethane	11	U
74-83-3	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	11	U
75-35-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-50-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
78-93-3	2-Butanone	11	U
107-06-2	1,2-Dichloroethane	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-67-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

QUALIFIERS

- U: Analysed for but not detected
- B: Found in associated blank as well as sample
- J: Estimated value, below quantitation limit

TOTAL ION CHROMATOGRAM



ANAL
11-23-93

Data File: >H1081::D4

Quant Output File: >H1081::D2

Name: 940259-2 X08SOUTH

Instrument ID: ELMER

Misc: INSTR.ID:ELMER CH6 WEBSTER 5.0 G

Id File: ET-CLP::SC

Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624

Last Calibration: 930522 17:42

Last Qcal Time: 931122 10:34

Operator ID: VOA

Quant Time : 931122 16:19

Injected at: 931122 15:38

201 FORM 1A
QUALITY CONTROL ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK 11/22

Client Name: WEBSTER

Client Project: 6448

Matrix: SOIL

Level: LOW

Sample wt/vol: 5.0 G

% Moisture: 0.0

E3I Sample ID: VBLK

E3I File Name: H1077

Associated Blank: H1077

Date Received: / /

Date Extracted: / /

Date Analyzed: 11/22/93

Dilution Factor: 1.0

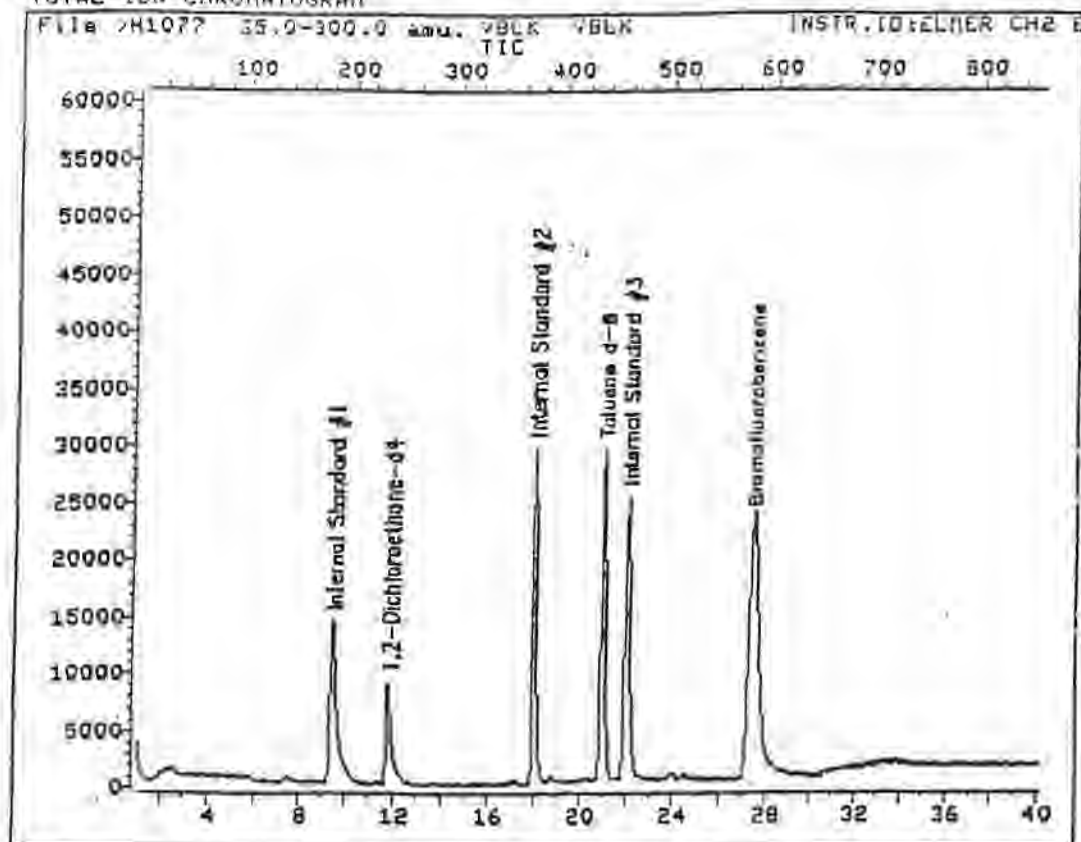
CAS NO. COMPOUND CONCENTRATION UNITS: ug/Kg Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	23	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
78-93-3	2-Butanone	10	U
107-06-2	1,2-Dichloroethane	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-6	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

QUALIFIERS

- U: Analysed for but not detected
- B: Found in associated blank as well as sample
- A: Estimated value, below quantitation limit

TOTAL ION CHROMATOGRAM



MM
11-23-93

Data File: >H1077::D4

Quant Output File: >H1077::D2

Name: VBLK VBLK

Instrument ID: ELMER

Misc: INSTR.ID:ELMER CH2 E3I 5.0 G

Id File: ET-CLP::SC

Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624

Last Calibration: 930522 17:42

Last Qcal Time: 931122 10:34

Operator ID: VOA

Quant Time : 931122 12:24

Injected at: 931122 11:43

E3I FORM 2A
SOIL VOLATILE ORGANIC SURROGATE RECOVERY

Client Name: WEBSTER

Client Project: SA40

Date Received: 11/17/93

E3I Project #: 940259

Level: LOW

	CLIENT SAMPLE ID	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	VBLK 11/22	103	101	100		0
2	X07NORTH	105	94	91		0
3	X08SOUTH	105	98	93		0
4						
5						
6						
7						
8						
9						
10						
11						
12						
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24						
25						
26						
27						
28						
29						
30						

QC LIMITS

S1 (TOL) = Toluene-d8: 84-138

S2 (BFB) = Bromofluorobenzene: 59-113

S3 (DCE) = 1,2-Dichloroethane-d4: 70-121

* Values outside of required QC limits

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

X09 NORTH

Client Name: WEBSTER ENG.
Client Project: SA48

E3I Sample ID: 940259-3
E3I File Name: C5432
Associated Blank: C5431

Matrix: SOIL
Level: LOW

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Sample wt/vol: 30.0 G
% Moisture: 8.0
Extract vol: 1.0 mL

Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION	UNITS: ug/Kg	Q
108-95-2	Phenol	360	U	
111-44-4	bis(2-Chloroethyl) Ether	360	U	
95-57-8	2-Chlorophenol	360	U	
541-73-1	1,3-Dichlorobenzene	360	U	
106-46-7	1,4-Dichlorobenzene	360	U	
95-50-1	1,2-Dichlorobenzene	360	U	
95-48-7	2-Methylphenol	360	U	
108-60-1	bis(2-chloroisopropyl) ether	360	U	
106-44-5	4-Methylphenol	360	U	
621-64-7	N-Nitroso-Di-n-propylamine	360	U	
67-72-1	Hexachloroethane	360	U	
98-95-3	Nitrobenzene	360	U	
78-59-1	Isophorone	360	U	
88-75-5	2-Nitrophenol	360	U	
105-67-9	2,4-Dimethylphenol	360	U	
111-91-1	bis(2-Chloroethoxy) methane	360	U	
120-83-2	2,4-Dichlorophenol	910	U	
120-82-1	1,2,4-Trichlorobenzene	360	U	
91-20-3	Naphthalene	360	U	
106-47-8	4-Chloroaniline	360	U	
87-68-3	Hexachlorobutadiene	360	U	
59-50-7	4-Chloro-3-methylphenol	360	U	
91-57-6	2-Methylnaphthalene	360	U	
77-47-4	Hexachlorocyclopentadiene	360	U	
88-06-2	2,4,6-Trichlorophenol	360	U	
95-95-4	2,4,5-Trichlorophenol	910	U	
91-58-7	2-Chloronaphthalene	360	U	
88-74-4	2-Nitroaniline	910	U	
131-11-3	Dimethylphthalate	360	U	
208-96-8	Acenaphthylene	360	U	
606-20-2	2,6-Dinitrotoluene	360	U	
99-09-2	3-Nitroaniline	910	U	
83-32-9	Acenaphthene	360	U	

QUALIFIERS

- U: Analysed for but not detected
- B: Found in associated blank as well as sample
- J: Estimated value, below quantitation limit
- E: Estimated value, above calibration limit

X09 NORTH

Client Name: WEBSTER ENG.
Client Project: SA48E3I Sample ID: 940259-3
E3I File Name: C5432
Associated Blank: C5431Matrix: SOIL
Level: LOWDate Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93Sample wt/vol: 30.0 G
% Moisture: 8.0
Extract vol: 1.0 mL

Dilution Factor: 1

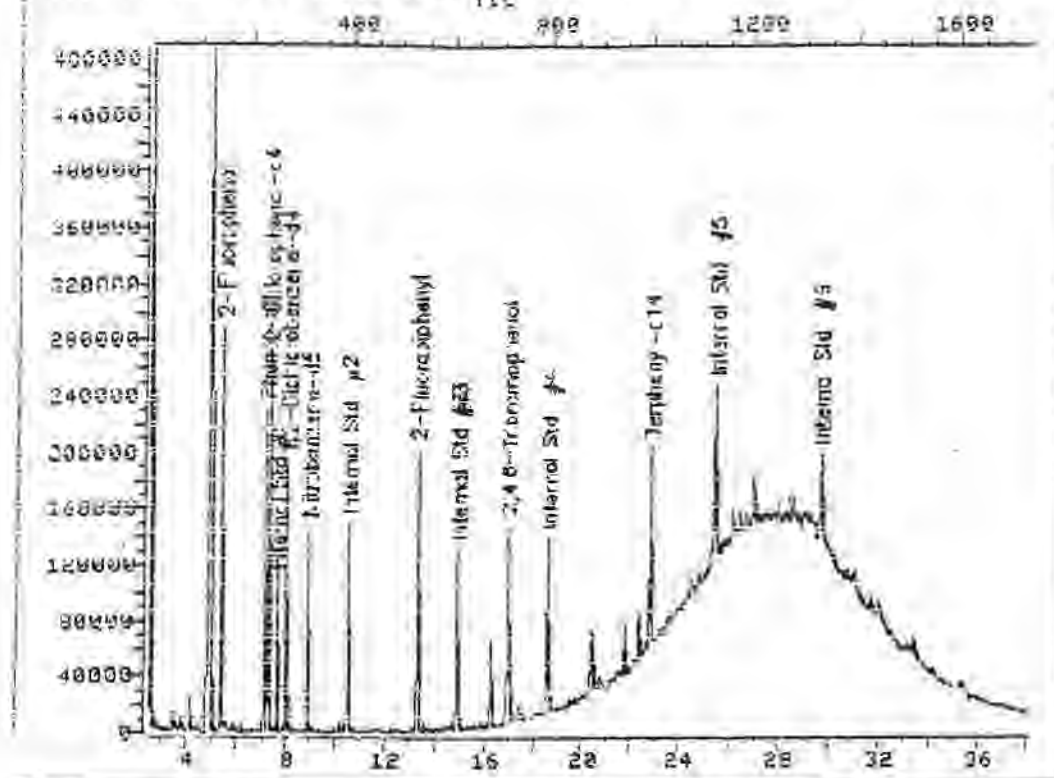
CAS NO.	COMPOUND	CONCENTRATION	UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	910		U
100-02-7	4-Nitrophenol	910		U
132-64-9	Dibenzofuran	360		U
121-14-2	2,4-Dinitrotoluene	360		U
84-66-2	Diethylphthalate	360		U
7005-72-3	4-Chlorophenyl-phenylether	360		U
86-73-7	Fluorene	360		U
100-01-6	4-Nitroaniline	910		U
534-52-1	4,6-Dinitro-2-methylphenol	910		U
86-30-6	N-Nitrosodiphenylamine	360		U
101-55-3	4-Bromophenyl-phenylether	360		U
118-74-1	Hexachlorobenzene	360		U
87-86-5	Pentachlorophenol	910		U
85-01-8	Phenanthrene	57		J
120-12-7	Anthracene	360		U
84-74-2	Di-n-butylphthalate	160		JB
206-44-0	Fluoranthene	140		J
129-00-0	Pyrene	140		J
85-68-7	Butylbenzylphthalate	360		U
91-94-1	3,3'-Dichlorobenzidine	360		U
56-55-3	Benzo(a)anthracene	82		J
218-01-9	Chrysene	84		J
117-81-7	bis(2-Ethylhexyl)phthalate	360		U
117-84-0	Di-n-octylphthalate	360		U
205-99-2	Benzo(b)fluoranthene	120		J
207-08-9	Benzo(k)fluoranthene	81		J
50-32-8	Benzo(a)pyrene	77		J
193-39-5	Indeno(1,2,3-cd)pyrene	360		U
53-70-3	Dibenzo(a,h)anthracene	360		U
191-24-2	Benzo(g,h,i)perylene	360		U
86-74-8	Carbazole	12000		U

QUALIFIERS

- U: Analysed for but not detected
 B: Found in associated blank as well as sample
 J: Estimated value, below quantitation limit
 E: Estimated value, above calibration limit

TOTAL ION CHROMATOGRAM

File C05432 35.3 500.0 amu, 931121-3 X09 NORTH INSTR.ID:ROCKY ASP91



Data File: C05432::R2

Quant Output File: C05432::QT

Name: 940259-3 X09 NORTH

Misc: INSTR.ID:ROCKY ASP91 WEBSTER ENG.

BTL#14

Id File: AQU91R::EX

Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP

Last Calibration: 931120 15:31

Operator ID: MIKE

Quant Time: 931121 03:21

Injected at: 931121 02:40

WAB
11/23/93

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

X10 SOUTH

Client Name: WEBSTER ENG.
Client Project: SA48

E3I Sample ID: 940259-4
E3I File Name: C5433
Associated Blank: C5431

Matrix: SOIL
Level: LOW

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Sample wt/vol: 30.0 G
% Moisture: 7.0
Extract vol: 1.0 mL

Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION	UNITS: ug/Kg	Q
108-95-2	Phenol	360		U
111-44-4	bis(2-Chloroethyl) Ether	360		U
95-57-8	2-Chlorophenol	360		U
541-73-1	1,3-Dichlorobenzene	360		U
106-46-7	1,4-Dichlorobenzene	360		U
95-50-1	1,2-Dichlorobenzene	360		U
95-48-7	2-Methylphenol	360		U
108-60-1	bis(2-chloroisopropyl) ether	360		U
106-44-5	4-Methylphenol	360		U
621-64-7	N-Nitroso-Di-n-propylamine	360		U
67-72-1	Hexachloroethane	360		U
98-95-3	Nitrobenzene	360		U
78-59-1	Isophorone	360		U
88-75-5	2-Nitrophenol	360		U
105-67-9	2,4-Dimethylphenol	360		U
111-91-1	bis(2-Chloroethoxy) methane	360		U
120-83-2	2,4-Dichlorophenol	900		U
120-82-1	1,2,4-Trichlorobenzene	360		U
91-20-3	Naphthalene	360		U
106-47-8	4-Chloroaniline	360		U
87-68-3	Hexachlorobutadiene	360		U
59-50-7	4-Chloro-3-methylphenol	360		U
91-57-6	2-Methylnaphthalene	360		U
77-47-4	Hexachlorocyclopentadiene	360		U
88-06-2	2,4,6-Trichlorophenol	360		U
95-95-4	2,4,5-Trichlorophenol	900		U
91-58-7	2-Chloronaphthalene	360		U
88-74-4	2-Nitroaniline	900		U
131-11-3	Dimethylphthalate	360		U
208-96-8	Acenaphthylene	360		U
606-20-2	2,6-Dinitrotoluene	360		U
99-09-2	3-Nitroaniline	900		U
83-32-9	Acenaphthene	360		U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

X10 SOUTH

Client Name: WEBSTER ENG.
Client Project: SA48E3I Sample ID: 940259-4
E3I File Name: C5433
Associated Blank: C5431Matrix: SOIL
Level: LOWDate Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93Sample wt/vol: 30.0 G
% Moisture: 7.0
Extract vol: 1.0 mL

Dilution Factor: 1

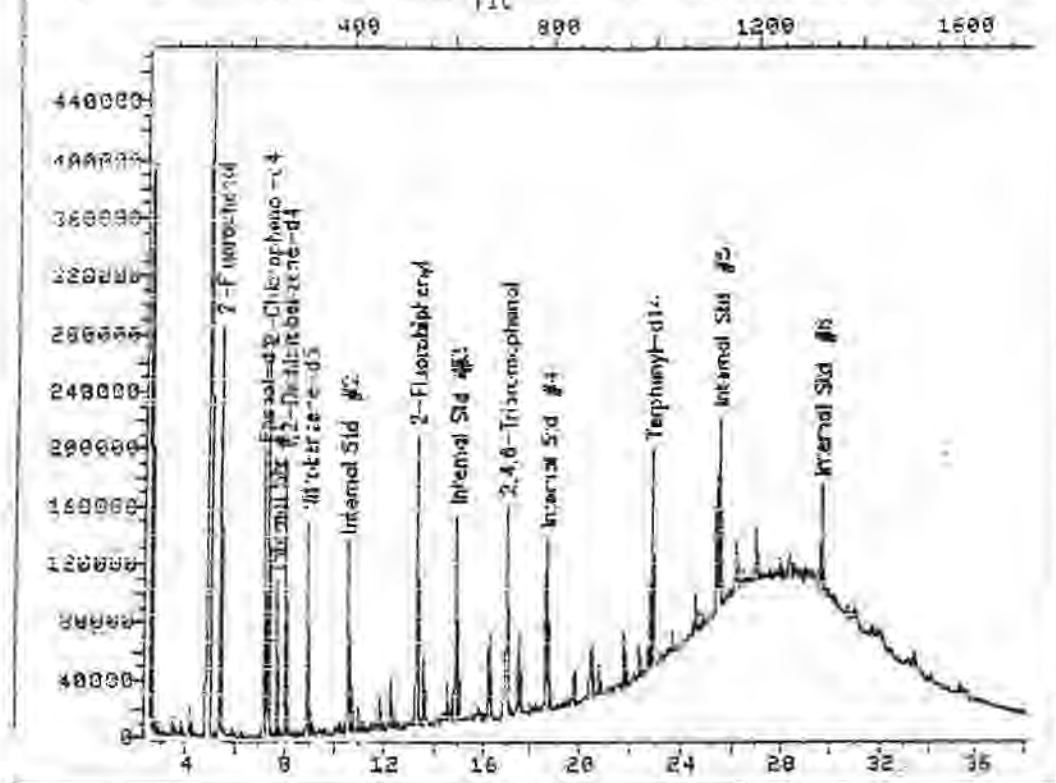
CAS NO.	COMPOUND	CONCENTRATION	UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	900		U
100-02-7	4-Nitrophenol	900		U
132-64-9	Dibenzofuran	360		U
121-14-2	2,4-Dinitrotoluene	360		U
84-66-2	Diethylphthalate	360		U
7005-72-3	4-Chlorophenyl-phenylether	360		U
86-73-7	Fluorene	360		U
100-01-6	4-Nitroaniline	900		U
534-52-1	4,6-Dinitro-2-methylphenol	900		U
86-30-6	N-Nitrosodiphenylamine	360		U
101-55-3	4-Bromophenyl-phenylether	360		U
118-74-1	Hexachlorobenzene	360		U
87-86-5	Pentachlorophenol	900		U
85-01-8	Phenanthrene	360		U
120-12-7	Anthracene	360		U
84-74-2	Di-n-butylphthalate	120		JB
206-44-0	Fluoranthene	95		J
129-00-0	Pyrene	88		J
85-68-7	Butylbenzylphthalate	360		U
91-94-1	3,3'-Dichlorobenzidine	360		U
56-55-3	Benzo(a)anthracene	61		J
218-01-9	Chrysene	63		J
117-81-7	bis(2-Ethylhexyl)phthalate	360		U
117-84-0	Di-n-octylphthalate	360		U
205-99-2	Benzo(b)fluoranthene	72		J
207-08-9	Benzo(k)fluoranthene	55		J
50-32-8	Benzo(a)pyrene	56		J
193-39-5	Indeno(1,2,3-cd)pyrene	360		U
53-70-3	Dibenzo(a,h)anthracene	360		U
191-24-2	Benzo(g,h,i)perylene	360		U
86-74-8	Carbazole	430000		U

QUALIFIERS

U: Analysed for but not detected
 B: Found in associated blank as well as sample
 J: Estimated value, below quantitation limit
 E: Estimated value, above calibration limit

TOTAL ION CHROMATOGRAM

FILE: C5433 25.6 200.0 amu. 931120-4 X10 SOUTH INSTR.ID:ROCKY ASP91



Data File: C5433::R2

Quant Output File: C5433::QT

Name: 940259-4 X10 SOUTH

Misc: INSTR.ID:ROCKY ASP91 WEBSTER ENG.

BTL#19

Id File: AQU91R::EX

Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP

Last Calibration: 931120 15:31

Operator ID: MIKE

Quant Time: 931121 04:09

Injected at: 931121 03:29

(uau)

11/23/93

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLKE3

Client Name: WEBSTER ENG.
Client Project: SA48

E3I Sample ID: S259 -
E3I File Name: C5431
Associated Blank: C5431

Matrix: SOIL
Level: LOW

Date Received: / /
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Sample wt/vol: 30.0 G
% Moisture: 0.0
Extract vol: 1.0 mL

Dilution Factor: 1

CAS NO. COMPOUND CONCENTRATION UNITS: ug/Kg Q

108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl) Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-chloroisopropyl) ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy) methane	330	U
120-83-2	2,4-Dichlorophenol	830	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	330	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

SBLKE3

Client Name: WEBSTER ENG.
Client Project: SA48E3I Sample ID: S259 -
E3I File Name: C5431
Associated Blank: C5431Matrix: SOIL
Level: LOWDate Received: / /
Date Extracted: 11/18/93
Date Analyzed: 11/21/93Sample wt/vol: 30.0 G
% Moisture: 0.0
Extract vol: 1.0 mL

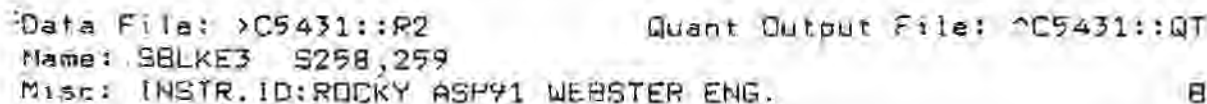
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION	UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	830		U
100-02-7	4-Nitrophenol	830		U
132-64-9	Dibenzofuran	330		U
121-14-2	2,4-Dinitrotoluene	330		U
84-66-2	Diethylphthalate	330		U
7005-72-3	4-Chlorophenyl-phenylether	330		U
86-73-7	Fluorene	330		U
100-01-6	4-Nitroaniline	830		U
534-52-1	4,6-Dinitro-2-methylphenol	830		U
86-30-6	N-Nitrosodiphenylamine	330		U
101-55-3	4-Bromophenyl-phenylether	330		U
118-74-1	Hexachlorobenzene	330		U
87-86-5	Pentachlorophenol	830		U
85-01-8	Phenanthrene	330		U
120-12-7	Anthracene	330		U
84-74-2	Di-n-butylphthalate	160		J
206-44-0	Fluoranthene	330		U
129-00-0	Pyrene	330		U
85-68-7	Butylbenzylphthalate	330		U
91-94-1	3,3'-Dichlorobenzidine	330		U
56-55-3	Benzo(a)anthracene	330		U
218-01-9	Chrysene	330		U
117-81-7	bis(2-Ethylhexyl)phthalate	330		U
117-84-0	Di-n-octylphthalate	330		U
205-99-2	Benzo(b)fluoranthene	330		U
207-08-9	Benzo(k)fluoranthene	330		U
50-32-8	Benzo(a)pyrene	330		U
193-39-5	Indeno(1,2,3-cd)pyrene	330		U
53-70-3	Dibenzo(a,h)anthracene	330		U
191-24-2	Benzo(g,h,i)perylene	330		U
86-74-8	Carbazole	330		U

QUALIFIERS

U: Analysed for but not detected
 B: Found in associated blank as well as sample
 J: Estimated value, below quantitation limit
 E: Estimated value, above calibration limit

File	005401	25.0	300.0	amu.	PSI KE3	9806,269	INSTR. ID: RQCHY: 09895
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BTL#13

Id File: AQU91R::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931120 15:31

```
Operator ID: MIKE
Quant Time: 931121 02:32
Injected at: 931121 01:52
```

11/23/93

E31 FORM 2A
SOIL SEMIVOLATILE ORGANIC SURROGATE RECOVERY

Client Name: WEBSTER ENG.

Client Project: SA48

Date Received: 11/17/93

E31 Project #: 940259

Level: LOW

	CLIENT SAMPLE ID	S1 (NB2)	S2 (FBP)	S3 (TPH)	S4 (DCB)	S5 (PHL)	S6 (2FP)	S7 (TBP)	S8 (2CP)	OTHER	TOT OUT
1	SBLKE3	61	58	48	63	67	52	64	58		0
2	X09 NORTH	54	56	47	53	68	54	68	57		0
3	X10 SOUTH	54	56	45	57	66	61	69	56		0
4											
5											
6											
7											
8											
9											
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QC LIMITS

S1 (NB2)	= Nitrobenzene-d5:	23-120
S2 (FBP)	= 2-fluorobiphenyl:	30-115
S3 (TPH)	= Terphenyl-d14:	18-137
S4 (DCB)	= 1,2-Dichlorobenzene-d4:	20-130 (Advisory)
S5 (PHL)	= Phenol-d5:	24-113
S6 (2FP)	= 2-Fluorophenol:	25-121
S7 (TBP)	= 2,4,6-Tribromophenol:	19-122
S8 (2CP)	= 2-Chlorophenol-d4:	20-130 (Advisory)

* - Values outside of required QC limits

D - Surrogates diluted out

2E
PCB SURROGATE RECOVERY

Lab Name: Energy and Environmental Engineering, Inc.

Lab Code: E3I Case No.: SA48

	CLIENT SAMPLE NO.	S1 (TCX) #	S2 (DCB) #
01	PBLK59	102	113
02	X09 NORTH	91	95
03	X10 SOUTH	92	94
04			
05			
06			
07			
08			
09			
10			
11			
12			
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28			
29			
30			

S1 (TCX) = TETRACHLORO-M-XYLENE

S2 (DCB) = DECACHLOROBIPHENYL

* Values outside of QC limits

Column used to flag recovery values

D Surrogates diluted out

ADVISORY
QC LIMITS
(60-150)

1 D
PCB ANALYSIS DATA SHEET

X9 NORTH

Lab Name: E3I
Lab Code: E3ICase No.: SA48
SDG No.:Matrix: Soil
Extraction: SoncLab Sample ID: 940259-3
Lab File ID: N18A149%Moisture: 8 %
Decanted: NDate Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/24/93Sample Size: 30.0 G
Extract Volume: 10.0 mL
Injection Vol.: 1.0 uLDil. Factor: 1
pH: 6.6

GPC Cleanup: N

Sulfur Cleanup: Y

CAS No.	COMPOUND	Concentration Units:	
		ug/Kg	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	64	U

(Q) - Qualifiers:

U: Analyzed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
C: Confirmed by GC/MS

1 D
PCB ANALYSIS DATA SHEET

X10 SOUTH

Lab Name: E3I
Lab Code: E3ICase No.: SA48
SDG No.:Matrix: Soil
Extraction: SoncLab Sample ID: 940259-4
Lab File ID: N18A150%Moisture: 7 %
Decanted: NDate Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/24/93Sample Size: 30.0 G
Extract Volume: 10.0 mL
Injection Vol.: 1.0 uLDil. Factor: 1
pH: 7.2

GPC Cleanup: N

Sulfur Cleanup: Y

CAS No.	COMPOUND	Concentration Units:	
		ug/Kg	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1231	72	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	40	

(Q) - Qualifiers:

- U: Analyzed for but not detected
- B: Found in associated blank as well as sample
- J: Estimated value, below quantitation limit
- C: Confirmed by GC/MS

APPENDIX B
BILL OF LADING - WEIGHT SLIPS

WEBSTER ENGINEERING CO., INC.
 BOX 275
 DORCHESTER, MA 02121

JOB NO. 93-12
 CONTAMINATED SOIL REMOVAL
 FORT DEVENS, AYER, MA

STUDY AREA 48 DESTINATION: WM OF NH						
DATE	LOAD NO.	GROSS	TARE	NET	TONS	CUM.
12/21/93	361340	106,380	35,150	71,210	36.43	36.43
12/21/93	N/A			0	0.00	36.43
12/21/93	361343	95,670	36,880	58,690	29.96	66.39
12/21/93	361344	95,640	37,450	58,190	35.67	102.06
12/21/93	361345	107,340.00	37,370.00	69,970	29.72	131.78
				0	0.00	131.78

Post-It™ brand fax transmittal memo 7571		# of pages: 1	
To: JOR P	From: HAC		
Co: EPC	Co: WEBSTER		
Dept:	Phone #		
Fax #	Fax #		


Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-012A

Release Tracking Number*

BILL OF LADING (pursuant to 310 CMR 40.0030)

2

0662

A. LOCATION OF SITE OR DISPOSAL SITE WHERE REMEDIATION WASTE WAS GENERATED:
Release Name (optional): U.S. ARMY, FORT DEVENSStreet: CAREY STREETLocation Aid: STUDY AREA 48City/Town: AYER

Zip Code: _____

Date/Period of Generation: ____/____/____ to ____/____/____

Additional Release Tracking Numbers Associated with this Bill of Lading: _____

**Note: If this Bill of Lading is the result of a Limited Removal Action (LRA) taken prior to Notification, a Release Tracking Number is not needed.*

B. PERSON CONDUCTING RESPONSE ACTION ASSOCIATED WITH BILL OF LADING:
Name of Organization: U.S. ARMY - FORT DEVENSName of Contact: JAMES CHAMBERSTitle: ENVIRONMENTAL MANAGERStreet: BUILDING 689 ENV.MGT.OFF. MCARTHUR AND PINE STREETCity/Town: FORT DEVENS, AYERState: MAZip Code: 01433Telephone: 508 - 796 - 3114

Ext. _____

C. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON CONDUCTING RESPONSE ACTION ASSOCIATED WITH BILL OF LADING:

(check one/specify)

☒ RP Specify (circle one): Owner Operator Generator Transporter Other RP: _____

☐ RP Specify (circle one): Owner Operator Generator Transporter Other RP: _____

☐ Fiduciary/Secured Lender

☐ Agency/Public Utility on a Right of Way

☐ Other Person: _____

If an owner and/or operator is not conducting the response action associated with the Bill of Lading, provide on an attachment the name, contact person, address and telephone number, including any area code and extension, for each, if known.

D. TRANSPORTER/COMMON CARRIER INFORMATION:
Transporter/Common Carrier Name: MERRIMAC CARTAGE INC.Contact Person: WILLIAM THOMPSON SR.Title: OWNERStreet: 210 HOLT ROADCity/Town: NORTH ANDOVERState: MAZip Code: 01845Telephone: 508 - 686 - 2020

Ext. _____

E. RECEIVING FACILITY/TEMPORARY STORAGE LOCATION:
Operator/Facility Name: WASTE MANAGEMENT INC. / TREE DIVISIONContact Person: ROBERT STEELETitle: PRESIDENTStreet: 90 ROCHESTER NECK ROADCity/Town: ROCHESTERState: N.H.Zip Code: 03839Telephone: 800 - 847 - 5303

Ext. _____

Type of Facility:
(check one)
☐ Asphalt Batch/Cold Mix

☒ Landfill/Disposal

☐ Incinerator

☐ Asphalt Batch/Hot Mix

☒ Landfill/Daily Cover

☐ Temporary Storage

☐ Thermal Processing

☐ Landfill/Structural Fill

☐ Other: _____

Type of Hazardous

Waste/Class A Permit #: N/ADivision of Solid Waste
Management Permit #: NH DES 7288019EPA Identification #: N/AActual/Anticipated Period of Temporary Storage (specify dates if applicable): ____/____/____ to ____/____/____ N/A

Reason for Temporary Storage (if applicable): _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-012A

Release Tracking Number:

BILL OF LADING (pursuant to 310 CMR 40.0030)

2 - 0662

E. RECEIVING FACILITY/TEMPORARY STORAGE LOCATION (continued):

Temporary Storage Address:

Street: _____

City/Town: _____ State: _____ Zip Code: _____

F. DESCRIPTION OF REMEDIATION WASTE:

(check all that apply)

☒ Contaminated Media (circle all that apply): Soil Groundwater Surface Water Other: _____

☐ Contaminated Debris (circle all that apply): Demolition/Construction Waste Vegetation/Organic Materials
Inorganic Absorbent Materials Other: _____

☐ Non-hazardous Uncontained Waste (circle all that apply): Non-aqueous Phase Liquid Other: _____

☐ Non-hazardous Containerized Waste (circle all that apply): Tank Bottoms/Sludges Containers Drums
Engineered Impoundments Other: _____

Type of Contamination (circle all that apply): Gasoline Diesel Fuel #2 Oil #4 Oil #6 Oil Waste Oil
Kerosene Jet Fuel Other: _____

Estimated Volume of Materials: Cubic Yards: _____ Tons: 150 Other: _____

Contaminant Source (check one/specify): ☐ Transportation Accident ☒ Underground Storage Tank ☐ Other: _____

Response Action Associated with Bill of Lading (circle one): Immediate Response Action Release Abatement Measure
Utility-Related Abatement Measure Limited Removal Action (LRA) Comprehensive Response Action
Other (specify): U.S. ARMY FORT DEVENS, AVER, MA CONTRACT # DACA 33-93-C-0061

Remediation Waste Characterization Support Documentation attached:

☒ Site History Information ☒ Sampling and Analytical Methods and Procedures ☒ 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 DEP.

G. LICENSED SITE PROFESSIONAL (LSP) OPINION:

Name of Organization: Department of Environmental Protection

LSP Name: _____ Title: _____

Telephone: 508-792-7653 Ext. 221

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 Remediation Waste, in accordance with 310 CMR 40.003, and that the facility or location can accept remediation 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 wilfully submit information which I know to be false, inaccurate, or materially incomplete.

Signature: [Signature] Seal: _____

Date: 12 / 15 / 93

License Number: _____

I. CERTIFICATION OF PERSON CONDUCTING RESPONSE ACTION ASSOCIATED WITH THIS BILL OF LADING:

I, under penalties of law that I have personally examined and am familiar with the information contained in this submittal, including any documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining information, the material 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 wilfully submitting false, inaccurate, or complete information.

Signature: [Signature] Date: 12 / 2 / 93

Name of Person (print): Mark Bosse



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-012B

BILL OF LADING (pursuant to 310 CMR 40.0030)
LOG SHEET OF

Release Tracking Number

2 0662

I. LOAD INFORMATION:

LOAD 1: Signature of Transporter Representative

← SEE ATTACHED LOAD # 1 →

Date of Shipment: 12/31/93 Time of Shipment: 08:30 (circle one) am/pm
Truck/Tractor Registration: C9B-237 Trailer Registration (if any): 60345

Receiving Facility/Temporary Storage Representative

Date of Receipt: 12/31/93 Time of Receipt: 11:06 (circle one) am/pm
Load Size (cu. yds./tons): 35.67

LOAD 2: Signature of Transporter Representative

← SEE ATT LOAD # 03 →

Date of Shipment: 12/31/93 Time of Shipment: 08:30 (circle one) am/pm
Truck/Tractor Registration: B22806 Trailer Registration (if any): 37070

Receiving Facility/Temporary Storage Representative

Date of Receipt: 12/31/93 Time of Receipt: 11:12 (circle one) am/pm
Load Size (cu. yds./tons): 29.72

LOAD 3: Signature of Transporter Representative

← SEE ATT LOAD # 04 →

Date of Shipment: 12/31/93 Time of Shipment: 09:00 (circle one) am/pm
Truck/Tractor Registration: 940081 Trailer Registration (if any): 37071

Receiving Facility/Temporary Storage Representative

Date of Receipt: 12/31/93 Time of Receipt: 11:15 (circle one) am/pm
Load Size (cu. yds./tons): 29.96

LOAD 4: Signature of Transporter Representative

← SEE ATT LOAD # 05 →

Date of Shipment: 12/31/93 Time of Shipment: 09:20 (circle one) am/pm
Truck/Tractor Registration: B73 499 Trailer Registration (if any): 61660

Receiving Facility/Temporary Storage Representative

Date of Receipt: 12/31/93 Time of Receipt: 11:15 (circle one) am/pm
Load Size (cu. yds./tons): 34.43

LOAD 5: Signature of Transporter Representative

Date of Shipment: / / Time of Shipment: : (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative

Date of Receipt: / / Time of Receipt: : (circle one) am/pm
Load Size (cu. yds./tons):

LOAD 6: Signature of Transporter Representative

Date of Shipment: / / Time of Shipment: : (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative

Date of Receipt: / / Time of Receipt: : (circle one) am/pm
Load Size (cu. yds./tons):

LOAD 7: Signature of Transporter Representative

Date of Shipment: / / Time of Shipment: : (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative

Date of Receipt: / / Time of Receipt: : (circle one) am/pm
Load Size (cu. yds./tons):

LOG SHEET VOLUME INFORMATION:

Total Volume This Page (cu. yds./tons)

131.78

Total Carried Forward (cu. yds./tons)

Total Carried Forward and This Page (cu. yds./tons)

Reverse Tracking Number

BILL OF LADING (pursuant to 310 CMR 40.0030)

SUMMARY SHEET OF _____

2	-	0662
---	---	------

K. SUMMARY OF SHIPMENTS:

[illegible]

SUMMARY SHEET TOTAL SHIPPED.

BILL OF LADING TOTALS SHIPPED (only if different).

SA48
LOAD #001

WASTE MANAGEMENT OF NEW HAMPSHIRE, INC
TURNKEY LANDFILL DIVISION
90 ROCHESTER NECK ROAD, ROCHESTER, NH
(603) 332-2386

361340
DATE: 12/21/93
TIME: 11:04-11:16

CUSTOMER: 325 WEBSTER ENGINEERING CO., INC.

HAULER:

WEIGH
MASTER: CHERYL PRESTON

TRUCK: W6 WASTE: SPW CONT. SOIL

PROFILE: 189404

COUNTY: 02 MASSACHUSETTS

GROSS: 107600 LBS

TARE: 34740 LBS

NET: 72860 LBS = 36.43 TONS

TO THE BEST OF MY
KNOWLEDGE THIS TRUCK
CONTAINS NO HAZARDOUS
OR UNACCEPTABLE WASTE

OUT-OF-STATE SOLID WASTE TRANSPORTER DECLARATION: I certify under penalty of perjury that the information provided is true and correct to the best of my knowledge and belief.

0002193 REMARKS

Soft DEWENS

SIGN

Cheryl Preston

SA48

LOAD # 003

WASTE MANAGEMENT OF NEW HAMPSHIRE, INC
TURNKEY LANDFILL DIVISION
90 ROCHESTER NECK ROAD, ROCHESTER, NH
(603) 332-2386

361343
DATE: 12/21/93
TIME: 11:11-11:31

CUSTOMER: 325 WEBSTER ENGINEERING CO., INC.

HAULER:

WEIGH
MASTER: CHERYL PRESTON

TRUCK: M6 WASTE: SPW CONT. SOIL

PROFILE: 189404

COUNTY: 02 MASSACHUSETTS

GROSS: 96620 LBS

TARE: 36700 LBS

NET: 59920 LBS = 29.96 TONS

TO THE BEST OF MY
KNOWLEDGE THIS TRUCK
CONTAINS NO HAZARDOUS
OR UNACCEPTABLE WASTE

OUT-OF-STATE SOLID WASTE TRANSPORTER DECLARATION: I certify under penalty of perjury that the information provided is true and correct to the best of my knowledge and belief.

0002193

REMARKS

Fort Devens

SIGN

Rob

SA48

LOAD # 004

WASTE MANAGEMENT OF NEW HAMPSHIRE, INC
TURNKEY LANDFILL DIVISION
90 ROCHESTER NECK ROAD, ROCHESTER, NH
(603) 332-2386

361345
DATE: 12/21/93
TIME: 11:18-11:30

CUSTOMER: 325 WEBSTER ENGINEERING CO., INC.

HAULER:

WEIGH
MASTER: CHERYL PRESTON

TRUCK: M18 WASTE: SPW CONT. SOIL

PROFILE: 189404

COUNTY: 02 MASSACHUSETTS

W.S.

GROSS: 96660 LBS

TARE: 37220 LBS

NET: 59440 LBS = 29.72 TONS

TO THE BEST OF MY
KNOWLEDGE THIS TRUCK
CONTAINS NO HAZARDOUS
OR UNACCEPTABLE WASTE

OUT-OF-STATE SOLID WASTE TRANSPORTER DECLARATION: I certify under penalty of perjury that the information provided is true and correct to the best of my knowledge and belief.

0002193 REMARKS

Fort Davis

SIGN

STAD

SA48

LOAD # 005

WASTE MANAGEMENT OF NEW HAMPSHIRE, INC
TURNKEY LANDFILL DIVISION
90 ROCHESTER NECK ROAD, ROCHESTER, NH
(603) 332-2386

361344

DATE: 12/21/93

TIME: 11:13-11:32

CUSTOMER: 325 WEBSTER ENGINEERING CO., INC.

HAULER:

WEIGH

MASTER: CHERYL PRESTON

TRUCK: M10 WASTE: SPW CONT. SOIL

PROFILE: 189404

COUNTY: 02 MASSACHUSETTS

GROSS: 108520 LBS

TARE: 37180 LBS

NET: 71340 LBS = 35.67 TONS

TO THE BEST OF MY
KNOWLEDGE THIS TRUCK
CONTAINS NO HAZARDOUS
OR UNACCEPTABLE WASTE

OUT-OF-STATE SOLID WASTE TRANSPORTER DECLARATION: I certify under penalty of perjury that the information provided is true and correct to the best of my knowledge and belief.

0002193 REMARKS

Fort Devens

SIGN

Signature

APPENDIX C

BORING LOGS AND MONITORING WELL CONSTRUCTION DIAGRAMS

DECEMBER 1993 - JANUARY 1994

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 4801

Protection: D

Client: LOE/NED

Project No. 7143.04

Completed: 12/14/93

Contractor: NH Boring

Date Started: 12/14/93

PI Meter: # 35917

Method: SPT 3" SPT

Casing Size: 4 1/2 in HSA

Total Depth: 32 FT

Ground Elev.:

Soil Drilled: 3.2 FT

☒ Below Ground:

Logged by: R GUESPÉ

Checked by: _____

Page 1 of: 2

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
SW	8 11 11 14			
S,				
SW	10 16 20 22			
SP	9 12 15 12			
SW	11 12 13 17			

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

SOIL BORING LOG

Study Area: 9A 48

Boring No.: BA 4801

Client: LOB/NED

Project No. 7143.00

Protection: D

Contractor: NHBORING

Date Started: 12/14/93

Completed: 12/14/93

Method: SPT 3" SPCW

Casing Size:

PI Meter: # 3347

Ground Elev.:

Soil Drilled: 32'

Total Depth: 32 FT

Logged by: R GILLESPIE

Checked by:

Below Ground: 30'

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 2 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN	WELL DATA	LITHOLOGY	ELEVATION (FT.)
25				24"	0.7	GRAVELLY SAND, 15-20% GRAVEL TO 1.0", COARSE TO FINE SAND, 25% FINES, DAMP, DARK GRAY-BROWN, (10 YR 4/2)	SW	14-18-24-30			
30				24"	0.7	SAND, UNIFORM, FINE, 25% FINES, SATURATED, LT GRAY (10 YR 9/2)	SP	12-15-20-24			
						END OF BORING @ 32'					

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)

0-10%

f = fine

gr = gray

MS = Split Spoon

Little (ll)

10-20%

m = medium

bn = brown

BW = Screened Auger

Some (sc)

20-35%

c = coarse

blk = black

HP = Hydropunch

and

35-50%

1st 06/12/2022

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 4802

Client: COE/NEJ

Project No. 17143.00

Protection: D

Contractor: NH BORING

Date Started: 12/14/93

Completed: 12-14-93

Method: HSA, 140# 3"

Casing Size: 4.25 IN HSA

PI Meter: # 3397

Ground Elev.:

Soil Drilled: 32'

Total Depth: 32'

Logged by: R GILLESPIE

Checked by:

Below Ground: —

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
8:20				24"	0	SAND, UNIFORM, FINE MED, <5% FINES, DAMP, LT GRAY (10 YR 7/2)	SP	3 5 8 10			
8:40				24"	0	TOP 10" SAND, POORLY GRADED, COARSE TO FINE, MOSTLY MED TO FINE, TRACE GRAVEL, TO 1/4" SUB-ROUND, DAMP, LT YELLOW-BROWN (2.5 Y 6/4)	SP	9 15 15 16			
8:55				24"	0.7	SAND, UNIFORM, FINE, <5% FINES, DAMP, LT GRAY (10 YR 7/2)	SP	8 9 15 16			
9:15				22"	0.7	SAND, POORLY GRADED, MED TO FINE, MOSTLY FINE, <5% FINES, DAMP, VERY FINE BROWN (10 YR 7/3)	SP	12 17 17 30			
						SAND, POORLY GRADED, COARSE TO FINE, MOSTLY FINE, TRACE SUB-ROUND GRAVEL, <5% FINES, DAMP, LT GRAY (10 YR 7/2)	SP				

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)
Little (ll)
Some (so)
and

0-10%
10-20%
20-35%
35-50%

f = fine
m = medium
c = coarse
gr = gray
bn = brown
blk = black

MS = Split Spoon
BW = Screened Auger
HP = Hydropunch

SOIL BORING LOG

Study Area: SA 48

Boring No.: Bx 4802

Client: COG/NEB

Project No. 7143 00

Protection: D

Contractor: NH BORING

Date Started: 12-14-93

Completed: 12-14-93

Method: SPT 3 IN. SPOON

Casing Size: 4.25 IN HSA

PI Meter: # 3397

Ground Elev.:

Soil Drilled: 32'

Total Depth: 32'

Logged by: R GILLESPIE

Checked by:

☒ Below Ground: —

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 2 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLIP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
25				24"	0.7	SAND, POORLY GRADED, COARSE TO FINE, MOSTLY FINE, 10-20% SUBROUND GRAVEL TO 1/2", 25% FINES DAMP, VERY PALE BROWN, (10 YR 7/3) TRACE RUST STN.	SP	12/14/17			
30				27"	0.7	SAND, UNIFORM MED FINE, 10-20% FINES, DAMP PALE BROWN (10 YR 6/3) SATURATED, TRACE RUST STAIN	SP	10/13/17/18			
10.00						END OF BORING @ 32'					

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)

0-10%

f = fine

gr = gray

MS = Split Spoon

Little (ll)

10-20%

m = medium

br = brown

BW = Screened Auger

Some (so)

20-35%

c = coarse

blk = black

HP = Hydropunch

and

35-50%

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 4803

Client: 1

Project No. 7143.00

Protection: D

Contractor: NH BORING

Date Started: 12-10-93

Completed:

Method: HSA 140th

Casing Size: 4 1/2" HSA

PI Meter: # 3397

Ground Elev.: 30.0

Soil Drilled: 30.0 FT

Total Depth: 32.0 FT KPS

Logged by: R GILLESPIE

Checked by:

Below Ground: 30.0 FT

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
5	5	14"	0			SAND POORLY GRADED, MOSTLY MED & FINE, <5% FINES, TR. SUB RD GRAVEL, DAMP, LT YELLOW-BROWN (2.5 Y 6/4)	SP	5 4 4 5			
10	10	20"	0			SAND UNIFORM, FINE, <5% FINES, DAMP, GRAY-BROWN (2.5 Y 5/2)	SP	9 8 8 8			
15	15	12"	0			TOP 6" SAND POORLY GRADED, MED & FINE, <5% FINES, TR. SUB RD GRAVEL, DAMP, YELLOW-BROWN (2.5 Y 6/4) BOT. 6" SAND UNIFORM, FINE, <5% FINES, GRAY-BROWN, DAMP, (2.5 Y 5/2)	SP	10 9 10 9			
20	20	20"	0			SAND, POORLY GRADED, MED TO FINE, <5% FINES, DAMP, LT YELLOW-BROWN (2.5 Y 6/4)	SP	5 5 6 7			
25											

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)
Little (ll)
Some (so)
and

0-10%
10-20%
20-35%
35-50%

f = fine
m = medium
c = coarse
gr = gray
bn = brown
blk = black

MS = Split Spoon
BW = Screened Auger
HP = Hydropunch

SOIL BORING LOG

Study Area: SA4B

Boring No.: Bx4803

Client: COE/NEC

Project No.: 7143.00

Protection: D

Contractor: NH BORING

Date Started: 15 DEC 93

Completed:

Method:

Casing Size:

PI Meter: # 3397

Ground Elev.:

Soil Drilled:

Total Depth: 32.3 FT

Logged by: R GILLESPIE

Checked by:

Below Ground:

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 2 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
25		25'		24"	0	SAND, UNIFORM, FINE, ~5% FINES, DAMP, LT GRAYISH-BROWN (3.5 Y 6/2)	SP	7 10 14 16			
30		30'		24"	0	SAND, POORLY GRADED, MED TO FINE, ~5% FINES, SATURATED, BROWN (10 YR 5/3) END OF BORING @ 30.0 FT	SP	15 11 11 13			

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)

0-10%

f = fine

gr = gray

MS = Split Spoon

Little (ll)

10-20%

m = medium

bn = brown

BW = Screened Auger

Some (so)

20-35%

c = coarse

blk = black

HP = Hydropunch

and

35-50%

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 4804

Client: COE/NED Project No. 7143 00

Protection: D

Contractor: NH BORING Data Started: 12/15/93

Completed: 16 DEC 93

Method: SPT 20" STAIN Casing Size: 6.25" HSA

PI Meter: # 3397 OVM

Ground Elev.: Soil Drilled: 42 FT

Total Depth: 42 FT

Logged by: R. GILLESPIE Checked by:

Below Ground: 29.5 16 DEC 93

Screen: 10 (ft.) Riser: 30 (ft.) Diam: 4.0 (ID) Material: SCH 40 PVC Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
5						Fill					
10						NO SAMPLES TAKEN FROM 0 TO 15 FT.					
15	1			16"	1.2	SAND WELL GRADED, COARSE TO FINE TRACE SUB-ROUND GRAVEL TO 1/2"	SW	3456			
20	2			2"	0.7	< 5% FINES, DAMP, PALE YELLOW (2.5 Y 7/4) SOME DK GRAY STAINING, PC. OF PLASTIC SHEETING					
25						GRAVELLY SAND WELL GRADED, GRAVEL TO 1 IN., < 5% FINES DAMP, GRAY-BROWN (2.5 Y 5/2) COBBLE IN TIP, LITTLE SAMPLE RECOVERED	SW	9-134723			

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)
Little (ll)
Some (so)
and0-10%
10-20%
20-35%
35-50%f = fine
m = medium
c = coarse
gr = gray
bn = brown
blk = blackMS = Split Spoon
BW = Screened Auger
HP = Hydropunch

SOIL BORING LOG

Study Area: SA48

Boring No.: Bx 4804

Client: COE/NED Project No. 7143.00

Protection: D

Contractor: NH BORING Date Started: 12/15/93

Completed: 16 Dec 93

Method: SPT, 20' SPCON Casing Size: HSA 6.25" ID

PI Meter: # 3397 OVM

Ground Elev.: Soil Drilled: 42 FT

Total Depth: 42 FT

Logged by: R GILLESPIE Checked by:

Below Ground: 29.5 FT

Screen: (ft.) Riser: (ft.) Diam: (ID) Material:

Page 2 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
25	3	15"	0.7			GRAVELLY SAND, WELL GRAD- ED GRAVEL TO 1.5" COARSE TO FINE SAND, 45% FINES DAMP, GRAY-BROWN (2.5 Y 5/2) FINE YELLOW SAND AT TOP OF SPCON.	SW	10 12 15 16			
30	4	16"	0.7			SAND, UNIFORM, FINE, 45% FINES, DAMP SATURATED, PALE YELLOW (2.5 Y 7/4)	SP	15 17 17 23			
35	5	24"	0.2			SAND, UNIFORM, FINE, 45% FINES, SATURATED TRACE SUB-RO GRAVEL, PALE YELLOW (2.5 Y 7/4)		9 5 7 10			
40	6	15"	0.2			SAND UNIFORM, FINE, 45% FINES, SATURATED, SL. MICACEOUS, LT. YELLOW-BROWN (10YR 6/4)		WORK 12 5-7			
						END OF BORING @ 42 FT					

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr) 0-10%
Little (li) 10-20%
Some (so) 20-35%
and 35-50%

f = fine gr = gray MS = Split Spoon
m = medium bn = brown BW = Screened Auger
c = coarse blk = black HP = Hydropunch

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX4805

Client: COE/NED

Project No. 7143.00

Protection: D

Contractor: NH BORING

Date Started: 12/15/93

Completed: 15 DEC 93

Method: SPT 2.0" SPN

Casing Size: 4.25" HSA

PI Meter: #3397

Ground Elev.:

Soil Drilled: 32 FT

Total Depth: 32 FT

Logged by: R GINGSPIE

Checked by:

Below Grounds

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
5	1	17"	0			SAND, POORLY GRADED, MOSTLY MED. TO FINE, TRACE SUB ROUND GRAVEL, <5% FINES, DAMP, YELLOW (10YR 7/6)	SP	3 3 2 3			
10	2	20"	3.5			SAND, POORLY GRADED, MOSTLY MED & FINE, TRACE FINE GRAVEL, <5% FINES, DAMP, VERY PALE BROWN (10YR 7/3)	SP	8 14 17 23			
15	3	24"	6.3			SAND, UNIFORM, FINE, <5% FINES, DAMP, LT. GRAY (2.5YR 7/2)	SP	13 13 14 13			
20	4	23"	6.3			SAND, POORLY GRADED, MED & FINE, MOSTLY FINE, <5% FINES, DAMP, PALE YELLOW (2.5Y 7/4)	SP	12 11 11 13			

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)
Little (ll)
Some (so)
and

0-10%
10-20%
20-35%
35-50%

f = fine
m = medium
c = coarse
gr = gray
bn = brown
blk = black

MS = Split Spoon
BW = Screened Auger
HP = Hydropunch

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 4805

Client: COE/NED

Project No.: 7147.00

Protection: D

Contractor: NH BORING

Date Started: 12/15/93

Completed: 15 DEC 93

Method: SPT, 2.0" SPOON

Casing Size: 4.25" HSA

PI Meter: # 3397

Ground Elev.:

Soil Drilled: 32 FT

Total Depth: 32 FT

Logged by: R GILLESPIE

Checked by:

Below Ground:

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 2 of: 2.

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLIPSCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
25	5			16"	5.4	SAND, WELL GRADED, COARSE TO FINE, 45% FINES, TR. GRAVEL TO 3/8", DAMP, PALE BROWN (10YR 6/3)	SW	14 12 16 31			
30	6			16"	4.0	SAND, POORLY GRADED, MED. TO FINE, 45% FINES, SATURATED, LT BROWN-GRAY (10YR 6/2)	SP	7 11 14 15			
						END OF BORING @ 32 FT					

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)

0-10%

f = fine

gr = gray

MS = Split Spoon

Little (li)

10-20%

m = medium

bn = brown

BW = Screened Auger

Some (so)

20-35%

c = coarse

blk = black

HP = Hydropunch

and

35-50%

SOIL BORING LOG

Study Area: SA 48

Boring No. BK4806

Client: WOE/NEO

Project No. 7143.00

Protection: D

Contractor: NH BORING Date Started: 12/16/93

Completed: 16 Dec 93

Method: SPT 2.0" SPAN Casing Size: 4.25" HSA

PI Meter: OVM #3397

Ground Elev.: Soil Drilled: 32 FT

Total Depth: 32 FT

Logged by: R. GILLESPIE Checked by:

Below Ground:

Screen: (ft.) Riser: (ft.) Diam: (ID) Material:

Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/8-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
5	1	18"	0.2			SAND, POORLY GRADED COARSE TO FINE, MOSTLY FINE, TRACE GRAVEL TO 3/8", <5% FINES, DAMP, LT. YELLOW-BROWN (10YR 6/4)	SP	6-6-5-6			
10	2	31"	0.2			SAND, UNIFORM, FINE (TOP 5") BECOMES SAND, WELL GRADED, COARSE TO FINE, 5-10% GRAVEL TO 3/8", <5% FINES, DAMP, LT. BROWN-GRAY (10YR 4/2)	SP	13-17-17-26			
15	3	23"	1.1			INTERLAYERED UNIFORM, FINE, SAND AND SAND, WELL GRADED, <5% FINES, TR. GRAVEL, DAMP, VERY PALE BROWN (10YR 7/3)	SP, SW	10-9-9-13			
20	4	19"	1.2			SAND, POORLY GRADED, MOSTLY MED & FINE, <5% FINES, TRACE SUB-RO GRAVEL, DAMP, LT. GRAY (10YR 7/2)	SP	9-9-12-31			

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)
Little (ll)
Some (so)
and

0-10%
10-20%
20-35%
35-50%

f = fine gr = gray
m = medium bn = brown
c = coarse blk = black

MS = Split Spoon
BW = Screened Auger
HP = Hydropunch

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 4806

Client: COE/NEO

Project No.: 7143.00

Protection: D

Contractor: M H Boring

Date Started: 16 DEC 93

Completed: 16 DEC 93

Method: SPT, 2.0" spoon

Casing Size: 4.25" HSA

PI Meter: OVM # 3397

Ground Elev.:

Soil Drilled: 32'

Total Depth: 32'

Logged by: R. GILLESPIE

Checked by:

Below Ground: ☒

Screen: (ft.)

Riser: (ft.)

Diam: (ID)

Material:

Page 2 of: 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
25	5			17"	0.2	SAND, WELL GRADED, TRACE GRAVEL, < 5% FINES, DAMP, LT GRAY (10YR 7/2)	SW	19-18-21-21			
30	6			21"	1.7	SAND, UNIFORM, FINE, < 5% FINES, SATURATED, PALE BROWN (10YR 6/3) END OF BORING @ 32 FT	SP	12-11-13-12			

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)

0-10%

f = fine

gr = gray

MS = Split Spoon

Little (ll)

10-20%

m = medium

bn = brown

BW = Screened Auger

Some (so)

20-35%

c = coarse

blk = black

HP = Hydropunch

and

35-50%

SOIL BORING LOG

Study Area: SA 48

Boring No.: BX 48C9

Client: COE/NED

Project No. 7143.00

Protection: D

Contractor: NHBORING

Date Started: 12/13/93

Completed: 12/13/93

Method: HSA 140th

Casing Size: 4.25 H3A

PI Meter: # 3317

Ground Elev.:

Soil Drilled: 32'

Total Depth: 32'

Logged by: R. G. MUELLER

Checked by:

Below Ground: 29' 3"

Screen:

(ft.)

Riser:

(ft.)

Diam:

(ID)

Material:

Page 1 of 2

12/13/93

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT)
5				23"	0	SAND, UNIFORM FINE DUMP, PALE BROWN (15YR 4/3) < 5% FINES	SP	5 5 7 8			
10				22"	0	SAND, WELL GRADED, COARSE TO FINE, PALE FINE GRAVEL, SUB-ROUNDED, < 5% FINES, DUMP, PALE BROWN (16YR 6/3)	SP	14 14 17 16			
15				24"	0	SAND, POORLY GRADED, MOSTLY MED & FINE < 5% FINES, DUMP, PALE BROWN (16YR 6/3) TRACE RUST STAIN.	SP	5 8 11 13			
20				26"	0	SAND, UNIFORM, MED TO FINE, < 5% FINES, DUMP, PALE BROWN (16YR 6/3) TRACE RUST STAIN	SP	6 9 11 15			
25								17 16 14 16			

PROPORTIONS

(-) AMOUNT (+)

ABBREVIATIONS

Trace (tr)
Little (ll)
Some (so)
and0-10%
10-20%
20-35%
35-50%f = fine gr = gray
m = medium bn = brown
c = coarse blk = blackMS = Split Spoon
BW = Screened Auger
HP = Hydropunch

SOIL BORING LOG

Client: LOE/NED		Project No.		Study Area: SA 48	
Contractor: NH BORING		Date Started: 12/13/93		Boring No: BX4809	
Method: HSA, 140"		Casing Size: 4 1/4" HSA		Protection: D	
Ground Elev.:		Soil Drilled: 32'		Completed: 12/13/93	
Logged by: R. GILLESPIE		Checked by:		PI Meter: # 3397	
Screen: (ft.)		Riser: (ft.)		Total Depth: 32'	
Diam: (ID)		Material:		Below Ground: 29' 3"	
				Page 2 of: 2	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
25				20"	0	SAND, UNIFORM, FINE, 45% FINES, DAMP, LT. GRAY (10YR 7/2)	SP	17 16 14 10			
						FOR 9" SAND, ROCKY GRADED, MOSTLY MED FINE, TRACE SUB-ROUND GRAVEL, DAMP, YELLOW-BROWN (10YR 5/6)	SP				
30				24"	0	SAND, WELL GRADED, TRACE GRAVEL, SUB-ROUND TO 1/4", 45% FINES, SATURATED, BROWN (10YR 5/3)	SW	5 7 7 8			
						END OF BORING @ 32 FT					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS

f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

MONITORING WELL CONSTRUCTION DIAGRAM

Project Fort Devens

Study Area 48

Driller NH BORING / G. TWOMBLEY

Project No. 7143-00

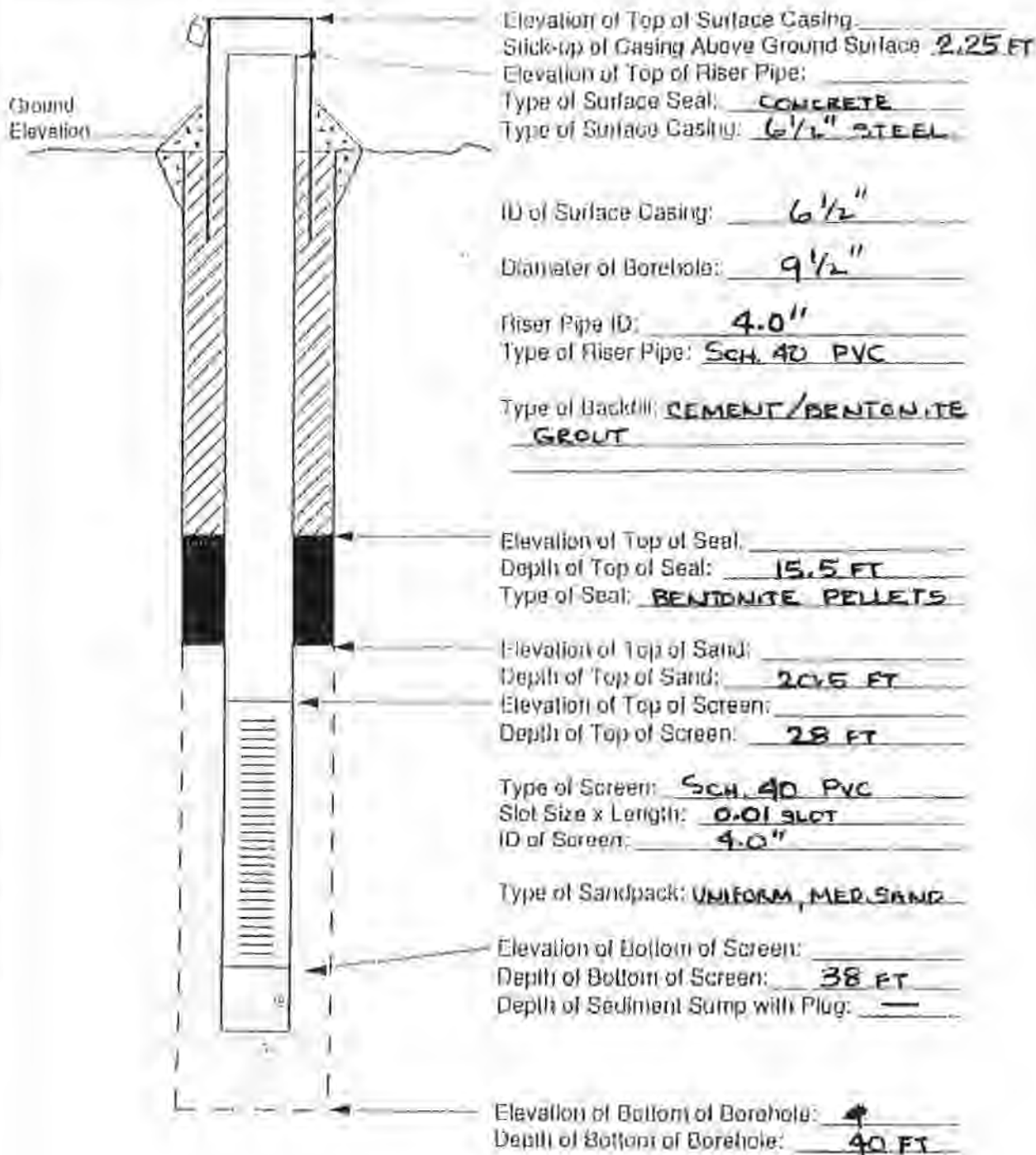
Boring No. BX4804

Drilling Method 6 1/4" HSA

Date Installed 16 DEC 93

Development Method

Field Geologist RPG GILLESPIE



APPENDIX D
FIELD DATA LOGS
JANUARY 1994



ABB ENVIRONMENTAL SERVICES, INC.

MONITORING WELL SAMPLING LOG

WELL NUMBER: MX4804DATE: 01/07/94SAMPLING PERSONNEL: MSD/HWCLOCATION: MX4804SHEET # 1 OF 1CLIENT: OS COE-NEOWEATHER: Cloudy, 25°JOB NUMBER: 7143.00WELL CONSTRUCTION MATERIAL: PVC STICK-UP (ft. from ground surface to top of casing - TOC): 2.01WELL INTERIOR DIAMETER (id): 4" DISTANCE FROM TOC TO TOP OF RISER (TOR): 0.44WELL RADIUS (r = 1/2 id): 2"INITIAL PID measurements (ppm): background (0 ppm) PURGING METHOD: Whole pump (submersible)WELL DEPTH (d; ft. from TOC or TOR circle one): 40.25' PURGING EQUIPMENT: Whole pumpSTATIC WATER LEVEL (w; ft. from TOC or TOR circle one): 31.42'STATIC WATER HEIGHT (h = d - w; ft.): 8.83'STATIC WATER VOLUME (V) VOLUME 1 114.8 VOLUME 3 44.5 VOLUME 5 74.17

V = h (0.16); gallons for 2" well);

V = h (0.86); gallons for 4" well);

V = h (0.15); gallons for 6" well);

VOLUME 2 29.7 VOLUME 4 59.4TOTAL VOLUME PURGED (GALLONS): 75 gals

STATIC WATER LEVEL AFTER PURGING (ft. from TOC): _____

PARAMETER	Start	VOLUME 1	VOLUME 2	VOLUME 3	VOLUME 4	VOLUME 5
CONDUCTIVITY (MC/cm)	<u>220</u>	<u>188</u>	<u>182</u>	<u>180</u>	<u>170</u>	<u>168</u>
pH (STANDARD UNITS)	<u>6.52</u>	<u>6.22</u>	<u>6.21</u>	<u>6.15</u>	<u>6.16</u>	<u>6.21</u>
TEMPERATURE (C)	<u>10°</u>	<u>9°</u>	<u>9°</u>	<u>9°</u>	<u>9°</u>	<u>9°</u>
TIME	<u>12:10</u>	<u>12:30</u>	<u>12:45</u>	<u>13:05</u>	<u>13:20</u>	<u>13:37</u>
Turbidity	<u>0.34</u>	<u>0.18</u>	<u>0.09</u>	<u>0.19</u>	<u>0.06</u>	<u>0.04</u>
NOTES: <u>Purge volume calculated by V = (water column) x 1.65 gallons for</u>						
<u>a 4" well and 10" borehole; well purge 5 volumes</u>						

SAMPLE ID: MX4804X1, MX4811X1LABORATORY: Coast to Coast / COE

SAMPLE COLLECTION TIME: _____

PARAMETERS: VOCs, SVOCs, Metals (filtered/unfiltered), TPH

$$\pi \left(\frac{1.9'}{2} \right)^2 = 2.83 \text{ ft}^2 \times$$

$$1 \text{ gallon} \times \frac{1 \text{ ft}^3}{7.48 \text{ gallons}} \times \frac{1}{2.83 \text{ ft}^2}$$

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER

MX4802X1

PROJECT MONTANA FT. DEVENS

COE/NED

SITE TYPE

WELL B-202-2

E ID

1111111111111111

B 202-2

JOB NUMBER

7143.00

SAMPLING DATE

1/18/94

FILE NAME

-GGH-

LOCATION

ACTIVITY

START

END

PROGRAM

-0-

WEATHER

Clear, cold

WATER LEVEL / WELL DATA

WELL DEPTH

110.0 FT

MEASURED

HISTORICAL

TOP OF WELL

TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND)

FT

PROTECTIVE CASING/WELL DIFF.

FT

WATER DEPTH

32.5 FT

HEIGHT OF WATER COLUMN

8.03 FT

13.19 GAL/VOL

66±

TOTAL GAL PURGED

WELL INTEGRITY:

PROT. CASING SECURE

CONCRETE COLLAR INTACT

WELL LOCKED

PVC WELL CAP

YES

NO

N/A

RISER ELEVATION

GROUNDWATER ELEVATION

PID READINGS:

AMBIENT AIR 0.0 PPM

WELL MOUTH 0.0 PPM

WELL DIAMETER 2 INCH 4 INCH 1 INCH

PURGE DATA

PURGE VOLUME

2.18 GAL

2.27 GAL

2.41 GAL

2.52 GAL

2.68 GAL

TEMP, DEG C

9.0

10.0

10.0

10.0

11.5

pH, UNITS pH PAPER

5.65

6.05

6.10

6.15

6.20

SPECIFIC CONDUCTIVITY UNITS/cm

122

123

116

119

121

PUMP RATE, GPM

0.12

0.15

0.17

0.23

0.12

SAMPLE OBSERVATIONS

CLEAR
CLOUDY
COLORED
TURBID
ODOR
OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING SAMPLING

PERISTALTIC PUMP
SUBMERSIBLE PUMP
BATTLER
PVC/SILICON TUBING
IN-LINE/DISPOSABLE FILTER 0.45µm
OTHER

EQUIPMENT ID

ISCO #

2" 4" 6"

DECON FLUIDS USED

POTABLE WATER

LIQUIMON

STEAM CLEANING

NONE

WATER LEVEL EQUIP. USED

ELECTRIC COND. PROBE

FLOAT ACTIVATED

PRESSURE TRANSDUCER

GROUND ELEVATION

NUMBER OF FILTERS USED

1

ANALYTICAL PARAMETERS

METHOD NUMBER

FRACTION CODE

PRESERVATION METHOD

VOLUME REQUIRED

SAMPLE COLLECTED

SAMPLE BOTTLE ID NUMBERS

VOC

4420

44

HCL, 4 DEG C

2.40 HL

1

SVOC

4440

44

4 DEG C

(2) 1 L AG

2

PSEYFED

4403

44

4 DEG C

(3) 1 L AG

3

TAL

4443

44

HNO3 TO pH<2

1 L P-CUBE

4

PAL INORGANICS (SPECIFIED BELOW)

4420

44

HNO3 TO pH<2

1 L P-CUBE

4

LEAD-ONLY Filtered

4449

44

4 DEG C

(3) 1 L AG

3

EXTRACTIVES

4452

44

H2SO4 TO pH<2

1 L AG

5

TOTAL

410.1

0

H2SO4 TO pH<2

1 L AG

5

TPHC

415.1

0

H2SO4 TO pH<2

1 L AG

5

TOC

74.22

5

H2SO4 TO pH<2

1 L P-CUBE

5

ARTHRG

174.0

5

4 DEG C

1 L P-CUBE

5

TSS

210.1

5

HNO3 TO pH<2

1 L P-CUBE

5

TSS ONLY

160.2

5

4 DEG C

1 L P-CUBE

5

H2O QUALITY (COLLECTED SEPARATELY)

303,909

5

H2SO4 TO pH<2

1 L P-CUBE

5

COLIFORM

303,909

5

4 DEG C

(1) 4 OZ

5

STERILE

NOTES

PAL INORGANICS: (CP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SD01).
H2O QUALITY: PD4 (TF27); TKN (TF26); NH (TF22); CL/604 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, 16: NON-FILTEREDSamples: Migliaccio
Colby

RECEIVED BY:

SIGNATURE:

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER

MX4801X1

PROJECT

WATAM FT. DEVENS

COE/NED

SITE TYPE

WELL B-202-1

TO

11/1/94

B202-1

JOB NUMBER

7143-00

SAMPLING DATE

11/1/94

FILE NAME

CEM

LOCATION

ACTIVITY

START

END

PROGRAM

8

WEATHER

11/1/94

PVC

WATER LEVEL / WELL DATA

WELL DEPTH

50.55 FT

MEASURED
HISTORICAL

TOP OF WELL
TOP OF CASING

PROTECTIVE
CASING STICK-UP
(FROM GROUND)

FT

PROTECTIVE
CASING/WELL DIFF.

FT

WATER DEPTH

28.51 FT

11.49 GAL/VOL

HEIGHT OF
WATER COLUMN

6.84 FT

585 TOTAL GAL PURGED

WELL INTEGRITY:
PROT. CASING SECURE
CONCRETE COLLAR INTACT
WELL LOCKED
PVC WELL CAP

YES NO N/A

RISE
ELEVATION

GROUNDWATER
ELEVATION

PID READINGS:

AMBIENT AIR 0.0 PPM

WELL MOUTH 0.4 PPM

WELL
DIAMETER 2 INCH
4 INCH
INCH

PURGE DATA

Test Pump: 1070

PURGE VOLUME

1034 GAL

1045 GAL

1057 GAL

1110 GAL

1123 GAL

TEMP, DEG C

10.0

11.5

10.5

11.0

11.0

pH, UNITS

5.01

6.28

6.4

6.28

6.41

SPECIFIC CONDUCTIVITY UNITS/cm

185

183

173

175

171

PUMP RATE, GPM

1.80

1.52

0.76

1.40

0.29

SAMPLE OBSERVATIONS

CLEAR
CLOUDY
COLORED
TURBID
ODOR
OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING SAMPLING

PERISTALTIC PUMP
SUBMERSIBLE PUMP
BAILER
PVC/SILICON TUBING
IN-LINE/DISPOSABLE FILTER
OTHER

EQUIPMENT ID

ISCO #

2" 4" 8"

0-45

DECON FLUIDS USED

POTABLE WATER
LIQUINOX
STEAM CLEANING
Dedicated Brush

WATER LEVEL EQUIP. USED

ELECTRIC COND. PROBE
FLOAT ACTIVATED
PRESSURE TRANSDUCER

GROUND ELEVATION

NUMBER OF FILTERS USED

1

ANALYTICAL PARAMETERS

METHOD
NUMBER

FRACTION
CODE

PRESERVATION
METHOD

VOLUME
REQUIRED

SAMPLE
COLLECTED

SAMPLE BOTTLE ID NUMBERS

VOC

UM20

10

HCL, 4 DEG C

(4) 60 ML

SVOC

UM78

10

4 DEG C

(2) 1 L AG

PEST/PCB

UM02

10

4 DEG C

(3) 1 L AG

TAL

UM13

10

4 DEG C

(1) 1 L AG

PAL INORGANICS (SPECIFIED BELOW)

LEAD ONLY

SD20

10

HNO3 TO pH<2

1 L P-CUBE

EXPLOSIVES

UM19

10

4 DEG C

(3) 1 L AG

TPHC

418.1

10

H2SO4 TO pH<2

1 L AG

TOC

415.1

10

H2SO4 TO pH<2

1 L AG

ANIONS

1132

10

H2SO4 TO pH<2

1 L P-CUBE

TSS ONLY

310.1

10

4 DEG C

1 L P-CUBE

H2O QUALITY (SPECIFIED BELOW)

160.1

10

HNO3 TO pH<2

1 L P-CUBE

COLIFORM

303,909

10

4 DEG C

(1) 4 OZ

STERILE

NOTES PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PH (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKH (TF26); MIT (TF22); CL/SD4 (TF10); TSS (TF0.2); ALX (S01.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Samplers Miguelaccio
Colby

RECEIVED BY:

SIGNATURE:

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER

2480321

PROJECT USATHAMA-2 DEWENS

SITE TYPE

WELL B202-3

ID

11-93

B202-3

JOB NUMBER

7143.00

SAMPLING DATE

1/10/93

FILE NAME

CGW

LOCATION

ACTIVITY

START

END

PROGRAM

10

WEATHER

Cloud, clear

WATER LEVEL / WELL DATA

WELL DEPTH

39.55 FT

WATER DEPTH

31.54 FT

HEIGHT OF

WATER COLUMN

8.01 FT

MEASURED
HISTORICAL

TOP OF WELL
TOP OF CASING

PROTECTIVE
CASING STICK-UP
(FROM GROUND)

FT

PROTECTIVE
CASING/WELL DIFF.

FT

13.46 GAL/VOL

675 TOTAL GAL PURGED

WELL INTEGRITY:
PROT. CASING SECURE
CONCRETE COLLAR INTACT
WELL LOCKED
PVC WELL CAP

YES NO N/A
1 0 0
1 0 0
1 0 0
1 0 0

RISER
ELEVATION

GROUNDWATER
ELEVATION

PID READINGS:

AMBIENT AIR 2.1 PPM

WELL MOUTH 8.2 PPM

WELL DIAMETER 2 INCH
4 INCH
INCH

PURGE DATA

Time:

1335

1353

1410

1440

1510

PURGE VOLUME

9.14 GAL

9.46 GAL

9.51 GAL

9.53 GAL

267.5 GAL

TEMP, DEG C

pH, UNITS

SPECIFIC CONDUCTIVITY umhos/cm

PUMP RATE, GPM

5.6

6.15

2.10

12

9.10

6.12

1.50

1.50

9.0

6.10

2.10

2.10

9.0

6.10

2.10

2.10

9.0

6.10

2.10

2.10

SAMPLE OBSERVATIONS

CLEAR
CLOUDY
COLORED
TURBID
ODOR
OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING SAMPLING

EQUIPMENT ID

DECON FLUIDS USED

WATER LEVEL EQUIP. USED

GROUND ELEVATION

PERISTALTIC PUMP

SUBMERSIBLE PUMP

BAILER

PVC/SILICON TUBING

IN-LINE/DISPOSABLE FILTER 0.45u

OTHER

TEST #

2" 4" #

POTABLE WATER

LIQUINOX

STEAM CLEANING

NEWEX (bottle)

ELECTRIC COND. PROBE

FLOAT ACTIVATED

PRESSURE TRANSDUCER

NUMBER OF FILTERS USED

1

ANALYTICAL PARAMETERS

METHOD

FRACTION

PRESERVATION

VOLUME

SAMPLE

SAMPLE BOTTLE ID NUMBERS

VOC

UN20

VP

HCL, 4 DEG C

(4) 60 ML

SVOC

UN18

MS

4 DEG C

(2) 1 L AG

PEST/PCB

UN02

EC

4 DEG C

(3) 1 L AG

TAL

UN19

PAL INORGANICS (SPECIFIED BELOW)

LEAD ONLY

3021

HNO3 TO pH<2

1 L P-CUBE

EXPLOSIVES

UN19

HNO3 TO pH<2

(3) 1 L AG

TPHC

418.1

H2SO4 TO pH<2

1 L AG

TOC

415.1

H2SO4 TO pH<2

1 L AG

ANIONS

TK22

H2SO4 TO pH<2

1 L P-CUBE

TSS ONLY

1110

4 DEG C

1 L P-CUBE

H2O QUALITY (SPECIFIED BELOW)

370.1

HNO3 TO pH<2

1 L P-CUBE

COLIFORM

180.2

4 DEG C

1 L P-CUBE

303,909

HNO3 TO pH<2

1 L P-CUBE

STERILE

(1) 4 OZ

STERILE

(1) 4 OZ

NOTES

PAL INORGANICS: (CP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SW (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NH (TF22); CL/SO4 (T110); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

sample: Colby
Majors

RECEIVED BY:

SIGNATURE:

APPENDIX E
PID AND NDIR SCREENING RESULTS
DECEMBER 1993

Date Reported 12/14/93

[illegible]

Date Reported 12/14/93

Sample ID	Date Sampled	Date Analyzed	TFN (ppm)	Headspace VOCs (ppm)
BX480005	12/14/93	12/14/93	<50	1.3
BX480210	↓	↓	↓	1.5
BX480215	↓	↓	↓	1.0
BX480220	↓	12/15/93	<50	2.0
BX480225	↓	↓	<50	1.4
BX480230	↓	↓	<50	1.7
BX480105	↓	↓	<50	1.4
110	↓	↓	<50	1.3
115	↓	↓	<50 250	3.1
120	↓	↓	<50	3.4
125	↓	↓	<50	3.8
130	↓	↓	<50	1.0
BX480505	12/15/93	12/15/93	<50	0.4
510	↓	↓	↓	0.8
515	↓	↓	↓	0.7
520	↓	↓	↓	0.4
525	↓	↓	↓	0.4
530	↓	↓	↓	0.3
BX480415	12/15/93	12/15/93	160 1630 (20)	1.7
BX480425	↓	↓	<50	1.7
BX480430	↓	↓	<50	1.6
BX480435	12/16/93	12/16/93	<50	1.4
BX480440	↓	↓	↓	1.4

TOTAL PETROLEUM HYDROCARBONS (NDIR)
AND
HEADSPACE VOCs (PID)

[illegible]

Date Reported 12/13/93[illegible]

APPENDIX F
CONTRACT LABORATORY ANALYTICAL REPORT
DECEMBER 1993 & JANUARY 1994

January 25, 1994

Mr. Herb Colby
ABB Environmental Services, Inc.
107 Audubon Road
Corporate Place 128
Wakefield, MA 01880

Dear Mr. Colby:

WORK ORDER NUMBER: WJ1564

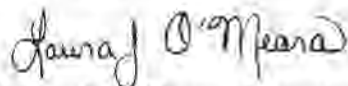
Please find enclosed the Report of Analysis (ROA) for the samples received by the laboratory on December 14, 1993. This cover letter is an integral part of the ROA.

Sample results are reported on our Laboratory Information Management System (LIMS) Report of Analysis. Results are presented by sample and by analytical group. PQLs, methods, dilution factors, dates of preparation and analysis as well as any applicable footnotes all appear on the page(s) where the parameter is reported. Samples and associated QC samples were analyzed in accordance with the methods noted on the Report of Analysis and met CCAS internal quality control criteria except as noted on the Report of Analysis. Analytical data were reviewed and approved for final reporting; an approval signature appears on the final page of the Report of Analysis.

If you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact me. We appreciate your continued use of our laboratory for your analytical needs and look forward to working with you in the future.

Sincerely,

Coast-to-Coast Analytical Services, Inc.



Laura J. O'Meara, Supervisor
Client Services

LJO/dmt

Enclosure

VOLATILE ORGANICS ANALYSIS DATA SHEET
IDENTITIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: V81K01

Lab Code: Case No.: SAS No.: SDC No.:

Matrix: (soil/water) soil Lab Sample ID: Blank

Sample wt/vol: 5 (g/mL) g Lab File ID: Y9872

Level: (low/med) low Date Received:

% Moisture: not dec. 100 Date Analyzed: 12/14/93

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>124384</u>	<u>Carbon Dioxide</u>	<u>1.92</u>	<u>8</u>	<u>JN</u>
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VOLATILE ORGANIC ANALYSIS DATA SHEET
POTENTIALLY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: VOIK02

Lab Code: _____ Case No.: _____ SRS No.: _____ STD No.: _____

Matrix: (soil/water) LOMTR Lab Sample ID: Blank

Sample Wt./Vol: 5 (g/mL) ml Lab File ID: Y9947

Reval: (low/med) low Date Received: —

% Moisture: not dec. — Date Analyzed: 12/16/93

GC Column: RFX-100.4 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 1 CONCENTRATION UNITS: (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124369</u>	<u>Carbon dioxide</u>	<u>1.91</u>	<u>9</u>	<u>IN</u>
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VOLATILE ORGANIC ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: BX480930

Lab Code: _____ Case No.: _____ SAS No.: _____ SDC No.: _____

Matrix: (soil/water) soil Lab Sample ID: WJ1564-1

Sample WT/Vol: 5 (g/mL) g Lab File ID: Y9873

Level: (low/hd) low Date Received: 12/14/93

% Moisture: not dec. 84 Date Analyzed: 12/14/93

GC Column: RTX-624 ID: 0.53 (m) Dilution Factor: 1.0 12-00 1/5/94

Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)

Number TICs found: 1 CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>124309</u>	<u>Carbon Dioxide</u>	<u>1.89</u>	<u>23.28</u>	<u>3 NB</u>
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4.				
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VOLATILE ORGANIC ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: _____ BX480330

Lab Code: _____ Case No.: _____ SAS No.: _____ SEC No.: _____

Matrix: (soil/water) Soil Lab Sample ID: WS1504-2

Sample wt/vol: 5 (g/mL) g Lab File ID: Y8874

Level: (low/med) low Date Received: 12/14/93

% Moisture: not det. 82 Date Analyzed: 12/14/93

GC Column: Rtx-624 ID: 0.53 (mm) Dilution Factor: 1.0 ~~1.2~~ 0.15/94

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (mL)

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon Dioxide</u>	<u>1.91</u>	^{0.15/94} <u>37</u> <u>37</u>	<u>JNB</u>
2.				
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VOLATILE ORGANIC ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

TRIP Blank

Lab Name: Coast to Coast Analytical

Contract: _____

Lab Code: _____

Case No.: _____

SAS No.: _____

SCS No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: WT1564-3

Sample wt/vol: 5 (g/mL) ml

Lab File ID: Y9948

Level: (low/med) low

Date Received: 12/14/93

% Moisture: not dec. _____

Date Analyzed: 12/16/93

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (mL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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Lab Name: CCAS Contract: ABB SBLK
 Lab Code: _____ Case No.: _____ SAS No.: _____ SCS No.: _____
 Matrix: (SOIL/WATER) SOIL Lab Sample ID: SBLK121693
 Sample wt/vol: 30 (g/dL) G Lab File ID: 121296
 Level: (LOW/MED) LOW Data Received: _____
 % Moisture: 0 corrected: (Y/N) N Data Extracted: 121693
 Concentrated Extract Volume: 1000 (uL) Data Analyzed: 010694
 Injection Volume: 1 (uL) pH: _____ Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 6

CONCENTRATION UNITS:
 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141797	3-Penten-2-one, 4-methyl-	4.28	260	JNB
2. 921471	Hexane, 2,3,4-trimethyl	4.81	150	JN
3. 123422	2-Pentanone, 4-hydroxy-4-methyl-	5.31	24000	JNA
4. 74381401	Propionic acid, 2-methyl-2-ethyl-2-methyl-2-methyl-1,3-propanediyl ester	17.60	150	JN
5. N/A	Alkane	18.86	170	S
6. 123284	Propionic acid, 3,3'-thiobis-, diisobutyl ester	36.56	460	JN
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Lab Name: CCAS Contract: ABB BX48093C
Lab Code: _____ Case No.: _____ SRS No.: _____ SCS No.: _____
Matrix: (soil, water) SOIL Lab Sample ID: WJ1564-1
Sample Wt./Vol: 30 (g/mL) G Lab File ID: 21297
Level: (low/med) LOW Date Received: 121493
% Moisture: 16 decont: (Y/N) N Date Extracted: 121693
Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794
Injection Volume: 1 (uL) f Dilution Factor: 1.0
GPC Cleanup: (Y/N) Y pH: -

Number TICs found: 4 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl-</u>	<u>4.28</u>	<u>320</u>	<u>JNB</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl-</u>	<u>5.29</u>	<u>25000</u>	<u>JNAB</u>
3. <u>74381401</u>	<u>Propionic acid, 2-methyl-1-(1,1-dimethylethyl)-</u>	<u>17.60</u>	<u>220</u>	<u>JNB</u>
4. <u>123284</u>	<u>Propionic acid, 3,3-thiobis-, didodecyl ester</u>	<u>36.55</u>	<u>220</u>	<u>JNB</u>
5. <u>011894</u>				
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BX480330

Lab Name: CCAS Contract: ABB
Lab Code: _____ Case No.: _____ SAE No.: _____ SDS No.: _____
Matrix: (solid/liquid) Soil Lab Sample ID: WT1564-2
Sample Wt/Vol: 30 (g/mL) G Lab File ID: 21798
Level: (low/med) LOW Date Received: 12/19/93
% Moisture: 18 Reported: (Y/N) N Date Extracted: 12/16/93
Concentrated Extract Volume: 500 (uL) Date Analyzed: 01/07/94
Injection Volume: 1 (uL) 1 Dilution Factor: 1.0
GPC Cleanup: (Y/N) Y pH: -

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl-</u>	<u>4.28</u>	<u>300</u>	<u>JNB</u>
2. <u>13422</u>	<u>2-Pentanone, 4-hydroxy</u>	<u>5.29</u>	<u>29000</u>	<u>JNAB</u>
3. <u>74381401</u>	<u>propionic acid, 2-methyl-, (1S,3S,4S,5S)-2,3,4,5-tetrahydro-1H-2H-pyran-2-yl ester</u>	<u>17.61</u>	<u>180</u>	<u>JNB</u>
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Northeastern Division
340 County Road, No. 5 • P.O. Box 730 • Westbrook, ME 04098

(207) 874-2400
Fax (207) 772-4029

CLIENT: HERE COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No. : MSA-93-01-784MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 1 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
BX480930	Solid/Soil/ Sludge	R. COLBY	12/13/93	12/14/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TR)	84.	wt %	1.0	0.10	CLP/CIP SOW	12/16/93	JF	1
Total Petroleum Hydrocarbons (TPH)	<26	mg/kgdrywt.	1.0	25.9071/418.1		12/28/93	GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 12/15/93 by JF

(2) Sample Preparation on 12/27/93 by GH

01/25/94

LJO/gfb/bjn/dmg

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
BX480930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA								
8270								1,2,3
Phenol	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
bis(2-Chloroethyl) ether	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Chlorophenol	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,4-Dichlorobenzene	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzyl alcohol	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Methylphenol	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
bis(2-Chloroisopropyl) ether	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Methylphenol	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
n-Nitroso-dipropylamine	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 12/16/93 by CGJ

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/26/94

WJ/ksj/jtg/ld

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128,, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 3 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE		RECEIVED	
BX480930	Solid/Soil/ Sludge		H. COLBY		12/13/93		12/14/93	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
Hexachloroethane	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Nitrobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Isophorone	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1900.	µg/kgdrywt	1.2	1600	EPA 8270	01/07/94	TG	
bis (2-Chloroethoxy)methane	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Naphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJO/kfg/jfg/lad

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
EX490930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
2-Methylnaphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<400.	µg/kgdrywt	1.2	130	EPA 8270	01/07/94	TG	
2,4,6-Trichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
2-Chloronaphthalene	<400.	µg/kgdrywt	1.2	130	EPA 8270	01/07/94	TG	
2-Nitroaniline	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Dimethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,6-Dinitrotoluene	<400.	µg/kgdrywt	1.2	130	EPA 8270	01/07/94	TG	
3-Nitroaniline	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Acenaphthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
4-Nitrophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/25/94

LJO/hfg/jfg/lad

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Fax (207) 775-4039

CLIENT: HERR COLBY

ARB-WAKEFIELD

CORPORATE PLACE, 12B, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1564-1

Report Date: 01/25/94

PO No. : MSA-93-01-78-MJ

Project : 7142,00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
BX480930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Dibenzofuran	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chlorophenyl phenyl ether	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Fluorene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
n-Nitrosodiphenylamine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Phenanthrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Anthracene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "E" values.

01/25/94

DJO/lfg/jfg/lad

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No. : MSA-91-01-78 ML
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX280930	Solid/Soil/ Sludge		H. COLBY		12/13/93	12/14/93		
PARAMETER	RESULT	UNITS	DB	*PQL	METHOD	ANALYZED	BY	NOTES
Di-n-butylphthalate	JB140	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
3,3'-Dichlorobenzidine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo (a) anthracene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Chrysene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
bis (2-Ethylhexyl) phthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo (b) Fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo (k) Fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo (a) pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Indeno (1,3,3-cd) pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/25/94

LJU/kfg/jfg/ld

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Fax (207) 775-4029

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01860

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No. : MSA-93-01-78-AC
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
EX480930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93				
PARAMETER	RESULT	UNITS	DE	*PQL	METHOD	ANALYZED	BY	NOTES
Dibenzo(a,h)anthracene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	64.	%	1.2		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	59.	%	1.2		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	59.	%	1.2		EPA 8270	01/07/94	TG	
2-Fluorobiphenyl (% Recovery)	64.	%	1.2		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (% Recovery)	61.	%	1.2		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	66.	%	1.2		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJO/kfg/jfg/lad

CLIENT: HERS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No. : MSA-93-01-79-M1
Project : 7143/00

REPORT OF ANALYTICAL RESULTS

Page 2 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
PX480930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	1,2
Bromomethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Vinyl chloride	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Chloroethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Methylene chloride	JB5	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Acetone	<18.	ug/kgdrywt	1.2	15	EPA 8240	12/14/93	DG	
Carbon disulfide	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
1,1-Dichloroethene	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
1,1-Dichloroethane	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Total 1,2-Dichloroethene	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Chloroform	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
1,2-Dichloroethane	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
2-Butanone	<15.	ug/kgdrywt	1.2	15	EPA 8240	12/14/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

- (1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
- (2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/25/94

LJA/KEG/jfg/rwh

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Fax (207) 775-4029

CLIENT: HERS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 35
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
EO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
BM480930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93				
PARAMETER	RESULT	UNITS	DB	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Carbon tetrachloride	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Vinyl acetate	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/14/93	DG	
Bromodichloromethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
1,2-Dichloropropane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
cis-1, 3-Dichloropropane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Trichloroethene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Dibromochloromethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
1,1,2-Trichloroethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Benzene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
trans-1,3-Dichloropropane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Bromoform	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
4-Methyl-2-pentanone	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/14/93	DG	
2-Hexanone	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/14/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

DD/kg/jfg/bwn

CLIENT: HERB COLBY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-1
Report Date: 01/25/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
BX480930	Solid/Soil/ Sludge	H. COLBY	12/13/93	12/14/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Tetrachloroethene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
Toluene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
Chlorobenzene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
Ethylbenzene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
Styrene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
Total Xylenes	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/14/93	DG	
1,2-Dichloroethane (% Recovery)	88.	%	1,2		EPA 8240	12/14/93	DG	
Toluene-d8 (% Recovery)	93.	%	1,2		EPA 8240	12/14/93	DG	
p-Bromofluorobenzene (% Recovery)	92.	%	1,2		EPA 8240	12/14/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

µg/kg / µg/gwt

CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1564-2

Report Date: 01/25/94

PO No. : MSA-93-01-78-M1

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX480330	Solid/Soil/ Sludge			H. COLBY		12/10/93	12/14/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	82.	wt %	1.0	0.10	CLP/CIP SOW	12/16/93	JE	1
Total Petroleum Hydrocarbons (TPH)	<25	mg/kgdrywt	1.0	25	9071/418.1	12/28/93	GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (<) values.

(1) Sample Preparation on 12/15/93 by JE

(2) Sample Preparation on 12/27/93 by GH

01/25/94

LJO/gfb/cjn/dmg

CLIENT: HERB COLBY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-2
Report Date: 01/25/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 12 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
BX480330	Solid/Soil/ Sludge	H. COLBY	12/10/93	12/14/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
ICL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
bis(2-Chloroethyl) ether	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
2-Chlorophenol	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
1,4-Dichlorobenzene	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
Benzyl alcohol	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
2-Methylphenol	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
bis(2-Chloroisopropyl) ether	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
4-Methylphenol	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	
n-Nitroso-dipropylamine	<400.	µg/kgdrywt	1,2		330 EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 12/16/93 by TG

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(3) "E" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/25/94

WJO/kg/jg/lad

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-2
Report Date: 01/25/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 13 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480330	Solid/Soil/ Sludge		H. COLBY		12/10/93	12/14/93		
PARAMETER	RESULT	UNITS	DE	*PQL	METHOD	ANALYZED	BY	NOTES
Hexachlorobutane	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Nitrobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Isophorone	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1900.	µg/kgdrywt	1.2	1600	EPA 8270	01/07/94	TG	
bis (2-Chloroethoxy)methane	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Naphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJO/rfg/jfg/lad

CLIENT: HERB COLBY
ASB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WT-1564-2
Report Date: 01/25/94
PO No. : MEA-93-01-78-ML
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BM480330	Solid/Soil/ Sludge		H. COLBY		12/10/93	12/14/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Methylnaphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4,6-Trichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<980.	µg/kgdrywt	1.2	920	EPA 8270	01/07/94	TG	
3-Chloronaphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Nitroaniline	<980.	µg/kgdrywt	1.2	920	EPA 8270	01/07/94	TG	
Dimethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,6-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
3-Nitroaniline	<980.	µg/kgdrywt	1.2	920	EPA 8270	01/07/94	TG	
Acenaphthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<980.	µg/kgdrywt	1.2	920	EPA 8270	01/07/94	TG	
4-Nitrophenol	<980.	µg/kgdrywt	1.2	920	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

100/kg/jfg/lad

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Fax (207) 775-4029

CLIENT: HEBB COLBY
ASB-WAREFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAREFIELD, MA 01860

Lab Number : WJ-1554-2
Report Date: 01/25/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 15 of 21

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
BX480330	Solid/Soil/ Sludge	H. COLBY	12/10/93	12/14/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Dibenzofuran	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chlorophenyl phenyl ether	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Fluorene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
n-Nitrosodiphenylamine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Phenanthrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Anthracene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

MDU/Rtg/Jfg/Lad

CLIENT: HERE COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 35
WAKEFIELD, MA 01880

Lab Number : WJ-1564-2
Report Date: 01/25/94
PG No. : MSA-93-01-75-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 16 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE		RECEIVED	
BX480380	Solid/Soil/ Sludge		H. COLBY		12/10/93		12/14/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Di-n-butylphthalate	JB200	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
3,3'-Dichlorobenzidine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(a)anthracene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Chrysene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl)phthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(b)fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(k)fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(a)pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Indeno(1,2,3-cd)pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJO/kgg/jfg/lad

CLIENT: HERB COLBY
ABB WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-2
Report Date: 01/25/94
PO No. : MSA-93-01-78-JL
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 17 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED					
BX480330	Solid/Soil/ Sludge	H. COLBY	12/10/93	12/14/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Dibenzo(a, b)anthracene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Benzo(g, h, i) perylene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	70.	%	1,2		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	69.	%	1,2		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	63.	%	1,2		EPA 8270	01/07/94	TG	
2-Fluorobiphenyl (% Recovery)	60.	%	1,2		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (% Recovery)	70.	%	1,2		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	70.	%	1,2		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJD/kfg/jfg/lab

CLIENT: HERB COLBY
ABB-WAREFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 35
WAREFIELD, MA 01880

Lab Number : WJ-1564-2
Report Date: 01/25/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 18 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
BX480330	Solid/soil/ Sludge	H. COLBY	12/10/93	12/14/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	1.2
Bromomethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Vinyl chloride	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Chloroethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Methylene chloride	JB4	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Acetone	<18.	ug/kgdrywt	1.2	15	EPA 8240	12/14/93	DG	
Carbon disulfide	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
1,1-Dichloroethene	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
1,1-Dichloroethane	<5.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Total 1,2-Dichloroethene	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Chloroform	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
1,2-Dichloroethane	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
2-Butanone	<18.	ug/kgdrywt	1.2	15	EPA 8240	12/14/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/25/94

LLO/<ug/kgwt

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01890

Lab Number : WJ-1564-2
Report Date: 01/25/94
PO No. : MSA-93-01-78-MQ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 19 of 33

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
RX480330	Solid/Soil/ Sludge		H. COLBY		12/10/93	12/14/93		
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Carbon tetrachloride	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Vinyl acetate	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/14/93	DG	
Bromodichloromethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
1,2-Dichloropropane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
cis-1,3-Dichloropropene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Trichloroethene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Dibromochloromethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
1,1,2-Trichloroethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Benzene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
trans-1,3-Dichloropropene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
Bromoform	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/14/93	DG	
4-Methyl-2-pentanone	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/14/93	DG	
2-Hexanone	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/14/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/25/94

LJG/HIG/bad

CLIENT: HERS COLBY
ABE-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WQ-1564-2
Report Date: 01/25/94
EO No. : MSA-93-01-78-ME
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

Page 20 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX480330	Solid/Soil/ Sludge		H. COLBY		12/10/93	12/14/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Tetrachloroethene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Toluene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Chlorobenzene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Ethylbenzene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Styrene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
Total Xylenes	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG	
1,2-Dichloroethane (% Recovery)	94.	%	1.2		EPA 8240	12/14/93	DG	
Toluene-d8 (% Recovery)	99.	%	1.2		EPA 8240	12/14/93	DG	
p-Bromofluorobenzene (% Recovery)	97.	%	1.2		EPA 8240	12/14/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJB/kfg/kwin

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CLIENT: HERB COLBY
ABB WAKEFIELD
CORPORATE PLACE 120, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-3
Report Date: 01/26/94
PG No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 21 of 21

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE		RECEIVED	
TRIP BLANK	Aqueous		B. COLBY		12/13/93		12/14/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<10.	µg/L	1.0		10 EPA 8240	12/16/93	DG	
Bromomethane	<10.	µg/L	1.0		10 EPA 8240	12/16/93	DG	
Vinyl chloride	<10.	µg/L	1.0		10 EPA 8240	12/16/93	DG	
Chloroethane	<10.	µg/L	1.0		10 EPA 8240	12/16/93	DG	
Methylene chloride	NR	µg/L	1.0		10 EPA 8240	12/16/93	DG	
Acetone	<15.	µg/L	1.0		15 EPA 8240	12/16/93	DG	
Carbon disulfide	<10.	µg/L	1.0		10 EPA 8240	12/16/93	DG	
1,1-Dichloroethene	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
1,1-Dichloroethane	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
Chloroform	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
1,2-Dichloroethane	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
2-Butanone	<15.	µg/L	1.0		15 EPA 8240	12/16/93	DG	
1,1,1-Trichloroethane	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'r' values.
- (1) "J" flag denotes an estimated value less than the laboratory's Practical Quantitation Level.
- (2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/25/94

LJO/kfg/kwh

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Fax (207) 775-4029

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-3
Report Date: 01/25/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 22 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
TRIP BLANK	Aqueous		H. COLBY		12/13/93	12/14/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	12/16/93	DO	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
cis-1,2-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
Benzene	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
trans-1,2-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
4-Methyl 2-pentabenzene	<15.	µg/L	1.0	15	EPA 8240	12/16/93	DO	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	12/16/93	DO	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	12/16/93	DO	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

01/25/94

Lap/kig/kwh

CLIENT: HERS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1564-5
Report Date: 01/25/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 23 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE		RECEIVED	
TRIP BLANK	Aqueous		H. COLBY		12/11/93		12/14/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Toluene	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
Chlorobenzene	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
Ethylbenzene	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
Styrene	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
Total Xylenes	<5.	µg/L	1.0		5 EPA 8240	12/16/93	DG	
1,2-Dichloroethane (% Recovery)	96.	%	1.0		EPA 8240	12/16/93	DG	
Toluene-d8 (% Recovery)	97.	%	1.0		EPA 8240	12/16/93	DG	
p-Bromofluorobenzene (% Recovery)	88.	%	1.0		EPA 8240	12/16/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (<) values.

01/25/94

LJO/kfg/kwin

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Laura J. O'Meara

Laura J. O'Meara
Supervisor, Client Services

Shipped 12/13/93

REVISED ON 4-15-94

CINER-BD-GL-2
SAMPLE CONTAINER RECEIPT FORM

PROJECT: SA 48 (Bldg 202) EAC083

Container received on 12/14/93 and inspected on 12/14/93 by: John A. B. J.

1. Shipper (USM, UPS, DHL, FEDEX, P/C, AIR EXF, HAND-DELIVERED)
2. Container type (Cooler, box, envelope, etc.) _____
3. Were custody seals on outside of container? N/A Yes No
How many & where: 2 on top, seal date: 12/13/93, seal name: _____
4. Were custody papers taped to lid inside container? N/A Yes No
5. Custody papers properly filled out? (ink, signed, etc.) Yes No
6. Was project identifiable from custody papers? Yes No
7. Did you sign custody papers in appropriate place? Yes No
8. Did you attach shipper's packing form to this form? N/A Yes No
9. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)
10. Was sufficient ice used? Temperature _____ °C upon arrival N/A Yes No
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. Did all sample labels agree with custody papers? Yes No
15. Were correct sample containers used for tests indicated? N/A Yes No
16. Were correct preservatives used? (TM pH____, CN- pH____) N/A Yes No
(TOC pH____, NUTRIENT pH____, TOX pH____, TPH pH____, OTHER pH____)
17. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
18. Was sufficient amount of sample sent in each container? 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: (A) NO TEMPERATURE VIAL WAS SENT IN THE COOLER - BUT ICE PACKS WERE INTACT.

(B) ONE THERMOLAB VOA VIAL HAS HEADSPACE.

WT1564

CHAIN OF CUSTODY RECORD

Page 1 of 1

[illegible]

Date Received _____
Lab Location _____
Results Due _____
Client I.D. No. _____

Company Corps of Engineers

Mailing Address

Purchase Order/Job Number 7143.00

Where to Send Report ☐ Directly to Client
☒ ABB - Name Herb Colby

Analyses Requested By: Technical Project Professional

Approved By: Abraham U. Colby
Project Manager

☐ Solid Waste Data File
☐ Data Documentation Req'd
☐ Entered in Computer

Type of Sample SOIL
List Any Hazards LOW

☐ Filtered in Field ☐ Non-Filtered

☐ SPECIAL
PROCEDURE

[illegible]

ABB Environmental Services, Inc.

Page 1 of 1

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Northeastern Division
140 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-3400
Fax (207) 775-4029

January 26, 1994

Mr. Herb Colby
ABB Environmental Services
107 Audubon Road
Corporate Place 107
Wakefield, MA 01880

Dear Mr. Colby:

WORK ORDER NUMBER: WJ1608

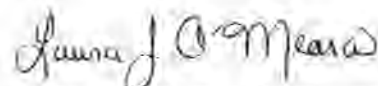
Please find enclosed the Report of Analysis (ROA) for the samples received by the laboratory on December 21, 1993. This cover letter is an integral part of the ROA.

Sample results are reported on our Laboratory Information Management System (LIMS) Report of Analysis. Results are presented by sample and by analytical group. PQLs, methods, dilution factors, dates of preparation and analysis as well as any applicable footnotes all appear on the page(s) where the parameter is reported. Samples and associated QC samples were analyzed in accordance with the methods noted on the Report of Analysis and met CCAS internal quality control criteria except as noted on the Report of Analysis. Analytical data were reviewed and approved for final reporting; an approval signature appears on the final page of the Report of Analysis.

If you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact me. We appreciate your continued use of our laboratory for your analytical needs and look forward to working with you in the future.

Sincerely,

Coast-to-Coast Analytical Services, Inc.



Laura J. O'Meara, Supervisor
Client Services

LJO/dmt

Enclosure

Lab Name: Coast to Coast Analytical Contract: VBK01
 Lab Code: _____ Case No.: _____ SAS No.: _____ SDC No.: _____
 Matrix: (soil/water) WATER Lab Sample ID: Blank
 Sample Wt/vol: 5 (g/mL) ml Lab File ID: Y0091
 Level: (low/med) low Date Received: _____
 % Moisture: not dec. _____ Date Analyzed: 12/22/93
 GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.89</u>	<u>9</u>	<u>JN</u>
2.				
3.				
4.				
5.				
6.				
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Lab Name: Coast to Coast Analytical

Contract: _____

SBK48N02

Lab Code: _____

Case No.: _____

SAS No.: _____

SOX No.: _____

Matrix: (Solid/Liquid) WATER

Lab Sample ID: W51608-1

Sample Vol/Vol: 5 (g/mL) ml

Lab File ID: Y0093

Level: (Low/Med) low

Date Received: 12/21/92

% Moisture: not dec. —

Date Analyzed: 12/22/92

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RD	EST. CONC.	Q
1.				
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Lab Name: CCAS Contract: ARB SBK
 Lab Code: _____ Case No.: _____ SIS No.: _____ EDC No.: _____
 Matrix: (solid/liquid) Water Lab Sample ID: SBK 122293
 Sample wt/vol: 1000 (g/mL) ml Lab File ID: 221345
 Level: (low/high) Low Date Received: 122193
 % Moisture: — Densified: (Y/N) — Date Extracted: 122293
 Concentrated Extract Volume: 1000 (mL) Date Analyzed: 011294
 Injection Volume: 1 (mL) 1 Dilution Factor: 1.0
 GPC Cleanup: (Y/N) — pH: —

Number TICs found: 1

CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>N/A</u>	<u>Unknown</u>	<u>31.37</u>	<u>5.0</u>	<u>J</u>
2.				
3.				
4.				
5.				
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Lab Name: CCAS Contract: ABR SER# 43102
 Lab Code: _____ Case No.: _____ SAS No.: _____ SDC No.: _____
 Matrix: (soil, water) water Lab Sample ID: WT1608-1
 Sample wt/vol: 1000 (g/mL) ml Lab File ID: 21346
 Level: (low/med) Low Date Received: 122193
 % Moisture: - Decanted: (Y/N) - Date Extracted: 122293
 Concentrated Extract Volume: 1000 (uL) Date Analyzed: 011294
 Injection Volume: 1 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) - pH: -

Number TICs found: 2

CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>N/A</u>	<u>Unknown</u>	<u>17.33</u>	<u>5.0²³</u>	<u>J</u>
2. <u>N/A</u>	<u>Unknown</u>	<u>19.93</u>	<u>//</u>	<u>J</u>
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Fax (207) 775-4029

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 2, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1608-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-W1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 1 of 10

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
SBK46N02	Aqueous	H. COLBY		12/17/93	12/21/93			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.0	mg/L	1.0	1.0	418.1	01/04/94	GH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/03/94 by GH

01/26/94

DDO/gfb

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CLIENT: HERB COLBY
ABB-WAREFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAREFIELD, MA 01880

Lab Number : WJ-1608-1
Report Date: 01/26/94
PO No. : MSA-93-01-VB-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBK48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*SQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								
Phenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
bis(2-Chloroethyl) ether	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzyl alcohol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	

* SQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 12/22/93 by CGJ

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/26/94

LJO/Kfg/jfg/kwh

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Fax (207) 875-4029

CLIENT: HERB COLBY
DBB WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1609-1
Report Date: 01/26/94
DQ No. : MSA-93-01-79-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 3 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BEK48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
Benzoic acid	<50.	µg/L	1.0	50	EPA 8270	01/12/94	WG	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	WG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with "<" values.

01/26/94

LDD/kBg/jBg/awh

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CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lap Number : WJ-1606-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 4 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBK48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Diethylphthalate	72	µg/L	1.0	10	EPA 8270	01/12/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/kwa

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 125, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1608-1
Report Date: 01/26/94
PO No. : MSA-93-01-79-MJ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 5 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBK48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
4,5-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/12/94	TG	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJS/MEg/jEg/twh

CLIENT: HERB COLBY
ABR-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1608-1
Report Date: 01/26/94
EC No. : MSA-93-01-78-VI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 6 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBN48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
bis(2-Ethylhexyl) phthalate	NR2	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	01/12/94	TG	
2-Fluorophenol (% Recovery)	80.	%	1.0		EPA 8270	01/12/94	TG	
Phenol-d5 (% Recovery)	81.	%	1.0		EPA 8270	01/12/94	TG	
Nitrobenzene-d5 (% Recovery)	72.	%	1.0		EPA 8270	01/12/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/lfg/jfg/bwl

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01890

Lab Number : WJ-1608-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143,00

REPORT OF ANALYTICAL RESULTS

Page 7 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBK48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*EQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	74.	%	1.0		EPA 8270	01/12/94	TG	
2,4,6-Trichlorophenol (% Recovery)	75.	%	1.0		EPA 8270	01/12/94	TG	
Terphenyl-d14 (% Recovery)	51.	%	1.0		EPA 8270	01/12/94	TG	

* EQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/tfg/kwll

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CLIENT: HERR COLBY
ABB WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01860

Lab Number : WJ-1608-1
Report Date: 01/26/94
MO No. : MSA-93-01-78-M1
Project : 7143/00

REPORT OF ANALYTICAL RESULTS

Page # of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
SBK48N02	Aqueous			H. COLBY		12/27/93	12/27/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
TCL Volatile Organics by USEPA 8240							
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	12/22/93	DG
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	12/22/93	DG
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	12/22/93	DG
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	12/22/93	DG
Methylene chloride	JB5	µg/L	1.0	10	EPA 8240	12/22/93	DG
Acetone	<15.	µg/L	1.0	15	EPA 8240	12/22/93	DG
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	12/22/93	DG
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG
Chloroform	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG
1,3-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	12/22/93	DG
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG

1,2

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.
- (1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
 - (2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

01/26/94

LJO/kfg/jfg/kw

CLIENT: HERR COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1608-1
Report Date: 01/26/94
PO No. : MSA-93-Q1-78-MQ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 9 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBE48NG2	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	12/22/93	DG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
Trichlorobenzene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	12/22/93	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	12/22/93	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	12/22/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

01/26/94

LJO/kfg/jfg/kwh

**COAST-TO-
COAST
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Fax (207) 775-4029

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1608-1
Report Date: 01/26/94
PO No. : MSR-33-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 16 of 16

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
SBK48N02	Aqueous			H. COLBY		12/17/93	12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Toluene	<5.	µg/L	1.0		5 EPA 8240	12/22/93	DG	
Chlorobenzene	<5.	µg/L	1.0		5 EPA 8240	12/22/93	DG	
Ethylbenzene	<5.	µg/L	1.0		5 EPA 8240	12/22/93	DG	
Styrene	<5.	µg/L	1.0		5 EPA 8240	12/22/93	DG	
Total Xylenes	<5.	µg/L	1.0		5 EPA 8240	12/22/93	DG	
1,2-Dichloroethane (% Recovery)	94.	%	1.0		EPA 8240	12/22/93	DG	
Toluene-d8 (% Recovery)	98.	%	1.0		EPA 8240	12/22/93	DG	
p-Bromofluorobenzene (% Recovery)	102.	%	1.0		EPA 8240	12/22/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LCD/kfg/jfg/lwn

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Laura J. O'Meara
Laura J. O'Meara
Supervisor, Client Services

GENES-3D-Q1-B
SAMPLE CONTAINER RECEIPT FORM

PROJECT: 7143-00 SA48 - Fort DevensContainer received on 122193 and inspected on 122193 by: K. A. Duff

1. Shipper (USX, UPS, DHL, FIDEX, P/O, AIR EXP, HAND-DELIVERED)
2. Container type (Cooler, box, envelope, etc.) _____
3. Were custody seals on outside of container? N/A Yes No
How many & where: 2 from - none - none - none -, seal date: 122093, seal name: HEBERT, J. C. 1001
4. Were custody papers taped to lid inside container? N/A Yes No
5. Custody papers properly filled out? (ink, signed, etc.) Yes No
6. Was project identifiable from custody papers? Yes No
7. Did you sign custody papers in appropriate place? Yes No
8. Did you attach shipper's packing form to this form? N/A Yes No
Packing material: peanuts, vermiculite, bubble wrap, paper, saw, other:
9. Was sufficient ice used? Temperature _____ °C upon arrival N/A Yes No (A)
10. Were all samples sealed in separate plastic bags? N/A Yes No
11. Did all samples arrive in good condition? Yes No
12. Sample labels complete? (#, date, analysis, preservation, sign.) Yes No
13. Did all sample labels agree with custody papers? 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 _____, TPR pH 12.0, OTHER pH _____)
16. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
17. Was sufficient amount of sample sent in each container? Yes No
18. Were air volumes noted for air samples? N/A Yes No
19. Were initial weights noted for pre-weighed filters? N/A Yes No

Discrepancies: (A) NO TEMPERATURE WAS RECEIVED IN COOLER

WJLG 08

Page 1 of 1

ABB Environmental Services, Inc.

January 26, 1994

Mr. Herb Colby
ABB Environmental Services
107 Audubon Road
Corporate Place 107
Wakefield, MA 01880

Dear Mr. Colby:

WORK ORDER NUMBER: WJ1597

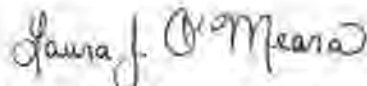
Please find enclosed the Report of Analysis (ROA) for the samples received by the laboratory on December 17, 1993. This cover letter is an integral part of the ROA.

Sample results are reported on our Laboratory Information Management System (LIMS) Report of Analysis. Results are presented by sample and by analytical group. PQLs, methods, dilution factors, dates of preparation and analysis as well as any applicable footnotes all appear on the page(s) where the parameter is reported. Samples and associated QC samples were analyzed in accordance with the methods noted on the Report of Analysis and met CCAS internal quality control criteria except as noted on the Report of Analysis. Analytical data were reviewed and approved for final reporting; an approval signature appears on the final page of the Report of Analysis.

If you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact me. We appreciate your continued use of our laboratory for your analytical needs and look forward to working with you in the future.

Sincerely,

Coast-to-Coast Analytical Services, Inc.



Laura J. O'Meara, Supervisor
Client Services

LJO/dmt

Enclosure

VOLATILE ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: VBK01
 Lab Code: _____ Case No.: _____ SAS No.: _____ SOC No.: _____
 Matrix: (soil/water) water Lab Sample ID: Blank
 Sample wt/vol: 5 (g/mL) ml Lab File ID: Y0003
 Level: (low/med) low Date Received: _____
 % Moisture: not dec. _____ Date Analyzed: 12/18/93
 GC Column: Rtx-629 ID: 0-53 (m) Dilution Factor: 1.0
 Soil Extract Volume: _____ (mL) Soil Aliquot Volume: _____ (mL)

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.89</u>	<u>8</u>	<u>JN</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical

Contract: _____

VBK 02

Lab Code: _____

Case No.: _____

SAS No.: _____

SCS No.: _____

Matrix: (soil/water) soil

Lab Sample ID: Blank

Sample wt/vol: 5 (g/mL) g

Lab File ID: Y0034

Level: (low/med) low

Date Received: —

% Moisture: not dec. 100

Date Analyzed: 12/19/93

GC Column: RTX-624 ID: 0.53 (mm)

Division Factor: 1.0

Soil Extract Volume: — (uL)

Soil Aliquot Volume: — (uL)

Number TICs Found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.90</u>	<u>38</u>	<u>TN</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: VB/K 03
 Lab Code: _____ Case No.: _____ SAS No.: _____ STD No.: _____
 Matrix: (soil/water) soil Lab Sample ID: Blank
 Sample wt/vol: 5 (g/mL) g Lab File ID: Y0055
 Level: (low/med) low Date Received: —
 % Moisture: not dec. 100 Date Analyzed: 12/20/93
 GC Column: PTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: — (μL) Soil Aliquot Volume: — (μL)

Number TICs found: 1

CONCENTRATION UNITS:
(μg/L or μg/Kg) μg/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.90</u>	<u>15</u>	<u>IN</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical

Contract: _____

BX480220

Lab Code: _____

Case No.: _____

SIS No.: _____

SID No.: _____

Matrix: (soil/water) soil

Lab Sample ID: WJ1597-1

Sample wt/vol: 5 (g/mL) g

Lab File ID: Y0035

Level: (low/med) low

Date Received: 12/17/93

% Moisture: not det. 95

Date Analyzed: 12/19/93

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0
1 + 0.15/1.44

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: _____

CONCENTRATION UNITS:

(ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.91</u>	<u>48</u>	<u>IN B</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical

Contract: _____

BX480115

Lab Code: _____

Case No.: _____

SAS No.: _____

SGG No.: _____

Matrix: (soil/water) soil

Lab Sample ID: WT1597-2

Sample wt/vol: 5 (g/mL) g

Lab File ID: Y0041

Level: (low/med) low

Date Received: 12/12/93

% Moisture: not dec. 85

Date Analyzed: 12/19/93

GC Column: RTX624 ID: 0.53 (mm)

Dilution Factor: 1.0
1.000000

Soil Extract Volume: — (uL)

Soil Aliquot Volume: — (uL)

Number TICs Found: 1

CONCENTRATION UNITS:

(ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124387</u>	<u>Carbon dioxide</u>	<u>1.92</u>	<u>110</u>	<u>INB</u>
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VOLATILE ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical

Contract: _____

BX480515

Lab Code: _____

Case No.: _____

SAS No.: _____

ECG No.: _____

Matrix: (soil/water) soil

Lab Sample ID: W31597-3
Y0038 09/15/94

Sample wt/vol: 5 (g/mL) g

Lab File ID: Y0038

Level: (low/med) low

Date Received: 12/12/93

% Moisture: not dec. 92

Date Analyzed: 12/19/93

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0
1.0 09/15/94

Soil Extract Volume: - (uL)

Soil Aliquot Volume: - (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>124389</u>	<u>Carbondioxide</u>	<u>1.92</u>	<u>47</u>	<u>5N13</u>
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VOLATILE ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: BX480415
 Lab Code: _____ Case No.: _____ SAS No.: _____ SOC No.: _____
 Matrix: (soil, water) soil Lab Sample ID: W51597-4
 Sample wt/vol: 5 (g/mL) g Lab File ID: Y0054
 Level: (low/med) low Date Received: 12/17/93
 % Moisture: not dec. 93 Date Analyzed: 12/20/93
 GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.90</u>	<u>150</u>	<u>INB</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: BX480630
 Lab Code: _____ Case No.: _____ SRS No.: _____ EIC No.: _____
 Matrix: (soil/water) soil Lab Sample ID: WJ1547-5
 Sample wt/vol: 5 (g/mL) g Lab File ID: Y0040
 Level: (low/high) low Date Received: 12/17/93
 % Moisture: not rec. 84 Date Analyzed: 12/19/93
 GC Column: RTX-624 ID: 0.53 (m) Dilution Factor: 1.0 09/15/94
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (mL)
 Number TICs found: 1 CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>124369</u>	<u>Carbon dioxide</u>	<u>1.92</u>	<u>32</u>	<u>SNB</u>
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NORTHWEST TOXICITY ANALYSIS DATA SHEET
EXTENSIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: BX481115
 Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____
 Matrix: (soil/water) soil Lab Sample ID: W-15101 WATIS47-6
 Sample Wt/Vol: 5 (g/mL) g Lab File ID: Y0057
 Level: (low/med) low Data Received: 12/12/93
 % Moisture: not dec. 88 Data Analyzed: 12/20/93
 GC Column: RTX-624 ID: 0.53 (mm) Diffusion Factor: 1.0
 Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)
 Number TICs found: 9 CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.92</u>	<u>42</u>	<u>JNB</u>
2.	<u>Unknown, MW = 281</u>	<u>18.02</u>	<u>73</u>	
3.	<u>Unknown</u>	<u>18.68</u>	<u>13</u>	
4.	<u>C₆H₇NO isomer</u>	<u>18.81</u>	<u>24</u>	
5.	<u>Unknown</u>	<u>19.04</u>	<u>12</u>	
6. <u>Unknown</u>	<u>C₁₃H₂₆ branched Alkane</u>	<u>19.15</u>	<u>38</u>	
7.	<u>C₇H₉NO isomer</u>	<u>19.42</u>	<u>57</u>	
8.	<u>Unknown</u>	<u>19.88</u>	<u>110</u>	
9.	<u>Unknown</u>	<u>21.13</u>	<u>60</u>	
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VOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical

Contract: _____

TBK48NO2

Lab Code: _____

Case No.: _____

SAS No.: _____

SDS No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: WJ1597-7

Sample wt/vol: 5 (g/mL) ml

Lab File ID: Y0009

Level: (low/med) low

Date Received: 12/17/93

% Moisture: not det. —

Date Analyzed: 12/18/93

GC Column: Rtx-624 ID: 0.53 (m)

Dilution Factor: 1.0

Soil Extract Volume: — (uL)

Soil Aliquot Volume: — (uL)

Number TICs found: 0

CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: ABB SBLK
 Lab Code: _____ Case No.: _____ SAE No.: _____ SED No.: _____
 Matrix: (soil/water) SOIL Lab Sample ID: SBLK
 Sample wt/vol: 30 (g/mL) G Lab File ID: 21299
 Level: (low/med) LOW Date Received: _____
 % Moisture: — Decanted: (Y/N) _____ Date Extracted: 121793
 Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794
 Injection Volume: 1 (uL) r Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 3

CONCENTRATION UNITS:
 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penteh-2-one, 4-methyl</u>	<u>4.26</u>	<u>310</u>	<u>JN</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl</u>	<u>5.29</u>	<u>32000</u>	<u>JNA</u>
3. <u>N/A</u>	<u>UNKNOWN</u>	<u>30.66</u>	<u>180</u>	<u>J</u>
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SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: ABB BX# 480220
 Lab Code: _____ Case No.: _____ Est. No.: _____ SOC No.: _____
 Matrix: (soil/water) SOIL Lab Sample ID: WJ1597-1
 Sample wt./vol: 30 (g/mL) G Lab File ID: 221309
 Level: (Low/med) LOW Date Received: 121793
 % Moisture: 5 Gasified: (Y/N) _____ Date Extracted: 121793
 Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794
 Injection Volume: 1 (uL) f Dilution Factor: UG 1.0
 GPC Cleanup: (Y/N) Y pH: _____ 010794

Number TICs found: 2 CONCENTRATION UNITS:
 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl-</u>	<u>4.28</u>	<u>440</u>	<u>JNP</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl-</u>	<u>5.41</u>	<u>30000</u>	<u>JNAB</u>
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SEMIQUANTITATIVE PRODUCTS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: ABB BX480915

Lab Code: _____ Case No.: _____ ESI No.: _____ SDS No.: _____

Matrix: (soil, water) SOIL Lab Sample ID: WJ1597-2

Sample wt/vol: 30 (g/mL) G Lab File ID: >21310

Level: (low/med) LOW Date Received: 12/793

% Moisture: 15 deaerated: (Y/N) _____ Date Extracted: 8/10/12/793

Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794

Injection Volume: 1 (uL) pH: _____ Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

Number TICs found: 2

CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl-</u>	<u>4.30</u>	<u>410</u>	<u>JNB</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl-</u>	<u>5.42</u>	<u>28000</u>	<u>JNAB</u>
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SEMIQUANTITATIVE ORGANIC ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: ABB BX480515

Lab Code: _____ Case No.: _____ SLS No.: _____ SDC No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: WJ1597-3

Sample Wt/Vol: 30 (g/mL) G Lab File ID: >21311

Level: (Low/med) LOW Date Received: 12/793

% Moisture: 8 decont: (Y/N) _____ Date Extracted: 12/793

Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794

Injection Volume: 1 (uL) 8 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 2 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl-</u>	<u>4.29</u>	<u>340</u>	<u>UNB</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl-</u>	<u>5.41</u>	<u>28000</u>	<u>UNAB</u>
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SEMIQUANTITATIVE ORGANICS ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: ABB BX480415

Lab Code: _____ Case No.: _____ Site No.: _____ SDI No.: _____

Matrix: (soil, water) SOIL Lab Sample ID: WJ1597-4

Sample wt/vol: 30 (g/mL) 6 Lab File ID: >21312

Level: (Low/med) LOW Date Received: 121793

% Moisture: 7 deaerated: (Y/N) _____ Date Extracted: 121793

Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794

Injection Volume: 1 (uL) f Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl</u>	<u>4.28</u>	<u>260</u>	<u>JNAB</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl</u>	<u>5.38</u>	<u>23000</u>	<u>JNAB</u>
3. <u>N/A</u>	<u>UNKNOWN</u>	<u>10.96</u>	<u>220</u>	<u>J</u>
4. <u>N/A</u>	<u>UNKNOWN</u>	<u>11.61</u>	<u>230</u>	<u>J</u>
5. <u>548328</u> <u>636</u>	<u>1H-Indene, octahydro-2,2,4,7-tetrahydronaphthalene</u>	<u>15.57</u>	<u>250</u> <u>550</u>	<u>JN</u>
6. <u>N/A</u>	<u>UNKNOWN</u>	<u>16.76</u>	<u>180</u>	<u>J</u>
7. <u>N/A</u>	<u>ALKANE</u>	<u>18.97</u>	<u>550</u>	<u>J</u>
8. <u>N/A</u>	<u>UNKNOWN</u>	<u>20.41</u>	<u>800</u>	<u>J</u>
9. <u>N/A</u>	<u>ALKANE</u>	<u>24.50</u>	<u>7700</u>	<u>J</u>
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Lab Name: CCAS Contract: ABB BX480630
Lab Code: _____ Case No.: _____ SLS No.: _____ SIG No.: _____
Matrix: (soil/water) SOIL Lab Sample ID: WJ1597-5
Sample Wt/Vol: 30 (g/mL) G Lab File ID: 721313
Level: (low/high) LOW Date Received: 121793
% Moisture: 16 Decanted: (Y/N) _____ Date Extracted: 121793
Concentrated Extract Volume: 500 (uL) Date Analyzed: 010794
Injection Volume: 1 (uL) 5 Dilution Factor: 1.0
GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>141797</u>	<u>3-Penten-2-one, 4-methyl-</u>	<u>4.30</u>	<u>350</u>	<u>JNB</u>
2. <u>123422</u>	<u>2-Pentanone, 4-hydroxy-4-methyl-</u>	<u>5.42</u>	<u>27000</u>	<u>JWAB</u>
3. <u>N/A</u>	<u>UNKNOWN</u>	<u>27.44</u>	<u>470</u>	<u>J</u>
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SEMIQUANTITATIVE ORGANICS ANALYSIS DATA SHEET
INITIALLY IDENTIFIED COMPOUNDS

BX481115

Lab Name: CCAS

Contract: ABB

Lab Code: _____

Case No.: _____

SAS No.: _____

SID No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: WJ1597-6

Sample wt/vol: 30 (g/mL) G

Lab File ID: 221314

Level: (Low/med) LOW

Date Received: 121793

% Moisture: 11 decont: (Y/N) _____

Date Extracted: 121793

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 010794

Injection Volume: 1 (uL) f

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 18

CONCENTRATION UNITS:
(ug/L or ug/kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141797	3-Penten-2-one	4.30	200	JNB
2. 123422	2-Pentanone, 4-hydroxy-4-methyl	5.36	17000	JNAB
3. N/A	UNKNOWN	9.75	280	J
4. 62338458	Bicyclo [2.2.2]octane, 1,2,3,6-tetramethyl	9.90	210	JN
5. N/A	UNKNOWN	10.02	210	J
6. N/A	UNKNOWN	10.55	290	J
7. N/A	Phthalate	10.83	290	J
8. N/A	UNKNOWN	10.98	310	J
9. N/A	UNKNOWN	11.28	230	J
10. N/A	UNKNOWN	11.61	840	J
11. 24949426	6-Tridecene, 7-methyl-	13.33	280	JN
12. 50876318	Cyclohexane, 1,1,3,5-tetramethyl	13.94	210	JN
13. N/A	UNKNOWN	14.37	430	J
14. N/A	Cyclohexane isomer	14.82	210	J
15. 54832836	1H-Indene, octahydro-2,2,4,4,7,7-hexamethyl	15.58	1300	JN
16. N/A	Alkane	15.90	220	J
17. N/A	Alkane	18.98	2100	J
18. N/A	Alkane	20.17	1800	J
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CLIENT: HERB COLBY
ABB-WAREFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAREFIELD, MA 01880

Lab Number : MJ-1597-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

Page 1 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BR480220	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	95.	wt %	1.0	0.10	CLP/CIP SOW	12/22/93	JF	1
Total Petroleum Hydrocarbons (TPH)	<25	mg/kgdrywt	1.0	25	9071/418.1	12/28/93	GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 12/21/93 by JF

(2) Sample Preparation on 12/27/93 by GH

01/26/94

LJO/gfb/djo/ang

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 2, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WD-1597-L
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480220	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								
Phenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	1,2
bis(2-Chloroethyl) ether	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Chlorophenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,4-Dichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzyl alcohol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylphenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Chloroisopropyl) ether	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Methylphenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
n-Nitroso-dipropylamine	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachloroethane	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 12/17/93 by LAG

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

rjw/kfg/jfg/lad

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CLIENT: HERE COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1697-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 3 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480220	Solid/Soil/ Sludge		B. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Isophorone	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1800.	µg/kgdrywt	1.1	1800	EPA 8270	01/07/94	TG	
bis(2-Chloroethoxy)methane	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Naphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylnaphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LJG/kfg/jfg/lad

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 138, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 4 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
RX480220	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	OF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
3-Chloronaphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitroaniline	<900.	µg/kgdrywt	1.1	830	EPA 8270	01/07/94	TG	
Dimethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3,6-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Acenaphthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
4-Nitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Dibenzofuran	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3,4-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

170/kg/3fg/1ad

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CLIENT: HERR COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 2, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PO No. : MSA-93-01-76-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 5 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE		RECEIVED	
EX480220	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93		12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluorene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
o-Nitrosodiphenylamine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
5-Bromophenyl phenyl ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Phenanthrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-butylphthalate	7180	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/lal

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CLIENT: HERS COLBY
ABB WAKEFIELD
CORPORATE PLACE 128, BUILDING 1, SUITE 25
WAKEFIELD, MA 01890

Lab Number : MJ-1597-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

Page 6 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480220	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
3,3'-Dichlorobenzidine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo (a) anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Chrysene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis (2-Ethylhexyl) phthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo (b) fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo (k) fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo (a) pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Indeno (1,2,3-cd) pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Dibenzo (a, h) anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo (g, h, i) perylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	66.	%	1.1		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	80.	%	1.1		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	57.	%	1.1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJU/lig/jfg/laa

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
BX480220	Solid/Soil/ Sludge	R. GILLESPIE	12/14/93	12/17/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	65.	%	1.1		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (%)	58.	%	1.1		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	79.	%	1.1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/35/94

LJO/kfg/jfg/lad

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CLIENT: HERS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-1
Report Date : 01/26/94
PO No. : MSA-93-01-75-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 8 of 64

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
RX480220	Solid/Soil/ Sludge	R. GILLESPIE	12/14/93 12/17/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
TCL Volatile Organics by USEPA							
8240							1
Chloromethane	<11	µg/kgdrywt	1.1	10	EPA 8240	12/19/93 DG	
Bromomethane	<11	µg/kgdrywt	1.1	10	EPA 8240	12/19/93 DG	
Vinyl chloride	<11	µg/kgdrywt	1.1	10	EPA 8240	12/19/93 DG	
Chloroethane	<11	µg/kgdrywt	1.1	10	EPA 8240	12/19/93 DG	
Methylene chloride	<11	µg/kgdrywt	1.1	10	EPA 8240	12/19/93 DG	
Acetone	<17	µg/kgdrywt	1.1	15	EPA 8240	12/19/93 DG	
Carbon disulfide	<11	µg/kgdrywt	1.1	10	EPA 8240	12/19/93 DG	
1,1-Dichloroethene	<6	µg/kgdrywt	1.1	5	EPA 8240	12/19/93 DG	
1,1-Dichloroethane	<6	µg/kgdrywt	1.1	5	EPA 8240	12/19/93 DG	
Total 1,2-Dichloroethene	<5	µg/kgdrywt	1.1	5	EPA 8240	12/19/93 DG	
Chloroform	<6	µg/kgdrywt	1.1	5	EPA 8240	12/19/93 DG	
1,2-Dichloroethane	<6	µg/kgdrywt	1.1	5	EPA 8240	12/19/93 DG	
2-Butanone	<17	µg/kgdrywt	1.1	15	EPA 8240	12/19/93 DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "U" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

LFO/kfg/jfg/kwh

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-1
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143,00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480220	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	JI	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Carbon tetrachloride	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Vinyl acetate	<17.	ug/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
Bromodichloromethane	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,2-Dichloropropane	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
cis-1,3-Dichloropropene	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Trichloroethene	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Dibromochloromethane	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,1,2-Trichloroethane	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Benzene	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
trans-1,3-Dichloropropene	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Bromoform	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
4-Methyl-2-pentanone	<17.	ug/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
2-Hexanone	<17.	ug/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
Tetrachloroethene	<6.	ug/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/lifg/jig/kwh

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-1
Report Date: 01/26/94
DO No. : MSA 93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX480220	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG	
Toluene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG	
Chlorobenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG	
Ethylbenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG	
Styrene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG	
Total Xylenes	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG	
1,2-Dichloroethane (% Recovery)	93.	%	1.1		EPA 8240	12/19/93	DG	
Toluene-d8 (% Recovery)	98.	%	1.1		EPA 8240	12/19/93	DG	
p-Bromofluorobenzene (%)	97.	%	1.1		EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LW/KG/jfg/jwm

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 11 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BR480115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	85	wt %	1.0	0.10	CLP/CLP 90W	12/22/93	JF	1
Total Petroleum Hydrocarbons (TPH)	90	mg/kgdrywt	1.0	25	9071/418.1	12/28/93	GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 12/21/93 by JF

(2) Sample Preparation on 12/27/93 by GH

01/26/94

LJO/gfb/djn/mg

CLIENT: HERB COLEY
ARR-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
PO No. : WSA-93-01-78-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 11 of 61

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
EX480115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED BY	NOTES
ICL Semivolatile Organics by USEPA 8270							1,2
Phenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
bis(2-Chloroethyl) ether	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
2-Chlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
1,3-Dichlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
1,4-Dichlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
Benzyl alcohol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
1,2-Dichlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
2-Methylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
bis(2-Chloroisopropyl) ether	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
4-Methylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
n-Nitroso-dipropylamine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
Hexachloroethane	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 12/17/93 by LAG

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

LTD/kg/jtg/lad

CLIENT: HERS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 129, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 13 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX490115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Isophorone	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1500.	µg/kgdrywt	1,2	1500	EPA 8270	01/07/94	TG	
bis(2-Chloroethoxy)methane	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Naphthalene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
2-Methylnaphthalene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	

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01/26/94

LDO/kfg/jfg/lad

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : W7-1597-2
Report Date: 01/26/94
TO No. : WSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 14 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX480115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<980.	µg/kgdrywt	1.2	980	EPA 8270	01/07/94	TG	
2-Chloronaphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Nitroaniline	<980.	µg/kgdrywt	1.2	980	EPA 8270	01/07/94	TG	
Dimethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,6-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
3-Nitroaniline	<980.	µg/kgdrywt	1.2	980	EPA 8270	01/07/94	TG	
Acenaphthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<980.	µg/kgdrywt	1.2	980	EPA 8270	01/07/94	TG	
4-Nitrophenol	<980.	µg/kgdrywt	1.2	980	EPA 8270	01/07/94	TG	
Dibenzofuran	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

150/kg/1 Eq/lad

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CLIENT: HERSH COLEBY
ABB-WAYFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 22
WAYFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
EQ No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX48Q115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Fluorene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<980.	ug/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<980.	ug/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
n-Nitrosodiphenylamine	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<980.	ug/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Phenanthrene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Anthracene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Di-n-butylphthalate	U130	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Fluoranthene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Pyrene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

TG/kg/jfg/Lab

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CLIENT: KERR OXLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
EO No. : MSA-93-01-78-MJ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX460115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
3,3'-Dichlorobenzidine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(a)anthracene	<400.	µg/kgdrywt	1.2	130	EPA 8270	01/07/94	TG	
Chrysene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl) phthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(b)fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(k)fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(a)pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Indeno(1,2,3-cd)pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Dibenzo(a,h)anthracene	<400.	µg/kgdrywt	1.2	130	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	65.	%	1.2		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	80.	%	1.2		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	65.	%	1.2		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LJO/kfg/jig/lad

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 17 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX480115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	59.	%	1.2		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (%)	70.	%	1.2		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	76.	%	1.2		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/lad

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CLIENT: HERB COLEY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	OF	*PQL	METHOD	ANALYZED	BY	NOTES
FCL Volatile Organics by USEPA								
8240								1
Chloromethane	<12.	ug/kgdrywt	1,2		10 EPA 8240	12/19/93	DG	
Bromomethane	<12.	ug/kgdrywt	1,2		10 EPA 8240	12/19/93	DG	
Vinyl chloride	<12.	ug/kgdrywt	1,2		10 EPA 8240	12/19/93	DG	
Chloroethane	<12.	ug/kgdrywt	1,2		10 EPA 8240	12/19/93	DG	
Methylene chloride	<12.	ug/kgdrywt	1,2		10 EPA 8240	12/19/93	DG	
Acetone	<18.	ug/kgdrywt	1,2		15 EPA 8240	12/19/93	DG	
Carbon disulfide	<12.	ug/kgdrywt	1,2		10 EPA 8240	12/19/93	DG	
1,1-Dichloroethene	<6.	ug/kgdrywt	1,2		5 EPA 8240	12/19/93	DG	
1,1-Dichloroethane	<6.	ug/kgdrywt	1,2		5 EPA 8240	12/19/93	DG	
Total 1,2-Dichloroethene	<6.	ug/kgdrywt	1,2		5 EPA 8240	12/19/93	DG	
Chloroform	<6.	ug/kgdrywt	1,2		5 EPA 8240	12/19/93	DG	
1,2-Dichloroethane	<6.	ug/kgdrywt	1,2		5 EPA 8240	12/19/93	DG	
2-Butene	<18.	ug/kgdrywt	1,2		15 EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents Laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.
(1) "C" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

LTD/kgg/jgg/kww

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CLIENT: HERR COLBY
 ARE-WAKEFIELD
 CORPORATE PLACE 128, BUILDING 3, SUITE 25
 WAKEFIELD, MA 01880

Lab Number : WO-1597-2
 Report Date: 01/26/94
 PO No. : MSA-93-01-78-M0
 Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BK480115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	JD	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Carbon tetrachloride	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Vinyl acetate	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/19/93	DG	
Bromodichloromethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
1,2-Dichloropropane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
cis-1,3-Dichloropropene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Trichloroethene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Dibromochloromethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
1,1,2-Trichloroethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Benzene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
trans-1,3-Dichloropropene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Bromoform	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
4-Methyl-2-pentanone	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/19/93	DG	
2-Hexanone	<18.	µg/kgdrywt	1.2		15 EPA 8240	12/19/93	DG	
Tetrachloroethene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

µg/kgg/jfg/lswh

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-2
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX#80115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Toluene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Chlorobenzene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Ethylbenzene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Styrene	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
Total Xylenes	<6.	µg/kgdrywt	1.2		5 EPA 8240	12/19/93	DG	
1,2-Dichloroethane (% Recovery)	92.	%	1.2		EPA 8240	12/19/93	DG	
Toluene-d8 (% Recovery)	108.	%	1.2		EPA 8240	12/19/93	DG	
p-Bromofluorobenzene (%)	92.	%	1.2		EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJD/kg/jfg/kwt



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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PO No. : MSA-93-01-78-PL
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
SX480515	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	92	wt %	1.0	0.10	CLP/CIP SOW	12/22/93 JF	1
Total Petroleum Hydrocarbons (TPH)	<25	mg/kgdrywt	1.0	25	9071/418.1	01/04/94 GH	2

* PQL (Practical Quantitation Level) represents Laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 12/21/93 by JF

(2) Sample Preparation on 12/30/93 by GH

01/26/94

LJO/gfb

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480515	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
TCL Semivolatile Organics by								
USEPA 8270								1/2
Phenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Chloroethyl) ether	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Chlorophenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,4-Dichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzyl alcohol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylphenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Chloroisopropyl) ether	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Methylphenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
n-Nitroso-dipropylamine	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachloroethane	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (<) values.

(1) Sample Preparation on 12/17/93 by LAG

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

µg/kg/jfg/lss

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CLIENT: HERS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 35
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PG No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480515	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Isophorone	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1800.	µg/kgdrywt	1.1	1600	EPA 8270	01/07/94	TG	
bis (2-Chloroethoxy)methane	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Naphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylnaphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJD/kfg/jfg/lwl

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1557-3
Report Date: 01/26/94
PC No. : MSA-93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
BX480515	Solid/soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
2,4,6-Trichlorophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
2,4,5-Trichlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG
2-Chloronaphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
2-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG
Dimethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
Acenaphthylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
2,6-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
3-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG
Acenaphthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
2,4-Dinitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG
4-Nitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG
Dibenzofuran	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
2,4-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG
Diethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LWQ/kfg/jfg/lad

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CLIENT: HERB COLBY
ASH-WAKEFIELD
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WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX480515	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluorene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<900.	ug/kgdrywt	1.1	920	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<900.	ug/kgdrywt	1.1	920	EPA 8270	01/07/94	TG	
m-Nitrosodiphenylamine	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<900.	ug/kgdrywt	1.1	920	EPA 8270	01/07/94	TG	
Phenanthrene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Anthracene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-butylphthalate	381	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluoranthene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pyrene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/28/94

fjn/kg/jfg/lad

CLIENT: HERR COLBY
ARR-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1587-3
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE		RECEIVED
BA480515	Solid/Soil/ Sludge			B. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
3,3'-Dichlorobenzidine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a)anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Chrysene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl) phthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(b)fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(k)fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a)pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Indeno(1,2,3-cd)pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Dibenzo(a,h)anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	57.	%	1.1		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	74.	%	1.1		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	57.	%	1.1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

100/100/100/100

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Fax (207) 775-4029

CLIENT: HERB COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597.3
Report Date: 01/26/94
PO No. : MEA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BX480515	Solid/Soil/ Sludge			R. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	59.	%	1.1		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (%)	57.	%	1.1		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	71.	%	1.1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LJO/ksfg/jfg/lad

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CLIENT: HERB COLEY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PO No. : MSA-93-01-78-W1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480515	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA								
8240								
Chloromethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/19/93	DG	
Bromomethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/19/93	DG	
Vinyl chloride	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/19/93	DG	
Chloroethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/19/93	DG	
Methylene chloride	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/19/93	DG	
Acetone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
Carbon disulfide	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/19/93	DG	
1,1-Dichloroethene	<5.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,1-Dichloroethane	<5.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Total 1,2-Dichloroethene	<5.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Chloroform	<5.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,2-Dichloroethane	<5.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
2-Butanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
1,1,1-Trichloroethane	<5.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

01/26/94

LJD/efg/jfg/kwa

CLIENT: HERB COLBY
ARE-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 35
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3
Report Date: 01/26/94
PO No. : MSA-93-01-79-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX480515	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Vinyl acetate	<6.	µg/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
Bromodichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,2-Dichloropropane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
cis-1,3-Dichloropropane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Trichloroethene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Dibromochloromethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,1,2-Trichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Benzene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
trans-1,3-Dichloropropane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Bromoform	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
4-Methyl-2-pentanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
2-Hexanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/19/93	DG	
Tetrachloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	
Toluene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/kwh

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CLIENT: HERB COLEY
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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-3

Report Date: 01/26/94

PO No. : MSA-93-DI-78-MI

Project : 7143,00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
EX480519	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Chlorobenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG
Ethylbenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG
Styrene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG
Total Xylenes	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/19/93	DG
1,2-Dichloroethane (% Recovery)	89.	%	1.1		EPA 8240	12/19/93	DG
Toluene-d8 (% Recovery)	105.	%	1.1		EPA 8240	12/19/93	DG
p-Bromofluorobenzene (%)	92.	%	1.1		EPA 8240	12/19/93	DG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

100/kgg/jgg/kwt

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED	
BX480415		Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	93.	wt %	1.0	0.10	CLP/CIP 80W	12/12/93 JF	1
Total Petroleum Hydrocarbons (TPH)	180.	mg/kgdrywt	1.0	25	9071/418.1	01/04/94 GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 12/21/93 by JF

(2) Sample Preparation on 01/03/94 by GH

01/26/94

LLO/gib

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
Report Date: 01/26/94
EQ No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
BX460415	Solid/Soil/ Sludge	F. GILLESPIE	12/15/93	12/17/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								
Phenol	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
bis(2-Chloroethyl) ether	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
2-Chlorophenol	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
1,4-Dichlorobenzene	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
Benzyl alcohol	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
2-Methylphenol	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
bis(2-Chloroisopropyl) ether	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
4-Methylphenol	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
n-Nitroso-dipropylamine	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	
Hexachloroethane	<360.	ug/kgdrywt	1.1		330 EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 12/17/93 by LAG

(2) "U" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

LJP/kfg/jfg/ldd

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : W7-1597-4
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 33 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
PX480415	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Isophorone	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzoic acid	<800.	µg/kgdrywt	1.1	1600	EPA 8270	01/07/94	TG	
bis(2-Chloroethoxy)methane	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Naphthalene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylnaphthalene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

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LLO/xfg/jfg/lac



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CLIENT: HERR COLBY
 ARE WAKEFIELD
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 WAKEFIELD, MA 01880

Lab Number : WT-1597-4
 Report Date: 01/26/94
 PO No. : MSA-93-01-78-MI
 Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX480415	Solid/Soil/ Sludge			R. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
3-Chloronaphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Dimethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3,6-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Acenaphthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
4-Nitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Dibenzofuran	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

1.00/kg/jfg/laul



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CLIENT: HERB COLEY
 ABB-WAKEFIELD
 CORPORATE PLACE 128, BUILDING 1, SUITE 25
 WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
 Report Date: 01/26/94
 PO No. : MSA-93-01 78-MI
 Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 35 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
HR480415	Solid/Soil/ Sludge			R. GILLESPIE		12/15/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluorene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
m-Nitrosodiphenylamine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Phenanthrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-butylphthalate	J100	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	J210	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

01/26/94

LJC/kfg/jfg/ldl



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CLIENT: REFE COLBY
 ABB-WAKEFIELD
 CORPORATE PLACE 128, BUILDING 3, SUITE 25
 WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
 Report Date: 01/26/94
 PO No. : MSA-93-01-78-MJ
 Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 36 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BX480415	Solid/Soil/ Sludge			R. GILLESPIE		12/16/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
3,3'-Dichlorobenzidide	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a)anthracene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Chrysene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl)phthalate	5190	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(b)fluoranthene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(k)fluoranthene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a)pyrene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Indeno(1,2,3-cd)pyrene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Dibenzo(a,h)anthracene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	55.	%	1.1		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	60.	%	1.1		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	47.	%	1.1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

WJD/kfg/jfg/lad

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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 26

WAKEFIELD, MA 01880

Lab Number : WO-1597-4

Report Date: 01/26/94

PO No. : MBA-93-01-78-M1

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 37 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED	
EX480415		Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
2-Fluorobiphenyl (% Recovery)	56.	%	1.1		EPA 8270	01/07/94	TG
2,4,6-Tribromophenol (%)	49.	%	1.1		EPA 8270	01/07/94	TG
Terphenyl-d14 (% Recovery)	61.	%	1.1		EPA 8270	01/07/94	TG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/lad

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CLIENT: HEPB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
Report Date : 01/26/94
PO No. : MBA 93-01-78-M1
Project : 7143 00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
BK480415	Solid/Soil/ Sludge	R. GILLESPIE	12/25/93	12/17/93

PARAMETER	RESULT	UNITS	DE	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by US EPA								
8240								
Chloromethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Bromomethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Vinyl chloride	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Chloroethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Methylene chloride	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Acetone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
Carbon disulfide	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
1,1-Dichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,1-Dichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Total 1,2-Dichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Chloroform	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,2-Dichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
2-Butanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
1,1,1-Trichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

µg/kg/g/g/kwh

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BM480415	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Vinyl acetate	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
Bromodichloromethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,2-Dichloropropane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
cis-1,3-Dichloropropene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Trichloroethene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Dibromochloromethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,1,2-Trichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Benzene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
trans-1,3-Dichloropropene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Bromoform	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
4-Methyl-2-pentanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
2-Hexanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
Tetrachloroethene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Toluene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LJO/kfg/jfg/kwn

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-4
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480415	Solid/Soil/ Sludge		R. GILLESPIE		12/15/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chlorobenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG	
Ethylbenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG	
Styrene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG	
Total Xylenes	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG	
1,2-Dichloroethane (% Recovery)	90.	%	1.1		EPA 8240	12/20/93	DG	
Toluene-d8 (% Recovery)	104.	%	1.1		EPA 8240	12/20/93	DG	
p-Bromofluorobenzene (%)	79.	%	1.1		EPA 8240	12/20/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/lwh

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CLIENT: REBE COLEY

ARB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1597-5

Report Date: 01/26/94

PO No. : MSA-93-01-78-MD

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
EX480630	Solid/Soil/ Sludge		R. GILLESPIE		12/16/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	84.	wt %	1.0	0.10	CLP/CIP SOW	12/22/93 JF	1
Total Petroleum Hydrocarbons (TPH)	<25	mg/kgdrywt	1.0	25	9071/418.1	01/04/94 GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (<) values.

(1) Sample Preparation on 12/21/93 by JF

(2) Sample Preparation on 01/03/94 by GH

01/26/94

WJ/gfb

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 35
WAKEFIELD, MA 01880

Lab Number : WJ-1597-8
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
BX480630	Solid/Soil/ Sludge	R. GILLESPIE	12/16/93	12/17/93

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED BY	NOTES
TCL Semivolatile Organics by USEPA 8270							1,2
Phenol	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
bis(2-Chloroethyl)ether	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
2-Chlorophenol	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
1,3-Dichlorobenzene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
1,4-Dichlorobenzene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
Benzyl alcohol	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
1,2-Dichlorobenzene	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
2-Methylphenol	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
bis(2-Chloroisopropyl) ether	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
4-Methylphenol	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
n-Nitroso-dipropylamine	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG
Hexachloroethane	<400.	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '=' values.

(1) Sample Preparation on 12/17/93 by IAG

(2) "T" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

LJO/KZg/jfg/lsg

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5
Report Date: 01/26/94
PO No. : MSA-93-01-78-MU
Project : 7143/00

REPORT OF ANALYTICAL RESULTS

Page 43 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX480630	Solid/Soil/ Sludge		R. GILLESPIE		12/16/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Isophorone	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1900.	µg/kgdrywt	1.2	1600	EPA 8270	01/07/94	TG	
bis(2-Chloroethoxy)methane	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Naphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Methylnaphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LWD/jfg/jfg/lac

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CLIENT: HERB COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-S
Report Date: 01/26/94
EO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BK480630	Solid/Soil/ Sludge			R. GILLESPIE		12/16/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
2-Chloronaphthalene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Nitroaniline	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Dimethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,6-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
3-Nitroaniline	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Acenaphthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
4-Nitrophenol	<980.	µg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG	
Dibenzofuran	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2,4-Dinitrotoluene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LWD/kfg/jfg/lad

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CLIENT: HERB COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143:00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480630	Solid/Soil/ Sludge		R. GILLESPIE		12/16/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Fluorene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<980.	µg/kgdrywt	1,2	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<980.	µg/kgdrywt	1,2	820	EPA 8270	01/07/94	TG	
n-Nitrosodiphenylamine	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<980.	µg/kgdrywt	1,2	820	EPA 8270	01/07/94	TG	
Phenanthrene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Anthracene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Di-n-butylphthalate	099	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Fluoranthene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Pyrene	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
Buryl benzylphthalate	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LTD/kcg/jig/ldd

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CLIENT: HERR COLBY
ASB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5
Report Date: 01/25/94
PO No. : MSA-93-01-78-01
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BN480630	Solid/Soil/ Sludge		R. GILLESPIE		12/16/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
2,3'-Dichlorobenzidine	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(a)anthracene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Chrysene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl)phthalate	J49	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(b)fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(k)fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Benzo(a)pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Indeno(1,2,3-cd)pyrene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Dibenzo(a,h)anthracene	<400.	µg/kgdrywt	1.2	230	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	65.	%	1.2		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	71.	%	1.2		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	60.	%	1.2		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/25/94

LJO/kfg/jfg/lad

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE		RECEIVED
BX480630	Solid/Soil/ Sludge			R. GILLESPIE		12/16/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	50.	%	1.2		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (%)	63.	%	1.2		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	76.	%	1.2		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

01/26/94.

LJO/rfg/jfg/lad

CLIENT: HERR COLBY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5

Report Date: 01/26/94

PO No. : MSA-93-01-79-MI

Project : 7143-00

REPORT OF ANALYTICAL RESULTS

Page 48 of 64

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
BX480630	Solid/Soil/ Sludge	R. GILLESPIE	12/16/93	12/17/93

PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED BY	NOTES
TCL Volatile Organics by USEPA 8240							
Chloromethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/19/93	DG
Bromomethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/19/93	DG
Vinyl chloride	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/19/93	DG
Chloroethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/19/93	DG
Methylene chloride	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/19/93	DG
Acetone	<18.	ug/kgdrywt	1.2	15	EPA 8240	12/19/93	DG
Carbon disulfide	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/19/93	DG
1,1-Dichloroethene	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/19/93	DG
1,1-Dichloroethane	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/19/93	DG
Total 1,2-Dichloroethene	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/19/93	DG
Chloroform	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/19/93	DG
1,2-Dichloroethane	<6.	ug/kgdrywt	1.2	5	EPA 8240	12/19/93	DG
2-Butanone	<18.	ug/kgdrywt	1.2	15	EPA 8240	12/19/93	DG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '(x)' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

LJO/lfg/jfg/lw/l

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01850

Lab Number : WJ-1597-5
Report Date: 01/26/94
PO No. : MSA-93-01-78-001
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480630	Solid/Soil/ Sludge		R. GILLESPIE		12/16/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<4	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
Carbon tetrachloride	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
Vinyl acetate	<15	µg/kgdrywt	1.2	15	EPA 8240	12/19/93	DG	
Bromodichloromethane	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
1,2-Dichloropropane	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
cis-1,3-Dichloropropene	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
Trichloroethene	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
Dibromochloromethane	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
1,1,2-Trichloroethane	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
Benzene	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
trans-1,3-Dichloropropene	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
Bromoform	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	
4-Methyl-2-pentanone	<15	µg/kgdrywt	1.2	15	EPA 8240	12/19/93	DG	
2-Hexanone	<15	µg/kgdrywt	1.2	15	EPA 8240	12/19/93	DG	
Tetrachloroethane	<6	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LTD/kg/g/gg/kwt

CLIENT: HERB COLBY
AMB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5
Report Date: 01/26/94
PO No. : MSA-93-01-78-nl
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
EX480630	Solid/Soil/ Sludge		R. GILLESPIE		12/16/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
1,1,2,2-Tetrachloroethane	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/19/93	DG
Toluene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/19/93	DG
Chlorobenzene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/19/93	DG
Ethylbenzene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/19/93	DG
Styrene	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/19/93	DG
Total Xylenes	<6.	µg/kgdrywt	1,2		5 EPA 8240	12/19/93	DG
1,2-Dichloroethane (% Recovery)	96.	%	1,2		EPA 8240	12/19/93	DG
Toluene-d8 (% Recovery)	96.	%	1,2		EPA 8240	12/19/93	DG
p-Bromofluorobenzene (%)	95.	%	1,2		EPA 8240	12/19/93	DG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LWD/kfg/jfg/kwn

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CLIENT: HEBB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 51 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
BN491115	Solid/Soil/ Sludge			B. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	88.	wt %	1.0	0.10	CLP/CIP SOW	12/22/93	JF	1
Total Petroleum Hydrocarbons (TPH)	110.	mg/kgdrywt	1.0	25	9071/418-1	01/04/94	GH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 's' values.

(1) Sample Preparation on 12/21/93 by JF

(2) Sample Preparation on 01/03/94 by GH

01/26/94

LJO/glb

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CLIENT: HERS COLBY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

Page 52 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
EX481115	Solid/Soil/ Sludge		B. GILLESPIE		12/14/93		12/17/93	
PARAMETER	RESULT	UNITS	DE	*PQL	METHOD	ANALYZED	BY	NOTES
VCL Semivolatile Organics by USEPA 8270								
Phenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	1.2
bis(2-Chloroethyl) ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Chlorophenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,4-Dichlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzyl alcohol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Chloroisopropyl) ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Methylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
n-Nitroso-dipropylamine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachloroethane	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "u" values.

(1) Sample Preparation on 12/17/93 by LAG

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

01/26/94

1J0/kfg/jfg/lad

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CLIENT: HERR COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : NJ-1597-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE		RECEIVED	
8X481115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<160.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Isophorone	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitrophenol	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dimethylphenol	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1800.	ug/kgdrywt	1.1	1600	EPA 8270	01/07/94	TG	
bis(2-Chloroethoxy)methane	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
1,2,4-Trichlorobenzene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Naphthalene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloroaniline	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3-Methylnaphthalene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/lad

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Fax (207) 775-4030

CLIENT: HERB COLBY
ABB WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1997-6
Report Date: 01/26/94
PI No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 54 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX481115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*RQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<160.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
2-Chloronaphthalene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Dimethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Acenaphthylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,6-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
3-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Acenaphthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
4-Nitrophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Dibenzofuran	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dinitrotoluene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* RQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

100/kg/1kg/1kg

CLIENT: HERR COLBY
AEP-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-5
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BY461115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	+PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluorene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Nitroaniline	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
4,6-Dinitro-2-methylphenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
n-Nitrosodiphenylamine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Bromophenyl phenyl ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pentachlorophenol	<900.	µg/kgdrywt	1.1	820	EPA 8270	01/07/94	TG	
Phenanthrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-butylphthalate	076	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Butyl benzylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LWN/kg/jfg/led

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 2S
WAKEFIELD, MA 01860

Lab Number : WJ-1597-E
Report Date: 01/26/94
PQ No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
SX481115	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,3'-Dichlorobenzidine	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a)anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Chrysene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl)phthalate	3360	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Di-n-octylphthalate	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(b)fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(k)fluoranthene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a)pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Indeno(1,2,3-cd)pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Dibenzo(a,h)anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Fluorophenol (% Recovery)	40.	%	1.1		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	45.	%	1.1		EPA 8270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	37.	%	1.1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

130/kg/5fg/1ad

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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1597-6

Report Date: 01/26/94

PO No. : MSA-93-01-78-MI

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
BX481115		Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	41.	%	1,1		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (%)	39.	%	1,1		EPA 8270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	54.	%	1,1		EPA 8270	01/07/94	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LJG/kfg/jfg/lad

CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 58 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX481115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								1, 2, 3, 4
Chloromethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Bromomethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Vinyl chloride	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Chloroethane	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Methylene chloride	JB6	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
Acetone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
Carbon disulfide	<11.	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG	
1,1-Dichloroethene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,1-Dichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Total 1,2-Dichloroethene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.
- (1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
 - (2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
 - (3) Internal standard area(s) are out of criteria. Reanalysis confirmed matrix interference.
 - (4) "S" flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.

01/26/94

LJO/kfg/jfg/lwh

CLIENT: HEBB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01860

Lab Number : WJ-1597-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 59 of 61

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
EX481115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chloroform	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,2-Dichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
2-Butanone	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
1,1,1-Trichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Carbon tetrachloride	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Vinyl acetate	<17.	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG	
Bromodichloromethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,2-Dichloropropane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
cis-1,3-Dichloropropene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Trichloroethene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
Dibromochloromethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	
1,1,2-Trichloroethane	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

01/26/94

LJO/xfg/jfg/wh

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CLIENT: HEBB COLBY
ABB-WAKEFIELD
CORPORATE PLAZA 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1897-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 60 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
EX481115	Solid/Soil/ Sludge			R. GILLESPIE		12/14/93	12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Benzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
trans-1,3-Dichloropropene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
Bromoform	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
4-Methyl-2-pentanone	<17.	µg/kgdrywt	1.1		15 EPA 8240	12/20/93	DG
2-Hexanone	<17.	µg/kgdrywt	1.1		15 EPA 8240	12/20/93	DG
Tetrachloroethene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
1,1,2,2-Tetrachloroethane	14	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
Toluene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
Chlorobenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
Ethylbenzene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
Styrene	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG
Total Xylenes	<6.	µg/kgdrywt	1.1		5 EPA 8240	12/20/93	DG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

01/26/94

LJC/kfg/jfg/bwh

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-6
Report Date: 01/26/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 61 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
BA482115		Solid/Soil/ Sludge		R. GILLESPIE		12/14/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,2-Dichloroethane (% Recovery)	91.	%	1.1		EPA 8240	12/20/93	DG	
Toluene-d8 (% Recovery)	\$134	%	1.1		EPA 8240	12/20/93	DG	
p-Bromofluorobenzene (%)	\$54	%	1.1		EPA 8240	12/20/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/l:fg/jfg/awh

CLIENT: MERR COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 2, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-7
Report Date: 01/26/94
PC No. : MSA-93-03-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 53 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
TER42N02	Aqueous			R. GILLESPIE		12/16/93	12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED BY	NOTES
VCL Volatile Organics by USEPA 8240							
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	12/18/93	DG
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	12/18/93	DG
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	12/18/93	DG
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	12/18/93	DG
Methylene chloride	<10.	µg/L	1.0	10	EPA 8240	12/18/93	DG
Acetone	<15.	µg/L	1.0	15	EPA 8240	12/18/93	DG
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	12/18/93	DG
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
Chloroform	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	12/18/93	DG
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	12/18/93	DG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values

01/26/94

LJD/kfg/jfg/kwh

CLIENT: HERB COLEY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1527-7
Report Date: 01/26/94
EO No. : MSA-93-01-78-MQ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 53 of 64

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
18948N03	Aqueous			R. GILLESPIE		12/16/93	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	12/18/93	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	12/18/93	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Toluene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	12/18/93	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

LJO/kfg/jfg/kwb

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WJ-1597-7
Report Date: 01/26/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 64 of 66

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED			
T8K26N02	Aqueous			R. GILLERSPIE		12/16/93	12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
Total Xylenes	<5.	µg/L	1.0		5 EPA 8240	12/18/93	DG		
1,2-Dichloroethane (% Recovery)	102.	%	1.0		EPA 8240	12/18/93	DG		
Toluene-d8 (% Recovery)	98.	%	1.0		EPA 8240	12/18/93	DG		
p-Bromofluorobenzene (% Recovery)	94.	%	1.0		EPA 8240	12/18/93	DG		

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

WJO/kfg/jfg/bwt

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Laura J. O'Meara
Laura J. O'Meara
Supervisor, Client Services

4BB-ES

REVISED ON 4-15-84

CENED-ED-GL-2
SAMPLE CONTAINER RECEIPT FORM

PROJECT: SA48 Fort Devens 7143.00 ✓

Container received on 12/7/93 and inspected on 12/7/93 by: K. A. Dijk

1. Shipper (USM, UPS, DHL, FIDEX, P/C, AIR EXP, HAND-DELIVERED)
2. Container type (cooler, box, envelope, etc.) _____
3. Were custody seals on outside of container? N/A Yes No
 How many & where: 2 FRONT - BACK - TOP N/A seal date: DATE seal name: DATE
FRONT - BACK - TOP - BOTTOM - SIDE - INSIDE
4. Were custody papers taped to lid inside container? N/A Yes No
5. Custody papers properly filled out? (ink, signed, etc.) Yes No
6. Was project identifiable from custody papers? Yes No
7. Did you sign custody papers in appropriate place? Yes No
8. Did you attach shipper's packing form to this form? N/A Yes No
9. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)
10. Was sufficient ice used? Temperature _____ °C upon arrival N/A Yes No
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. Did all sample labels agree with custody papers? Yes No
15. Were correct sample containers used for tests indicated? N/A Yes No
16. Were correct preservatives used? (TM pH____, CN- pH____) N/A Yes No
 (TOC pH____, NUTRIENT pH____, TOX pH____, TPH pH____, OTHER pH____)
17. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
18. Was sufficient amount of sample sent in each container? 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: (1) NO TEMPERATURE VIALS WERE SENT IN COOLER, BUT ICE & PACKS WERE
INITIALS (3) 4848015 - USE FOR TOX, SVOC, & VOC, BUT NOT ON AIR, BUT OUT OF THE 2
BOTTLES REQ'D. ONE FOR TOX & SVOC - THE OTHER FOR SVOC. (2) 4848115 - 2 JUE BOTTLES WERE
SITE ID'S WERE NOTED IN BOTTLES AS 4848115 INSTEAD OF 4848115.

Page 1 of 1

OH-52

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Fax (207) 775-4020

February 14, 1994

Mr. Herb Colby
ABB-Wakefield
Corporate Place 128
Building 3, Suite 25
Wakefield, MA 01880

Dear Mr. Colby:

WORK ORDER NUMBER: WK0032

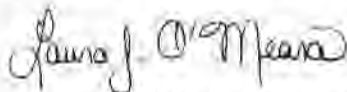
Please find enclosed the Report of Analysis (ROA) for the samples received by the laboratory on January 12, 1994. This cover letter is an integral part of the ROA.

Sample results are reported on our Laboratory Information Management System (LIMS) Report of Analysis. Results are presented by sample and by analytical group. PQLs, methods, dilution factors, dates of preparation and analysis as well as any applicable footnotes all appear on the page(s) where the parameter is reported. Samples and associated QC samples were analyzed in accordance with the methods noted on the Report of Analysis and met CCAS internal quality control criteria except as noted on the Report of Analysis. Analytical data were reviewed and approved for final reporting; an approval signature appears on the final page of the Report of Analysis.

If you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact me. We appreciate your continued use of our laboratory for your analytical needs and look forward to working with you in the future.

Sincerely,

Coast-to-Coast Analytical Services, Inc.



Laura J. O'Meara, Supervisor
Client Services

LJO/dmt

Enclosure

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CLIENT: HERB COLBY
ABB WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0033-1
Report Date: 02/14/94
EO No. : MSA-93-01-78-02
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 1 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MM4804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Aluminum, Total	0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	2
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	3
Antimony, Total	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	3
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	205.2/7060	01/21/94	KW	4
Arsenic, Total	<0.005	mg/L	1.0	0.005	205.2/7060	01/21/94	KW	5
Barium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Barium, Total	0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	2
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	2
Cadmium, Dissolved	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	4
Cadmium, Total	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	5

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

- (1) Sample Preparation on 01/20/94 by JCD using 3010
- (2) Sample Preparation on 01/21/94 by JCD using 3010
- (3) Sample Preparation on 01/25/94 by JCD using 3010
- (4) Sample Preparation on 01/20/94 by JCD using 3020
- (5) Sample Preparation on 01/21/94 by JCD using 3020

02/14/94

LCO/gfh
6A20ICPXW1

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Northeastern Division
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Fax (207) 775-4029

CLIENT: KERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED			
MT4804XI	Aqueous			CLIENT		01/07/94	01/12/94		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
Calcium, Dissolved	9.0	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1	
Calcium, Total	9.0	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	2	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1	
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/03/94	KW	2	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1	
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	2	
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1	
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	2	
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/04/94	KW	1	
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	2	
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.3/7421	01/21/94	KW	3	
Lead, Total	<0.005	mg/L	1.0	0.005	239.3/7421	01/25/94	KW	4	
Magnesium, Dissolved	1.1	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "L" values.

- (1) Sample Preparation on 01/20/94 by JCD using 3010
- (2) Sample Preparation on 01/21/94 by JCD using 3010
- (3) Sample Preparation on 01/20/94 by JCD using 3020
- (4) Sample Preparation on 01/21/94 by JCD using 3020

02/14/94

LJO/gfb
KA201020W1

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340 County Road, No. 5 • P.O. Box 726 • Westbrook, ME 04098

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : W8-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 3 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Magnesium, Total	1.1	mg/L	1.0	0.050	200.7/6010	02/03/94	KW	1
Manganese, Dissolved	0.021	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	2
Manganese, Total	0.021	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Mercury, Dissolved	<0.30	µg/L	1.0	0.30	245.1	02/01/94	JD	3
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	3
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	02/04/94	KW	2
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	1
Potassium, Dissolved	1.5	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Potassium, Total	1.6	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	4
Selenium, Total	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

- (1) Sample Preparation on 01/21/94 by JCD using 3010
- (2) Sample Preparation on 01/30/94 by JCD using 3010
- (3) Sample Preparation on 01/31/94 by JCD using 245.1
- (4) Sample Preparation on 01/20/94 by JCD using 3020
- (5) Sample Preparation on 01/21/94 by JCD using 3020

02/14/94

LW/gfb
K211CPXW1

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CLIENT: NERE COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WR-0033-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX48C4X1	Aqueous			CLIENT		01/07/94	01/17/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYSED	BY	NOTES
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	1
Sodium, Dissolved	17.	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	2
Sodium, Total	16	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	3
Thallium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	1
Thallium, Total	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	4
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	2
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	3
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '-' values.

- (1) Sample Preparation on 01/21/94 by JCD using 3010
- (2) Sample Preparation on 01/20/94 by JCD using 3010
- (3) Sample Preparation on 01/20/94 by JCD using 3020
- (4) Sample Preparation on 01/21/94 by JCD using 3020

02/14/94

LQJ/gEb
KA21ICPXWL

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Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
MX48G4X1	Aqueous		CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.1	mg/L	1.1	1.0	418.1	02/02/94 /LA	1,2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/31/94 by GH/LAD

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

02/14/94

WJO/gfb/djn

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Lab Number : WR-0032-1
Report Date: 02/14/94
PO No. : NSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA								
8270								1,2
Phenol	75	µg/L	1.0		10 EPA 8270	01/19/94	WF	
bis(2-Chloroethyl) ether	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
2-Chlorophenol	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
1,3-Dichlorobenzene	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
1,4-Dichlorobenzene	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
Benzyl alcohol	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
1,2-Dichlorobenzene	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
2-Methylphenol	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
4-Methylphenol	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
n-Nitroso-dipropylamine	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
Hexachloroethane	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	
Nitrobenzene	<10.	µg/L	1.0		10 EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 01/13/94 by CAM

(2) "J" flag denotes an estimated value less than the laboratory's Practical Quantitation Level.

02/14/94

LDO/kfg/jfg/kwb

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Lab Number : WK-0012-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
W04804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Isophorone	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzoic acid	<50.	µg/L	1.0	50	EPA 8270	01/19/94	WF	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJD/kig/jig/kwb

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Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg:jfg/lowh

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Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
MA4804X1	Aqueous			CLIENT		01/07/94	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94 WF	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94 WF	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	01/19/94 WF	
bis(2-Ethylhexyl) phthalate	74	µg/L	1.0	10	EPA 8270	01/19/94 WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

L.H./K.Sg./J.Sg./kwh

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Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(b) fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(k) fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(a) pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Fluorophenol (% Recovery)	71.	%	1.0		EPA 8270	01/19/94	WF	
Phenol-d5 (% Recovery)	75.	%	1.0		EPA 8270	01/19/94	WF	
Nitrobenzene-d5 (% Recovery)	71.	%	1.0		EPA 8270	01/19/94	WF	
2-Fluorobiphenyl (% Recovery)	77.	%	1.0		EPA 8270	01/19/94	WF	
2,4,6-Tribromophenol (% Recovery)	68.	%	1.0		EPA 8270	01/19/94	WF	
Terphenyl-d14 (% Recovery)	105.	%	1.0		EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'L' values.

02/14/94

LTD/kfg/jfg/whh

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Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4604X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	1,2
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Methylene chloride	JB3	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Total 1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

- * PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) "U" flag denotes an estimated value less than the laboratory's Practical Quantitation Level.
- (2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

02/14/94

LJO/kfg/jfg/lad

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Lab Number : WK-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01 78-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4604X1	Aqueous			CLIENT		01/07/94	02/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

02/14/94

LWX/RIG/jtg/lad

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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WKC-0032-1
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4804X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Toluene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Total Xylenes	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1-Dichloroethane (% Recovery)	95.	%	1.0		EPA 8240	01/17/94	DG	
Toluene-d8 (% Recovery)	99.	%	1.0		EPA 8240	01/17/94	DG	
p-Bromofluorobenzene (% Recovery)	103.	%	1.0		EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/tfg/jfg/lad

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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01850

Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-ML
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 14 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Aluminum, Total	0.11	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Antimony, Total	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	KW	3
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	KW	3
Barium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Barium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Cadmium, Dissolved	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	3
Cadmium, Total	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	3
Calcium, Dissolved	8.4	mg/L	1.0	0.050	200.7/6010	02/03/94	KW	1
Calcium, Total	8.6	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/26/94 by JCD using 3010

(3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LJD/gfb
RW201C2XW1

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CLIENT: HERB COLBY
AGE-WAKEFIELD
CORPORATE PLACE 129, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.D0

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MM4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/21/94	KW	2
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	01/21/94	KW	2
Magnesium, Dissolved	1.0	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Magnesium, Total	1.1	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Manganese, Dissolved	0.028	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Manganese, Total	0.017	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LWO/gfb
KA301CPXW1

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WAKEFIELD, MA 01880

Lab Number : WKC-0012-2
Report Date: 02/14/94
PO No. : MSA-93-01-75-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX481111	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	03/01/94	JD	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	03/01/94	JD	1
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	02/04/94	KW	2
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Potassium, Dissolved	1.2	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Potassium, Total	1.1	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7740	01/26/94	KW	3
Selenium, Total	<0.005	mg/L	1.0	0.005	279.2/7740	01/26/94	KW	3
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Sodium, Dissolved	18.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Sodium, Total	15.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Thallium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3
Thallium, Total	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/31/94 by JCD using 245.1

(2) Sample Preparation on 01/20/94 by JCD using 3010

(3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LOD/gfb

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WAKEFIELD, MA 01880

Lab Number : WK-D032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	03/03/94	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/20/94 by JCD using 3010

02/14/94

LJO/gfb
KA20ICPXW1

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-ME
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
MX4811X1	Aqueous		CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.0	mg/L	1.0	1.0	418.1	02/02/94 /LA	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/31/94 by GH/LAD

02/14/94

LJD/gfb/djn

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA 93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED BY	NOTES	
TCL Semivolatile Organics by USEPA 8270							1,2,3	
Phenol	J5	µg/L	1.1	10	EPA 8270	01/19/94	WF	
bis(2-Chloroethyl) ether	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
3-Chlorophenol	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
1,3-Dichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
1,4-Dichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Benzyl alcohol	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
1,2-Dichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
2-Methylphenol	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
bis(2-Chloroisopropyl) ether	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
4-Methylphenol	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
n-Nitroso-dipropylamine	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Hexachloroethane	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

(1) Sample Preparation on 01/13/94 by CAM

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(3) Insufficient sample was provided to enable laboratory to achieve the laboratory's standard Practical Quantitation Level.

02/14/94

LJO/kfg/jfg/kwl

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MN4811X1	Aqueous			CLIENT		01/07/94	01/13/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Isophorone	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2-Nitrophenol	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2,4-Dimethylphenol	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Benzoic acid	<55.	ug/L	1.1	50	EPA 8270	01/19/94	WF	
bis (2-Chloroethoxy) methane	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2,4-Dichlorophenol	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
1,2,4-Trichlorobenzene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Naphthalene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
4-Chloroaniline	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Hexachlorobutadiene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
4-Chloro-3-methylphenol	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2-Methylnaphthalene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Hexachlorocyclopentadiene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with LCL values.

02/14/94

L20/x1g/11g/mh

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CORPORATE PLACE 129, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-3
Report Date: 02/14/94
PO No. : MSA-93-01-79-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 21 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MM4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2,4,5-Trichlorophenol	<28.	ug/L	1.1	25	EPA 8270	01/19/94	WF	
3-Chloronaphthalene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
3-Nitroaniline	<28.	ug/L	1.1	25	EPA 8270	01/19/94	WF	
Dimethylphthalate	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Acenaphthylene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2,6-Dinitrotoluene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
3-Nitroaniline	<28.	ug/L	1.1	25	EPA 8270	01/19/94	WF	
Acenaphthene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2,4-Dinitrophenol	<28.	ug/L	1.1	25	EPA 8270	01/19/94	WF	
4-Nitrophenol	<28.	ug/L	1.1	25	EPA 8270	01/19/94	WF	
Dibenzofuran	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
2,4-Dinitrotoluene	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	
Diethylphthalate	<11.	ug/L	1.1	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'x' values.

02/14/94

LDD/Kfg/jfg/kwh

CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01890

Lab Number : WS-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 32 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
4-Chlorophenyl phenyl ether	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Fluorene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
4-Nitroaniline	<28.	µg/L	1.1	25	EPA 8270	01/19/94	WF	
4,6-Dinitro-2-methylphenol	<28.	µg/L	1.1	25	EPA 8270	01/19/94	WF	
n-Nitrosodiphenylamine	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
4-Bromophenyl phenyl ether	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Hexachlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Pentachlorophenol	<28.	µg/L	1.1	25	EPA 8270	01/19/94	WF	
Phenanthrene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Anthracene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Di-n-butylphthalate	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Fluoranthene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Pyrene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	
Butyl benzylphthalate	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg/jfg/kwh

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WAKEFIELD, MA 01880

Lab Number : WR-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
MO04811X1	Aqueous			CLIENT		01/07/94	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
3,3'-Dichlorobenzidine	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Benzo(a)anthracene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Chrysene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
bis(2-Ethylhexyl)phthalate	31	µg/L	1.1	10	EPA 8270	01/19/94	WF
Di-n-octylphthalate	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Benzo(b)fluoranthene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Benzo(k)fluoranthene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Benzo(a)pyrene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Indeno(1,2,3-cd)pyrene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Dibenzo(a,h)anthracene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
Benzo(g,h,i)perylene	<11.	µg/L	1.1	10	EPA 8270	01/19/94	WF
2-Fluorophenol (% Recovery)	80.	%	1.1		EPA 8270	01/19/94	WF
Phenol-d5 (% Recovery)	79.	%	1.1		EPA 8270	01/19/94	WF
Nitrobenzene-d5 (% Recovery)	73.	%	1.1		EPA 8270	01/19/94	WF

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (c) values.

02/14/94

100/kg/3.5g/kg/h

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-7B-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	71.	%	1.1		EPA 8270	01/19/94	WF	
2,4,6-Tribromophenol (% Recovery)	73.	%	1.1		EPA 8270	01/19/94	WF	
Terphenyl-d14 (% Recovery)	82.	%	1.1		EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg/jfg/kwh

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Lab Number : WK-0032-2
Report Date: 02/14/94
EO No. : MSA-93-01-78-M0
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
MW4811X1	Aqueous			CLIENT		01/07/94	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
TCL Volatile Organics by USEPA 8240							1,2
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Methylene chloride	JB1	µg/L	1.0	10	EPA 8240	01/17/94	DG
Acetone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
Chloroform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG
1,1,1-Trichloroethane	JB1	µg/L	1.0	5	EPA 8240	01/17/94	DG

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

02/14/94

LLO/kfg/jfg/lad

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-MD
Project : 7142.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MM4811X1	Aqueous			CLIENT		01/07/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "s" values.

02/14/94

LJP/kfg/jfg/lad

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
MX4811X1	Aqueous			CLIENT		01/07/94	01/12/94
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED BY	NOTES
Toluene	<5.	µg/L	1.0	5	EPA 8240	01/17/94 DG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94 DG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94 DG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	01/17/94 DG	
Total Xylenes	<5.	µg/L	1.0	5	EPA 8240	01/17/94 DG	
1,2-Dichloroethane (% Recovery)	104.	%	1.0		EPA 8240	01/17/94 DG	
Toluene-d8 (% Recovery)	105.	%	1.0		EPA 8240	01/17/94 DG	
p-Bromofluorobenzene (% Recovery)	97.	%	1.0		EPA 8240	01/17/94 DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LWD/hfg/jfg/lad

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Lab Number : WK-0032-3
Report Date : 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4503X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Aluminum, Total	0.13	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Antimony, Total	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	KW	3
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	KW	3
Barium, Dissolved	0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Barium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Cadmium, Dissolved	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	3
Cadmium, Total	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	3
Calcium, Dissolved	19.	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Calcium, Total	17.	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

- (1) Sample Preparation on 01/20/94 by JCD using 3010
- (2) Sample Preparation on 01/26/94 by JCD using 3010
- (3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LJO/gfe
KASDICEXW1

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WAKEFIELD, MA 01880

Lab Number : WK-0012-3
Report Date: 02/14/94
PO No. : MSA-93-01-76-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

Page 29 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803K1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Copper, Total	<0.025	mg/L	1.0	0.035	200.7/6010	02/02/94	KW	1
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	339.2/7421	01/21/94	KW	2
Lead, Total	<0.005	mg/L	1.0	0.005	339.2/7421	01/21/94	KW	2
Magnesium, Dissolved	2.2	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Magnesium, Total	1.9	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Manganese, Dissolved	0.018	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Manganese, Total	0.015	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/20/94 by JCD using 3020

03/14/94

LWD/gfb
KAZOICPX01

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Lab Number : WK-0032-3
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	1
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Potassium, Dissolved	1.1	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Potassium, Total	1.4	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Selenium, Total	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Sodium, Dissolved	14.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Sodium, Total	16.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Thallium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3
Thallium, Total	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/31/94 by JCD using 245.1

(2) Sample Preparation on 01/20/94 by JCD using 3010

(3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

120/gm

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Lab Number : WK-0032-3
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803X1	Aqueous			CLIENT		01/10/94	01/13/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 01/20/94 by JCD using 3010

02/14/94

LJO/gfb
W2010P2X1

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WAKEFIELD, MA 01880

Lab Number : WK-0032-3
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803X1	Aqueous		CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.3	mg/L	1.3	1.0	418.1	02/02/94 /LA	1.3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 01/31/94 by GH/LAD

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

02/14/94

UGB/gb/djn

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Lab Number : WK-0030-2
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PO No. : MSA-93-01-78-MJ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803Y1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYSED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								
Phenol	12.	µg/L	1.1	10	EPA 8270	01/25/94	WF	1,2,3
bis(2-Chloroethyl) ether	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
2-Chlorophenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
1,3-Dichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
1,4-Dichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Benzyl alcohol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
1,2-Dichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
2-Methylphenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
bis(2-Chloroisopropyl) ether	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
4-Methylphenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
N-Nitroso-dipropylamine	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Hexachloroethane	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 01/13/94 by CAM

(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(3) Insufficient sample was provided to enable laboratory to achieve the laboratory's standard Practical Quantitation Level.

02/14/94

LJD/hfg/kwh

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Lab Number : WK-0032-3
Report Date: 02/14/94
EO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Isophorone	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
3-Nitrophenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
2,4-Dimethylphenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Benzoic acid	<55.	µg/L	1.1	50	EPA 8270	01/25/94	WF	
bis(2-Chloroethoxy)methane	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
2,4-Dichlorophenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
1,2,4-Trichlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Naphthalene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
4-Chloroaniline	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Hexachlorobutadiene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
4-Chloro-3-methylphenol	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
3-Methylnaphthalene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Hexachlorocyclopentadiene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg/jwn

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Lab Number : WK-0032-3
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Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MY480351	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
3,4,6-Trichlorophenol	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
2,4,5-Trichlorophenol	<25.	ug/L	1.1	25	EPA 8270	01/25/94	WF	
2-Chloronaphthalene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
2-Nitroaniline	<25.	ug/L	1.1	25	EPA 8270	01/25/94	WF	
Dimethylphthalate	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Acenaphthylene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
2,6-Dinitrotoluene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
3-Nitroaniline	<25.	ug/L	1.1	25	EPA 8270	01/25/94	WF	
Acenaphthene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
2,4-Dinitrophenol	<25.	ug/L	1.1	25	EPA 8270	01/25/94	WF	
4-Nitrophenol	<25.	ug/L	1.1	25	EPA 8270	01/25/94	WF	
Dibenzofuran	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
2,4-Dinitrotoluene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Diethylphthalate	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LWD/kcg/kwh

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Lab Number : WK-0032-2
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MY4803X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Fluorene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
4-Nitroaniline	<28.	µg/L	1.1	25	EPA 8270	01/25/94	WF	
4,6-Dinitro-2-methylphenol	<38.	µg/L	1.1	25	EPA 8270	01/25/94	WF	
n-Microsodiphenylamine	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
4-Bromophenyl phenyl ether	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Hexachlorobenzene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Pentachlorophenol	<28.	µg/L	1.1	25	EPA 8270	01/25/94	WF	
Phenanthrene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Anthracene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Di-n-butylphthalate	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Fluoranthene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Pyrene	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	
Butyl benzylphthalate	<11.	µg/L	1.1	10	EPA 8270	01/25/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

02/14/94

LJD/kfg/kwh

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Lab Number : WK-0002-3
Report Date: 02/14/94
PO No. : MSA-93 01-7B-MI
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1'-Dichlorobenzidine	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Benzo(a)anthracene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Chrysene	78	ug/L	1.1	10	EPA 8270	01/25/94	WF	
bis(2-Ethylhexyl)phthalate	72	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Di-n-octylphthalate	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Benzo(b)fluoranthene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Benzo(k)fluoranthene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Benzo(a)pyrene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Indeno(1,2,3-cd)pyrene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Dibenzo(a,h)anthracene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
Benzo(g,h,i)perylene	<11.	ug/L	1.1	10	EPA 8270	01/25/94	WF	
2-Fluorophenol (% Recovery)	99.	%	1.1		EPA 8270	01/25/94	WF	
Phenol-d5 (% Recovery)	95.	%	1.1		EPA 8270	01/25/94	WF	
Nitrobenzene-d5 (% Recovery)	80.	%	1.1		EPA 8270	01/25/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

02/14/94

LTC/rfg/sad

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Project : 7143,00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX9803X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	101.	%	1.1		EPA 8270	01/25/94	WF	
2,4,6-Tribromophenol (% Recovery)	74.	%	1.1		EPA 8270	01/25/94	WF	
Terphenyl-d14 (% Recovery)	121.	%	1.1		EPA 8270	01/25/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/lcEg/jkh

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REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4603X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	1,2
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Methylene chloride	JB2	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
1,1,1-Trichloroethane	JB1	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

02/14/94

LJD/kfg/jfg/lad

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EO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
2-Pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

DGD/kfg/jlg/lad

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Report Date: 02/14/94
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Project : 7143.00

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4803X1	Aqueous			CLIENT		01/10/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Toluene	<5	µg/L	1.0		5 EPA 8240	01/17/94	DG	
Chlorobenzene	<5	µg/L	1.0		5 EPA 8240	01/17/94	DG	
Ethylbenzene	<5	µg/L	1.0		5 EPA 8240	01/17/94	DG	
Styrene	<5	µg/L	1.0		5 EPA 8240	01/17/94	DG	
Total Xylenes	<5	µg/L	1.0		5 EPA 8240	01/17/94	DG	
1,2-Dichloroethane (% Recovery)	106	%	1.0		EPA 8240	01/17/94	DG	
Toluene-d8 (% Recovery)	105	%	1.0		EPA 8240	01/17/94	DG	
p-Bromofluorobenzene (% Recovery)	96	%	1.0		EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LWD/kfg/jfg/lad

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 12B, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Antimony, Total	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	KW	3
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	KW	3
Barium, Dissolved	0.009	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Barium, Total	0.010	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Cadmium, Dissolved	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	3
Cadmium, Total	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	KW	3
Calcium, Dissolved	14.	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Calcium, Total	14.	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/26/94 by JCD using 3010

(3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LJD/gfb
RA20ICPXW1

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CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WM-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-ML
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/21/94	KW	2
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	01/21/94	KW	2
Magnesium, Dissolved	1.8	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Magnesium, Total	1.8	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	1
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Manganese, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 's' values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LSD/gfb
FA201CEAW1

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CLIENT: HESS COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 15
WAKEFIELD, MA 01880

Lab Number : WM-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-72-M
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MM48Q2X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	1
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Nickel, Total	0.042	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Potassium, Dissolved	1.2	mg/L	1.0	0.50	200.7/6010	02/07/94	KW	2
Potassium, Total	1.9	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Selenium, Total	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Sodium, Dissolved	31.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Sodium, Total	32.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Thallium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3
Thallium, Total	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with: '<' values.

(1) Sample Preparation on 01/31/94 by JCD using 245.1

(2) Sample Preparation on 01/30/94 by JCD using 3010

(3) Sample Preparation on 01/30/94 by JCD using 3020

02/14/94

1.10/gfn

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (<) values.
(1) Sample Preparation on 01/20/94 by JCD Using 3010

02/14/94

LED/gfb
KASOICXW1

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WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PG No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
ND04801X1	Aqueous		CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.3	mg/L	1.3	1.0	#18.1	02/02/94 /LA	1,2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/31/94 by GH/LAD

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

02/14/94

WJ/gfb/djn

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ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 2, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WF-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
VCL Semivolatiles Organics by USEPA							
8270							1
Phenol	17.	µg/L	1.0	10	EPA 8270	01/19/94	WF
bis(2-Chloroethyl) ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
Benzyl alcohol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF
Isophorone	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 01/13/94 by CM

02/14/94

LJO/mfg/rwh

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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzoic acid	<50.	µg/L	1.0	50	EPA 8270	01/19/94	WF	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/Kfg/twq

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CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,5-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LWD/kfg/kwh

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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAREFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PG No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
WK4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
bis(2-Ethylhexyl)phthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

02/14/94

WJG/kfg/kwh

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WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143-00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Fluorophenol (% Recovery)	81.	%	1.0		EPA 8270	01/19/94	WF	
Phenol-d5 (% Recovery)	81.	%	1.0		EPA 8270	01/19/94	WF	
Nitrobenzene-d5 (% Recovery)	72.	%	1.0		EPA 8270	01/19/94	WF	
2-Fluorobiphenyl (% Recovery)	70.	%	1.0		EPA 8270	01/19/94	WF	
2,4,6-Tribromophenol (% Recovery)	65.	%	1.0		EPA 8270	01/19/94	WF	
Terphenyl-d14 (% Recovery)	79.	%	1.0		EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

02/14/94

WJO/kfg/lwh

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WAKEFIELD, MA 01860

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/13/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<10.	ug/L	1.0	10	EPA 8240	01/17/94	DG	1,2
Bromomethane	<10.	ug/L	1.0	10	EPA 8240	01/17/94	DG	
Vinyl chloride	<10.	ug/L	1.0	10	EPA 8240	01/17/94	DG	
Chloroethane	<10.	ug/L	1.0	10	EPA 8240	01/17/94	DG	
Methylene chloride	JB2	ug/L	1.0	10	EPA 8240	01/17/94	DG	
Acetone	<15.	ug/L	1.0	15	EPA 8240	01/17/94	DG	
Carbon disulfide	<10.	ug/L	1.0	10	EPA 8240	01/17/94	DG	
1,1-Dichloroethene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
1,1-Dichloroethane	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
Total 1,2-Dichloroethene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
Chloroform	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloroethane	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
2-Butanone	<15.	ug/L	1.0	15	EPA 8240	01/17/94	DG	
1,1,1-Trichloroethane	JB1	ug/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

02/14/94

LCO/hig/jlg/lad

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Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MSA-93-01-78-M2
Project : 7143,00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4801X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Trichloroethene	73	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJD/kfg/jfg/lal

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WAKEFIELD, MA 01880

Lab Number : WK-0032-4
Report Date: 02/14/94
PO No. : MGA-93-01-78-MI
Project : 7143, 00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4601X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Toluene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
Chlorobenzene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
Ethylbenzene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
Styrene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
Total Xylenes	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloroethane (% Recovery)	107.	%	1.0		EPA 8240	01/17/94	DG	
Toluene-d8 (% Recovery)	103.	%	1.0		EPA 8240	01/17/94	DG	
p-Bromofluorobenzene (% Recovery)	100.	%	1.0		EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

100 ug/g 1 ug/lad

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Lab Number : WK-0032-5
Report Date: 02/14/94
DO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
MX4902X1	Aqueous		CLIENT		01/11/94	01/12/94		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	RW	1
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	RW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Antimony, Total	<0.005	mg/L	1.0	0.005	204.2/7041	01/28/94	AC	2
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	RW	3
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	RW	3
Barium, Dissolved	0.007	mg/L	1.0	0.005	200.7/6010	02/03/94	RW	1
Barium, Total	0.009	mg/L	1.0	0.005	200.7/6010	02/03/94	RW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	RW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	RW	1
Cadmium, Dissolved	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	RW	3
Cadmium, Total	<0.002	mg/L	1.0	0.002	213.2/7131	01/24/94	RW	3
Calcium, Dissolved	11.	mg/L	1.0	0.050	200.7/6010	02/02/94	RW	1
Calcium, Total	11.	mg/L	1.0	0.050	200.7/6010	02/02/94	RW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/26/94 by JCD using 3010

(3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LJO/gfb
K200CPXW1

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Lab Number: WK 0033-E
Report Date: 02/14/94
PO No.: MSA-93-01-78-M1
Project: 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	KW	1
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Total	0.028	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/21/94	KW	2
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	01/21/94	KW	2
Magnesium, Dissolved	1.4	mg/L	1.0	0.050	200.7/6010	02/03/94	KW	1
Magnesium, Total	1.4	mg/L	1.0	0.050	200.7/6010	02/03/94	KW	1
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1
Manganese, Total	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

(1) Sample Preparation on 01/20/94 by JCD using 3010

(2) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LJO/gfb
FA201CFXWH

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Lab Number + WK-0032-5
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYZED	BY	NOTES
Mercury, Dissolved	<0.30	µg/L	1.0	0.30	245.1	02/01/94	JD	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	1
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Potassium, Dissolved	1.1	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Potassium, Total	1.2	mg/L	1.0	0.50	200.7/6010	02/03/94	KW	2
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Selenium, Total	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	3
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	KW	2
Sodium, Dissolved	19.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Sodium, Total	19.	mg/L	1.0	0.10	200.7/6010	02/03/94	KW	2
Thallium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3
Thallium, Total	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	KW	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 01/31/94 by JCD using 245.1

(2) Sample Preparation on 01/30/94 by JCD using 3010

(3) Sample Preparation on 01/20/94 by JCD using 3020

02/14/94

LJD/gfb

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WAKEFIELD, MA 01880

Lab Number : WK-0032-5
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MK4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 01/20/94 by JCD using 3010

02/14/94

LEO/grb
KAL01CPXW1

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Lab Number : WK-0032-5
Report Date: 02/14/94
PO No. : MSA-93-01-78-MJ
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED				
MX4802X1	Aqueous	CLIENT	01/11/94	01/12/94			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.2	mg/L	1.2	1.0	418.1	02/02/94 /LA	1.2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/31/94 by CH/LAD

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

02/14/94

LoO/afb/djn

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Lab Number : WC-0032-5
Report Date : 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802K1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCI Semivolatile Organics by USEPA								
8270								
Phenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
bis(2-Chloroethyl) ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
3-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzyl alcohol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '*' values.
(1) Sample Preparation on 01/13/94 by CWM

02/14/94

LJO/rfg/kwt

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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01890

Lab Number : WK-0032-5

Report Date : 02/14/94

EO No. : MSA-93-01-78 MC

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 61 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzoic acid	<50.	µg/L	1.0	50	EPA 8270	01/19/94	WF	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

02/14/94

LJD/kfg/kwf

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ABB-WAREFIELD
CORPORATE PLACE 138, BUILDING 3, SUITE 25
WAREFIELD, MA 01880

Lab Number : WK-0052-5
Report Date: 02/14/94
PO No. : MSA-93-01-75-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX480281	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
1-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "/<" values.

02/14/94

LJD/kfg/lwv

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CLIENT: HERB COLEY
ABB WAKEFIELD
CORPORATE PLACE 129, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-5
Report Date: 02/14/94
PO No. : MSA-93-01-7B-ME
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
NO4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WF	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Bis(2-Ethylhexyl)phthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg/vsh

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CLIENT: HERS COLBY
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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-6032-5
Report Date: 02/18/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF	
2-Fluorophenol (% Recovery)	75.	%	1.0		EPA 8270	01/19/94	WF	
Phenol-d5 (% Recovery)	80.	%	1.0		EPA 8270	01/19/94	WF	
Nitrobenzene-d5 (% Recovery)	76.	%	1.0		EPA 8270	01/19/94	WF	
2-Fluorobiphenyl (% Recovery)	70.	%	1.0		EPA 8270	01/19/94	WF	
2,4,6-Tribromophenol (% Recovery)	63.	%	1.0		EPA 8270	01/19/94	WF	
Terphenyl-d14 (% Recovery)	79.	%	1.0		EPA 8270	01/19/94	WF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kcg/towh

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CLIENT: HERB COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-S
Report Date: 02/14/94
PO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 65 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX480331	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	IXJ	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	IXJ	
Methylene chloride	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg/jfg/lag

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CLIENT: HERE COLBY
ARB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0030-5
Report Date: 02/14/94
EQ No. : MSA-93-01-TB-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802X1	Aqueous			CLIENT		01/11/94	01/13/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Toluene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '(x)' values.

02/14/94

LJO/lfg/jfg/lad

CLIENT: HERB COLBY
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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WK-0032-5
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MX4802X1	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Total Xylenes	<5.	µg/L	1.0		5 EPA 8240	01/17/94	DG	
1,2-Dichloroethane (% Recovery)	103.	%	1.0		EPA 8240	01/17/94	DG	
Toluene-d8 (% Recovery)	104.	%	1.0		EPA 8240	01/17/94	DG	
p-Bromofluorobenzene (% Recovery)	95.	%	1.0		EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/Kfg/jfg/lad

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CORPORATE PLACE 126, BUILDING 3, SUITE 25
WAKEFIELD, MA 01860

Lab Number : WB-0032-6
Report Date: 02/14/94
PO No. : MSA-93-01-78-M1
Project : 7142.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
TRK48N03	Aqueous			CLIENT		01/11/94	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
TCL Volatile Organics by USEPA 8240							
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
Methylene chloride	JB4	µg/L	1.0	10	EPA 8240	01/17/94	DG
Acetone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
Chloroform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
1,2 Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG
1,1,1-Trichloroethane	JB1	µg/L	1.0	5	EPA 8240	01/17/94	DG

- * PQL (Practical Quantitation Level) represents Laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
- (1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
- (2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

02/14/94

LJO/kfg/jfg/lad

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CLIENT: HERB COLBY
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CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WR-0032-6
Report Date: 02/14/94
PO No. : MSA-93-01-78-01
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
TRBAEN03	Aqueous			CLIENT		01/11/94	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	01/17/94	DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with "<" values.

02/14/94

LJD/kfg/jfd/lad

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COAST
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CLIENT: HERR COLBY
ABB-WAKEFIELD
CORPORATE PLACE 128, BUILDING 3, SUITE 25
WAKEFIELD, MA 01880

Lab Number : WE-0033-6
Report Date: 02/14/94
EO No. : MSA-93-01-78-MI
Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 70 of 70

SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
TBF48903	Aqueous			CLIENT		01/11/94	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Toluene	<5	µg/L	1.0		5 EPA 8240	01/17/94 DG	
Chlorobenzene	<5	µg/L	1.0		5 EPA 8240	01/17/94 DG	
Ethylbenzene	<5	µg/L	1.0		5 EPA 8240	01/17/94 DG	
Styrene	<5	µg/L	1.0		5 EPA 8240	01/17/94 DG	
Total Xylenes	<5	µg/L	1.0		5 EPA 8240	01/17/94 DG	
1,2-Dichloroethane (% Recovery)	101	%	1.0		EPA 8240	01/17/94 DG	
Toluene-d8 (% Recovery)	105	%	1.0		EPA 8240	01/17/94 DG	
p-Bromofluorobenzene (% Recovery)	94	%	1.0		EPA 8240	01/17/94 DG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

02/14/94

LM/Kfg/jfg/lad

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Laura J. O'Meara
Laura J. O'Meara

Supervisor, Client Services

Cooler 1 of 4 *

REVISED ON 4-15-91

CHNED-3D-Q1-3
SAMPLE CONTAINER RECEIPT FORM

PROJECT: SA48 Fort Ord 7/43.00Container received on 01/29/94 and inspected on 01/29/94 by: [Signature]

1. Shipper (USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)
2. Container type (Cooler, box, envelope, etc.) Cooler
3. Were custody seals on outside of container? N/A Yes No
How many & where: 2; One on front and back, seal date: 01/29/94, seal name: AMR
4. Were custody papers taped to lid inside container? N/A Yes No
5. Custody papers properly filled out? (ink, signed, etc.) Yes No
6. Was project identifiable from custody papers? Yes No
7. Did you sign custody papers in appropriate place? Yes No
8. Did you attach shipper's packing form to this form? N/A Yes No
9. Packing material: peanuts, vermiculite, bubble wrap, paper, cans, other
10. Was sufficient ice used? Temperature _____ °C upon arrival N/A Yes No (A)
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. Did all sample labels agree with custody papers? Yes No
15. Were correct sample containers used for tests indicated? N/A Yes No
16. Were correct preservatives used? (TX pH _____, CN- pH _____)
(TOC pH _____, NUTRIENT pH _____, TOX pH _____, TFM pH < 2, OTHER pH < 2) N/A Yes No (B)
17. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
18. Was sufficient amount of sample sent in each container? 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: * Only one sample container form received with two coolers.
CCAS Cooler receipt forms used for coolers 2-4. (1) No temperature blank was
present in cooler. (2) All metals containers had a pH < 2.

SEMIQUANTITATIVE RESIDUES ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: Ft. Stevens SBLK
 Lab Code: _____ Case No.: _____ SRS No.: _____ SRS No.: _____
 Matrix: (soil/water) Water Lab Sample ID: SBLK
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 721422
 Level: (low/med) LOW Date Received: _____
 % Moisture: _____ decanted: (Y/N) _____ Date Extracted: 01/30/94
 Concentrated Extract Volume: 1000 (uL) Date Analyzed: 01/19/94
 Injection Volume: 1 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>105088</u>	<u>1,4-Cyclohexanedimethanol</u>	<u>15.03</u>	<u>5</u>	<u>JN</u>
2. <u>N/A</u>	<u>UNKNOWN</u>	<u>31.17</u>	<u>4</u>	<u>JN</u>
3.				<u>10/30/94</u>
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SEMIQUANTITATIVE SCREENING ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: Ft. Devens MK4804X1

Lab Code: _____ Case No.: _____ SAS No.: _____ SCS No.: _____

Matrix: (soil/water) water Lab Sample ID: WK0032-1

Sample wt/vol: 960 (g/mL) ML Lab File ID: 721423

Level: (Low/med) Low Date Received: 011294

% Moisture: _____ Decanted: (Y/N) _____ Date Extracted: 011394

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 011994

Injection Volume: 1 (uL) ? Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 3 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. <u>60322</u>	<u>Hexanoic acid, 6-amino-</u>	<u>13.49</u>	<u>46</u>	<u>JN</u>
2. <u>N/A</u>	<u>UNKNOWN</u>	<u>25.41</u>	<u>9</u>	<u>J</u>
3. <u>N/A</u>	<u>UNKNOWN</u>	<u>31.23</u>	<u>8</u>	<u>JB</u>
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SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: LCAS Contract: Ft. Devens MX4811X1

Lab Code: _____ Case No.: _____ SAS No.: _____ SDS No.: _____

Matrix: (soil/water) water Lab Sample ID: WK0032-2

Sample wt/vol: 920 (g/mL) mL Lab File ID: 721425

Level: (low/high) Low Date Received: 011294

% Moisture: — Decanted: (Y/N) — Date Extracted: 011394

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 011994

Injection Volume: 1 (uL) ✓ Dilution Factor: 1.0

GPC Cleanup: (Y/N) — pH: —

Number TICs found: 0112094
20 CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	8.78	51 ppc	
2.	unknown	9.68	39 012094	
3.				
4.	<u>No Compounds Detected</u>			
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SEMIQUANTITATIVE ANALYSIS REPORT DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: Ft. Devens MX4803X1
 Lab Code: _____ Case No.: _____ SAE No.: _____ SDG No.: _____
 Matrix: (soil/water) WATER Lab Sample ID: WK0032-3
 Sample wt/vol: 890 (g/mL) ML Lab File ID: 221475
 Level: (Low/med) LOW Date Received: 011294
 % Moisture: — Decanted: (Y/N) — Date Extracted: 011394
 Concentrated Extract Volume: 1000 (uL) Date Analyzed: 012594
 Injection Volume: 1 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 2 CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	31.17	5	JP
2.	PAH: M.W. 278	33.28	5	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: CCAS Contract: FT. Devens MX4801X1
 Lab Code: _____ Case No.: _____ SAS No.: _____ SOG No.: _____
 Matrix: (soil, water) water Lab Sample ID: WK0032-4
 Sample wt/vol: 1060 (g/mL) ML Lab File ID: 721427
 Level: (Low/med) Low Date Received: 011294
 % Moisture: — Decanted: (Y/N) — Date Extracted: 011394
 Concentrated Extract Volume: 1000 (uL) Date Analyzed: 011994
 Injection Volume: 1 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: —

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	<u>No Compounds detected</u>			
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SEMIQUANTITATIVE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast-to-Coast Contract: MX4802X1

Lab Code: _____ Case No.: _____ SAS No.: _____ SDS No.: _____

Matrix: (soil/water) water Lab Sample ID: WK0032-S

Sample wt/vol: 1030 (g/mL) ML Lab File ID: 721428

Level: (low/med) Low Date Received: 01/29/94

% Moisture: — Decanted: (Y/N) N Date Extracted: 01/13/94

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 01/19/94

Injection Volume: 1 (uL) ✓ Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 8/20/12694 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	9.66	33	J <u>8/20/12694</u>
2.	N/A	25.42	7	J
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VOLATILE ORGANIC ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

USE SAME

Lab Name: Coast to Coast Analytical Contract: VB/K01
 Lab Code: _____ Case No.: _____ SAS No.: _____ SDS No.: _____
 Matrix: (solid/liquid) water Lab Sample ID: Blank
 Sample wt/vol: 5 (g/L) ml Lab File ID: Y0416
 Level: (low/med) low Data Received: 1/12/94
 % Moisture: not dec. — Date Analyzed: 1/17/94
 GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)
 Number TICs found: 1 CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1. <u>124389</u>	<u>Carbon dioxide</u>	<u>1.90</u>	<u>8</u>	<u>JN</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: MX4804X1
 Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____
 Matrix: (soil/water) water Lab Sample ID: WIS0032-1
 Sample wt/vol: 5 (g/mL) ml Lab File ID: 40417
 Level: (low/med) low Date Received: 1/12/94
 % Moisture: not dec. — Date Analyzed: 1/17/94
 GC column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANIC ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

170-200-111

Lab Name: Coast to Coast Analytical Contract: MX4811X1
 Lab Code: Case No.: SAS No.: SDC No.:
 Matrix: (soil/water) water Lab Sample ID: WKN032-2
 Sample wt/vol: 5 (g/L) ml Lab File ID: Y0420
 Level: (low/hed) low Date Received: 1/12/94
 % Moisture: not dec. Date Analyzed: 1/17/94
 GC column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)
 Number TICs found: 1 CONCENTRATION UNITS:
 (ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1.	<u>unknown</u>	<u>21.25</u>	<u>6</u>	<u>J</u>
2.				
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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: MX4803X1
 Lab Code: _____ Case No.: _____ SAS No.: _____ SDC No.: _____
 Matrix: (soil, water) water Lab Sample ID: WK0032-3
 Sample wt/vol: 5 (g/L) ml Lab File ID: Y0421
 Level: (Low/Med) low Date Received: 1/12/94
 % Moisture: not dec. — Date Analyzed: 1/17/94
 GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	<u>unknown</u>	<u>21.26</u>	<u>6</u>	<u>J</u>
2.	<u>unknown</u>	<u>23.16</u>	<u>5</u>	<u>J</u>
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12
VOLATILE ORGANICS ANALYSIS DATA SHEET
GENERALLY IDENTIFIED COMPOUNDS

IPA SAMPLE NO.

Lab Name: Coast to Coast Analytical Contract: MX4801X1
 Lab Code: _____ Case No.: _____ ERS No.: _____ STD No.: _____
 Matrix: (soil/water) water Lab Sample ID: WK0032-4
 Sample wt/vol: 5 (g/mL) ml Lab File ID: Y0422
 Level: (low/med) low Date Received: 1/12/94
 % Moisture: not dec. - Date Analyzed: 1/17/94
 GC column: Rtx-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: - (uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1.	<u>unknown</u>	<u>21.25</u>	<u>11</u>	
2.	<u>unknown</u>	<u>23.14</u>	<u>6</u>	<u>5</u>
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VOLATILE ORGANICS ANALYSIS DATA SHEET
IDENTIFICATION IDENTIFIED COMPOUNDS

Lab Name: Coast to Coast Analytical Contract: MX4802X1
 Lab Code: _____ Case No.: _____ SAS No.: _____ EPA No.: _____
 Matrix: (soil/water) water Lab Sample ID: WK0032-5
 Sample wt/vol: 5 (g/mL) ml Lab File ID: Y0423
 Level: (low/med) low Date Received: 1/12/94
 % Moisture: not dec. — Date Analyzed: 1/17/94
 GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
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Lab Name: Coast to Coast Analytical Contract: TBK48N03
Lab Code: _____ Case No.: _____ ERM No.: _____ SOC No.: _____
Matrix: (soil/water) water Lab Sample ID: WK0032-6
Sample wt/vol: 5 (g/ml) ml Lab File ID: Y0424
Level: (low/hd) low Date Received: 1/12/94
% Moisture: not dec. — Date Analyzed: 1/12/94
GC column: RTX-624 ID: 0.53 (II) Dilution Factor: 1.0
Soil Extract Volume: — (uL) Soil Aliquot Volume: — (uL)

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	C
1.	<u>Unknown</u>	<u>21.26</u>	<u>6</u>	<u>J</u>
2.				
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APPENDIX G

COE/NED QUALITY ASSURANCE LABORATORY
QA/QC DATA COMPARISON

MAY 1994

RECORD OF TRANSMITTAL

CENED-ED-GL-E

May 13, 1994

FOR Project Manager, U.S. Army Corps of Engineers, CENED-ED-EH,
ATTN: Mr. Mark Applebee

SUBJECT: QA/QC Data Comparison, Fort Devens - SA48.

1. Enclosed is the QA/QC Data Comparison report for the above subject project.
2. Should you have any questions regarding this report, please direct them to Gary Rogowski at 508-928-4238.



Encl

GARY S. ROGOWSKI
Chemist,
Environmental Laboratory

CF (w/encl):
Dr. Bruce Heitke, HQUSACE

Department of the Army
New England Division
Corps of Engineers
Environmental Laboratory

May 13, 1994

Subject: QA/QC Comparison

Project: Fort Devens - SA48

Requested by: Mr. Mark Applebee , Project Engineer, CENED-ED-EH

Contract Laboratories: Coast-to-Coast Analytical Services,
Westbrook, ME

QA Laboratory: USACE, Environmental Laboratory, Hubbardston, MA

QA/QC Comparison:

a. Three (3) sets of QA samples in coolers were received on 12/17/93, 12/21/93 and 1/12/94. Proper sample handling protocols were mostly followed, the exceptions are noted below:

1. 1/12/94, Sample were not in separate plastic bags.

Copies of all custody documents and QA laboratory cooler receipt forms are appended to this report for reference.

b. All QA analyses were performed by the USACE Environmental Laboratory, Hubbardston, MA; Aquatech, Inc., Colchester, VT; and E3I, Somerville, MA.

For the purpose of statistical evaluation, minor data discrepancies as defined in appendix B will be considered only one half as serious as major ones.

c. Data Comparison for Trace Metals: The trace metal data from the QA and Contract laboratory had an overall agreement of 97% and a quantitative agreement of 92%. Quantitative agreement is the agreement between laboratories only for results in which one or both labs report values above the detection limit. Disagreement was due to three (3) minor discrepancies.

d. Data Comparison for BNA: The BNA data from the QA and contract laboratory had an overall agreement of 99% and a quantitative agreement of 75%. Disagreement was due to one (1) minor discrepancy. Phthalates are commonly used as plasticizers in the manufacture of plastics and are commonly detected in semi-volatile analysis making data comparison difficult, for this reason they have been eliminated from statistical consideration for all matrices.

e. Data Comparison for Volatile Organic Analysis: The VOA data from the QA and contract laboratory had an overall agreement of 99% and a quantitative agreement of 95%. Disagreement was due to one (1) minor discrepancy. Both acetone and methylene chloride are common laboratory solvents and are often detected as artifacts in volatile organic analysis making data comparison difficult, for this reason they have been eliminated from statistical consideration for all matrices. The trip blanks were free of contamination with the exception of trace amounts of acetone, methylene chloride, 2- hexanone, xylenes and 1,1,1-trichloroethane.

f. Data Comparison for Total Petroleum Hydrocarbon Analysis: The TPH data from the QA and contract laboratory had an overall agreement of 50% and a quantitative agreement of 25%. Disagreement was due one major discrepancy which occurred on sample number 24397 (contractor no. WJ-1597-2) where the contract lab reported 90 mg/kg TPH, while the QA lab reported 6800 mg/kg TPH. One minor discrepancy was also noted.

g. **Summary:** Overall there was good data agreement between the laboratories for the samples that were analyzed with exception of TPH. Based on the findings of our QA/QC data comparison, the contract laboratory's performance was satisfactory for Trace Metals, VOA, BNA and unsatisfactory for TPH.

APPENDIX A
ANALYTICAL METHODS PERFORMED

<u>PARAMETER</u>	<u>QA LABORATORY</u>	<u>CONTRACTOR LABORATORY</u>
VOA's	8260	8240
SVOC's Water	3510/8270	8270
Soil	3540/8270	8270
ARSENIC	7060	7060
LEAD	7421	7421
MERCURY	7470	7470
SELENIUM	7740	7740
THALLIUM	7841	7841
ICAP METALS	3015/6010	6010
TPH	418.1	418.1

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	<5x difference for liquids
Herbicides	<10x difference for solids
PCB's	

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	5x<difference<10x for liquids
Herbicides	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, >10x difference for all matrices
VOA, TPH, BTEX

Pesticide/PCB >10x difference for liquids
Herbicides >20x difference for solids

Alkalinity >5x difference for all matrices
Hardness, Ammonia
(water quality, etc.)

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 - SA48

DISSOLVED METALS

QA SAMPLE NO.: 24697
QA FIELD ID: MR4804X1

CONTRACTOR'S SAMPLE NO.: WK-0032-1
CONTRACTOR'S FIELD ID: MX4804X1

MATERIAL DESCRIPTION: WATER
DATE SAMPLED: 1/7/94
UNITS: MG/L

*****				*****			
* PARAMETER	QA LAB	CONTRACTOR	*	PARAMETER	QA LAB	CONTRACTOR	*
	C RESULTS	RESULTS			C RESULTS	RESULTS	
*****				*****			
* Aluminum	0			* Manganese	0	0.020	0.023
* Antimony	0			* Mercury	0		
* Arsenic	0			* Nickel	0		
* Barium	0	J 0.0059	<0.005	* Potassium	0	1.1	1.5
* Beryllium	0			* Selenium	0		
* Cadmium	0			* Silver	0	J 0.011	<0.015
* Calcium	0	8.6	9.0	* Sodium	0	11	17
* Chromium	0			* Thallium	0		
* Cobalt	0			* Vanadium	0		
* Copper	0			* Zinc	0	0.0093	<0.025
* Iron	0	0.012	<0.025				
* Lead	0						
* Magnesium	0	0.96	1.1				
*****				*****			

ELEMENTS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS

PROJECT: Fort Devens - SA48

TOTAL METALS

QA SAMPLE NO.: 24697
QA FIELD ID: MR4804X1CONTRACTOR'S SAMPLE NO.: WK-0032-1
CONTRACTOR'S FIELD ID: MX4804X1MATERIAL DESCRIPTION: WATER
DATE SAMPLED: 1/7/94
UNITS: MG/L

```
*****
*          PARAMETER          QA LAB  CONTRACTOR *          PARAMETER          QA LAB  CONTRACTOR *
*          C  RESULTS        RESULTS *          C  RESULTS        RESULTS *
*****
* Aluminum          3  J 0.026      0.10 * Manganese          0  0.020      0.021 *
* Antimony          0                      * Mercury            0                      *
* Arsenic           0                      * Nickel            0                      *
* Barium            0  J 0.0062      0.005 * Potassium          0  1.2        1.6 *
* Beryllium         0                      * Selenium           0                      *
* Cadmium           0                      * Silver             3  0.29       <0.015 *
* Calcium           0  8.6          9.0 * Sodium             0  11         16 *
* Chromium          0                      * Thallium           0                      *
* Cobalt            0                      * Vanadium           0                      *
* Copper            0                      * Zinc               0  0.0093     <0.025 *
* Iron              3  0.042      <0.025 *
* Lead              0                      *
* Magnesium         0  0.96        1.1 *
*****
```

ELEMENTS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS

PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24397
QA FIELD ID: BR480115
QA ANALYSIS DATE: 12/22/93

CONTRACTOR'S SAMPLE NO.: WJ-1597-2
CONTRACTOR'S FIELD ID: BX480115
CONTRACTOR'S ANALYSIS DATE: 12/19/93

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 12/14/93
UNITS: UG/KG

*****				*****			
* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB
* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS

* Chloromethane	0		* 1,2-Dichloropropane	0		* Chloromethane	0
* Vinyl chloride	0		* Bromodichloromethane	0		* Vinyl chloride	0
* Bromomethane	0		* 4-Methyl-2-pentanone	0		* Bromomethane	0
* Chloroethane	0		* cis-1,3-Dichloropropene	0		* Chloroethane	0
* 1,1-Dichloroethene	0		* Toluene	0		* 1,1-Dichloroethene	0
* Acetone	1 J 11	<18	* trans-1,3-Dichloropropene	0		* Acetone	1 J 11
* Carbon disulfide	0		* 1,1,2-Trichloroethane	0		* Carbon disulfide	0
* Methylene chloride	1 B 23	<12	* Tetrachloroethene	0		* Methylene chloride	1 B 23
* trans-1,2-Dichloroethene	0		* 2-Hexanone	0		* trans-1,2-Dichloroethene	0
* 1,1-Dichloroethane	0		* Dibromochloromethane	0		* 1,1-Dichloroethane	0
* cis-1,2-Dichloroethene	0		* Chlorobenzene	0		* cis-1,2-Dichloroethene	0
* 2-Butanone	0		* Ethylbenzene	0		* 2-Butanone	0
* Chloroform	0		* m/p-Xylenes	0		* Chloroform	0
* 1,1,1-Trichloroethane	3 <0.70	J 3	* o-Xylene	0		* 1,1,1-Trichloroethane	3 <0.70
* Carbon tetrachloride	0		* Styrene	0		* Carbon tetrachloride	0
* Benzene	0		* Bromoform	0		* Benzene	0
* 1,2-Dichloroethane	0		* 1,1,2,2-Tetrachloroethane	0		* 1,2-Dichloroethane	0
* Trichloroethene	0					* Trichloroethene	0

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR
1,2-Dichloroethane D4	*127	92
Toluene D8	108	108
4-Bromofluorobenzene	86	92

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS

PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24424
 QA FIELD ID: SBKR48N02
 QA ANALYSIS DATE: 1/6/94

CONTRACTOR'S SAMPLE NO.: WJ-1608-1
 CONTRACTOR'S FIELD ID: SBK48N02
 CONTRACTOR'S ANALYSIS DATE: 12/22/93

MATERIAL DESCRIPTION: WATER
 DATE SAMPLED: 12/14/93
 UNITS: UG/L

*****				*****			
PARAMETER	QA LAB	CONTRACTOR		PARAMETER	QA LAB	CONTRACTOR	
	C	RESULTS	RESULTS		C	RESULTS	RESULTS
*****				*****			
* Chloromethane	0			* 1,2-Dichloropropane	0		*
* Vinyl chloride	0			* Bromodichloromethane	0		*
* Bromomethane	0			* 4-Methyl-2-pentanone	0		*
* Chloroethane	0			* cis-1,3-Dichloropropene	0		*
* 1,1-Dichloroethene	0			* Toluene	0		*
* Acetone	1	J 2.7	<15	* trans-1,3-Dichloropropene	0		*
* Carbon disulfide	0			* 1,1,2-Trichloroethane	0		*
* Methylene chloride	1	B 17	J, B 5	* Tetrachloroethene	0		*
* trans-1,2-Dichloroethene	0			* 2-Hexanone	0		*
* 1,1-Dichloroethane	0			* Dibromochloromethane	0		*
* cis-1,2-Dichloroethene	0			* Chlorobenzene	0		*
* 2-Butanone	0			* Ethylbenzene	0		*
* Chloroform	0			* m/p-Xylenes	0		*
* 1,1,1-Trichloroethane	0			* o-Xylene	0		*
* Carbon tetrachloride	0			* Styrene	0		*
* Benzene	0	J 0.78	<5	* Bromoform	0		*
* 1,2-Dichloroethane	0			* 1,1,2,2-Tetrachloroethane	0		*
* Trichloroethene	0						*
*****				*****			

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR
1,2-Dichloroethane D4	*125	94
Toluene D8	109	98
4-Bromofluorobenzene	91	102

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24697
QA FIELD ID: MR4804X1
QA ANALYSIS DATE: 1/26/94

CONTRACTOR'S SAMPLE NO.: WK-0032-1
CONTRACTOR'S FIELD ID: MX4804X1
CONTRACTOR'S ANALYSIS DATE: 1/17/94

MATERIAL DESCRIPTION: WATER
DATE SAMPLED: 1/7/94
UNITS: UG/L

*****				*****			
* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB
* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS

* Chloromethane	0		* 1,2-Dichloropropane	0		* Chloromethane	0
* Vinyl chloride	0		* Bromodichloromethane	0		* Vinyl chloride	0
* Bromomethane	0		* 4-Methyl-2-pentanone	0	J 1.6	* Bromomethane	0
* Chloroethane	0		* cis-1,3-Dichloropropene	0		* Chloroethane	0
* 1,1-Dichloroethene	0		* Toluene	0		* 1,1-Dichloroethene	0
* Acetone	1	J 6.0	* trans-1,3-Dichloropropene	0		* Acetone	1
* Carbon disulfide	0		* 1,1,2-Trichloroethane	0		* Carbon disulfide	0
* Methylene chloride	1	B 9.9	* Tetrachloroethene	0		* Methylene chloride	1
* trans-1,2-Dichloroethene	0		* 2-Hexanone	0	J 0.46	* trans-1,2-Dichloroethene	0
* 1,1-Dichloroethane	0		* Dibromochloromethane	0		* 1,1-Dichloroethane	0
* cis-1,2-Dichloroethene	0		* Chlorobenzene	0		* cis-1,2-Dichloroethene	0
* 2-Butanone	0		* Ethylbenzene	0		* 2-Butanone	0
* Chloroform	0		* m/p-Xylenes	0		* Chloroform	0
* 1,1,1-Trichloroethane	0		* o-Xylene	0	B 1.3	* 1,1,1-Trichloroethane	0
* Carbon tetrachloride	0		* Styrene	0	B 1.2	* Carbon tetrachloride	0
* Benzene	0	0.76	* Bromoform	0		* Benzene	0
* 1,2-Dichloroethane	0		* 1,1,2,2-Tetrachloroethane	0		* 1,2-Dichloroethane	0
* Trichloroethene	0					* Trichloroethene	0

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR
1,2-Dichloroethane D4	102	95
Toluene D8	101	99
4-Bromofluorobenzene	81	102

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24398
QA FIELD ID: TBK48N11
QA ANALYSIS DATE: 12/22/93

CONTRACTOR'S SAMPLE NO.: WJ-1597-7
CONTRACTOR'S FIELD ID: TBK48N02
CONTRACTOR'S ANALYSIS DATE: 12/18/93

MATERIAL DESCRIPTION: TRIP BLANK - WATER
DATE SAMPLED: 11/24/93
UNITS: UG/L

*****				*****			
PARAMETER	QA LAB	CONTRACTOR		PARAMETER	QA LAB	CONTRACTOR	
	C	RESULTS	RESULTS		C	RESULTS	RESULTS
*****				*****			
* Chloromethane	0			* 1,2-Dichloropropane	0		*
* Vinyl chloride	0			* Bromodichloromethane	0		*
* Bromomethane	0			* 4-Methyl-2-pentanone	0		*
* Chloroethane	0			* cis-1,3-Dichloropropene	0		*
* 1,1-Dichloroethene	0			* Toluene	0		*
* Acetone	1	J 3.6	<15	* trans-1,3-Dichloropropene	0		*
* Carbon disulfide	0			* 1,1,2-Trichloroethane	0		*
* Methylene chloride	1	B 15	<10	* Tetrachloroethene	0		*
* trans-1,2-Dichloroethene	0			* 2-Hexanone	0		*
* 1,1-Dichloroethane	0			* Dibromochloromethane	0		*
* cis-1,2-Dichloroethene	0			* Chlorobenzene	0		*
* 2-Butanone	0			* Ethylbenzene	0		*
* Chloroform	0			* m/p-Xylenes	0		*
* 1,1,1-Trichloroethane	0			* o-Xylene	0		*
* Carbon tetrachloride	0			* Styrene	0		*
* Benzene	0			* Bromoform	0		*
* 1,2-Dichloroethane	0			* 1,1,2,2-Tetrachloroethane	0		*
* Trichloroethene	0						*
*****				*****			

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR
1,2-Dichloroethane D4	*125	102
Toluene D8	101	98
4-Bromofluorobenzene	91	94

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24698
QA FIELD ID: TBK48N12
QA ANALYSIS DATE: 1/26/94

CONTRACTOR'S SAMPLE NO.: WK-0032-6
CONTRACTOR'S FIELD ID: TBK48N03
CONTRACTOR'S ANALYSIS DATE: 1/17/94

MATERIAL DESCRIPTION: TRIP BLANK - WATER
DATE SAMPLED: 11/24/93
UNITS: UG/L

* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER
* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS	RESULTS	* C RESULTS

* Chloromethane	0		* 1,2-Dichloropropane	0		* Chloromethane	0		* 1,2-Dichloropropane
* Vinyl chloride	0		* Bromodichloromethane	0		* Vinyl chloride	0		* Bromodichloromethane
* Bromomethane	0		* 4-Methyl-2-pentanone	0		* Bromomethane	0		* 4-Methyl-2-pentanone
* Chloroethane	0		* cis-1,3-Dichloropropene	0		* Chloroethane	0		* cis-1,3-Dichloropropene
* 1,1-Dichloroethene	0		* Toluene	0		* 1,1-Dichloroethene	0		* Toluene
* Acetone	1 J 6.1	<15	* trans-1,3-Dichloropropene	0		* Acetone	1 J 6.1	<15	* trans-1,3-Dichloropropene
* Carbon disulfide	0		* 1,1,2-Trichloroethane	0		* Carbon disulfide	0		* 1,1,2-Trichloroethane
* Methylene chloride	1 B 12	J, B 4	* Tetrachloroethene	0		* Methylene chloride	1 B 12	J, B 4	* Tetrachloroethene
* trans-1,2-Dichloroethene	0		* 2-Hexanone	0 J 2.1	<15	* trans-1,2-Dichloroethene	0		* 2-Hexanone
* 1,1-Dichloroethane	0		* Dibromochloromethane	0		* 1,1-Dichloroethane	0		* Dibromochloromethane
* cis-1,2-Dichloroethene	0		* Chlorobenzene	0		* cis-1,2-Dichloroethene	0		* Chlorobenzene
* 2-Butanone	0		* Ethylbenzene	0		* 2-Butanone	0		* Ethylbenzene
* Chloroform	0		* m/p-Xylenes	0		* Chloroform	0		* m/p-Xylenes
* 1,1,1-Trichloroethane	0 0.39	J, B 1	* o-Xylene	0 B 1.3	<5	* 1,1,1-Trichloroethane	0 0.39	J, B 1	* o-Xylene
* Carbon tetrachloride	0		* Styrene	0		* Carbon tetrachloride	0		* Styrene
* Benzene	0		* Bromoform	0		* Benzene	0		* Bromoform
* 1,2-Dichloroethane	0		* 1,1,2,2-Tetrachloroethane	0		* 1,2-Dichloroethane	0		* 1,1,2,2-Tetrachloroethane
* Trichloroethene	0					* Trichloroethene	0		

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR
1,2-Dichloroethane D4	107	101
Toluene D8	96	105
4-Bromofluorobenzene	85	94

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24397
QA FIELD ID: BR480115
QA EXTRACTION DATE: 12/21/93
QA ANALYSIS DATE: 1/13/94

CONTRACTOR'S SAMPLE NO.: WJ-1597-2
CONTRACTOR'S FIELD ID: BX480115
CONTRACTOR'S EXTRACTION DATE: 12/17/93
CONTRACTOR'S ANALYSIS DATE: 1/7/94

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 12/14/93
UNITS: UG/KG

*****				*****			
* PARAMETER	QA LAB	CONTRACTOR	*	* PARAMETER	QA LAB	CONTRACTOR	*
	C RESULTS	RESULTS	*		C RESULTS	RESULTS	*

* Aniline	2	NR	*	* 3-Nitroaniline	0		*
* Phenol	0		*	* Acenaphthene	0		*
* Bis(2-chloroethyl)ether	0		*	* 2,4-Dinitrophenol	0		*
* 2-Chlorophenol	0		*	* 4-Nitrophenol	0		*
* 1,3-Dichlorobenzene	0		*	* Dibenzofuran	0		*
* 1,4-Dichlorobenzene	0		*	* 2,6-Dinitrotoluene	0		*
* 1,2-Dichlorobenzene	0		*	* 2,4-Dinitrotoluene	0		*
* Benzyl alcohol	0		*	* Diethylphthalate	0		*
* 2-Methylphenol	0		*	* 4-Chlorophenyl-phenylether	0		*
* Bis(2-chloroisopropyl)ether	0		*	* Fluorene	0		*
* 4-Methylphenol	0		*	* 4-Nitroaniline	0		*
* N-Nitroso-di-n-propylamine	0		*	* 4,6-Dinitro-2-methylphenol	0		*
* Hexachloroethane	0		*	* N-Nitrosodiphenylamine	0		*
* Nitrobenzene	0		*	* 1,2-Diphenylhydrazine	0		*
* Isophorone	0		*	* 4-Bromophenyl-phenylether	0		*
* 2-Nitrophenol	0		*	* Hexachlorobenzene	0		*
* 2,4-Dimethylphenol	0		*	* Pentachlorophenol	0		*
* Benzoic acid	0		*	* Phenanthrene	0		*
* Bis(2-chloroethoxy)methane	0		*	* Anthracene	0		*
* 2,4-Dichlorophenol	0		*	* Di-n-butylphthalate	1	<38	J 130
* 1,2,4-Trichlorobenzene	0		*	* Fluoranthene	0		*
* Napthalene	0	77	<400	* Pyrene	0		*
* 4-Chloroaniline	0		*	* Butylbenzylphthalate	0		*
* Hexachlorobutadiene	0		*	* 3,3'-Dichlorobenzidine	0		*
* 4-Chloro-3-methylphenol	0		*	* Benzo(a)anthracene	0		*
* 2-Methylnapthalene	0		*	* Bis(2ethylhexyl)phthalate	1	910	<400
* Hexachlorocyclopentadiene	0		*	* Chrysene	0		*
* 2,4,6-Trichlorophenol	0		*	* Di-n-octyl phthalate	0		*
* 2,4,5-Trichlorophenol	0		*	* Benzo(b)fluoranthene	0		*
* 2-Chloronaphthalene	0		*	* Benzo(k)fluoranthene	0		*
* 2-Nitroaniline	0		*	* Benzo(a)pyrene	0		*
* Dimethylphthalate	0		*	* Indeno(1,2,3-cd)pyrene	0		*
* Acenaphthylene	0		*	* Dibenz(a,h)anthracene	0		*
			*	* Benzo(g,h,i)perylene	0		*

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR	SURROGATE	QA	CONTRACTOR
Nitrobenzene-d5	54	65	2-Fluorophenol	66	65
2-Fluorobiphenyl	77	69	Phenol-d6	65	80
4-Terphenyl-d14	*145	76	2,4,6-Tribromophenol	85	70

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE
COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS
SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS

PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24424
 QA FIELD ID: SBR48N02
 QA EXTRACTION DATE: 12/27/93
 QA ANALYSIS DATE: 1/11/94

CONTRACTOR'S SAMPLE NO.: WJ-1608-1
 CONTRACTOR'S FIELD ID: SBK48N02
 CONTRACTOR'S EXTRACTION DATE: 12/22/93
 CONTRACTOR'S ANALYSIS DATE: 1/12/94

MATERIAL DESCRIPTION: WATER

DATE SAMPLED: 12/17/93

UNITS: UG/L

*****				*****					
* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER	QA LAB	CONTRACTOR	* PARAMETER
* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS	RESULTS	* C RESULTS	RESULTS	RESULTS	* C RESULTS

* Aniline	2	NR	* 3-Nitroaniline	0		* 3-Nitroaniline	0		* 3-Nitroaniline
* Phenol	0		* Acenaphthene	0		* Acenaphthene	0		* Acenaphthene
* Bis(2-chloroethyl)ether	0		* 2,4-Dinitrophenol	0		* 2,4-Dinitrophenol	0		* 2,4-Dinitrophenol
* 2-Chlorophenol	0		* 4-Nitrophenol	0		* 4-Nitrophenol	0		* 4-Nitrophenol
* 1,3-Dichlorobenzene	0		* Dibenzofuran	0		* Dibenzofuran	0		* Dibenzofuran
* 1,4-Dichlorobenzene	0		* 2,6-Dinitrotoluene	0		* 2,6-Dinitrotoluene	0		* 2,6-Dinitrotoluene
* 1,2-Dichlorobenzene	0		* 2,4-Dinitrotoluene	0		* 2,4-Dinitrotoluene	0		* 2,4-Dinitrotoluene
* Benzyl alcohol	0		* Diethylphthalate	1	0.12	* Diethylphthalate	1	0.12	* Diethylphthalate
* 2-Methylphenol	0		* 4-Chlorophenyl-phenylether	0		* 4-Chlorophenyl-phenylether	0		* 4-Chlorophenyl-phenylether
* Bis(2-chloroisopropyl)ether	0		* Fluorene	0		* Fluorene	0		* Fluorene
* 4-Methylphenol	0		* 4-Nitroaniline	0		* 4-Nitroaniline	0		* 4-Nitroaniline
* N-Nitroso-di-n-propylamine	0		* 4,6-Dinitro-2-methylphenol	0		* 4,6-Dinitro-2-methylphenol	0		* 4,6-Dinitro-2-methylphenol
* Hexachloroethane	0		* N-Nitrosodiphenylamine	0		* N-Nitrosodiphenylamine	0		* N-Nitrosodiphenylamine
* Nitrobenzene	0		* 1,2-Diphenylhydrazine	0		* 1,2-Diphenylhydrazine	0		* 1,2-Diphenylhydrazine
* Isophorone	0		* 4-Bromophenyl-phenylether	0		* 4-Bromophenyl-phenylether	0		* 4-Bromophenyl-phenylether
* 2-Nitrophenol	0		* Hexachlorobenzene	0		* Hexachlorobenzene	0		* Hexachlorobenzene
* 2,4-Dimethylphenol	0		* Pentachlorophenol	0		* Pentachlorophenol	0		* Pentachlorophenol
* Benzoic acid	0		* Phenanthrene	0		* Phenanthrene	0		* Phenanthrene
* Bis(2-chloroethoxy)methane	0		* Anthracene	0		* Anthracene	0		* Anthracene
* 2,4-Dichlorophenol	0		* Di-n-butylphthalate	0		* Di-n-butylphthalate	0		* Di-n-butylphthalate
* 1,2,4-Trichlorobenzene	0		* Fluoranthene	0		* Fluoranthene	0		* Fluoranthene
* Napthalene	0		* Pyrene	0		* Pyrene	0		* Pyrene
* 4-Chloroaniline	0		* Butylbenzylphthalate	1	J 0.60	* Butylbenzylphthalate	1	J 0.60	* Butylbenzylphthalate
* Hexachlorobutadiene	0		* 3,3'-Dichlorobenzidine	0		* 3,3'-Dichlorobenzidine	0		* 3,3'-Dichlorobenzidine
* 4-Chloro-3-methylphenol	0		* Benzo(a)anthracene	0		* Benzo(a)anthracene	0		* Benzo(a)anthracene
* 2-Methylnapthalene	0		* Bis(2ethylhexyl)phthalate	1	J 1.8	* Bis(2ethylhexyl)phthalate	1	J 1.8	* Bis(2ethylhexyl)phthalate
* Hexachlorocyclopentadiene	0		* Chrysene	0		* Chrysene	0		* Chrysene
* 2,4,6-Trichlorophenol	0		* Di-n-octyl phthalate	0		* Di-n-octyl phthalate	0		* Di-n-octyl phthalate
* 2,4,5-Trichlorophenol	0		* Benzo(b)fluoranthene	0		* Benzo(b)fluoranthene	0		* Benzo(b)fluoranthene
* 2-Chloronaphthalene	0		* Benzo(k)fluoranthene	0		* Benzo(k)fluoranthene	0		* Benzo(k)fluoranthene
* 2-Nitroaniline	0		* Benzo(a)pyrene	0		* Benzo(a)pyrene	0		* Benzo(a)pyrene
* Dimethylphthalate	0		* Indeno(1,2,3-cd)pyrene	0		* Indeno(1,2,3-cd)pyrene	0		* Indeno(1,2,3-cd)pyrene
* Acenaphthylene	0		* Dibenz(a,h)anthracene	0		* Dibenz(a,h)anthracene	0		* Dibenz(a,h)anthracene
*			* Benzo(g,h,i)perylene	0		* Benzo(g,h,i)perylene	0		* Benzo(g,h,i)perylene

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR	SURROGATE	QA	CONTRACTOR
Nitrobenzene-d5	101	72	2-Fluorophenol	99	80
2-Fluorobiphenyl	96	74	Phenol-d6	56	81
4-Terphenyl-d14	116	51	2,4,6-Tribromophenol	113	76

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE
 COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS
 SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: Fort Devens - SA48

QA SAMPLE NO.: 24697	CONTRACTOR'S SAMPLE NO.: WK-0032-1
QA FIELD ID: MR4804X1	CONTRACTOR'S FIELD ID: MX4804X1
QA EXTRACTION DATE: 1/14/94	CONTRACTOR'S EXTRACTION DATE: 1/13/94
QA ANALYSIS DATE: 2/10/94	CONTRACTOR'S ANALYSIS DATE: 1/19/94

MATERIAL DESCRIPTION: WATER
DATE SAMPLED: 1/7/94
UNITS: UG/L

* * PARAMETER	C	QA LAB RESULTS	CONTRACTOR RESULTS	* * PARAMETER	C	QA LAB RESULTS	CONTRACTOR RESULTS	* * PARAMETER

* Aniline	2		NR	* 3-Nitroaniline	0			*
* Phenol	3	<0.69	J 5	* Acenaphthene	0			*
* Bis(2-chloroethyl)ether	0			* 2,4-Dinitrophenol	0			*
* 2-Chlorophenol	0			* 4-Nitrophenol	0			*
* 1,3-Dichlorobenzene	0			* Dibenzofuran	0			*
* 1,4-Dichlorobenzene	0			* 2,6-Dinitrotoluene	0			*
* 1,2-Dichlorobenzene	0			* 2,4-Dinitrotoluene	0			*
* Benzyl alcohol	0			* Diethylphthalate	1	B 0.47	<10	*
* 2-Methylphenol	0			* 4-Chlorophenyl-phenylether	0			*
* Bis(2-chloroisopropyl)ether	0			* Fluorene	0			*
* 4-Methylphenol	0			* 4-Nitroaniline	0			*
* N-Nitroso-di-n-propylamine	0			* 4,6-Dinitro-2-methylphenol	0			*
* Hexachloroethane	0			* N-Nitrosodiphenylamine	0			*
* Nitrobenzene	0			* 1,2-Diphenylhydrazine	0			*
* Isophorone	0			* 4-Bromophenyl-phenylether	0			*
* 2-Nitrophenol	0			* Hexachlorobenzene	0			*
* 2,4-Dimethylphenol	0			* Pentachlorophenol	0			*
* Benzoic acid	0			* Phenanthrene	0			*
* Bis(2-chloroethoxy)methane	0			* Anthracene	0			*
* 2,4-Dichlorophenol	0			* Di-n-butylphthalate	0			*
* 1,2,4-Trichlorobenzene	0			* Fluoranthene	0			*
* Napthalene	0			* Pyrene	0			*
* 4-Chloroaniline	0			* Butylbenzylphthalate	0			*
* Hexachlorobutadiene	0			* 3,3'-Dichlorobenzidine	0			*
* 4-Chloro-3-methylphenol	0			* Benzo(a)anthracene	0			*
* 2-Methylnapthalene	0			* Bis(2ethylhexyl)phthalate	1	7.2	J 4	*
* Hexachlorocyclopentadiene	0			* Chrysene	0			*
* 2,4,6-Trichlorophenol	0			* Di-n-octyl phthalate	0			*
* 2,4,5-Trichlorophenol	0			* Benzo(b)fluoranthene	0			*
* 2-Chloronaphthalene	0			* Benzo(k)fluoranthene	0			*
* 2-Nitroaniline	0			* Benzo(a)pyrene	0			*
* Dimethylphthalate	0			* Indeno(1,2,3-cd)pyrene	0			*
* Acenaphthylene	0			* Dibenz(a,h)anthracene	0			*
				* Benzo(g,h,i)perylene	0			*

SURROGATE RECOVERIES (%):

SURROGATE	QA	CONTRACTOR	SURROGATE	QA	CONTRACTOR
Nitrobenzene-d5	99	71	2-Fluorophenol	70	71
2-Fluorobiphenyl	91	77	Phenol-d6	51	75
4-Terphenyl-d14	96	105	2,4,6-Tribromophenol	105	68

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE
COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS
SEE APPENDIX B FOR KEY TO COMMENTS

[illegible]

PROJECT: SAGE Fort Devens

EA0083

Container received on 11/17/57 and inspected on 11/20/57 by:

1. SHIPMODE (USM, VTS, DHL, FEDEX, F/C, AIR EXP, HAND-DELIVERED)

2. Супермаркет бумага (Cooler, box, envelope, etc.)

3. Were custody seals on outside of container?

N/A (Yes) No

How many & where: 2 14-15 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370

4. Were custody papers taped to lid inside container?

N/A Yes No

5. Custody papers properly filled out? (inv, signed, etc.)

Yes No

8. Was project identifiable from custody papers?

Yes No

7. Did you sign custody papers in appropriate places?

Yes No

4. Did you answer whether a Mexican man is this man?

N/A Yes No

9. Packing material (peanuts, vermiculite, bubble wrap, paper, foam, other)

10. Was sufficient ice used? Temperature 4.1 °C upon arrival

N/A Yes No

11. Were all samples sealed in separate plastic bags?

N/A Yes No

12. Did all sensors arrive in good condition?

Yes No

11. Sample labels complete? (%, date, analysis, preservation, sign.)

☒ Yes ☐ No

14. Did all sample labels agree with custody papers?

Yes No

13. Were correct usage containers used for waste indicated?

N/A Yes No

15. Were correct preservatives used? (TX - ☐ , CN - ☐)

N/A Yes No

(TOC pH _____, NUTRIENT pH _____, TOX pH _____, TYP pH _____, OTHER pH _____)

17. Were VOA vials bubble-free (H₂O) or no headspace (soil)?

N/A (Yes) No

13. Was sufficient amount of money sent in each month?

Yaa No

13. Were all vehicles used for air operations?

N/A Yes No

20. Name of the individual covered by this document 111857

NA Yes No

Discrepancies:

Page 1 of 1

24435

CENED-ED-GL-E
SAMPLE CONTAINER RECEIPT FORM

JECT:

Fort Devens SA 48

Container received on 12.21.93 and inspected on 12.21.93 by:

S. Clark

1. Shipper (USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)
2. Container type (Cooler, box, envelope, etc.)
3. Were custody seals on outside of container? N/A Yes No
How many & where: 2 over lid, seal date: 12/20/93 seal name: D. Colby
4. Were custody papers taped to lid inside container? N/A Yes No
5. Custody papers properly filled out? (ink, signed, etc.) Yes No
6. Was project identifiable from custody papers? Yes No
7. Did you sign custody papers in appropriate place? Yes No
8. Did you attach shipper's packing form to this form? N/A Yes No
9. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)
- Was sufficient ice used? Temperature 0.5 °C upon arrival N/A Yes No
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. Did all sample labels agree with custody papers? Yes No
15. Were correct sample containers used for tests indicated? N/A Yes No
16. Were correct preservatives used? (TM pH, CN- pH, TOC pH, NUTRIENT pH, TOX pH, TPH pH 2, OTHER pH) N/A Yes No
17. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
18. Was sufficient amount of sample sent in each container? 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:

CHAIN OF CUSTODY RECORD

Page 1 of 1

[illegible]

EA0083

REVISED ON 4-16-91

CENED-EE-Q1-2
SAMPLE CONTAINER RECEIPT FORM

SUBJECT: SALT FORT DOWNS COE/NEO

shipped by
ABG-53

Container received on 1/12/94 and inspected on 1/12/94 by: S. Clark

1. Shipper (USX, UPS, DHL, FEDEX, P/O, AIR EXZ, HAND-DELIVERED)
2. Container type (Carrier, box, envelope, etc.)
3. Were custody seals on outside of container? Y/A Yes No
How many & where: 2, seal date: 1/11/94 seal name: J. R. Ruff
4. Were custody papers taped to lid inside container? N/A Yes No
5. Custody papers properly filled out? (ink, signed, etc.) Yes No
6. Was project identifiable from custody papers? Yes No
7. Did you sign custody papers in appropriate place? Yes No
8. Did you attach shipper's packing form to this form? N/A Yes No
9. Packing material (packing peanuts, vermiculite, bubble wrap, paper, foam, other):
Was sufficient ice used? Temperature 0.2°C upon arrival N/A Yes No
10. Were all samples sealed in separate plastic bags? N/A Yes No
11. Did all samples arrive in good condition? Yes No
12. Sample labels complete? (#, date, analysis, preservation, sign.) Yes No
13. Did all sample labels agree with custody papers? Yes No
14. Were correct sample containers used for tests indicated? N/A Yes No
15. Were correct preservatives used? (TX pH 1, CN- pH 1,
(TOC pH 1, NUTRIENT pH 1, TOX pH 1, IFX pH 2, OTHER pH 1) N/A Yes No
16. Were VOA vials bubble-free (H₂O) or no headspace (soil)? N/A Yes No
17. Was sufficient amount of sample sent in each container? Yes No
18. Were air volumes noted for air samples? N/A Yes No
19. Were initial weights noted for pre-weighed filters? N/A Yes No

Discrepancies: _____

APPENDIX H
TANK REMOVAL MONITORING REPORT, EG&G
NOVEMBER 1989



Environmental Engineering & Geotechnics, Inc.
379 Broadway
Suite 202
Lynnfield, MA 01940
(617) 596-2160

721-1013

November 15, 1989

Alan Mechanical Services Corporation
290 West Boylston Street
Worcester, Massachusetts 01606

Attention: Steve McCarthy

RE: Tank Removal Monitoring Report
Fort Devens Military Reservation
Building Locations 202, 602, 604 & 2517
Fort Devens, Massachusetts
EE&G Project No. 89.1027MA

Dear Mr. McCarthy:

Environmental Engineering & Geotechnics, Inc. (EE&G) has completed the Tank Removal Monitoring Report (EE&G Project Number 89.1027MA) for the above referenced property. This study was authorized by Alan Mechanical Services Corporation on February 6, 1989.

The analytical investigation program performed on soil samples obtained during the excavation operations in conjunction with the removal of the underground storage tanks located at building locations 202, 602, 604 and 2517 encountered elevated total petroleum hydrocarbons. The results were determined as 3,212.894 parts per million (ppm) in building location 202; 29,612 ppm at building location 602; 73,553 ppm at building location 604; and 662.772 ppm at building location 2517. The only TPH result noted below the limiting criteria as established by the Fort Devens Specifications (50 ppm) was noted as building location 602. To date, approximately 270 cubic yards of contaminated soil has been removed from the the tank removal locations and disposed of at the Consolidated Landfill located in Norridgewock, Maine. EE&G's recommendations in connection with this scope of work are noted in Section 10.0 of this report (page 14).

After Alan Mechanical Services Corporation has had an opportunity to review this report, please contact EE&G to discuss any questions or comments concerning this study.

Sincerely,
ENVIRONMENTAL ENGINEERING
& GEOTECHNICS, INC.

Philip D. McBain
Manager Geotechnical Division

Mark A. Owens
President

ATTACHMENT 1

from "National Site
Investigation"

B/E 602 1/2-603

Info. on SA 43-H, 43-I,
2148 (B/E 202)

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Figure 1 - Site Vicinity Plan	
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Appendix A - Bidding Documents, Sections I: Underground Storage Tanks Removal - Subsections 1.0 to 6.3	
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Appendix D - Photovac Tip I Testing Protocol and Methodology	
Appendix E - UST Analytical Results - February 15, 1989	
Appendix F - UST Analytical Results - March 2, 1989	
Appendix G - Contaminated Soil Disposal Testing	
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Appendix J - Correspondence	



1.0 GENERAL

1.1 *Authorization*

In accordance with Mr. Steve McCarthy's verbal approval, as a representative of Alan Mechanical Services Corporation, dated February 6, 1989, Environmental Engineering & Geotechnics, Inc. (EE&G) has undertaken and completed a Tank Removal Monitoring Report of Buildings 202, 602, 604 and 2517 located in the Fort Devens Military Reservation located in Fort Devens, Massachusetts. A Site Vicinity Plan is included as Figure 1 to this report.

1.2 *Purpose of Study*

The purpose of this investigation program was to document the removal of four (4) underground storage tanks (UST's) and determine whether a release of oil and/or hazardous materials has occurred at each of the removal locations. The investigation and analytical programs were performed in accordance with the Fort Devens UST Removal Bid Documents/Specifications.

1.3 *Scope of Work*

To accomplish this task, the following scope of services was performed:

- Performed a site reconnaissance visit, which included documentation of visible on-site conditions. This program included the monitoring and documentation of the UST removal program.
- Collected soil and/or groundwater (if encountered) samples from the UST excavations. These soil and groundwater samples were analyzed for concentrations of total petroleum hydrocarbons (TPH) in accordance with extraction method EPA (Environmental Protection Agency) Method SW-846-8010 and analytical method EPA Method 418.1.
- Screened the excavated soils and completed UST excavations using a Photovac Tip I, portable photoionization detector for total organic vapors (TOV's), as calibrated to benzene.
- Drilled two (2) test borings near the UST excavations located at buildings 202 and 2517. These test borings were required to collect soil samples to define the nature of the contamination concern. Soil samples collected during the drilling program were screened for TOV levels using a portable photoionization detector.
- Analyzed contaminated soils encountered for polychlorinated biphenyls (PCB's), volatile organic compounds (VOC's), EP toxicity metals, TPH, reactivity (cyanides/sulfides), flash point, corrosivity, and total metals (lead, chromium, nickel and zinc).



2.2 Specified Analytical and Limiting Criteria

In accordance with the Fort Devens Bidding Document, the following guidelines and limiting criteria were established for the UST removal program:

- Upon the completion of the UST excavation program, the UST excavation was screened for TOV readings. The TOV readings were taken from soil samples located approximately 6 inches from the surface of the removed UST.
- Collected one (1) soil and one (1) groundwater (if encountered) sample per UST excavation. These samples were submitted for TPH analysis in accordance with EPA Method SW-846-8010.
- Established a limiting criteria of 10 parts per million (ppm) for TOV readings and a limiting criteria of 50 ppm for TPH concentrations. Soils exceeding this limiting criteria would require corrective measures to be taken.

These standards were instituted during for EE&G's monitoring of the UST removal program. A copy of the specification regarding the monitoring of the UST removal program and the submission of this report are attached in Appendix A of this report.

2.3 Project Personnel

The following personnel and associated companies were connected with the UST removal program:

Mr. Steve McCarthy	Alan Mechanical Services Corporation 290 West Boylston Street Worcester, Massachusetts 01606 Telephone No. 1-508-853-2901
Mr. Philip D. McBain	Environmental Engineering & Geotechnics, Inc. 379 Broadway Street, Suite 202 Lynnfield, Massachusetts 01940 Telephone No. 1-617-596-2160
Mr. Gerry McCarthy	Cyn Oil Corporation 1771 Washington Street Stoughton, Massachusetts 02072 Telephone No. 1-800-242-5818
Mr. Bill Totman, Jr.	Bill Totman, Jr. Trucking P.O. Box 551 Stoughton, Massachusetts 02072 Telephone No. 1-508-822-8069



3.0 REMOVED UNDERGROUND STORAGE TANKS

3.1 General

The tank removal program required the removal of one (1) 1,000 gallon UST from each building location (202, 602, 604 and 2517). According to information supplied in the Fort Devens Bidding Documents, these UST's were used for the storage of waste oil at the garage servicing facilities. A copy of the Material Safety Data Sheets (MSDS) was supplied by Fort Devens environmental personnel and is included as Appendix B of this report.

3.2 UST Removal Operations and Photoionization Results

On February 13 and 14, 1989, a total of four (4) 1,000 gallon underground waste oil UST's were removed, one from each of the previously noted building locations. The UST removal program was performed by Cyn Oil Company of Stoughton, Massachusetts under the supervision of Philip D. McBain of EE&G. During the excavation operations and upon removal of the UST's, each location was screened for TOV's using a portable photoionization detector. Soils exhibiting TOV readings exceeding 10 ppm were stockpile for proper disposal. In each UST location the excavation operations were terminated upon reaching the 10 ppm TOV limit. At this point a representative soil sample was collected from each of the UST excavations for TPH analysis.

The UST removal program recorded the following information in each of the UST removal locations:

- **Building Location 2517**

No leaks or pitting of the UST's were encountered during inspection after the removal operations. Because of the depth of groundwater at this location, a pump was used to dewater the tank excavation. Approximately 10 cubic yards of contaminated soil was encountered between the UST and the concrete deadman pad. Screening of the excavated soil encountered levels varying between 1.4 and 9.0 ppm.

Tank Specifications:

Size	1,000 gallons
Dimensions	129 inches by 49.5 inches
Quantity of Sediment	Half of a 55 gallon drum
Quantity of Product	300 gallons
Product Storage	Waste Oil
Depth to Top of UST	4.5 Feet
Depth to Groundwater	3.5 Feet



• Building Location 602 - SA 43-6

Minor quantities of contaminated soil was encountered during the UST removal program. No visual evidence of leaks or damage to the UST and associated piping was detected during visual inspection. Soil exceeding the 10 ppm TOV limit was stockpiled adjacent to the tank excavation. The excavation program removed approximately 80 cubic yard of contaminated soil. Upon the completion of the excavation program, a representative soil sample was collected from the UST excavation. Screening the stockpile contaminated soil encountered TOV reading varying between 4.1 and 50.4 ppm.

Tank Specifications:

Size	1,000 gallons
Dimensions	129 inches by 49.5 inches
Quantity of Sediment	Half of a 2 55 gallon drum
Quantity of Product	500 gallons
Product Storage	Waste Oil
Depth to Top of UST	4.5 Feet
Depth to Groundwater	Not Encountered

• Building Location 604 - SA 43-1

The UST removal operations exposed contaminated soil around the filler piping of the UST. The contaminated soil extended along the eastern side of the UST. Upon the removal of the UST, a visual inspection indicated no evidence of leaks, pitting or hole in the storage system. The only signs of leakage were attributed to the area around the UST filler piping. Upon the removal of the UST, the excavation was screened and soils exceeding the limiting criteria were removed. The excavation program encountered and stockpiled approximately 80 cubic yards of contaminated soil. A representative soil sample was collected from the UST excavation and submitted for TPH analysis. Screening of the contaminated soil encountered TOV readings varying between 11.4 and 57.1 ppm.

Tank Specifications:

Size	1,000 gallons
Dimensions	129 inches by 49.5 inches
Quantity of Sediment	Half of a 55 gallon drum
Quantity of Product	900 gallons
Product Storage	Waste Oil
Depth to Top of UST	3.5 Feet
Depth to Groundwater	Not Encountered

• Building Location 202 SA 48

The UST removal program noted minor discolorations and elevated TOV readings to the soils removed from the UST excavation. Excavation of the soil was conducted until TOV readings were detected below the limiting criteria.



A review of the UST's interior during the cleaning operations detected a separation in one of the seams. No other visual evidence was detected during the review of the UST. Approximately 100 cubic yards of contaminated soil was removed from this location. Screening of the contaminated soil encountered TOV readings varying between 8.8 and 45.3 ppm.

Tank Specifications:

Size	1,000 gallons
Dimensions	129 inches by 49.5 inches
Quantity of Sediment	One and a Half - 55 gallon drums
Quantity of Product	300 gallons
Product Storage	Waste Oil
Depth to Top of UST	4.0 Feet
Depth to Groundwater	Not Encountered

In each of the UST locations, the excavation was also inspected by Chief Corville of the Fort Devens Fire Department.

Based on the results of the TOV screening a total of approximately 270 cubic yards of contaminated soil was removed from building locations 202, 602, 604 and 2517. In each of these locations, excavation of the soils was terminated upon ascertaining a TOV reading under the 10 ppm limiting criteria. Final approval on the environmental integrity of the UST excavation would be determined by the results of the TPH analysis. If conditions indicated TPH levels exceeding limiting criteria, further remedial measures would be required at the UST location.

4.0 SUBSURFACE EXPLORATIONS

4.1 General

The subsurface conditions at building locations 202 and 2517 were explored by drilling a total of four (4) test borings, two (2) at each of the building locations. The test borings were installed by Al Shinner Test Boring, Inc. of Melrose, Massachusetts under the supervision of EE&G personnel. The test borings were installed on May 25, 1989. Test boring logs are included in Appendix C of this report.

The following notation was employed by EE&G to identify the exploration locations and monitoring wells during the EE&G subsurface exploration and investigation program.

Test Borings

- B-1 to B-2 identify (B) test boring numbers 1 to 2 which were installed under EE&G supervision at building location 2517. These test borings were used to determine the subsurface, lithology conditions and determine the nature of the environmental concern at this location.



- B-3 to B-4 identify (B) test boring numbers 3 to 4 which were installed under EE&G supervision at building location 202. These test borings were used to determine the subsurface, lithology conditions and determine the nature of the environmental concern at this location.

Test borings were positioned to evaluate subsurface conditions for the presence of contamination. Specifically, test boring locations were determined based upon:

- the location of the UST;
- the location of the underground lines;
- screening results from the installed test borings;
- estimated groundwater flow direction.

4.2 Test Borings and Photoionization Results

The EE&G investigative program required the installation of two (2) test borings to be drilled at building locations 202 and 2517. The test borings were extended to a maximum depth of 32.0 feet below the existing grade and terminated 5 feet into the groundwater table.

The test borings were installed by using a mobile truck mounted rotary drill rig with split spoon soil samples being collected in accordance with the American Society for Testing and Material (ASTM) D1586, "Penetration Test and Split Barrel Sampling of Soils". Standard Penetration Tests (SPT's) were performed in all test boring locations at 5.0 feet depth intervals or as shown on the test boring logs. (See Appendix C). The drilling program used 6-inch outside diameter hollow stem augers.

Soil samples obtained from the test borings were analyzed with a direct reading Photovac TIP 1 photoionization detector for concentrations of TOV's. The levels of TOV's detected were recorded and are summarized on Table 1 located on the following page and listed on the test boring logs. Testing protocol and methodology is attached in Appendix D of this report.

5.0 SITE CONDITIONS

5.1 Subsurface Soil Conditions

EE&G's knowledge of the subsurface conditions is based on the results of the field investigation described in Section 4.0. The following generalized subsurface stratum were encountered beginning from ground surface:

- ***Building 2517 (Borings B-1 & B-2)***
 1. Bituminous Pavement, approximately 1.5 inches thick, was encountered at the surface of test borings B-1 and B-2.



TABLE 1

Soil Analyses, Test Borings
 Summary of Photovac Tip I Readings

Sampling Depth (Feet)	Photovac Readings (in part per million - ppm)			
	B-1	B-2	B-3	B-4
0.0 - 2.0	0.2	0.0	0.0	0.4
3.0 - 7.0	0.5	0.1	0.2	0.1
10.0 - 12.0	0.0	0.0	0.1	0.2
12.0 - 14.0	~	~	0.1	0.0
14.0 - 16.0	~	~	0.1	0.0
16.0 - 18.0	~	~	0.0	0.1
18.0 - 20.0	~	~	130.0	0.0
20.0 - 22.0	~	~	0.2	0.0
22.0 - 24.0	~	~	0.2	0.0
24.0 - 26.0	~	~	0.1	0.1
26.0 - 28.0	~	~	0.2	0.5
28.0 - 30.0	~	~	0.3	0.2
30.0 - 32.0	~	~	0.2	0.0
Termination Depth	11.5'	11.0'	32.0'	32.0'
Groundwater Depth	3.5'	4.0'	29.0'	29.0'

Note: Limiting criteria established in the Fort Devens UST Removal Bid Documents as 10 ppm.

2. Brown Gravelly Sand (SP-SM): was encountered underlying the surface of the asphalt pavement in test borings B-1 and B-2, and varied in thickness from 3.0 to 3.5 feet. The gravelly sand layer consisted of varying percentages of coarse to fine sand with 15-20% coarse to fine gravel and 5-10% nonplastic fines.
3. Grey / Brown Silty Gravel (GM): was encountered underlying the gravelly sand layer in test borings B-1 and B-2, and extended to the maximum depth explored which was 11.5 feet below the existing grade. The silty gravel layer consisted of varying percentages of coarse to fine gravel, 30-40% nonplastic fines and 5-15% coarse to fine sand. The silty gravel layer was medium dense to very dense with SPT N-Values* varying between 32 and 88 blows.

* SPT N-Value is the number of blows for a 140 pound hammer falling freely through 30 inches required to advance the standard 1-3/8 inch inside diameter by 2 inch outside diameter split-spoon sampler the last 12 inches of an 18 inch sampling interval.



• **Building 202 (Boring B-3 & B-4)**

1. Brown Sand (SP): was encountered at the surface of test borings B-3 and B-4, interbedded in the silty sand layer in test boring B-3, underlying the silty sand layer in test boring B-4 and ranged in thickness from 4.0 to 10.0 feet. The sand layer consisted of varying percentages of coarse to fine sand with less than 12% coarse to fine gravel and less than 10% nonplastic fines. The sand layer was loose to medium dense with SPT N-Values varying between 10 to 26 blows.
2. Brown Gravelly Sand (SP): was encountered underlying the sand layers in test boring B-3 and B-4, and varied in thickness from 2.0 to 8.0 feet. The gravelly sand layer consisted of varying percentages of coarse to fine sand with 10-25% coarse to fine gravel and less than 7% nonplastic fines. The gravelly sand layer was medium dense to dense with SPT N-Values varying between 15 to 33 blows.
3. Tan / Grey Brown Silty Sand (SM): was encountered underlying the gravelly sand layer and interbedded in the sand layer in test boring B-3, and varied in thickness from 3.8 to 4.0 feet. The silty sand layer consisted of varying percentages of coarse to fine sand and 20-30% nonplastic fines. The silty sand layer was medium dense to dense with SPT N-Values varying between 15 to 31 blows.

5.2 Groundwater Conditions

The groundwater table was encountered at a depth of 29.0 feet below ground surface at building location 202 and at a depth varying between 3.5 to 4.0 feet below the existing ground surface at building location 2517. The excavation of the UST from building locations 602 and 604 did not encounter a groundwater table. Groundwater levels may be affected by local anomalous conditions and may be dependent on seasonal factors and thus may not represent the levels to be encountered in the future. Generally, groundwater readings are highest in the early spring and lowest in the fall.

6.0 LABORATORY INVESTIGATION

6.1 Sampling Procedures & Protocols

All soil and groundwater samples were collected under the supervision of or obtained by EE&G personnel. Glass bottles were all precleaned and rinsed prior to sampling.

The following protocol was implemented for the collection of soil and groundwater samples during the drilling and UST removal programs:



- *UST Removal Program*

After the removal and upon the confirmation that the soils from the UST excavation screened below the 10 ppm limiting criteria, soil samples were collected from the UST excavations. Samples were collected from 6 to 9 locations at the base of the UST excavation, placed in a plastic bag, mixed and transferred into a 8 ounce glass jar with a double layer aluminum seal. The screening of the excavated and in-situ soil was performed in accordance with the methodology listed in Appendix D of this report. In accordance with the UST removal specifications, one representative soil sample was collected from each of the UST excavations.

In addition to the soil samples, a sample of the groundwater was collected from the UST excavation located at building location 2517. The groundwater sample was collected upon completion of the UST removal and upon stabilization of the groundwater table. The sample was collected by submersing a 1 liter jar into the groundwater table. The groundwater sample was then transferred to a second 1 liter jar.

No separate phase product was encountered in any of the UST excavations.

- *Drilling Program*

Soil samples collected during the drilling program were placed in eight ounce glass jars and capped immediately to prevent any loss of VOC's or oxidations. A double layer of aluminum foil was placed between the jar opening and the screw cap to provide a tight seal. Screening of the soil samples for TOV readings was performed in accordance with the Methodology attached in appendix D of this report.

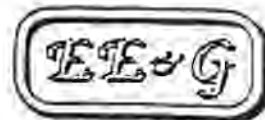
Since no authorization was given for analysis of select soil samples, these soil samples were forwarded to Mr. Steve McCarthy of Alan Mechanical Services for possible further analysis as dictated by Fort Devens Environmental Personnel.

Samples designated for analysis were placed in glass jars and labeled with identification which included the following information:

- | | |
|----------------------------|------------------|
| • Project Name | • Project Number |
| • Date | • Time |
| • Sampler's Name | • Location |
| • Analysis to be Performed | |

All of the samples were placed in protective containers (cooler) with packing material, cooled to 4 degrees Centigrade and shipped overnight to LCC Institute of Water Research in Lubbock, Texas for analysis. All of the soil samples were accompanied by a Chain of Custody denoting the analysis to be performed.

No separate phase product was encountered in any of the UST excavations.



6.2 Laboratory Mix

A groundwater sample was obtained from the UST excavation located at building location 2517 and analyzed for concentrations of TPH. Soil samples were collected from the base of each UST excavation and analyzed for TPH. These samples were collected upon ascertaining TOV readings under 10 ppm.

In addition to the TPH testing, a sample of the contaminated soil was obtained from each of the stockpiles and composited for laboratory analysis. The composite soil sample was analyzed for concentrations of PCB's, EP toxicity metals, pH, reactivity (cyanides/sulfides) flash point, corrosivity, total metals (lead, chromium, nickel, and zinc), TPH and VOC's.

6.3 Analytical Results

The results of EE&G's first phase laboratory analysis program encountered the following analytical results:

Building Locations	TPH Concentrations (in ppm)	
	Soil	Groundwater
202	915.776	Not Encountered
602	88.994	Not Encountered
604	1,517.080	Not Encountered
2517	3,538.556	4.787
Limiting Criteria	50 ppm	Not Established

Based on the analytical results, the Fort Devens Environmental Personnel requested additional TPH testing performed on the UST excavations. In this scenario, it was required that a composite soil sample be obtained from the UST excavation, separated into three individual jars and resubmitted for TPH analysis. In this case, one of each of the soil samples was given to EE&G, the Fort Devens Environmental Personnel and the DEP for testing by their respective analytical laboratories. The results of EE&G's second phase analytical testing program encountered the following TPH results: Building 202 - 3,212.894 ppm; Building 602 - 29.612 ppm; Building 604 - 73.553 ppm; and Building 2517 - 662.772 ppm. Since the other TPH analysis was not made available for EE&G's review, a comparison could not be made and could not be provided in this report.

Base on the results of the first phase analytical program all UST excavations were determined to be in excess of the 50 ppm TPH limiting criteria. However, in the second phase testing program building locations 202, 604 and 2517 were determined to be exceeding the 50 ppm TPH limiting criteria.

The complete analytical results (TPH) are shown in Appendices E and F of this report. Sampling locations are shown on the UST Location Plan which is included as Figure 2 through 5 of this report.



The results of the analytical testing performed on the contaminated soil is noted in Table 2 located below and in Appendix G. The analysis performed by Consolidated Waste Services for final disposal of the contaminated soil is summarized in Table 3 located on the following page and in Appendix H.

TABLE 2

*Soil Analysis
 Summary of Disposal (Analysis) Results*

<u>Analysis Performed</u>	<u>Results in ppm</u>
PCH's	< 1.0
EP Toxicity Metals	
Arsenic	< 0.005
Barium	0.032
Cadmium	< 0.05
Chromium	< 0.05
Lead	< 0.10
Copper	0.05
Mercury	< 0.005
Nickel	0.75
Selenium	< 0.005
Silver	< 0.05
Zinc	0.19
Initial pH	6.32
Final pH	4.52
Reactivity	
Cyanide	0.200
Sulfides	12.0
Flash Point	> 160 ° F
Corrosivity	6.32
Total Metals	
Lead	14.0
Chromium	9.0
Nickel	30.0
Zinc	37.0
TPH	6,000
VOC's	Below Detection Limit

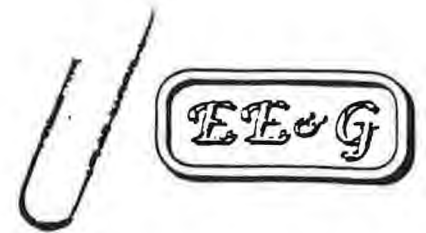


TABLE 3
Soil Analysis
Summary of Consolidated Waste Services Results

<u>Analysis Performed</u>	<u>Building 202</u>	<u>Results in ppm</u> <u>Building 602/2517</u>	<u>Building 604</u>
PCB's & Pesticides	< 1.0	< 1.0	< 1.0
EP Toxicity Metals			
Arsenic	< 0.01	< 0.01	< 0.01
Barium	< 0.5	< 0.5	< 0.5
Cadmium	0.01	0.02	< 0.01
Chromium	0.4	< 0.2	< 0.2
Lead	< 0.1	< 0.1	0.1
Mercury	< 0.002	< 0.002	< 0.002
Selenium	< 0.01	< 0.01	< 0.01
Silver	0.1	< 0.1	< 0.1
Initial pH	5.56	5.26	6.58
Final pH	4.94	5.04	4.81
Reactivity			
Cyanide	Negative	Negative	Negative
Sulfides	Negative	Negative	Negative
Flash Point	> 160 ° F	> 160 ° F	> 160 ° F
Corrosivity	5.32	5.65	6.67
Ethylene Glycol	Below Detection Limit (BDL)	BDL	BDL
VOC's	BDL	BDL	BDL

7.0 SOIL DISPOSAL

On August 27 and 28, 1989, the stockpiled contaminated soil located at building locations 202, 602, 604 and 2517 was removed from the premises under the supervision of Alan Mechanical Services personnel. The removal operations were performed by Enpro Services, Inc. of Newburyport, Massachusetts. The soils were disposed of at Consolidated Waste Services Facility located on Airport Road in Norridgewock, Maine. The Hazardous Waste Manifests are included in Appendix 1 of this report.



8.0 SUMMARY AND EVALUATION

This completes the scope of services as mandated by the Tank Removal Specifications and Alan Mechanical Services Corporation. EE&G's investigation encountered the following information:

- Approximately 270 cubic yards of contaminated soil was removed from building locations 202, 602, 604 and 2517. This soil was removed from the Fort Devens Military Reservation on August 27 and 28, 1989 and disposed of at the Consolidated Landfill in Norridgewock, Maine;
- Based on the analytical testing results (TPH), additional contaminated soils remain in the UST excavations at building locations 202 (3,212.894 ppm), 604 (73.553 ppm) and 2517 (662.772 ppm);
- All of the UST excavations screened below the 10 ppm limiting TOV criteria.

9.0 CONCLUSIONS

Based on the results of the UST removal program, laboratory results and the subsurface exploration program, EE&G concludes that there has been a release of oil and/or hazardous materials at building locations 202, 2517 and 604. This evaluation is formulated on the results of the TPH testing and the limiting criteria.

To date approximately 270 cubic yards of contaminated soil has been removed from the UST excavations. Analyses performed on the soils encountered in the UST excavations indicates that additional soil should be removed from all of the UST excavations with the exception of building location 602.

At the present time, the UST excavations located at building locations 202, 604 and 2517 are not in compliance with the DEP policies and procedures. Therefore, corrective actions are required to facilitate environmental compliance and to obtain permanent site closure.

10.0 RECOMMENDATIONS

Based upon the results of our Tank Removal Monitoring Report, a determination of the environmental integrity of the UST's located at building locations 202, 602 and 2517 can not be distinguished at this time. To facilitate EE&G's review of the site conditions the following information/actions are required:

- Notify the DEP located in Woburn, Massachusetts of the current environmental concern. This notification should include the submission of this report.

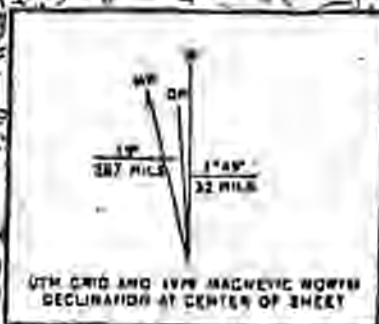
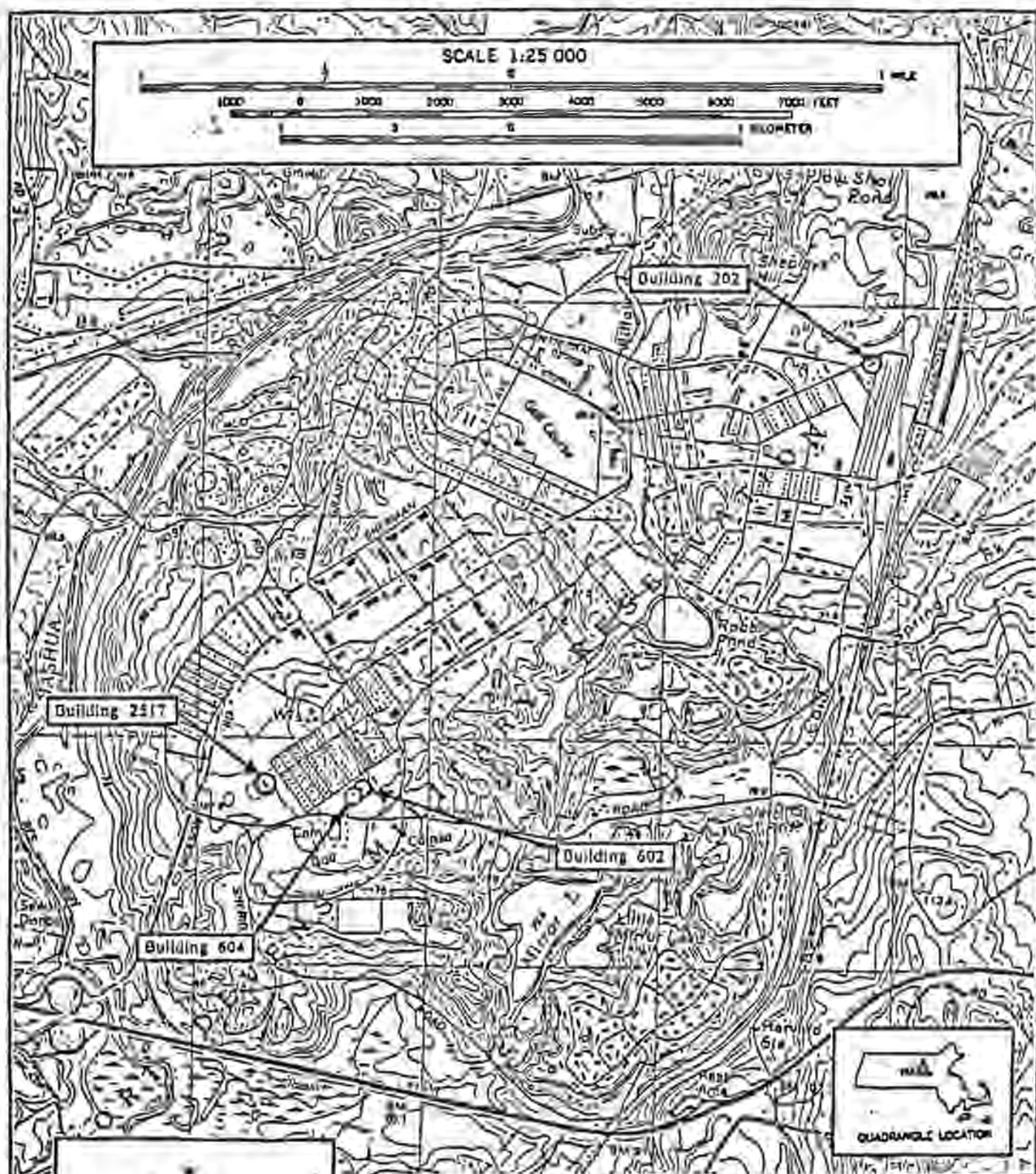


- Perform a Phase I: Limited Site Investigation of the UST excavations located at building locations 202, 602 and 2517. This investigation program should be implemented to obtain specific groundwater information and provide further information on the nature of the contamination concern. The installation of three (3) to five (5) test borings/monitoring wells should be installed at each of the tank removal locations, and representative soil and groundwater samples analyzed for concentrations of TOV's, VOC's and TPH.

11.0 LIMITATIONS

It should be noted that all surficial investigations are inherently limited in the sense that conclusions are drawn and recommendations developed based on the analytical data and a visual review of the UST removal locations. Finalization of the environmental integrity of the UST removal locations can only be determined by addition subsurface assessment and chemical analyses of the site's soil and groundwater.

EE&G's professional services have been performed in accordance with acceptable environmental and geotechnical principals and practices. EE&G is not responsible for independent conclusions, opinions or recommendations made by others based on the information contained herein. Any additional information concerning the UST removal locations, should be provided to EE&G so that EE&G's recommendations and conclusions may be reviewed and modified accordingly.



TANK REMOVAL LOCATION PLAN FORT DEVENS, FORT DEVENS MASSACHUSETTS

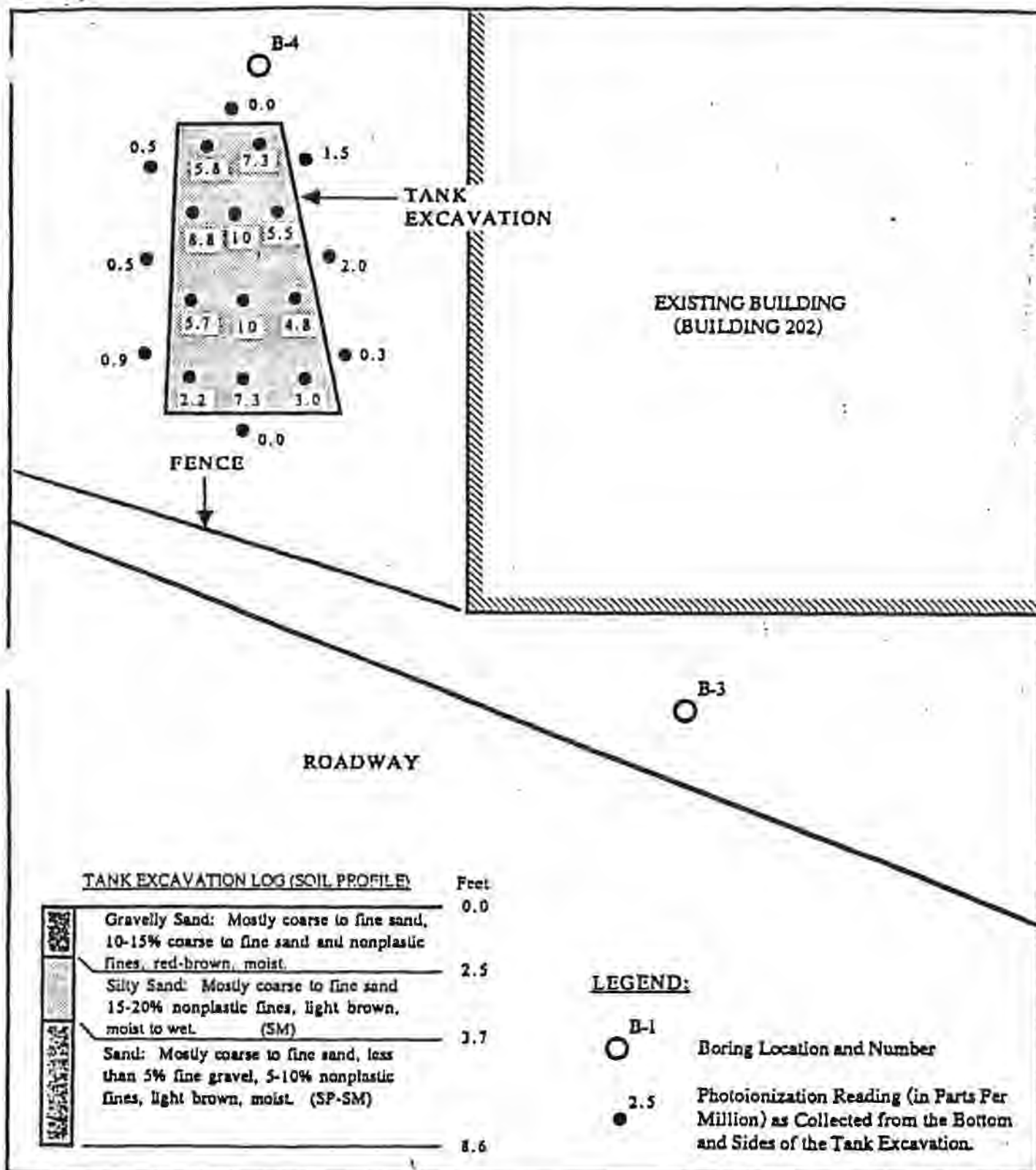
EE&G

ENVIRONMENTAL ENGINEERING AND
GEOTECHNICS, INC.
379 BROADWAY STREET, SUITE 202
LYNNFIELD MASSACHUSETTS 01940

DR. BY: POM
CK'D BY: MAO

SCALE: ABOVE
DATE: 9 NOV 1999

PROJ. NO. 89.1027 MA
FIG. NO. 1



**TANK LOCATION PLAN
BUILDING 202, FORT DEVENS, AYER, MA.**

**ENVIRONMENTAL ENGINEERING AND
GEOTECHNICS, INC.**
379 BROADWAY, SUITE 202
LYNNFIELD MASSACHUSETTS 01940

EE&G

DR. BY: PDM

CK'D BY: MAO

SCALE: 1" = 10'

DATE: 31 MAY 1989

PROJ. NO. 89.1027MA

FIG. NO. 2

APPENDIX I

**"REPORT OF FIELD ACTIVITY, SOIL REMOVAL AT STUDY AREA 48,"
USCOE, NEW ENGLAND DIVISION**

JUNE 1993

MEMORANDUM FOR Chief, Geotechnical Engineering Division

SUBJECT: Report of Field Activity
Soil Removal at Study Area 48
Ft Devens, Ayer, MA

1. Summary: At the request of Ft Devens, NED contracted excavation services to assist in the Removal Action at Study Area 48, located adjacent to Building 202 (see Figure 1). Purchase Order No. DACA33-93-M-0198 was awarded to Site Remediation Services, Inc. (SRS) on 20 November 1993. Once the necessary submittals were received from the Contractor and approved, work was scheduled to start the week of 19 April 1993. Ecology and Environment (E & E), the consultant to the Army Environmental Center (AEC; formerly USATHAMA), provided personnel on-site to perform field screening, and analytical sampling and testing support work.

A total of approximately 335 cu yds of soil were excavated under this Removal Action (see Figure 2). Site soils consisted chiefly of grayish brown, medium sand, with rare pebbly zones. Excavation was restricted to the north because of building foundation concerns, and limited to the depth of the excavator's reach (approximately 20 ft). The excavation was backfilled upon completion.

Approximately 150 tons of waste oil contaminated soil were stockpiled at the site. The disposal of contaminated soil was originally a line item in the Purchase Order, but was later deleted to allow more excavation without exceeding the limit of the contractual vehicle. The stockpiled soil is to be removed and disposed of under an ammendment to the contract issued for the disposal of contaminated soil at Study Area 15. Disposal is to be completed as quickly as possible, in consideration of the 120 day time limit. The results of the SA 48 TCLP analyses of the stockpile samples were received from E & E on 4 June 93.

The Contractor has sampled and tested the decontamination wash water, which is currently being stored at the site in a 55-gallon drum. However, due to improper handling of the Quality Assurance sample sent to the Corps Environmental Laboratory, the Contractor must re-sample the water and submit the new sample to the Corps Laboratory for analysis. Contractor is still responsible for proper disposal and manifesting of the decontamination wash water.

Based on observations made during excavation, field screening information, and analytical results, there is significant contamination (up to several thousand ppm TPH) remaining in the soil below a depth of 20 ft, and to the north (towards Building

202). The extent/quantity of this remaining contamination cannot be calculated without further subsurface investigation.

2. Purpose: Removal of contaminated soil below a former underground storage tank (UST) location, and at a location believed to be an unrelated, localized spill.

3. Personnel On-Site:

Rose Schmidt, Geologist, CENED-ED-GG
Mark Rossetti, Supervisor, SRS
William Long, SSHO and Operator, SRS
Cyril St. George, Dump Truck Driver, SRS
Richard Alimberti, Laborer, SRS
Maria Robino, EMT and Laborer, SRS
Keith Davison, Scientist, E & E
Ken Kanige, Chemist, E & E
Dan Stenstream, Engineer, CENED-ED-GD (20 April 93)
Low Boy Driver, SRS (11 May 93)
Jeff Waugh, CENED-PD-L (12 - 13 May 93)
John Callan, Geologist, Camp, Dresser and McKee Federal
Programs Corporation (CDM), for USEPA (12 May 93)
David Salvador, Environmental Analyst, Massachusetts
Dept. of Environmental Protection (12 - 13 May 93)
Frank Bieniek Sr., Miller Engineering and Testing,
working for SRS (12 - 13 May 93)

Note: For ease in this presentation, a "Project North" was used, such that the wall of the building facing the work area is taken to be oriented east - west (see Figure 2).

4. Conclusions: Excavation was conducted in the vicinity of the former UST location on the south side of Building 202, and at the localized spill location, as defined by the shallow contamination encountered in a boring performed by E & E during the Site Investigation. Additional excavation was required because initial excavation at the former UST grave was conducted in the wrong location. Previous reports from the tank removal project (by others, 1989) contained incorrect tank location information. Because of the initial excavation in the incorrect location, the final footprint of the excavation was approximately 42 ft by 18 ft (see Figure 2).

The actual old tank grave measured approximately 22 ft by 16 ft, and approximately 7 ft deep. The floor was found to be lined with plastic. Soil excavated below a depth of 6 ft was stockpiled as contaminated, to protect the integrity of the clean stockpiles. The footprint of the old tank area was excavated to a depth of 10 ft. The 10-ft depth was dictated by building foundation concerns. Soil excavated between 7 ft and 10 ft had a slight oily odor. Samples were taken from the floor of the excavation at a depth of 10 ft, and analyzed for Total Petroleum Hydrocarbons by Non-

Dispersive Infrared (NDIR). The samples had TPH concentrations ranging between "Not Detected" (less than 50 ppm) and 2,700 ppm.

Because of building foundation concerns, additional excavation below a depth of 10 ft was conducted in two trenches (approximately 6 ft by 12 ft), opened up to a depth of 20 ft, one at a time. Visibly contaminated soil with a heavy oily odor was encountered between 10 ft and 20 ft in the first trench, and the sample from the bottom of the excavation at a depth of 20 ft had a TPH concentration of 257 ppm. Contamination was observed to be remaining on the north wall of this trench, but continued excavation to the north was restricted because of the closeness to the building foundation. The first trench was lined with plastic and backfilled before the second deep trench was opened up. The second trench was made parallel to and alongside the south wall of the first trench. As this trench was excavated, it was observed that the degree of contamination varied from one side of the bucket to the other. The material from the north side of the bucket remained highly contaminated (2,000 to 16,000 ppm TPH), but the material from the south side of the bucket was clean ("ND"). The sample from the north side of the bucket taken at a depth of 20 ft still had a TPH concentration of 2,127 ppm; the sample from the south side of the bucket at the same depth was "ND."

Contamination from the waste oil tank has migrated vertically through the sandy soils to a depth greater than 20 ft, and laterally to the north (towards the building) to an unknown extent.

Continued attempts to clean up the south and west walls of the small "spill" area (boring B202-BH1) eventually resulted in the small excavation merging with the larger excavation. Based on the spotty "hits" from the walls of the small excavation, it is suspected that the contamination encountered in the original boring is related to random spills and leaks from vehicles parked over an unpaved surface over many years. At the end of this work, there was still contamination (189 ppm TPH) on the west wall; however, it did not appear that a meaningful cleanup could be accomplished for this contamination within the scope of this removal action, given the apparent random distribution of this contamination.

5. Recommendations: Further subsurface investigation is recommended in order to determine the lateral and vertical extent of the contamination related to the waste oil tank. Further consideration of clean-up goals is recommended for the contamination believed to be the result of isolated spills.

6. Narrative:

(1) General. The initial plan for this removal action was to re-excavate the old tank grave, and then excavate contaminated soil below this level, to a cleanup level of 50 ppm Total Petroleum

Hydrocarbons (TPH), as defined by the detection level of the Non-Dispersive Infrared (NDIR) detector field screening method. In addition, shallow excavation was planned at a location identified as a localized spill area, based on the results from a boring (B202-BH1) made by E & E as part of the Site Investigation (see Figure 2). The 0 ft to 2 ft sample in boring B202-BH1 had a concentration of 1,350 ppm TPH. Excavation was to be centered on the staked location of boring B202-BH1, and extend to a minimum depth of 3.5 ft. Contamination at this location was believed to be a result of a localized spill, and not related to the UST. The quantities in the contract were based on the assumption that only about 50 % of all the excavated material, or approximately 70 tons, would be subject to removal and disposal.

(2) Previous Work By Others. A 1,000 gallon underground waste oil storage tank was removed from the back (south) side of Building 202 in 1989 by Environmental Engineering and Geotechnics, Inc. (EE & G). According to the EE & G Tank Removal Monitoring Report, dated 15 November 1989, excavation of contaminated soil continued until Total Organic Vapor (TOV) readings (headspace analyses, performed using a Photoionization Detector) fell below 10 ppm. TOV readings from the contaminated soil were reported to range between 8 and 45 ppm. Approximately 100 cubic yards of soil were reportedly removed. Because the first composite soil sample taken from the excavation floor had a high Total Petroleum Hydrocarbon concentration (916 ppm), a second composite sample was taken and split between three entities (MDEP, Ft Devens, and EE & G) for re-analysis. The second sample analyzed by EE & G had a concentration of approximately 3,213 ppm. The excavation was backfilled with clean imported material at that time, although contamination appeared to be remaining on the floor of the excavation. Two borings, B-3 and B-4, were made by EE & G in the vicinity of the former tank location. Both holes were continuously sampled to a depth of 32 ft, and the samples tested for TOV's (headspace). All of the samples had TOV's at background levels, except for the 18 ft to 20 ft sample in boring B-3 (located around the corner of the building from the former tank location), which was reported to have a reading of 150 ppm TOV (see Figure 2). No additional information was available regarding this particular sample, and no laboratory analyses were performed on these samples. Groundwater was reportedly encountered at a depth of 29 ft.

(3) 20 April 1993. The Contractor mobilized a small, rubber-tired backhoe to the site. The gate to the yard behind Building 202 was locked, causing approximately one hour delay while waiting for the lock to be cut off. E & E personnel staked the location of boring B202-BH1; and the ends of the former tank location, based on the figure in the report by EE & G. Ft Devens Directorate of Engineering and Housing (DEH; now the Directorate of Public Works) personnel stopped by the site and confirmed location of water and sewer lines alongside/outside the fence. Excavation was started at the east end of the former tank location, to avoid losing access to

this area once the excavation expanded in size (see Figure 2). Light and dark brown layering in uppermost 3 ft was thought to be lifts of backfill. The Contractor excavated a 12 ft by 13.5 ft area to a depth of approximately 8 ft, and then went down one bucket-width in the center, to a depth of approximately 13 ft, the maximum reach of the backhoe. Material below approximately 7 ft to 9 ft appeared to be "natural" in-situ material. There was no distinct break between fill and natural material. E & E personnel collected three samples from the excavation and tested them for TPH by NDIR (Modified EPA Method 418.1).

<u>Sample Location</u>	<u>TPH (ppm)</u>
East Wall, 2.5' depth	ND
Floor, 8.0' - 8.5' depth	ND
Floor, 13.0' - 13.5' depth	ND

ND = Not Detected

Detection Limit = 50 ppm.

In light of the 20 ft minimum depth of excavation required by the Action Memorandum, several issues came up at this point:

(a) The specifications (based on extremely preliminary information) only called for excavation to a depth of approximately 10 ft.

(b) The Contractor mobilized a small backhoe to the site, capable of excavating to a depth of no more than approximately 13 ft (without ramping and entering the excavation).

(c) The information in the EE & G report was not clear in indicating the depth of their excavation. Based on an excavation quantity of 100 cu yds (unbulked), their excavation may have been as deep as 14 ft. This was contradictory to the materials observed in the excavation.

(d) Due to the proximity of the excavation to the building, maximum allowable excavation depth would have to be restricted to prevent damage to the building foundation. Foundation drawings for a typical Ordnance Shop were obtained from DEH.

Until these issues could be resolved, it was decided to discontinue excavation work at the former tank location. The excavation was partially backfilled with clean excavated material to a depth of 3 ft to minimize the hazard of an open hole, and was fenced off. Approximately 25 cu yds were excavated in this location, and 8 cu yds backfilled. Approximately 5 cu yds were then excavated from an excavation measuring approximately 5.5 ft by 6.7 ft, and 3.5 ft deep, centered on the staked location of B202-BH1. This potentially contaminated soil was stockpiled separately on plastic, and covered with plastic. E & E personnel collected 5 samples from this excavation for TPH analysis (NDIR); one from the floor, and one from each wall at a depth of approximately 3 ft. These results were not immediately available, and so the Contractor demobilized his equipment and personnel until costs for mobilizing larger

excavator, etc. could be negotiated, and the work could be rescheduled.

<u>Sample Location</u>	<u>TPH (ppm)</u>
Floor	ND
North Wall	ND
East Wall	ND
South Wall	88
West Wall	77

Note: It was later confirmed in a conversation between GED and EE & G personnel that the tank grave was about 8 ft to 9 ft deep, and probably not lined with plastic. The 100 cu yds cited in the EE & G report apparently represented a bulked figure.

(4) 11 May 1993. The plan was to excavate the former UST location to a depth of approximately 8 ft and stockpile this soil as clean, and then excavate below this to a depth of approximately 10 ft, stockpiling this soil as potentially contaminated. The 10-ft-depth was dictated by closeness to the building foundation. Based on NDIR results from the floor of the excavation at 10 ft, two locations were to be selected for deep excavation (one bucket wide) to a depth of approximately 20 ft. After the first 20-ft deep excavation was excavated and sampled, it would be backfilled, and then the second location would be opened up. This excavation and backfilling sequence was proposed in order to avoid opening up a long trench all at once to a depth of 20 ft along the building. This sampling strategy was verbally agreed to between Ft Devens and USEPA.

The Contractor mobilized a large, track excavator (Akerman H14B). The excavator had been decontaminated at their shop, but there was still grease/oil on the bucket. One of the Contractor's support vehicles, carrying decontamination supplies, was delayed in arriving to the site due to mechanical difficulties. When the truck arrived, the Contractor obtained water from the specified watering point on the South Post (after receiving instruction on the use of this water supply), set up a decontamination pad, and decontaminated the bucket. A representative from the USEPA's consultant was present at the site this day. Excavation of the former tank location continued as planned. The locations of the tank corners, as shown in the EE & G report, were again marked on the ground. E & E personnel collected seven samples for TPH analysis (NDIR) from the 21-ft-long by 11-ft-wide excavation; three from the floor, at east, center, and west locations; at a depth of 10 ft; and one from each wall. All of these samples were "ND."

An excavation was then made, one bucket wide, to a depth of 20 ft in the center of the main excavation. E & E personnel collected duplicate samples to be analyzed for TPH by NDIR in the field, and potentially to be sent to their laboratory for confirmatory testing for TPH by EPA Method 418.1. Three samples were collected; one

from the bottom of the excavation at a depth of approximately 20 ft; one from the south wall at a depth of 10 ft; and one from the east wall at a depth of 10 ft. All of these samples were "ND" by NDIR.

The first 20-ft-deep excavation was backfilled, and a second 20-ft-deep hole was to be excavated on the west end of the main excavation. In the process of enlarging the west end of the excavation in preparation for excavating the second deep hole, plastic was encountered at the west end of the excavation, and it was apparent that the west end of our excavation was the east end of the former tank grave. Excavation was stopped for the day. The duplicate confirmatory samples were not sent to the laboratory for analysis.

A total of approximately 105 cubic yards were excavated this day.

(5) 12 May 93. After backfilling the eastern portion of the existing excavation, the plan was to excavate in the area of the former tank location to a depth of approximately 6 ft (1 ft above the plastic) and stockpile this soil as clean, and then excavate below this to a depth of approximately 10 ft, stockpiling this soil as contaminated. Based on NDIR results from the floor of the excavation at 10 ft, two locations would be selected for deep excavation (one bucket wide) to a depth of approximately 20 ft. After the first 20-ft-deep excavation was excavated and sampled, it was to be backfilled, and then a second deep location was to be opened up.

The excavation was opened up to the west, and the extent of the former tank grave determined to be approximately 22-ft-long by 16-ft-wide, based on the presence of the plastic, and obvious differences in material. Plastic was encountered on the floor of the excavation at a depth of 7 ft. After additional excavation, E & E personnel collected 4 samples; one from the floor of the excavation, at a depth of 8 ft, and one sample from each wall (north, south, and west) at a depth of approximately 4 ft. After additional excavation, E & E personnel collected three samples (east, center, and west) from the floor of the excavation at a depth of 10 ft. The NDIR test results are shown below.

<u>Depth</u>	<u>Sample Location</u>	<u>TPH (ppm)</u>
4 ft	North Wall	ND
4 ft	South Wall	ND
4 ft	West Wall	ND
8 ft	Floor, Center	182.6
10 ft	Floor, East End	1,115
10 ft	Floor, Center	2,704
10 ft	Floor, West End	ND

On the basis of these results, a 20 ft deep hole was excavated in the east-central portion of the excavation, approximately 6-ft wide

and 12-ft long, roughly parallel to the length of the building, and approximately 10 ft out from the building. Material excavated was a gray, stained, medium sand, with a heavy oil odor. Field screening with a Photoionization Device (PID) obtained the following information:

<u>Depth/Location</u>		<u>Ambient Air Over Soil PID Rdg. (ppm)</u>	<u>Headspace PID Rdg. (ppm)</u>
16 ft	Bottom of Trench	9	95
18 ft	Bottom of Trench	20	NA
20 ft	Bottom of Trench	6	15

E & E personnel collected 3 duplicate samples, for both NDIR and laboratory analyses; one from the bottom of the excavation at 20 ft, one from the north wall at a depth of 4 ft, and one from the south wall at a depth of 4 ft. The USEPA representative collected splits of these samples. It is not known at this time whether or not laboratory analyses have been performed on the duplicate samples. The NDIR results are shown below.

<u>Depth</u>	<u>Sample Location</u>	<u>TPH (ppm)</u>
4 ft	North Wall	118
4 ft	South Wall	ND
20 ft	Bottom of Excavation	257

Based on the physical appearance of the north side of the excavation below 10 ft, and the presence of contamination relatively shallow on the north wall, it appeared that contamination extended an unknown distance to the north, towards the building. Due to the excavation constraints imposed by the presence of the building, additional excavation in this direction was not considered an alternative. In addition, the depth of the contamination extended deeper than 20 ft, and was beyond the reach of the excavator. The 20-ft deep trench was lined with plastic, and then backfilled until it was level with the 10-ft floor depth in the remainder of the excavation. The Contractor made arrangements to have clean backfill delivered to the site the next day.

Additional excavation was also conducted on the south and west walls of the small "spill" excavation location (centered on B202-BH1). E & E personnel collected 2 samples for TPH analysis by NDIR; one from the south wall, and one from the west wall. The NDIR results are shown below.

<u>Sample Location</u>	<u>TPH (ppm)</u>
South Wall	ND
West Wall	189

At the end of the day, Ms. Rose Schmidt went to the Environmental Management Office (EMO) at Ft Devens, and briefed appropriate EMO personnel (Mr. Pierce, Mr. Chambers) on the progress of the site

work. Regulatory personnel were also available at site for discussion (USEPA and MDEP). Everyone wanted to see as much contaminated soil removed as possible. The plan agreed upon was the excavation of another bucket-wide trench alongside the first one, but on the south side of it. This would allow more contaminated soil to be removed, without posing a risk to the building foundation.

Additional deep excavation on the north (building) side of the trench was not recommended by the Corps. It was agreed, however, that an engineer from Ft Devens DEH (if available) would look at the site the next morning, and give his/her opinion to Mr. Pierce. Mr. Pierce would then make the decision whether or not additional excavation would take place to the north. Mr. Waugh (USCOE), also present, was available to coordinate/contact DEH in the morning.

(6) 13 May 93. A second deep trench was excavated immediately south and alongside the first trench. This trench also measured approximately 6 ft wide (one bucket width) by 12 ft long, and went to a depth of 20 ft. As a result of this additional excavation, the thin wall of soil separating the small "spill" excavation (boring B202-BH1) was taken out, and the excavations became essentially one. An engineer from DEH was not available to give an opinion regarding excavation near the building, and so no additional excavation was conducted to the north. Approximately 42 cu yds were excavated this day.

During excavation of the deep trench to the south, the material in the north side of the bucket was obviously contaminated, while the material in the south side of the bucket appeared to be clean. Field screening with a PID obtained the following information:

<u>Depth</u>	<u>Condition</u>	<u>Side of Bucket</u>		
		<u>North</u>	<u>Middle</u>	<u>South</u>
10 ft - 14 ft	Ambient *	NA	0	NA
14 ft - 15 ft	Ambient	NA	0.4	NA
15 ft - 16 ft	Ambient	5	0.4	0
17 ft	Ambient	19	7	2
17 ft	Headspace	18	NA	0
18 ft	Ambient	9	3	0
19 ft	Ambient	12	7	0
20 ft - 21 ft	Headspace	20	NA	0

* Ambient indicates that PID reading was obtained in the air immediately over a soil sample, or in a small depression made into the soil.

E & E personnel collected two samples from the 15-ft to 16-ft bucket, one from each side of the bucket; two samples from the 20-ft to 21-ft bucket, one from each side of the bucket; and one sample from the south wall at a depth of 16 ft. The NDIR results are shown below. Also, duplicate samples were obtained for two of

these samples, and sent to a laboratory for analysis for TPH. These results are also shown below.

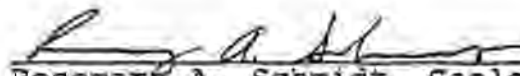
<u>Depth</u>	<u>Sample Location</u>	<u>NDIR TPH (ppm)</u>	<u>Laboratory TPH (ppm)</u>
15 ft	North Side of Bucket	4,322	16,100
15 ft	South Side of Bucket	ND	NA
16 ft	South Wall	ND	NA
20 ft	North Side of Bucket	2,127	NA
20 ft	South Side of Bucket	ND	ND*

* Laboratory Detection Limit = 31.3 ppm.

MDEP personnel on site also collected samples from the north side of the 20 ft bucket, to potentially run additional tests (8240, 8270, 8080 - Pesticides, and Total Metals). It is not known at this time if these tests have been run. E & E personnel collected two samples from the contaminated soil stockpiles for analysis (TCLP, full suite of tests, plus RCRA parameters) to characterize the material for disposal. The results of the TCLP analyses of the stockpile samples were received from E & E on 4 June 93.

The excavation was lined with plastic and backfilled to a depth of 10 ft. The bucket was decontaminated before placing clean backfill above this level. The excavation was backfilled and compacted to approximately 95 percent of the maximum dry density, as required in the specification.

The Contractor sampled the decontamination wash water, and containerized it in a 55-gallon drum. The drum is located near the soil stockpiles. The Contractor's analytical test results have been received (approximately 2 ppm TPH). However, due to improper handling of the Quality Assurance sample sent to the Corps Environmental Laboratory, the Contractor must re-sample the water and submit the new sample to the Corps Laboratory for analysis. The Contractor is still responsible for proper disposal and manifesting of the decontamination wash water.


Rosemary A. Schmidt, Geologist
U.S. Army Corps of Engineers

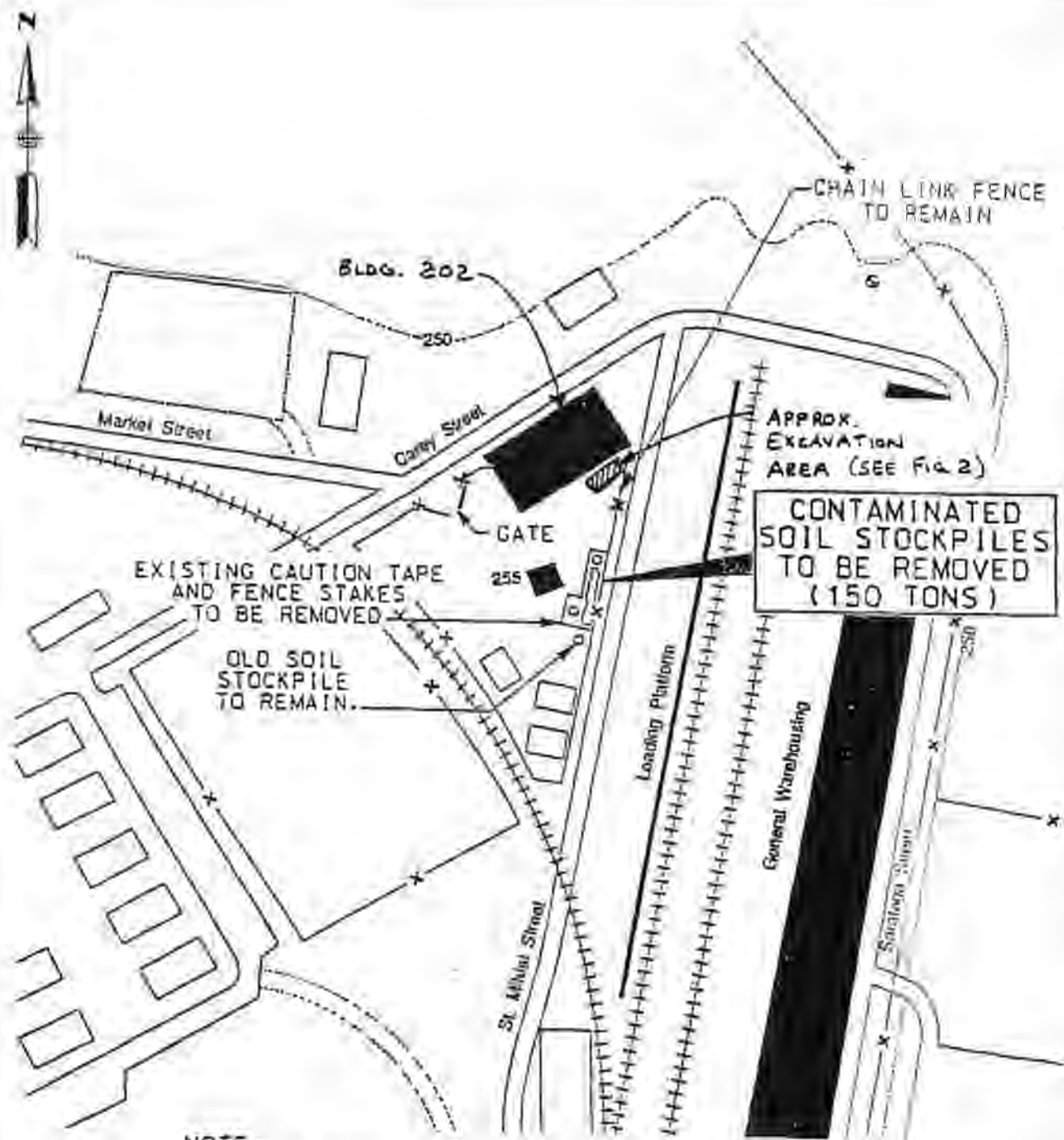


FIGURE 1

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

BASE REALIGNMENT AND CLOSURE
AYER, MA.
FT. DEVENS
SITE PLAN - SA-48

27 Sept 49

CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT S-100 AREA 48 BUILDING 202 FT DEVENS

COMPUTATION

DRAWN

COMPUTED BY

ROSE SCHMIDT

CHECKED BY

DATE

JUNE

1949

APPROX. LOCATION
EET&G BORING B-3
150 PPM TOV IN
18'-20' SAMPLE

4/20/93
FIRST EXCAVATION
12' x 13.5' x 8'
13.5' DEEPEST
PORTION
(25 CU YDS)

5/11/93
SECOND EXCAVATION
12' x 21' x 8' DEEP
DEEP PORTION 6' x 6' x 20' DEEP

APPROX. LOCATION
E&E BORING B202-B111
EXCAVATION 4/20/93
CENTERED ON BORING
(5 CU YDS)

5/12/93
ADDITIONAL EXCAVATION
TO 3.5' DEPTH

CLAIM LINE FENCE

20' DEEP TRENCH
EXCAVATED 5/12/93

20' DEEP TRENCH
EXCAVATED 5/13/93

5/12/93
THIRD EXCAVATION
16' x 22' x 10' DEEP

5/13/93
ADDITIONAL EXCAVATION
APPROX. 15 CU YDS

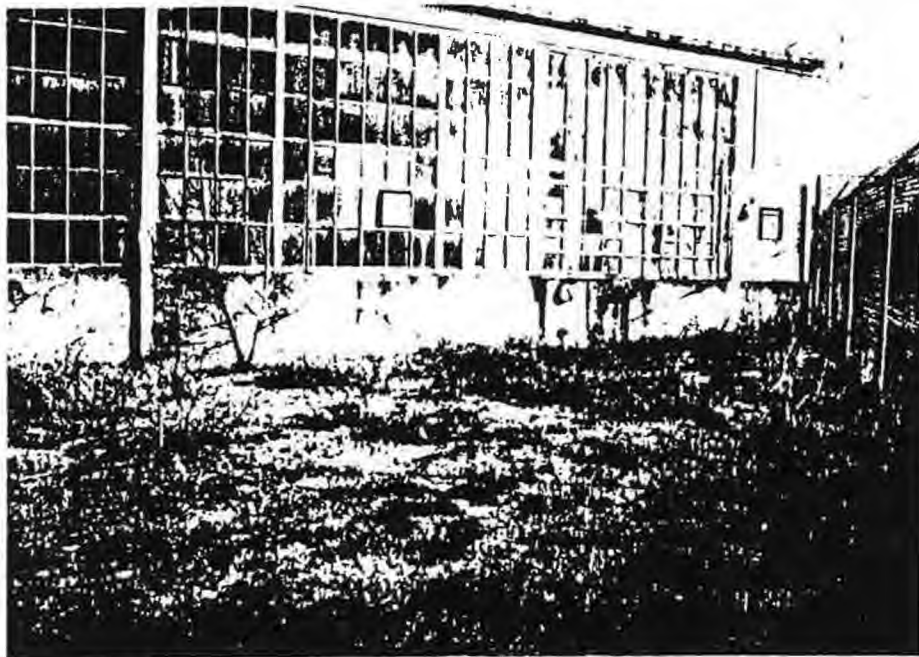
PROJECT TRUE
NORTH NORTH

SCALE: 1" = 10'

DEEP (20')
EXCAVATION



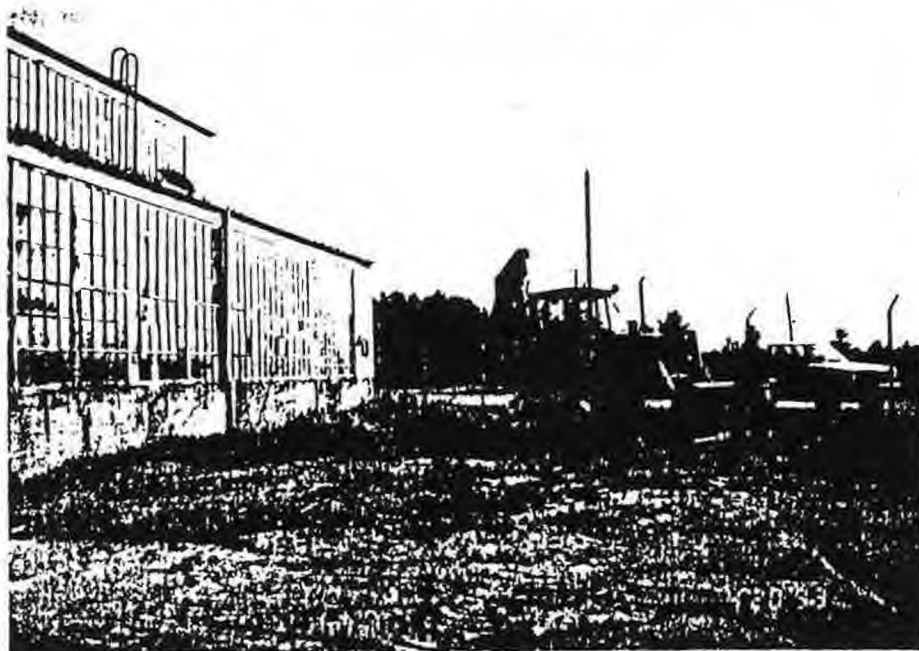
FIGURE 2



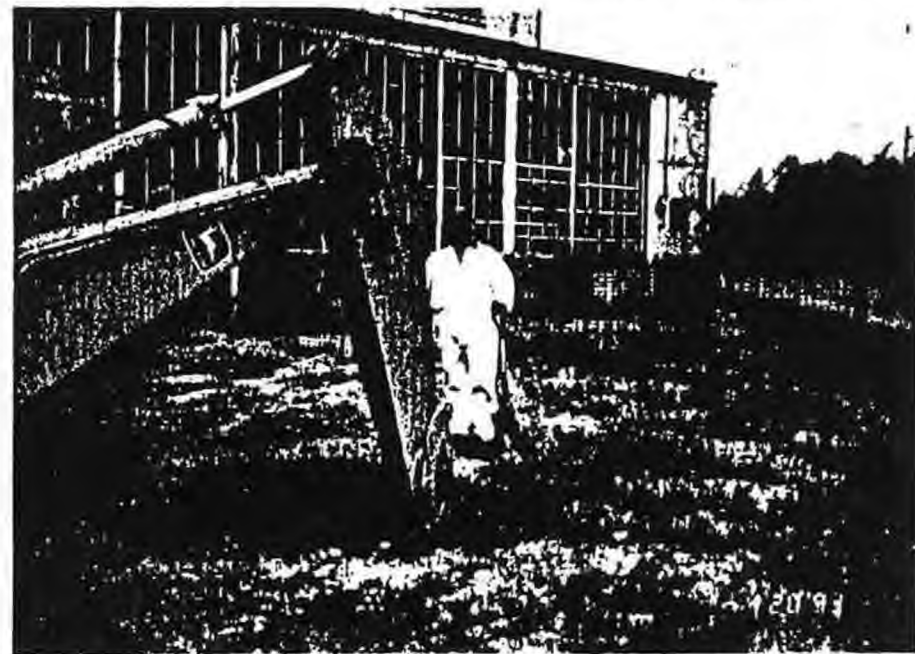
(1) Building 202, looking northeast (project). Ends of former UST excavation staked.



(2) Staked location of E & E boring B202-BH1. Building 202 in background. (Looking north.)



(3) Backhoe set up to start excavation at former tank location (4/20/93).



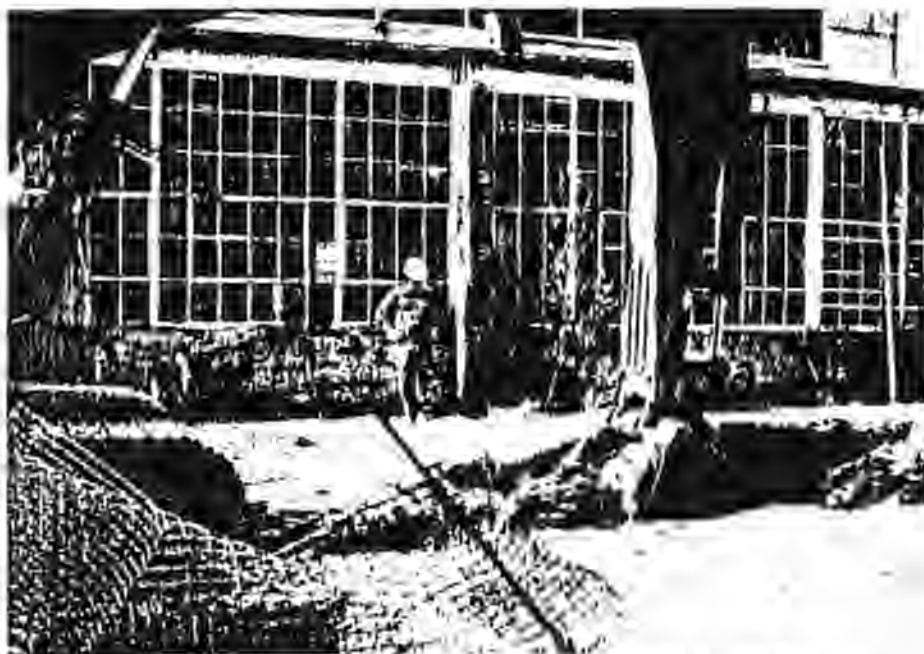
(4) Excavation at boring B202-BH1 (4/20/93).



(5) large excavator mobilized to resume excavation at former UST on 5/11/93 (looking west).



(6) Excavation of marked off area to 10 ft; first 20 ft hole being backfilled.



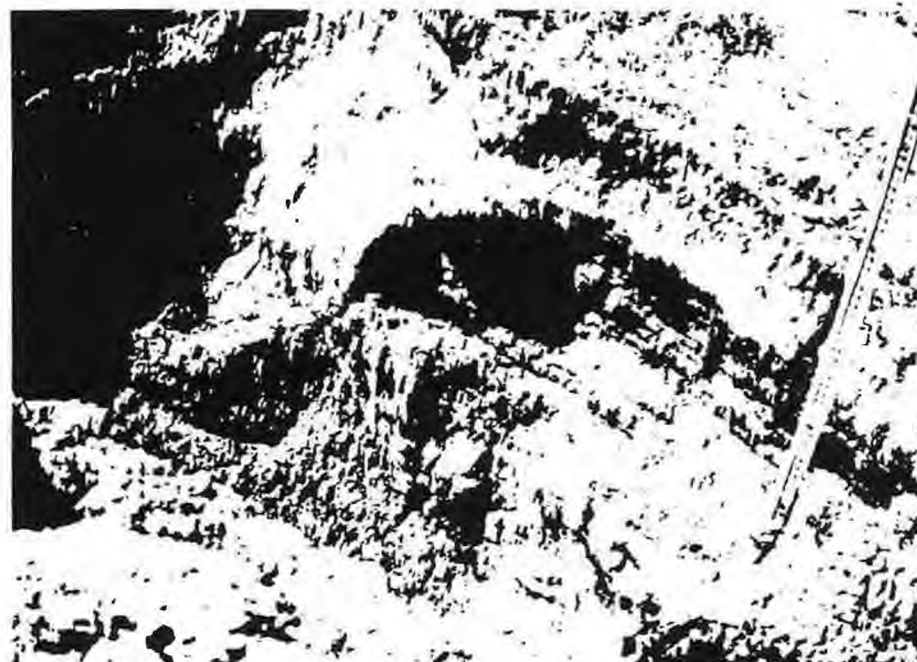
(7) Start of second 20 ft hole on west end of excavation on 5/11/93 (looking north).



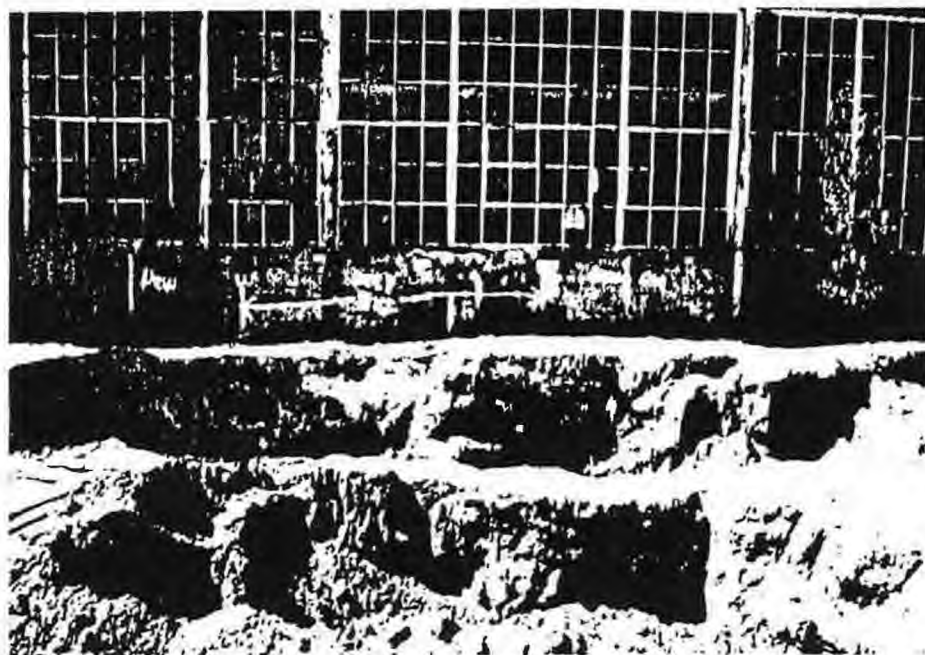
(8) East end of old tank excavation found during excavation of second 20 ft hole (looking north).



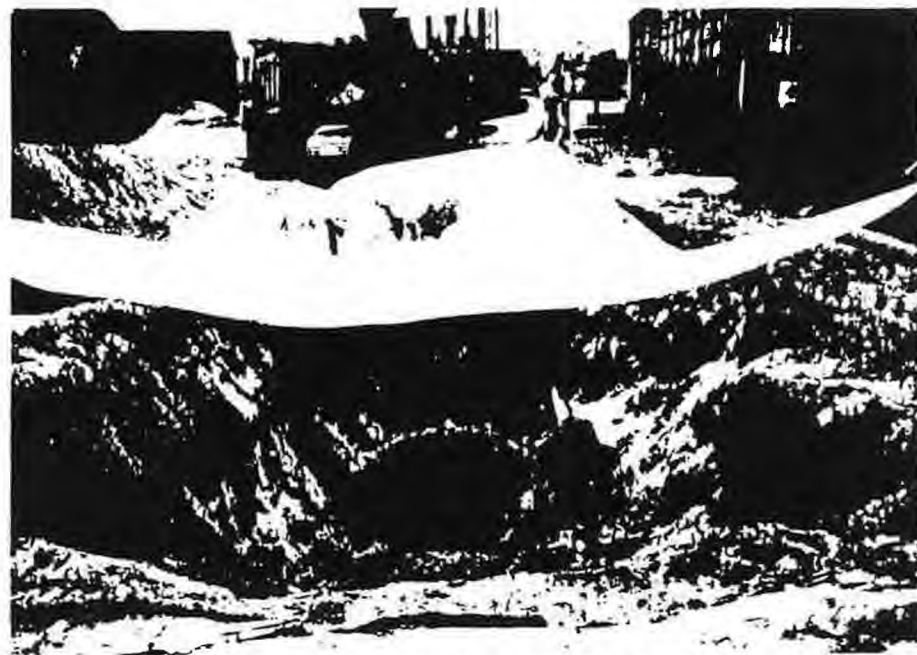
(9) First 20 ft trench on floor of new excavation at correct location of former UST (5/12/93).



(10) Gray discolored soil below about 12 ft depth on the north wall of first 20 ft trench.



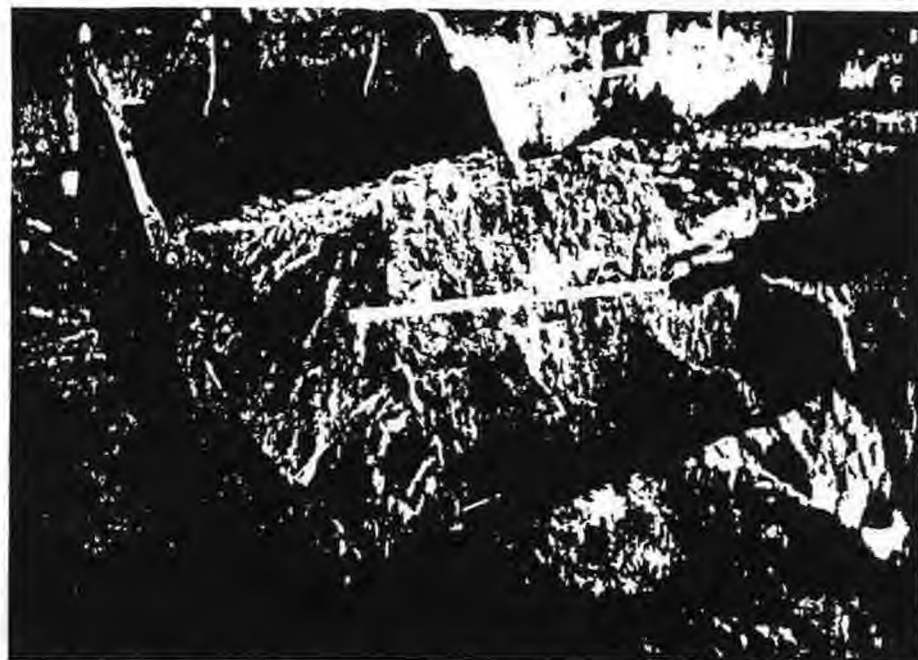
(11) View of excavation, looking north.



(12) Lining first 20 ft trench with plastic.



(13) Second 20 ft trench, immediately south of and parallel to first; looking west (5/13/93).



(14) North (left) side of bucket still highly contaminated; south (right) side clean.



(15) Backfilling of excavation (5/13/93).



(16) Stockpiled contaminated soil, covered with plastic (looking south).

APPENDIX J

"STATUS OF SA48 REMOVAL ACTION", ECOLOGY AND ENVIRONMENT

MAY 1993

ECOLOGY & ENVIRONMENT, INC.
1700 NORTH MOORE STREET, SUITE 1610
ARLINGTON, VA, USA 22209
TELEPHONE: 703-322-6065
FAX: 703-558-7950

DATE: 15 MAY 1993

PROJECT: FT. BELVER

NUMBER OF PAGES: 3

NUMBER: UC4046

FAX NUMBER: 1-410-671-1635

ATTENTION: CHARLES GEORGE
USADC

SUBJECT: STATUS OF SA 48 REMOVAL ACTION

FROM: KEITH DAVISON

CC: ROBERT J. KING
RUFF WALTER

The removal action at SA 48 (Building 202 UST) has been stopped by the Army Corps of Engineers - New England Division (COE). An unknown quantity of petroleum hydrocarbon contaminated soil was left on site between the excavation and Building 202. This contaminated soil was not removed due to COE concerns about damaging the structural integrity of the building. It is not clear what, if any, further remedial actions are planned for this site.

In accordance with the Action Memo written by Capt. Pease, the COE set out to remediate two areas at SA 48. These two areas were the former underground waste oil storage tank site and an area of near-surface contamination discovered during the SI at SA 48. During the course of the removal work, the excavations at each site were enlarged until they became a single excavation. A diagram of the final extent of this excavation is attached. The excavation was being backfilled by the COE when the E & E team departed from site on 11 May.

The most significant area of contamination discovered during excavation was between 15' and 20' BGS, on the north wall of the excavation. This wall was roughly parallel to S202. Soil uncovered at this depth was pale gray in color and had a detectable hydrocarbon odor. The maximum TPHC level detected by NDIR analysis of this material was 4320 ppm. Contamination from the UST did not spread southward (away from the building) beyond the excavation. NDIR samples collected from the south wall of the excavation between 15' and 20' BGS reported TPHC levels less than 50 ppm.

Two TCLP samples were collected from the approximately 100 cubic yards of contaminated soil stockpiled on site. These two samples, and one TPHC sample to confirm the accuracy of the NDIR, were sent to ES&E for analysis. A 21-day turnaround time on the samples was requested. E & E will submit a formal letter report on this removal action when the analytical report from ES&E becomes available.

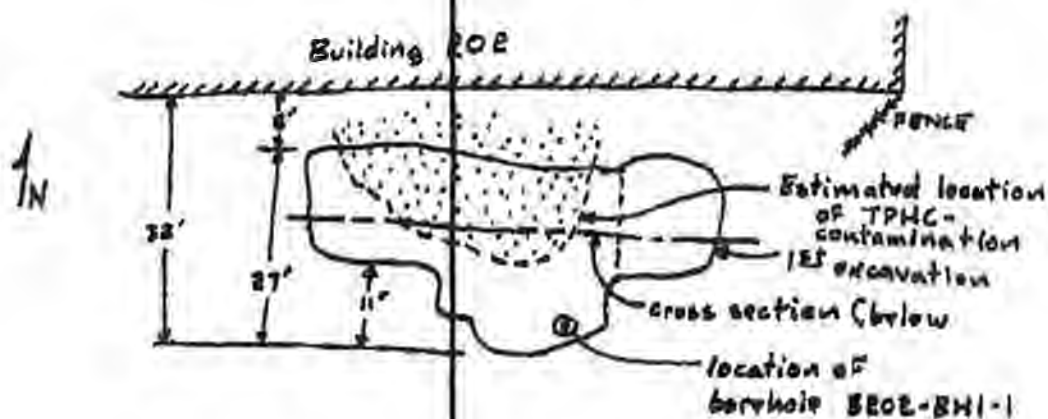
MAY 5 '94 9:42 FROM ECOLOGY AND ENVIRON

PAGE 003

**FIELD SCREENING RESULTS OF SAMPLES COLLECTED BY E & E
IN SUPPORT OF REMOVAL ACTION AT SA 45**

SAMPLE NAME	DATE	TIME	DEPTH (FT. MGS)	LOCATION	YPBC CONTENT (IN PPW)
Samples collected from first UST excavation (east of actual UST location):					
USTN-2	4/20/93	1005	2.5	North wall	< 50
USTB-3	4/20/93	1005	8.5	Bottom of excavation	< 50
USTB-6	4/20/93	1020	13.5	Bottom of excavation	< 50
USTN-6	5/11/93	1345	9	North wall	< 50
USTN-7	5/11/93	1345	9	East wall	< 50
USTB-8	5/11/93	1345	9	South wall	< 50
USTV-9	5/11/93	1345	9	West wall	< 50
USTB-10	5/11/93	1345	10	Bottom of excavation	< 50
USTB-11	5/11/93	1345	10	Bottom of excavation	< 50
USTB-12	5/11/93	1345	10	Bottom of excavation	< 50
USTB-13	5/11/93	1445	19	Bottom of excavation	< 50
USTB-14	5/11/93	1435	10	South wall	< 50
USTV-15	5/11/93	1500	10	West wall	< 50
Samples collected from borehole location:					
BB-1	4/20/93	1330	3.5	Bottom of excavation	< 50
BS-2	4/20/93	1330	0.5	South wall	77
BN-3	4/20/93	1330	2	North wall	< 50
BY-4	4/20/93	1330	2	West wall	< 50
BS-5	4/20/93	1330	1 - 2	East wall	88
BY-6	5/12/93	1515	2	West wall	189
BS-7	5/12/93	1515	2	South wall	< 50
Samples collected from final UST excavation (which encompassed borehole and UST locations):					
U2B-1	5/12/93	0955	8	Bottom of excavation	108
U2N-2	5/12/93	0955	4	North wall	< 50
U2S-3	5/12/93	0955	4	South wall	< 50
U2W-4	5/12/93	0955	4	West wall	< 50
U2B-5	5/12/93	1025	10	Bottom of excavation	1120
U2B-6	5/12/93	1025	10	Bottom of excavation	2700
U2B-7	5/12/93	1025	10	Bottom of excavation	< 50
U2B-8	5/12/93	1305	20	Bottom of excavation	257
U2V-9	5/12/93	1315	4	West wall	< 50
U2N-10	5/12/93	1320	4	North wall	118
U2-15'-N	5/13/93	0835	15	North wall	4320
U2-15'-S	5/13/93	0835	15	South wall	< 50
U2B-11	5/13/93	0915	20	Bottom, north of excvn	2130
U2B-12	5/13/93	0915	20	Bottom, south of excvn	< 50
U2S-13	5/13/93	1025	16	South wall	< 50

Extent of Final Excavation At B202 (SA 4B)



Cross Section Facing North

(Samples collected from north wall of excavation shown)

MAY 5 '94 9146 FROM ECOLOGY AND ENVIRON

PAGE 885



Environmental
Science &
Engineering, Inc.

May 12, 1993
ESE # 39240650-0400-3200

Keith Davison
Ecology and Environment
1700 N Moore St., Suite 1610
Arlington, Va. 22209

RE: Ft. Devens, Final TCLP Data for Army Total Environmental Program Support.
Contract # DAAA15-90-D-0012

Dear Mr. Davison:

Enclosed are the final data and QC reports for soil samples received at ESE from Ft Devens. The samples were collected on May 13, 1993 for TPHC and TCLP analysis.

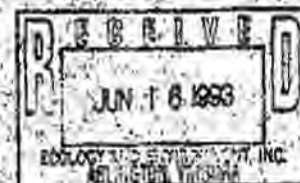
The samples were analyzed according to procedures specified in our subcontract agreement as applicable to the analytes of interest. The TCLP methods and the Total Petroleum Hydrocarbons (TPHC) followed procedures in Test Methods for Evaluating Solid Wastes, SW846, November, 1986. The methods utilized were not certified by USATHAMA due the type of analysis requested.

Thank you for letting ESE be of service to you and we hope we may continue to provide our professional services under this existing work authorization.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Joseph J. Vondrick
Sr. Project Scientist



Environmental Science & Engineering DATE 06/18/93 STATUS (FINAL PAGE)
 PROJECT NUMBER 99248680 8296 PROJECT NAME E & S - FT. DEVENS
 FIELD GROUP DV188 PROJECT MANAGER J.V. VONORICK
 ALL LAB COORDINATOR JOE VONORICK

SAMPLE ID'S	STORCT	DV08	DV188	DV188	DV188
PARAMETERS	ETHOOD	E14	E18	E18	E17
UNITS					
DATE	05/12/93	05/18/93	05/18/93	05/18/93	05/18/93
TIME	10:25	08:28	09:05	11:00	
SAMPLE TYPE	71899	EQ	EQ	EQ	EQ
SITE TYPE	99789	EXCV	EXCV	EXCV	EXCV
DEPTH	72915	10.0	10.0	0.0	0.0
FEET	72980	C	C	C	C
SAMPLING TECHNIQUE	99780	DV	DV	DV	DV
INSTALLATION CODE	99780	DV	DV	DV	DV
SAMPLE	99	TX4884X1	TX4884X1	TX4884X1	TX4884X1
FIELD I.D.	79328	0.1	0.1	NRQ	NRQ
MOISTURE	99289	0.1	10.00	NRQ	NRQ
WET WT	97168	NRQ	NRQ	05/18/93	05/18/93
HYDROCARBONS, PETROL	97168	NRQ	NRQ	05/18/93	05/18/93
US/D-DRY	97168	NRQ	NRQ	05/18/93	05/18/93
TCLF EXTRACTION -	97168	NRQ	NRQ	05/18/93	05/18/93
METALS	97168	NRQ	NRQ	05/18/93	05/18/93
TCLF EXTRACTION -	97168	NRQ	NRQ	05/18/93	05/18/93
PCB'S	97168	NRQ	NRQ	05/18/93	05/18/93
TCLF EXTRACTION -	97168	NRQ	NRQ	05/18/93	05/18/93
VOAS	97168	NRQ	NRQ	05/18/93	05/18/93
TCLF EXTRACTION -	97168	NRQ	NRQ	05/18/93	05/18/93
HERBS	99791	NRQ	NRQ	0.0	0.0
IGNITABILITY	99342	NRQ	NRQ	0.0	0.0
DETO-C	99724	NRQ	NRQ	NA	NA
REACTIVITY	99724	NRQ	NRQ	NA	NA
CORROSIVITY, BW846	99724	NRQ	NRQ	NA	NA
PH, SOIL	99724	NRQ	NRQ	0.2	0.0
STD UNITS					