

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



Prepared for:

U.S. Army Corps of Engineers New England Division Waltham, Massachusetts Contract DACA33-91-D-0006 Delivery Order No. 19

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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 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 Memorandom 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 timuted 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.

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.

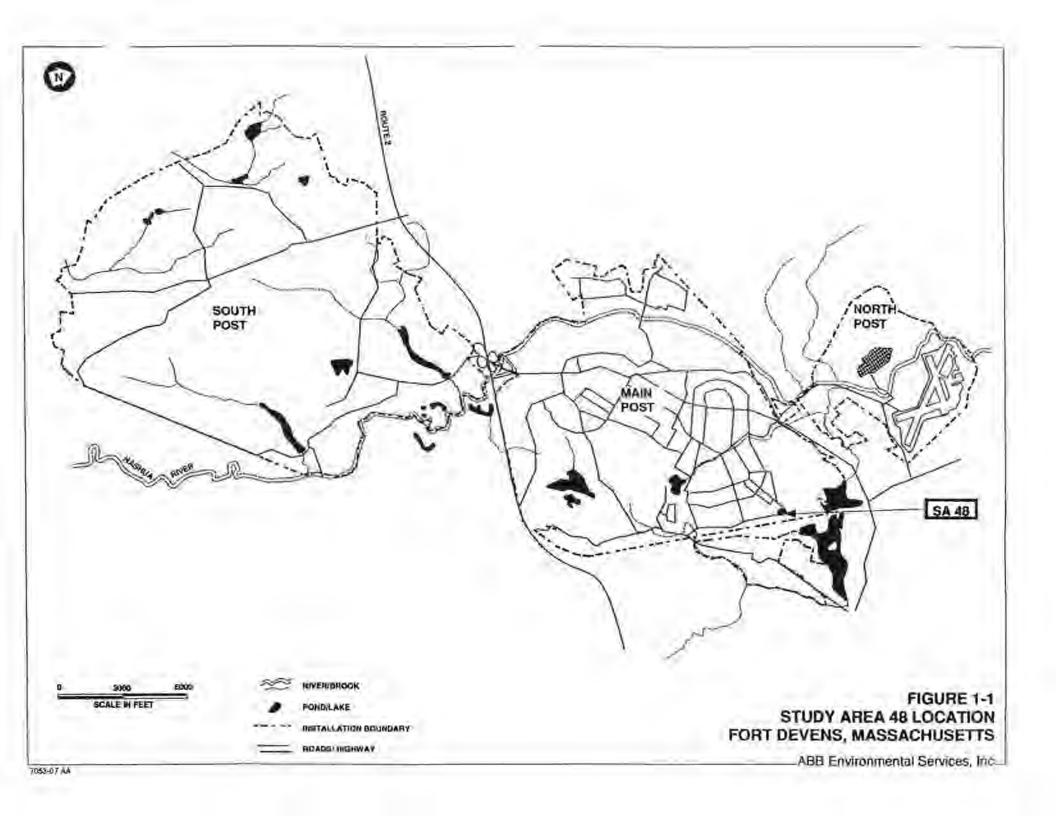
In conjunction with the Army's Installation Restoration Program (IRP), Fort Devens and the U.S. Army Environmental Center (USAEC; formerly the U.S. Army Toxic and Hazardous Materials Agency) initiated a Master Environmental Plan (MEP) in 1988. The MEP consists of assessments of the environmental status 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.

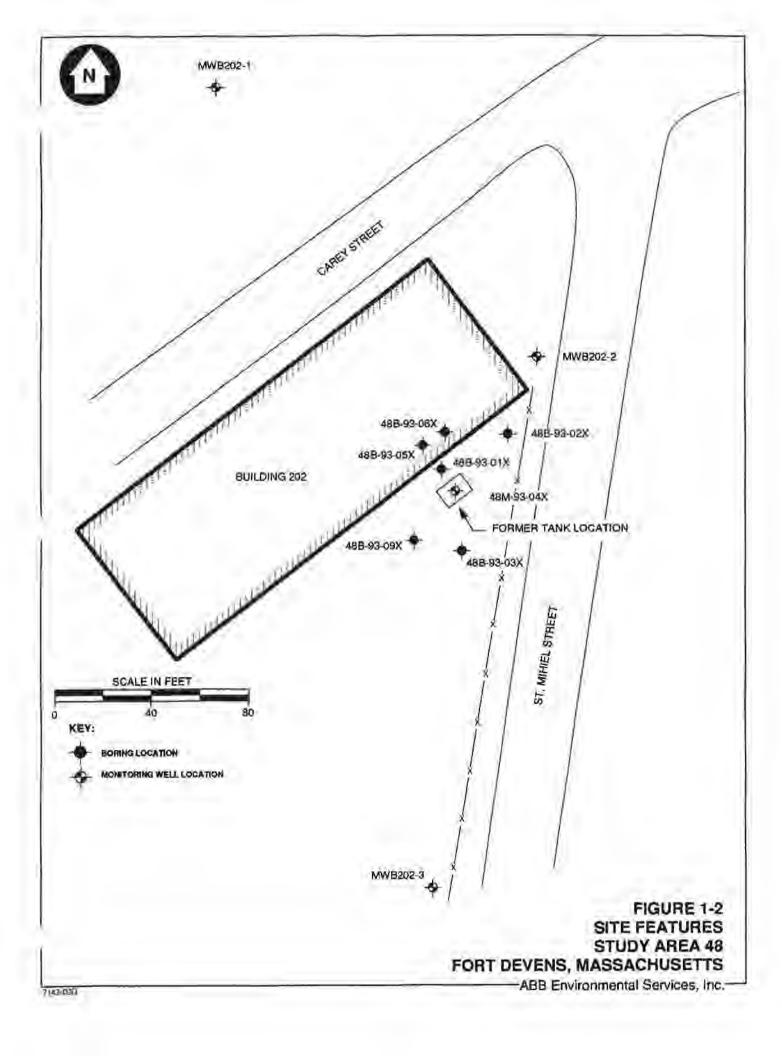
SA 48 is situated in the southwest corner of Carey and St. Mihiel Streets in the northeast portion of the Main Post adjacent to Building 202 (Figures 1-1 and 1-2). The SA comprises both a portion of Building 202 and the former underground storage tank (UST) location immediately adjacent to and southeast 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.

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.





SECTION 2

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

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

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

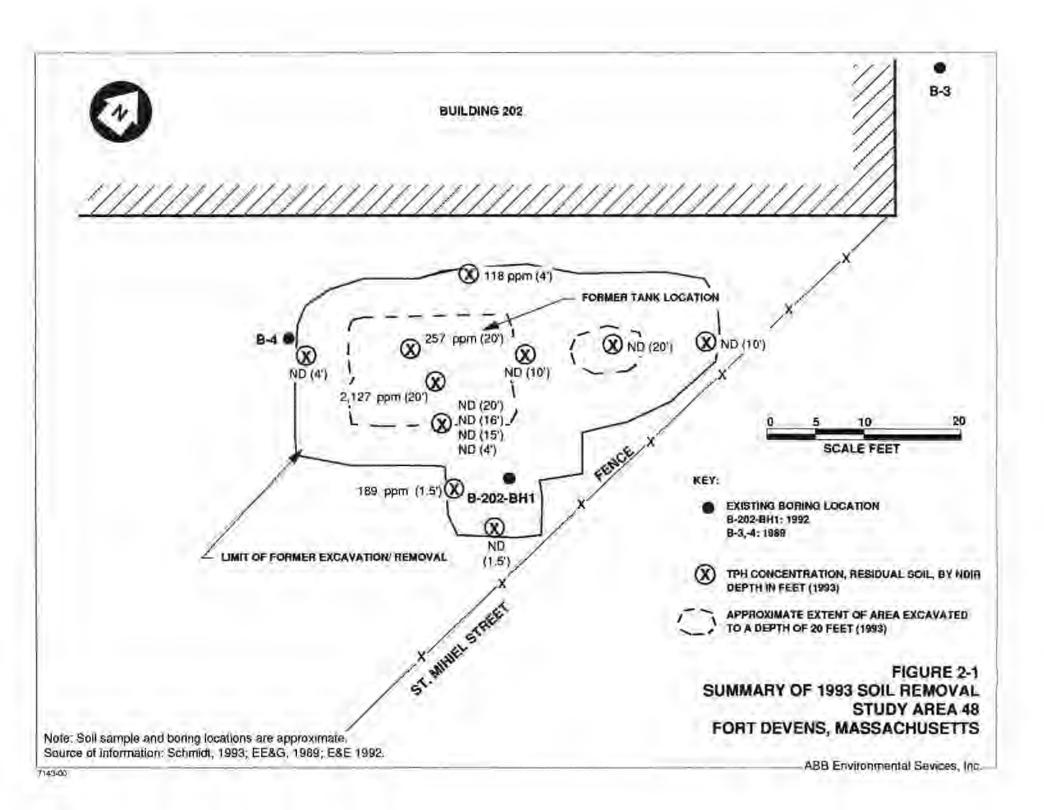
In October 1992, United States Army Toxic and Hazardous Materials Agency (USATHAMA) prepared an Action Memorandum to document the decision to perform soil removal actions at SA 48. The Action Memorandum indicated that soil would be removed from two areas. The first area was in the immediate vicinity 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

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 I).

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.

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.



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

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 (LD.) 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 LD. 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.

SECTION 3

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 bentonitepellet 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.

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 (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

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)

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-bexanone, 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.

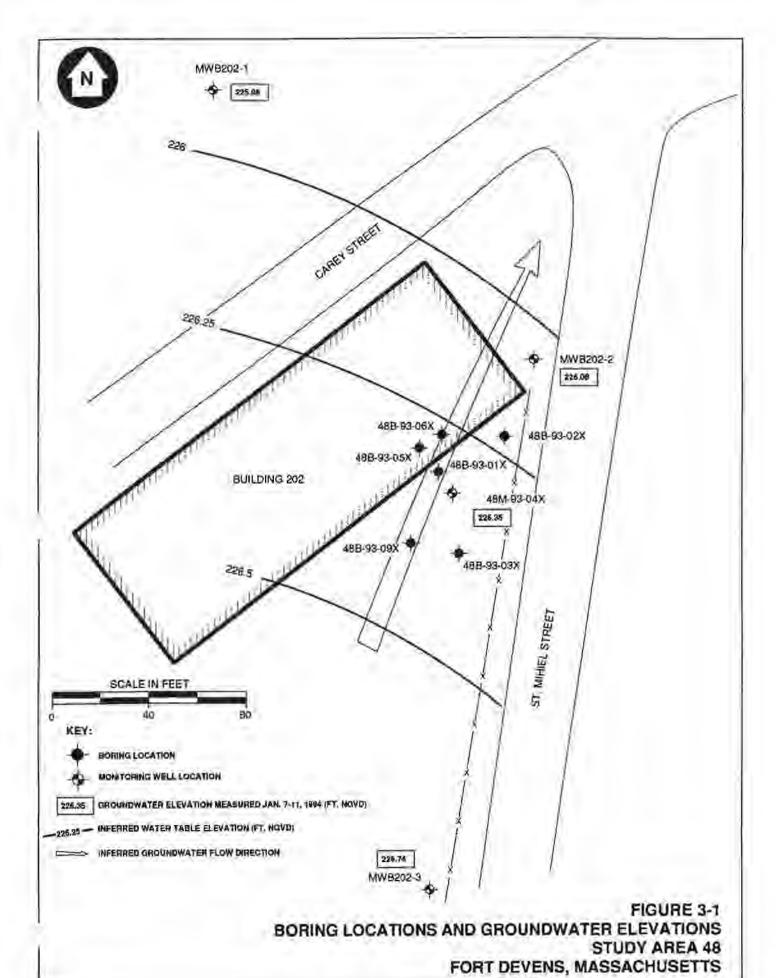
SECTION 3

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.

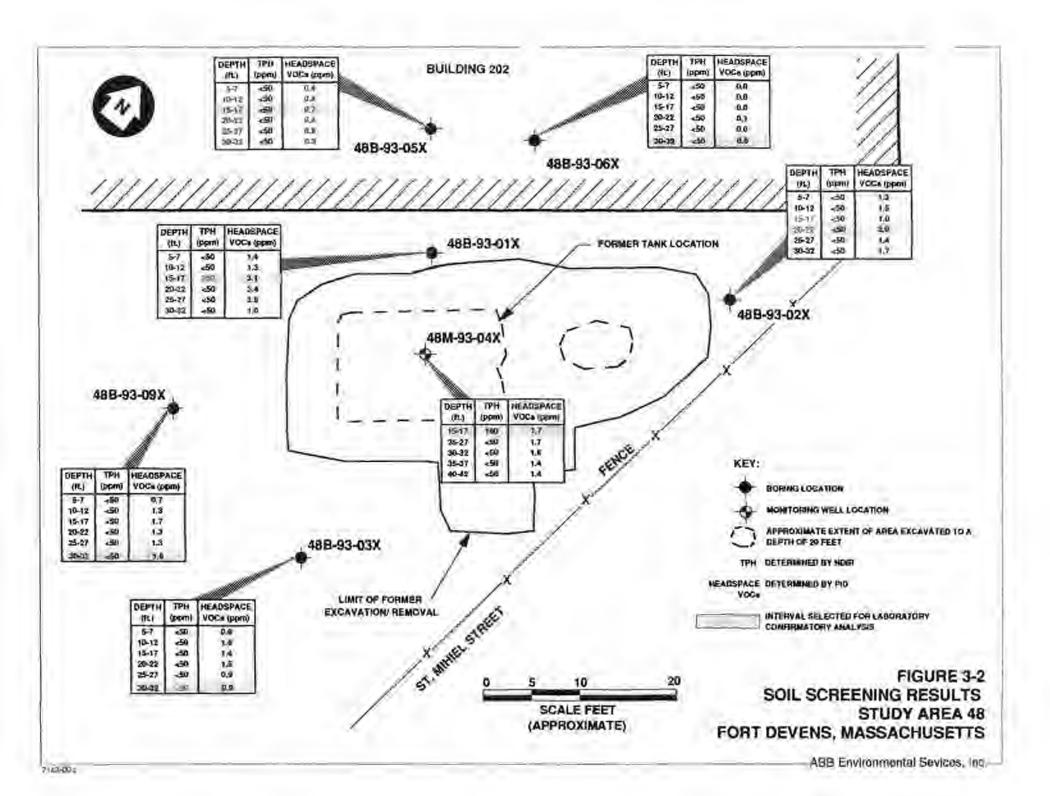
The analytical results for the contract laboratory field and duplicate samples showed good comparability. The QA laboratory analytical results, and their comparison with the associated contract laboratory results, are presented in Appendix G. The QA lab results generally showed good agreement with the 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.

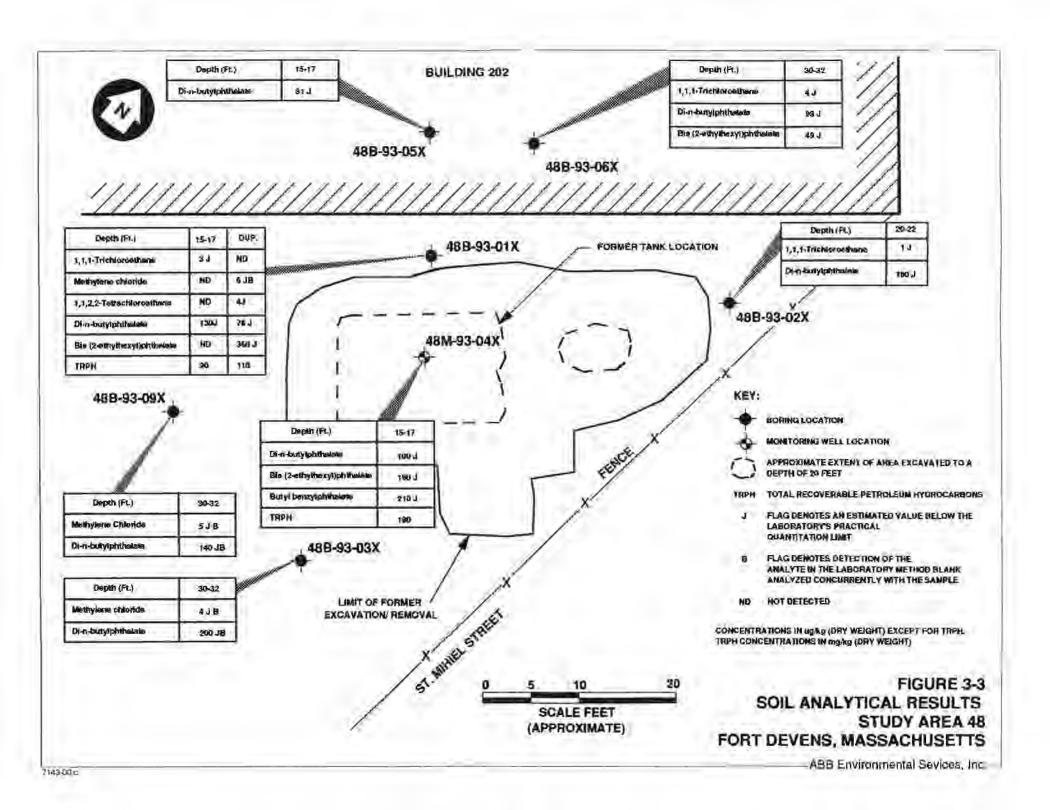
A rinsate (sampler) blank was collected in the field from a split spoon sampler to assess the effectiveness of decontamination procedures used at SA 48 on preventing cross contamination. The sample was analyzed for the full suite of analytes tested for at SA 48 (VOCs, SVOCs, and TPHC). TPHC was not detected 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.

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 $(1 \mu g/L)$ 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).



-ABB Environmental Services, Inc.:





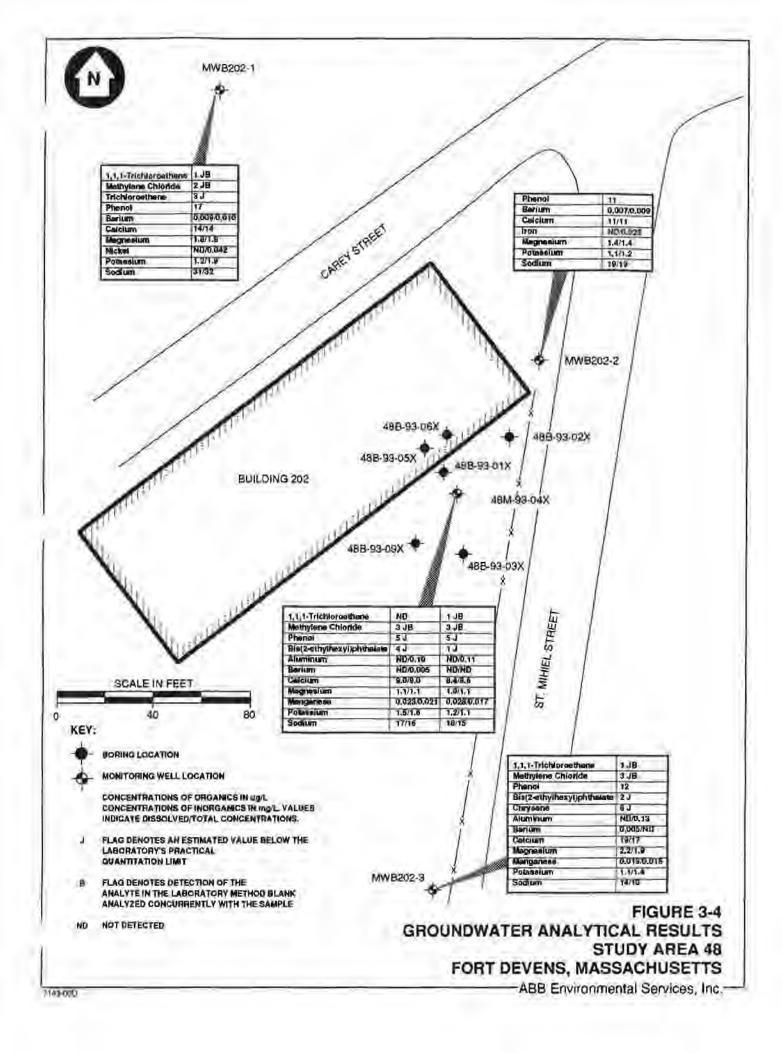


TABLE 3-1 ANALYTES IN SOIL STUDY AREA 48

REMOVAL SITE EVALUATION FORT DEVENS, MASSACHUSETTS

ANALYTE	BORING	48B-93-01X	488-93-01X	48B-93-02X	48B-93-03X	
	SAMPLE ID	RX480115	BX481115	BX480220	BX480330 30 FT	
	DEPTH	15 FT	15 FT DUP	20 FT		
VOLATILE ORGANICS (ug/kg dry wt)						
1,1,1-TRICHLOROETHANE		31	< 6 11		< 6	
METHYLENE CHLORIDE		< 12	6.JB	< 11	4 JB	
1.1.2.2 TETRACHLOROETHANE		< ΰ	4.3	< 6	< 6	
SEMIVOLATILE ORGANICS (ug/kg dr	y wt)					
DI-N-BUTYL PHTHALATE		1301	763 1803		200 JB	
BIS(2-ETHYLHEXYL)PHTHALATE		< 400	360 J	< 360	< 400	
BUTYL BENZYLPHTHALATE		< 400	< 360	< 360	< 400	
DIETHYLPHTHALATE		< 400	< 360.	< 360	< 400	
OTHER (mg/kg dry wt)						
TOTAL PETROLEUM HYDROCARBONS		90.	110	< 25	<25	

Notes.

I 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)					- 200	
I,I,I - TRICHLOROETHANE		< 6	< 6	43	< 6	
METHYLENE CHLORIDE		<11	<11	< 12	5JB	
1,1,2,2-TETRACHLOROETHANE		< 6	< 6	< 6	< 6	
SEMIVOLATILE ORGANICS (ag/kg dr)	wt)					
DI-N-BUTYL PHTHALATE		1001	81 J	99 1	140 JB	
BIS(2-ETHYLHEXYL)PHTHALATE		1901	< 360	49.1	< 400	
BUTYL BENZYLPHTHALATE		210 J	< 360	< 400	< 400	
DIETHYLPHTHALATE		< 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

	WELL	B202-1	B202-1	B202-2	D202-2	B202-3	B202-3
	SAMPLE ID BACKGROUND	MX4801X1 FILTERED	MX480LX1 UNFILTERED	MX4802X1 FILTERED	MX4802X1 UNFILTERED	MX4809X1 FILTERED	MX4803X1 UNFILTERED
ANALYTE							
VOLATILE ORGANICS (ug/L)		-7-0-4-					
1,1,1-TRICHLOROETHANE	9.1	NA	118	NA	<.5	NA	1 JB
METHYLENE CHLORIDE	11.0	NA	2.18	NA.	< 10	NA	3 JB
TRICHLOROETHENE		NA	31	NA	<.5	NA	< 5
SEMIVOLATILE ORGANICS (ug/L)							
PHENOL		NA	17	NA.	11	NA	12
BIS(2-ETHYLHEXYL)PHTHALATT		NA.	< 10	NA	< 10	NA	2.1
CHRYSENE		NA	< 10	NA.	< 10	NA	81
INORGANICS (ug/L)							
ALUMINUM	6870	< 100	< 100	< 100	< 100	< 100	130
BARTUM	39,6	ā	10	7	9	5	< 5
CALCIUM	14700	14000	14000	11000	11000	19000	17000
IRON	9100	< 25	< 25	< 25	28	< 25	< 25
MAGNESIUM	3480	(800	1800	1400	1400	2200	1900
MANUANESE	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 (mg/L)							
TOTAL PETROLEUM HYDROCARBONS		NA	< 1.3	NA.	< 1.2	NA	< 1.3

Notes:

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

if 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

	WELL	48M-93-04X	48M-93-04X	48M-93-04X DUP	48M-93-04X DUP
	SAMPLE ID	MX4804X1	MX4804X1	MX4811X1	MCX4811X1
ANALYTE	BACKGROUND	FILTERED	UNFILTERED	FILTERED	UNFILTERED
VOLATILE ORGANICS (M/L)					
1,1,1-TRICHLOROETHANE		NA	< 5	NA.	118
METHYLENE CHLORIDE		NA	318	NA.	3.78
TRICHLOROETHENE		NA	< 5	NA	< 5
SEMIVOLATILE ORGANICS (ag/L)					
PHENOL		NA	51	NA.	53
DIS(2-ETHYLHEXYL)PHTHALATE		NA	41	NA.	1.5
CHRYSENE		NA	< 10	NA NA	<11
INDRGANICS (eg/L)				0	
ALUMINUM	6870	< 100	100	< 100	110
BARIUM	39,6	< 5	9	6.5	c 5
CALCIUM	14700	9000	900XI	8400	8600
IRON	9100	< 25	< 25	< 25	< 25
MAGNESIUM	3480	1100	1100	1000	1100
MANGANESE	291	23	21	28	17
NICKEL	34.3	< 40	< 40	< 40	< 40
POTASSIUM	2370	1500	1600	1200	1100
SODIUM	10800	17000	16000	15000	15000
OTHER (mg/L)					
TOTAL PETROLEUM HYDROCARBONS		NA.	< 1.1	NA	<1

Notes:

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

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

NA Not malyzed

< 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:

- 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

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 μ g/L) exceeded its drinking water standard/guideline (0.2 μ 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 μ g/L) is in excess of the sodium groundwater standard/guideline considered in this PRE (20,000 μ 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.

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

FORT DEVENS, MA.

ANALYTE	OF CONCENT		TIONS (a)	REGION III COMMERCIAL/INDUSTRIAL	MCP S-2/GW-1	MAXIMUM EXCEEDS	
	DETECTION	AVERAGE	MAXIMUM	SOIL CONCENTRATION	STANDARD	CONCENTRATION?	
ORGANICS (mg/kg)	- V -						
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 [6]	3/4	126.7	180	NA 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 FLAN FOUT DEVENS, MA

ANALYTE	GROUNDWATER BACKGROUND	FREQUENCY OF	DETEC	TED NTRATIONS [a]	MAXIMUM EXCEEDS	DRINKING WATER STANDARD/GUIDELINE [b]	MAXIMUM EXCEEDS	
	CONCENTRATION (ug/L)	DETECTION	AVERAGE (ug/L)	MAXIMUM (ug/L)	BACKGROUND?	(ug/L)	STANDARD/ GUIDELINES	
ORGANICS								
TRICHLOROETHENE		1/5	3	3	-		NO	
PRENOL		5/5	10	17	-	4000	NO	
BIS(2-ETHYLHEXYL	PHTHALATE	3/5	2.3	4	-	ő	NO	
CHRYSENE		1/5	8	8	-	2	YE5	
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	23	NO	300	NO	
MAGNESIUM	3480	5/5	1,460	1,900	NO	NA	2	
MANGANESE	291	3/5	17.66	21	NO	50	NO	
NICKEL	34.3	1/5	42	42	YES	200	NO	
POTASSIUM	2370	5/5	1,440	1,900	NO	NA.	18	
SODTUM	10500	5/5	18,400	32,000	YES	000,03	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 MADEP 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 SSL. 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 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.

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- Weston, Roy F., Inc. (1992). Enhanced Preliminary Assessment, Fort Devens, Massachusetts, April 1992.
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APPENDIX A WASTE CHARACTERIZATION RESULTS ON STOCKPILED SOIL

*** ****

To: Joe Polsinello, Webster Engineering

Ecology + Environment FR: Keith Davison,

DT: 15 Nov 1993

0.961

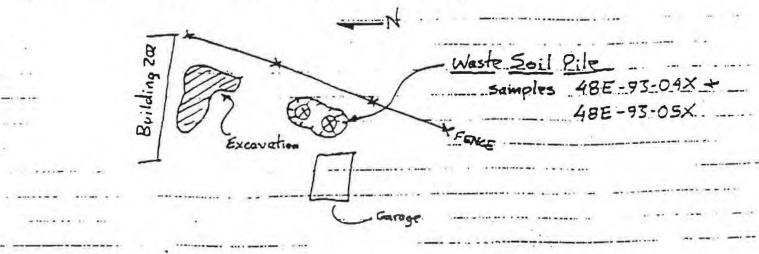
RE: Sampling For TCLP Analysis at Fort Devens SA 48

As per our conversation on 11.12.93 I am Faxing. 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 discret locations from the waste pile were sampled.

You told me that your information For SAIS is _____complete, so I am not including the lab report _____

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



and the commence of the same of the commence o

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) 558-7950

Addressee:

CHARLES GEORGE, USAEC

ROSE SCHMIDT, COE

FAX Number.

Attention:

Reference: SA 48 TCLP RESULTS

Reference: 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 SA48 - Building 202 UST.

Kith Dimm



Harden - Works 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 # 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 <u>Test Methods for Evaluating Solid Wastes</u>, 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



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ecology and environment, inc.

Installa	tion :	D	1				CH	AIN-OF-CUST	DDY RECORD					n.I.cos	C-56-5V	r= 1_n_
UC4046	FOR	TÈ	EV	ENS/A	OC 18 P	EMOVAL	Field Team L	J KING	,			ĺ	6	13	\$////	ARICE.
SITE	TIME	100 N		SITE	BAMPLE INF	Disease Title	TELD SAUP	DEPTH	NLOCATION	NUMBER OF CON- TAINERS	1	6	ar sel			Ŧ
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XCV /1/2	1025	1		48E - 93	-03X	E x480		za'		- 1	£	4		-	TPHC (aspect +5)	0,,,,)
XCV MA				19E-93 19E-93		E T480		0.		2	£	Y			TELP/RERA chara	eteristics.
EXCV Phyla	0835			18E,-9	Z-06X	EX/Bo	ex!	15*		-1	1	'n.		H	TPHC Comput 14	000
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		1		All sa	mples ace	enuipasi	les	•			L		1			
				- Samp Dote	mples ace le type = 5/13/43	-50_	——————————————————————————————————————				L			Ĥ		
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tellinsquished By:	Signature)		Detel	lime.	Received For Lat	outeny gy-	Relinquished	By (Signature)	Date/Time:	flerene (Spring		Eden	winey Br	1	5873992013	5/13/93
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Environmental Science & Engineering DATE 86/15/93 STATUS :FINAL PAGE 1
PROJECT NUMBER 3924865G 8288 PROJECT MAME E & E - FT. DEVENS
FIELD GROUP DVIBS PROJECT MANAGER J.J. VONDRICK
ALL LAB COORDINATOR JOE VONDRICK

SAMPLE ID'S	4	8E-93-83X4	BE-93-86X4	8E-93-84X4	8E-93-85
PARAMETERS	STORET	DVIBS	DVIBS	DVIBS	DVIBS
UNITS	METHOD	214	215	216	217
DATE -		05/13/93	05/13/93	05/13/93	85/13/93
TIME		10:25	08:35	89:85	11:05
SAMPLE TYPE	71999	\$0	so	20	so
SITE TYPE 1	99759	EXCA	EXCA	EXCV	EXC
DEPTH FEET	72815	20.0	15.0	0.0	0.0
SAMPLING TECHNIQUE	72885	С	С	С	•
INSTALLATION CODE SAMPLE	99728	DV	DV	DV	DI
FIELD I.D.	29	EX4803X1	EX4886X1	ET4884X1	ET4885X
MOISTURE SHET NT	70320	10.5	6.1	NRQ	NRC
HYDROCARBONS PETROL UG/G-DRY	98233	<31.3	16100	MRQ	NRC
TCLP EXTRACTION -	97160 H	NRQ	NRQ	05/18/93	05/18/9
TCLP EXTRACTION - PESTS	97160 P	NRQ	NRQ	05/18/93	85/18/9
TCLP EXTRACTION -	97160 BNA	NRQ	NRQ	85/18/93	05/18/9
TCLP EXTRACTION -	97168 ZHE	NRQ	NRQ	85/18/93	05/18/9
TCLP EXTRACTION - HERBS	97160 H	NRQ	NRQ	05/18/93	85/18/93
IGNITABILITY DEG-C	99741	NRQ	NRQ	>60	>60
REACTIVITY	99342	NRQ	NRQ	9.6	0.1
CORROS IVITY, SH846 MM/YR	98724	NRQ	NRQ	NA	N
PH, SOIL STD UNITS	99218	NRQ	NRQ	6.2	6.6

Sample 03X + 06X are from the excavation.

OHX + O5X on from the Soil start piles Environmental Science & Engineering DATE 86/15/93 STATUS :FINAL PAGE 1
PROJECT NUMBER 3924865G 8288 PROJECT NAME E & E - FT. DEVENS
FIELD GROUP DVIBT PROJECT MANAGER J.J. VONDRICK
ALL LAB COORDINATOR JOE VONDRICK

SAMPLE 10 PARAMETER		STORET METHOD	BE-93-04X4 DV1BT 9	8E-93-85X DV1BT
DATE -			05/18/93 11:00	05/18/93 11:00
SAMPLE TY	PE	71999	so	so
SITE TYPE	1	99759	EXCV	EXCV
DEPTH		72915	0.0	0.0
SAMPLING	FEET TECHNIQUE	72885	c	c
INSTALLAT		99720	DV	DV
FIELD 1.D	SAMPLE	8 29	ET4804X1	ET4805X1
			100	7.34
ARSENIC	UG/L	TCLP	<188	<160
BARIUM	UG/L ·	1007 TCLP	160	218
CADMIUM	UG/L	1927 TCLP	<5.0	<5.8
CHROMIUM	Live and	1034	(5.8	<5.0
LEAD	UG/L	TCLP 1051	<50	79
MERCURY	UG/L	TCLP 71900	<0.2	<8.2
SELENIUM	UG/L	TCLP 1147	<188	<190
	UG/L	TCLP		
SILVER	UG/L	TCLP	<5.0	<5.0
BHC,G(LIN	UG/L	39348 TCLP	<0.05	<0.05
CHLORDANE	UG/L	39350 TCLP	<0.3	<0.3
ENDRIN		39399	<0.05	<0.05
HEPTACHLO		TCLP 39418	<0.05	<0.85
HEPTACHLO	UG/L R EPOXIDE	TCLP 39428	<8.85	<8.85
TOXAPHENE	NC/L	TCLP 39488	<5.0	<5.0
	UG/L	TCLP		
METHOXYCH	UG/L	TCLP	<0.05	<0.05
2,4-D, TO	UG/L	39730 TCLP	<0.2	<8.2
2.4.5-TP/	SILVEX+DER. UG/L	39045 TCLP	<0.2	<0.2
BENZENE	UG/L	34838 TCLP	<1.8	<1.0
CARBON TE	TRACHLORIDE	32182	(2.6	<2.6
CHLOROBEN	UG/L IZENE	TCLP 34301	<1.4	(1.4
CHLOROFOR	MG/L	32106	<2.5	<2.5
1.2-DICHL	UG/L DROFTHANE	TCLP 34531	(2.5	(2.5
	UG/L	TCLP		
	OROETHYLENE UG/L	TCLP	<3.2	<3.2
METHYL ET	HYL KETONE UG/L	B1595 TCLP	<10.0	<10.8
TETRACHLO	ROETHENE UG/L	34475 TCLP	<1.9	<1.9
TRICHLORO		39180 TCLP	<3.0	(3.0
VINYL CHL		39175 TCLP	<4.6	<4.6

Environmental Science & Engineering DATE 86/15/93 STATUS :FINAL PAGE 2
PROJECT NUMBER 3924865G 8288 PROJECT NAME E & E - FT. DEVENS
FIELD GROUP DVIBT PROJECT MANAGER J.J. VONDRICK
LAB COORDINATOR JOE VONDRICK

SAMPLE ID'S	4	8E-93-04X4	8E-93-85X	
PARAMETERS	STORET	DVIBT	DVIBT	
UNITS	METHOD	9	10	
DATE		05/18/93	05/18/93	
TIME .		11:00	11:88	
2-METHYL PHENOL UG/L	99873 TCLP	<2.8	₹2.0	
3-METHYL PHENOL	97286 TCLP	₹2.0	<2.8	
4-METHYL PHENOL	99074	(2.8	€2.0	
UG/L 1.4-DICHLOROBENZENE		<1.0	<1.8	
UG/L 2,4-DINITROTOLUENE	TCLP 34611	<2.8	<2.0	
UG/L HEXACHLOROBENZENE	TCLP 39706	<1.8	<1.0	
UG/L HEXACHLOROBUTADIENE		<2.8	(2.8	
UG/L HE XACHLOROETHANE	TCLP 34396	<1.0	<1.0	
NITROBENZENE .	TCLP 34447	<1.0	<1.8	
UG/L PENTACHLOROPHENOL	TCLP 39032	<10.0	<10.0	
PYRIDINE UG/L	TCLP 97288	<10.0	<18.8	
UG/L 2.4.5-TRICHL'PHENOL	TCLP 77687	<3.0	<3.8	
UG/L 2.4.6-TRICHL'PHENOL	TCLP	<3.0	<3.8	
UG/L	TCLP	13.0	13.0	

US/L

UG/L

UG/L

UG/L

UC/L

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饭儿

UT/L

UG/L

1945AWTCLP

29738-TCL#

39845-TOLP

34938+TCL#

37102"TCL

S430 INTCLP

EZ 196+TCLP

3453 INTCL#

1450 JATCLE

BISSSHTCLE

34475#TCLP

B919##TCLP

39175#TCL#

99073HTCLP

972964TCLP

99874"TCLF

\$4571#TCLP

34611 TCLP

297984TCL#

3439 I*TCLF

34396=TCLF

BAAA7MTCLP

39932#TCLF

97298+TCLN

METHOXYCHLOR

2,4-D, TOTAL

CHLOROBENZENE

HLOROFORM

BENZENE

2.4.5-TP/3/LVEX+DER.

CARBON TETRACHLORIDE

2-DICHLORDETHANE

METHYL ETHYL KETONE

TETRACHLOADETHENE

TRICHLONGETHERE

2-METHIL PHENDL

3-METHTL PHEHOL

4-METHTE PHENOL

1.4-DICHLORDBENZERE

2 4-DIMITROTOLUENE

HE XACHLOROBUTADIENE

HEXACHLOROBENZENE

HEXACHLOROETHANE

PENTACHLOADPHENOL

MITROBENZENE

PYRIDINE

VINTE CHLORIDE

. . 1-DICHLOADETHYLENE

HAHE	UNITS	STORMRETH.	BATCH	SAMPLE	DATE	FOUND	C.B.L. FOOTAGE
NO (STURE	SHET MT	70320-1	03755B	UB-dC+I	45/26/93	18.5	0.56
THISTURE	WHET HT			MB+OC+2		2.02	0.50
STURE	SHET MT	4.00		HB*CC*3		48.5	0,50
JROCARBONS PETROL	US/G-DRY	98233*1	637585	HB-THAMAOL	#5/2#/93	C28.0	1.6796
CHITABILITY	DEG-C	9974141	617496	AB THAMAT	05/75/93	>61	MDL
REACTIVITY		99342*1	. 037713	MB-THAMARI	85/24/93	0.0	MDC
H SOIL	STO UNITS	9921841	037750	HB*THAMA*1	#6/#L/91	0.3	MC
ASEN)C	Ut/L	1002 HTCLP	037596	MB-THAMA-1	45/27/93	C100	410
ASENIC	US/L			MB*TCLF*1		C100	180
AF IUN	UG/L	LOS7"TCLP		HENTHAMANI		£25	25.0
ARTUM	UE/L			MO-TELPO!		48	25.8
ADHIUM	UG/L	18274TCLF		MB-THAMA-1		45.0	5.0
MUNICA	UG/L			MB*TCLF+1		65.0	5,0
HRONIUM	05/L	1834*TCLP		MB-THARAPI		45.0	5.0
HRUNIUN	UG/L			MB-TELP-1		45.0	5.0
EAD	UG/L	1051 TCLF		BB=THAHA=1		<50	50.4
EAD	UG/L			HB-TCLPA1	V- V- W	550	58.4
ERCURT	UG/L	71900"TCLP	637593	L-AMAHT-BE	RS/26/93	12.2	1/2
ERCURY	UE/L	1111111111	The same	MB=THAMA+2		44.2	1.2
ELEKTUR	UG/L	1147"TCLP	637595	MB=THAMA=1	05/27/93	<108	186
ELENIUM	UG/L			MBATGLERI	200	4140	186
ILVER	DE/L	1877*TOLP		MB*THARAP1		45.0	5.8
ILVER	US/L			MB+TCL#+1		€5.0	5.0
HE GILINDANE)	UD/L	\$9348*TCL*	637637	HE-THAMA-L	#5/26/93	CO. 05	1
HLORDAME	ME/L	3935##7CLP		MB=TRAMA=1		46.3	5
NDEIN	世女/上	3939#+TCL		HB-THAMA-1		C# . 05	1
EPTACHLOR	US/L	39#J##TCLP		MB THAMA" 1		(0.85	10
HEPTACHLOR EPOXIDE	UG/L	39428*TCL*		BE-THAMA-1		48.05	1
TOXAPHENE	UG/L	3948EFTCLP		HB-THARA-1		45.0	100
Company of the same	Annual Street	the boundaries and and		MARK WALLES AND AND		2 m mm	

MB - THAMA - 1

ME-THAMA-1

MB"THAMA"

BB-THABAF1

TEATHAMA"1

HB+THAMAP I

MB THAMAP 1

DESTHARAM!

MB=THAMA*I

HE-THAMA-1

MB-THAMA-1

HB*THARASI

T*AMAHT + BM

HE-THAMA-L

MB-THABA-1

MB.THAMA.L

RE-THAMAPI

RESTHAMASL

I PARAMY BR

HOT THANKS

MB-THAHATI

MB-THARA-I

CHAMANITERN BESTEAMANI

GETSAN MOSTHAMASI

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05/23/93

05/Z1/93

#5/24/93

06/15/93

Environmental Science & Engineering, Inc.
QC SUMMARY
Method Blank (NB) Sample Summery

Fage 2

MAME	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	₹3.8	3.0	_
2.4.6-TRICHL'PHENOL	UG/L	34621 TCLP	1-AMAHT-BM		(3.8	3.8	

Environmental Science & Engineering, Inc. OC SUMMARY Sample Matrix Spike (SPM) Recovery Summary

MARE	UNITS	STORMETH		SAMPLE	DATE	TARGET	FOUND	MRECY	RECV CR	T UNSPIRE
HYDROCARBONS PETROL	UG/O-DAY	98233*1	\$37585	\$12#561 AD+1445	05/20/93	1250	1170	93.6	76-122	18 4
HYDROCARBONS FETROL	UG/G-DRY			5PH2+DV1854214		1250	1288	96.0	76-122	18.4
PERMIC	UG/L	1882*TCLP	£37596	25H+DA181+FR	05/27/93	1668	1188	185,1	75-125	49
RIUM	UG/L	1867-TCLP		ZPRODVIBING		5098	4900	97.8	86-186	2)0
LADRIUM	UG/L -	1027-TCLP		SPH-DVIBT-18		200	130	94.9	86-188	0.3
CHRONIUM	UG/L	1#34*TCLP		SPH-DVIBT-IB		1000	976	96.5	79-109	4.B
LEAD	UG/L	IBS1 TCLF		SPH-DVIBTHLE		1001	928	92,1	75-189	29
MERCURY	UC/L	71988=TCLF	637593	SFM=DV18T=18	95/26/91	5.0	4.8	96.€	83-125	0.8
SELEWIUM	UG/L	11470TCLP	637596	ZPH+DVIBT+IM	05/27/93	200	230	116.0	75-125	28
SILVER	UG/L	1877*TCLP		3##*DV18T=18		(000	950	95.8	73-167	0.4
BHC G(LINDAME)	UG/L	39348*TCLP	\$37637	SPRIPDVIBT-10	:05/25/93	3.0	1.6	53.3	43-145	0.0
ENDRIN	HG/L	19398+TCLP		SPHI-DVIBT-10	2.75445	2.1	2.1	79.4	35-155	8.8
HE PTACHLOR	UG/L	39410-TCLP		SPHI-OVIBT-18		3.0	2.2	73/3	48-124	0.8
HEPTACHLOR EPOXIDE	UC/L	29428*TCLP		3P#1=DV18T=18		3.6	2.0	93.1	68-138	8.0
METHOXYCHLOR	UG/L	19488FTCLP		SPRIMOVIBTEIR		36	25	83.3	86-128	8.8
2,4-0, TOTAL	NG/L	19730-TCLP	677441	SPHI-DVIBT-9	W5/22/93	2.3	2-1	92.9	9-119	8.0
Z.4-0. TOTAL	UG/L	20.30	73.475	SPH2*DVIBT*9		2.3	2.1	92.9	9-119	8.0
2.4.5-TP/SILVEX+DER.	UG/L	35045=TCLP		SPNI-DVIBT-9	2	2.1	2.3	189.0	33-135	8.8
2.4.5-TP/SILVEX+DER.	UG/L	23663-1071		SPRZ*DVIBT*9		2.1	2.8	94.8	33-139	0.0
BENZENE	UG/L	34839-TCLF	P17540	SPHI-DVIBT-16	05/21/93	50	52		37-151	0.0
BENZENE		Season-10-FC	831340	2545-0A181-19	*3/21/32	50	52	184.8	37-151	8.8
	UB/L	321020TELP				50	47	94.0	78-148	8.8
CARBON TETRACHLURIDE	UG/L	WELD COLUMN		SP#1=0V18T+10		50	52	184.8		0.6
CARBON TETRACHLORIDE	UG/L	*******		5PH2=DV18T=18		50	57	185.8		
CHLOROBENZENE	UE/L	34361 TCLP		SP# 1=0V187=18				(3,000,000	36-158	8.8
CHLOROBENZENE	UG/L	Antarane 6		SPH240V18T+18		50	54 50	9.381		0.8
CHLOROFORM	nc/r	32106-TCLP		SPH!=DVIBT=16		50		180.2		0.9
CHLOROFORM	ME/C			SPH2=DV187=18		30	52		52-13R	0.9
1. Z-DICHLOROETHANE	UC/L	34531=TCLP		SPH I OV IBT = 18		50	51	(-76,0-76,0-76)	49-155	0.0
1_Z-DICHLOROETHANE	UG/L	San Santana		SPH2#DV18T#18		50	53	106-0		0. B
3.1-DICHLOROETHYLENE	UG/L	34581 TELP		SPHI-DVIBY-19		50	48	96.8	6-234	0.0
1, I-DICHLORGETHYLENE	DC/L	Picture (COM)		SPH2-DVIBT-18		58	52	The second secon	8-234	8.0
METHYL ETHYL KETONE	UG/L	NIS95#TCLP		SPH I DV IBT = 18		169	116	116.0	58-158	0.8
METHYL ETHYL KETONE	UG/L			SPMZ*DVIBT*10		199	110	119.0	59-158	0. H
TETRACHLOROETHENE	1/20	34475-TCLP		SPhi-DVIET-18		50	47	94.0	64-148	8.8
TETRACHLOROETHENE	UC/L			5PH2*0V1B7*18		50	52	184.8	64-148	9.0
TRICHLOROETHEME	UG/L	39 1880 TCLP		SPHI-DVIBT-18		59	51	182.8	71-157	0.8
"A I CHLOROE THENE	UG/L			SPM2*DV18T*16		50	54	188.0	71-157	9.0
NYL CHLORIDE	UG/L	39175-TCLP		SPHI DVIBT - 18		50	29	78.0	0-250	0.8
VINYL CHLORIDE	UG/L		V-117	SPAZ*DVIBT*IB	Secretary.	50	44	88.8	8-258	9.0
2-METHYL PHENOL	05/L	99873-TCL*	037538	SPM ! DV IBT . 9	85/24/93	56	16	76.8	31-119	8.0
3-METHYL PHENOL	UC/L	97286 TCLP		SP#1#DV187#9		100	66	66.8	31-119	F. 8
4-METHYL PHENOL	UO/L	99874*TCLP		SPHI#DVIBT#9		168	65	56.8	31-119	8 8
1 4-DICHLOROBENZENE	UC/L	34571-TCLP		SPH (4DV 18T+9		5 B	39	78.0	29-124	0.6
Z. 4-DINITROTOLUENE	ME/L	346110TCLP		SP#140V18T-9		58	43	86.8	39-139	E.8
HEXACHLOROBENZENE	UC/L	39789*TCLP		5PM1=DV4BT=9		50	43	86.8	8-152	0.8
HEXACHLOROBUTADIENE	UC/L	34391 TCLP		SPHI DV 18T#9		58	36	72.0	24-116	9.2
HEXACHLORGETHANE	UG/L	34396*TCLP		SPAJ CV 18T+9		58	14	6.88	41-113	8.8
MI TROBENZENE	U6/L	34447*TCLP		SPHI-DVIET-9		58	42	84.0	34-188	8.8
PENTACHLOROPHENOL	MG/L	24032*TCLF		SPH 1+0V18749		108	51	51.8	14-176	3.6
PYRIDINE	UG/L	37288*TCLP		SPH1MOV1BTM9		50	15	74.0	58-158	0.6
2 4 5-TRICHL'PHENOL	UG/L	77627*TCLP		SPH1#DV1BT#9		50	79	75.0	36-144	5.0
				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		58	41	82.0	36-144	4.6
2.4.4-TRICHL PHENOL	mc/r	34621=TCLP		SPHIADVIBLAD		DW	44	45.6	30.144	

Environmental Science and Engineering, Inc. OC SUMMARY

	Sample Matrix Spike N	COVERY	Ste	tistics Su			
STORET-HETHOD	NAME	-14 53	R	MINIMUM	HAXIBUR	AVERAGE	STANDARD DEVIATION
96233*1	HYDROCARBONS PETROL		7	93.6	96.8	94.8	1.7
1982*TCLP	ARSENIC		1	105.1	105.1	185.1	0.0
1007-TCLP	BARIUN		1	97.8	97.8	57.0	0.0
27-TCLP	CADRIUM		1	94.9	94.9	74.9	W.0
34 TCLP	CHRON IUM		1	96.5	96.5	96.5	0.0
1851-TCLP	LEAD	19	1	1.54	92.1	92.1	0.0
719890TCLP	MERCURY		1	96.0	96.1	96.8	4.4
1147-TCLP	SELENJUM		4	116.€	316.0	116.0	W.W.
INTIETCLE	SILVER	10.2	1	95.8	95.1	95.8	0.0
39348-TCLP	BHC G(LINDANE)		4	53.3	53.3	53.3	9.6
393984TCLF	ENDRIN		1	70.0	76.8	76.6	9.8
394184TCLF	HEPTACHLOR		1	73.3	73.3	73.3	8.0
39420-TCLP	HEFTACHLOR EPOXIDE		1	23.3	93.3	93.3	9.0
39480-TCLP	METHOXYCHLOR		1	83.3	83.3	83.3	0.0
39730*TCLP	2,4-D, TOTAL		2	92.9	92.9	\$2.9	9.6
39845 TCLF	2,4.5-TP/SILVEX+DER-		2	94.8	109,8	101.9	10.0
34030-TELP	DENZEHE		2	184.8	104.0	104.8	0.0
32182-TCLP	CARBON TETRACHLORIDE		2	94.8	164.8	99.8	7.1
34361*TCLP	CHLOROBENZENE		2	106.€	108.6	107.0	1.4
32 196 TELP	CHLOROFORM		2	108.2	104.2	182.2	7.1
34531 TCLP	1,2-DICHLORDETHANE		2	186.8	106.0	196.8	9.8
34561-TCLF	1 . 1-DICHLORDETHYLENE		2	96.8	104.5	100.5	5.7
BIS95.TCLP	METHYL ETHYL KETONE		2	116/8	118.0	410.0	0.0
34475VTCLP	TETRACHLORGETHENE		2	94.0	104.8	99.8	7.1
39166*TCLP	TRICHLORDETHENE		2	102.0	108.6	105.E	4.2
39175*TCLP	VINTL CHLORIDE		2	78.1	08.8	83.6	7.1
99873+TCLP	2-METHYL PHENOL		1	76.8	76.0	76.8	4.7
97296*TCLP	3-METHYL PHENOL		1	66.6	66.1	66.0	0.0
99274FTCLP	4-METHYL PHENOL		1	66.8	66.1	66.0	0.0
34571*TCLP	1,4-DICHLORGBENZENE		I	78.8	78.0	78.8	0.1
34611eTCLF	2 4-DINITROTOLUENE		-1	86.0	86.0	86.8	0.0
397###TCLP	HEXACHLOROBENZERE		-1	86.8	86.8	86.8	0.0
34351ATCLP	HEXACHLOROBUTAD TENE		1	72.8	72.0	72.0	0.0
34396=TCLP	The Control and the Market Control and the Control of the Control		-1	68.4	68.4	60.0	0.0
34447+TCLP			1	84.8	B4.9	84.8	7.3
39832*TCLP	PENTACHLOROPHENOL		î	51.0	51.6	51.0	0.8
97268FTCLP	PYRIDINE		i	70.1	76.4	78.8	0.0
7687-TCLP	2 4 5-THICHL' PHENOL		1	78.0	71.0	76.1	V.0
4621-TCLP	2 4 6-TRICHL PHENDL		1	02.5	92.6	92.5	0.8

CHAIN OF CUSTODY RECORD

WORK ORDER #:

																			DUE	DATE		2 _	-	
PHONE P.O. II	617) VAC CONTACT OT IDILOCA	26) -51 A 3)-1	700 }- Pool Tosep 1 ACA 33	Pal	1617 rine R 9	907	111200	61128	1. 2 3. 1. 5	WATER SOIL SLUDGE OIL TISSUE (HER	P G V	- PLASTI - GLASS - VOA	100	1	1 1 × 1 × 1	18/2/	1	5/	ANAL	YSES		1//	1	//
TOXIKON		IPLE ICATION	SAMPLE	. 3.	NTAIN		SAM	PLING	5		/	20/0	3/	2/	1/	*	1	1	1	1	1	/	/	
	IDENTIF	ICATION	TYPE	SIZE	TYPE		DATE	TIME	PRESE	RVATIVE	1		Y 4	/_	1	Z_,	1	1	/	/_	1	1	1	COMMENT
	X607	-north	5	10	V	2	11/16	110	Cola	l	X			Ш										
		-south	5	20	V		11/16	2:37	P 40	18	1													
	209	North	5	580 m	C	T	1/16	100	PU	010		×	×	1.1	1			5-4						
	X0/0	south	5	500	G	1	11/6	20				*	X					74						
	× 01	Kiek	5	170	6	1	11/16		N.	-			2.7	×										
	Xbos	lahe	5	250 ml 250 ml	G	10	11/16	2:10	b				1	X				- 1						
-				250	6	1		1	_		1	-		2)	1	-						1	-	
	XL03	34.476	5	mx	V-	1	11/16	2:19	1 G	10			-		X				-			-		
			-									21			i.									
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51											1 1									.4.				
											L	4						1	1					
Harrigue	SHEDION:	D	ATE	18	- 9	3	RECEIVE	D BY:	. 11	DATE:	11-	16	73	1	PECL	AT IN	STRI	ICTIO	ONG-	-				
HILL COM	Mr.	ो	ME 1	- 11 - 93 RECEIVED BY:				litte	TIME	3 -	46	- fm		SPECIAL INSTRUCTIONS:										
EUNOU	SHED BY		DATE - RECEIVED BY:				DATE				\$	RUSH, DAY TURN AROUND												
		7)			+					TIME	0.5				TR	OUT	INE							
HELMOU	SHED BY	0	ATE	4	*	-	RECEIVE	DFORLA	H HY	DATE	-													
		Α.	ME	•						TIME	15		-											

E31 PRICE QUOTATION FOR WEBSTER ENGINEERING

Requested on: November 16, 1993

E3I RFP #:

Requested by: Joseph V. Polsinello Telephone #: (617) 265-5500

Fax #: (617) 826-9332

Project Description: Fort Devens; Soil Analysis

No. DACAB3-93-R-0007

Parameter	Method	Price (S)/Sample
VOA	Mod 8240	165
ABN	Mod 8270	320
PCB	Mod 8080	95
TPH (IR)	418.1	55
TPH GC/MS	Mod 8270	155

NOTES:

- Turnaround time is one week with a 50% surcharge.
- MS/MSD, spikes, duplicates, field blanks and trip blanks will 2. be billed at unit price.
- 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.

cholas P. Corso

Executive Vice President

TOTAL PETROLEUM HYDROCARBONS

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

E3I ID:		Client ID:	Petroleum Hydrocarbons				
24 4			Dry Weight				
	940259-1	X01 North	300 mg/kg				
	940259-2	X02 Center	180 mg/kg				
= 18,4	\$257,258,259	Soil Blank	< 25 mg/kg				

[&]quot;<" 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 E31 ID: 940259-7 Date Analyzed: 11/21/93

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.

FILE FURM IA MERTLE FRANT ANALYSIS DATA SHEET

XD7MCRTH

FLIENT SAMPLE NO.

			1-	_	_
Tight Tame Tight Pholesis	044W	E3I Jamp E3I File Associati	Name -	9402 H108 : H107	0
atrix evel:	201F	Date Reco		11/1	7/93
amale wi/val Maisture:	5.0 G 10	Date Ana Dilution			2/93
CAS NO.	СОМРЛИНО	CONCENTRATION	UNITS:	ug/Kg	0
20.02.2	Ch Variable band			11	10
74-87-3	Chloromethane	-		11	iù
74-83-9	Scomomethane			11	10
75-01-4	Vingl Chlaride				III
75-00-3	Chlorgethane	196			IU
75-09-2	Methylene liblor	ue			iŭ
67-64-1	Acetone			6	10
75-15-0	Carbon Disulfide			5 5	iŭ
75-35-4	1.1-0ichloroethe			6	IU
75-34-3	1.1-Dichloroeth	ane			10
540-59-0	1.2-Oichioroethe	ene (total)			
67-66-3	i Chloroform			5	In
78-93-3	/ Z-Bucanone			11	ĮΨ
107-06-2	1.2-Dichloroeth				lu
71-55-6	1.1.1-Trichloros			6	1U
56-23-5	Carbon Tetrachlo	oride		6	In
108-05-4	Vinyl Acetate		- 1	11	IR
75-27-4	Bromadichlorome	thane		6	In
78-87-9	1 1.2-Dichtoropros	pane		6	10
10061-01-5	cis-1,3-Dichlore	оргореле		б	10
79-01-6	Trichloroethene	,		5	10
124-48-1	Dibramoch lorome	thane		6	14
79-00-5	1.1.2-Trichloros			5	U
71-43-2	Benzene	C.C. Di		ō	10
10061-02-6	trans-1,3-Dichlo	propropene		5	1U
75-25-2	Bromaform	CONTRACTOR OF		6	1U
108-10-1	4-Methy I-2-penta	anone		11	0
591-78-6	2-Hexanone		1 3	11	IU
127-18-4	Tetrach loroether	ne.		5	U
79-34-5	1.1.2.2-Tetrach	Iproethane		6	U
	Тотиеле			5	Ü-
188-88-7	A Company of the Comp			5	U
108-88-3	1 Chloropantane				
108-90-7	Chlorobentene	A 1			
	Chlorobenzene Ethylbenzene Styrene			5 5	IU IU

QUALIFIERS

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

toral idl scollar usenn File 241080 35.0-500.0 amus 340857-1 CONCRETE INSTRUMENTALES CHE I 100 800 200 500 500 700 400 800 560004 52000-48000-- Inhamal Standard 12 44000-- Brohoffacircbenzena 40000-Internet Standard #5 36000 32000 Internal Standard #1 1,2-Dichlarbelhana-dt 28000-24000-20000-15000 120004 8000 4000-

24

ZE

32

Misc: INSTR. ID: ELMER CH5 WEB 5.0 G

1.5

Id File: ET-CLP::SC

Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624

20

Last Qcal Time: 931122 10:34 Last Calibration: 930522 17:42

Operator ID; VOA

Quant Time : 931122 15:20 Injected at: 931122 14:39

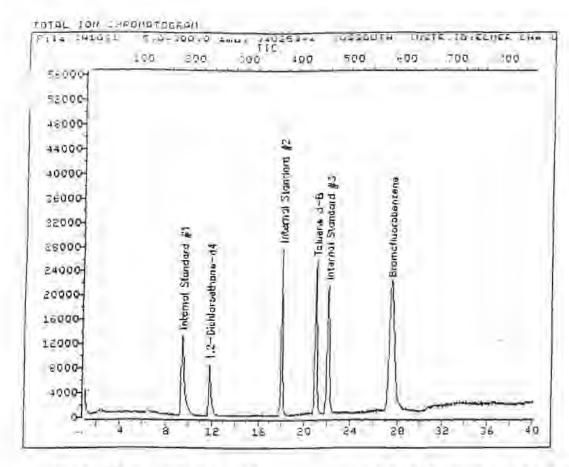
CLIENT SAMPLE NO KORSOUTH

1	(mi) me	We'd Sed	E3I Samp	In 10:	940	259-2
7	THE WAR TO SE	NEG EN	E31 File		1 1 1 1 1 1 1	
U	tent Propositi	7A4A				
		4.00	Associate	ed Birtin	e HIU	C.F.
	EP-LK?	301L	a Sellia Va	-1000 m	VSw	4100
e.	ye!	L DW	Date Rece		1177	7/93
			Date Exti		1	1
. X	mp (w wt/virl)	5.0 0	Oate Ana	lyzed:	11/2	22/93
	Maisture	9.0				
ľ	Miles and in the	414	Offacion	Factor:	1.0	
	AS NO.	COMPOUND	CONCENTRATION	UNITS:	ad/Ka	Q.
	TASK MISS.	7.0ME00.00	Comprison (Co.		-92/12	
Ĭ,	31 65 5	CATAVARAFASA			11	10
Į,	74-87-3	Chloromethan	e.		11) U
Į,	74-83-3	/ Scomomethane	44		11	U
l	75-01-0	(Vinyl Chlore				10
1	75-00-3	Chlorosthane			11	14
ľ	75-09-2	Merny lene th	loride .		4) J
1	67-64-1	Acetone			11	(n
ŀ	75-55-0	Carbon Disul	fide	1	6	10
ì	75-35-4	1.1-Dichloro	ethene		6	10
ì	75-34-3	1 1,1-Dichloro		ĺ.	5	IU
'n	540-50-0	1 1-2-0 (cr. loros	echene (total)		5	[U
l	57-66-3	Chiaroform	diens Marie A	ì	5	10
	78-93-3	2-Butanone			11	111
V	107-06-2	1.2-Dichloro	ethane		6	10
ļ	71-55-6	I.1.1-Trichle	roethane	,	6	111
Į.	56-23-5	Caroon Tetra		l .	6	IU
ſ.					11	iU
Ų	108-05-4	Vinyl Acetat		-	6	u
Į.	75-27-4	Bromodichlor			6	III
l	78-67-5	I I.Z-Dichloro			6	TÜ
ľ	10061-01-5	cis-1.3-01ch				A
U	79-01-6	frich largeth			6	IU.
	124-48-1	Dibromach lar			6	I.U
L	79-00-5	I.1.2-Trient	aroethane.		6	111
	71-43-2	Benzene	alahus alum Mi		6	In.
0	10061-02-6		chloropropese		6	10
Û	75-25-2	Bromofarm			6	(U
0	108-10-1	4-Methy1-2-pe	entanone		11	10
1	591-78-6	2-Hexanone		5	11.	In
ĺ	127-18-4	[Tetrachlorne			6	1U
1	79-34-5	1,1,2,2-Tetr	achloroethane		6	10
ñ	108-88-3	1 Toluene	The state of the s		5	101
1	108-90-7	Chlorobenzen	2		6	Ju
1	100-41-4	Ethylbenzene			6	1U
ы	100-42-5	Styrene		1	6	(U)
r						

QUALIFIERS

- U: Analysed for but not detected

 B: Found in associated blank as well as sample
- Estimated value, below quantitation limit J:



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 Qcal Time: 931122 10:34 Last Calibration: 930522 17:42

Operator ID: VOA

Quant Time : 931122 16:19 Injected at: 931122 15:38

CLIENT CAMPLE MIT 9816 11/22

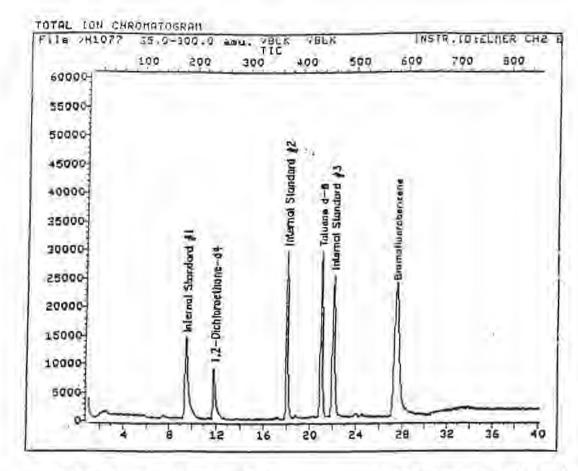
		E3I Samo E3I File	Name: HIO	7.7
		Associat	ea Blank HlD	7.7
MACHE N.	201L	2.47	4.00 mg	TV.
(evell	LOM	Date Reco		-5
100 NO 100 NO WILL	- a a	Date Ext		22/93
Sample wt/voi:	5 0 6	Date Ana	Tyzed: TIV	CE1 22
% Motiture:	a, a	Dillet inn	Factor: 1.0	
		01/06/00	7.95.1111	-
CAS NO.	COMPOUND	CONCENTRATION	NNITS: 0g/Kg	Ø
Table Laboration	V See a see s		10	10
74-87-3	Chioromethan		10	10
74-83-9	Bromomethane		10	U
75-01-4	Vinyl Chilori		10	III
75-00-1	Chlorosthane		5	10
75-09-2	Methylene Ch	tor toe	22	19
67-64-1	Acetone	2:42	5	TU
75-15-0	Carbon Disul		5	1u
75-35-4	1,1-Dichloro		5	10
75-34-3	1.1-Dichlara		8	iu
540-59-0		ethene (total)	5	Ü
67-66-3	Chloroform		10	10
78-93-3	Z-Butanone	0.00.0	5	10
107-06-2	1,2-Dichlaro	ethane	8	FU.
71-55-6	1.1.1-Trichl		5	Ü
55-23-5	Carbon Tetra		10	U
108-05-4	Vinyl Acetat		.5	iù
75-27-4	Bromodichlor		5	U
78-87-5	1 1,2-Dichlord		5	iù
10061-01-5 79-01-6	cis-1.3-Dich		5 5	10
124-48-1	Dibramachlar		5	iù
	1 1,1.2-Trich1	nroothane	3	IU
79-00-5 71-43-2		Ol-ne-rilane.	5	10
10061-02-6	Benzene	chloropropene	5	IU
1 75-25-2	Bromoform	childi opi openie	5	iu
108-10-1	4-Methyl-2-g	entagone	10	U
591-78-6	Z-Hexanone	elline diene	10	u
127-18-4	Tetrachloroe	there	5	ju
79-34-5	1 1.1.2.2-Tetr	ach loroethane	5	10
108-88-3	Taluene	mary and an arreline	5	ju
108-90-7	Chiorobenzen	e	5 5 5	U
1 100-41-4	Ethylbenzene		5	ju
100-42-5	Styrene		5	10
1330-20-7	Xylene (tota	11	5	10

- QUALIFIERS

 U: Analysed for but not detected

 E: Found in associated blank as well as sample

 A: Estimated value, below quantitation limit



nu 12-93

Data File: >H1077::D4

Quant Output File: "H1077::D2

Name: VBLK VBLK Instrument ID: ELMER

Misc: INSTR.ID: ELMER CH2 E31 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

EIL FIRM IN TOTAL VOLATILE ORGANIA SHRROGATE RECOVERY

Pliant Name:

WEBSTER

Client Project: 5A40

Date Received:

11/17/93

E31 Project #: 940259

Level:

LOW

CLIENT SAMPLE ED	St (TOL) #		(DCE) #	OTHER	TOT
VBLK 11/22 XO7NGRTH XO8SOUTH	103 105 105	101 94 98	100 91 93		0

QC LIMITS

51, (TOL) = Toluene-d8: 84-138

52 (BF8) = Bromofluorobenzene: 59-113

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

[.] Values outside of required QC limits

ESI FORM 1B SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

X09 NORTH

E3I Sample ID: 940259-3 Client Name: WEBSTER ENG. C5432 E31 File Name: Client Project: SA48 Associated Blank: C5431

SOIL Matrix: Date Received: 11/17/93 LOW Level: Date Extracted: 11/18/93 11/21/93 Date Analyzed: 30.0 G Sample wt/vol:

8.0 % Moisture: Dilution Factor: Extract vol: 1.0 mL

CONCENTRATION UNITS: ug/Kg Q COMPOUND CAS NO. U 360 Phenol 108-95-2 360 U bis(2-Chloroethyl) Ether 111-44-4 360 U z-Chlorophenol 95-57-8 U 360 1,3-Dichlorobenzene 541-73-1 U 360 1,4-Dichlorobenzene 106-46-7 U 360 1,2-Dichlorobenzene 95-50-1 U 360 2-Methylphenol 95-48-7 U 360 bis(2-chloroisopropyl)ether 108-60-1 Ú 360 4-Methylphenol 106-44-5 U N-Nitroso-Di-n-propylamine 360 621-64-7 U 360 Hexachloroethane 67-72-1 U 360 98-95-3 Nitrobenzene U 360 Isophorone 78-59-1 U 360 88-75-5 2-Nitrophenol U 360 2.4-Dimethylphenol 105-67-9 U 360 bis(2-Chloroethoxy) methane 111-91-1 U 910 2,4-Dichlorophenol 120-83-2 U 1,2,4-Trichlorobenzene 360 120-82-1 U 360 Naphthalene 91-20-3 U 360 4-Chloroaniline 106-47-8 U 360 Hexachlorobutadiene 87-68-3 U 360 4-Chloro-3-methylphenol 59-50-7 U 360 2-Methylnaphthalene 91-57-6 U 360 Hexachlorocyclopentadiene 77-47-4 360 U 2,4,6-Trichlorophenol 88-06-2 U 910 2,4,5-Trichlorophenol 95-95-4 U 360 2-Chloronaphthalene 91-58-7 U 910 2-Nitroaniline 88-74-4 U 360 Dimethy1phthalate 131-11-3 U 360 Acenaphthylene 208-96-8 U 360 2,6-Dinitrotoluene 606-20-2 U 910 3-Nitroaniline 99-09-2 U 360 Acenaphthene 83-32-9

QUALIFIERS

Analysed for but not detected U:

E:

- Found in associated blank as well as sample B:
 - Estimated value, below quantitation limit J: Estimated value, above calibration limit

X09 NORTH

Client Name: WEBSTER ENG. EJI Sample ID: 940259-3 Client Project: SA48 EJI File Name: C5432 Associated Blank: C5431

Matrix: SOIL Level: LOW

Level: LOW Date Received: 11/17/93
Date Extracted: 11/18/93
Sample wt/vol: 30.0 G Date Analyzed: 11/21/93

% Moisture: 8.0 Extract vol: 1.0 mL

Dilution Factor: 1

CAS NO. COMPOUND CONCENTRATION UNITS: ug/kg Q

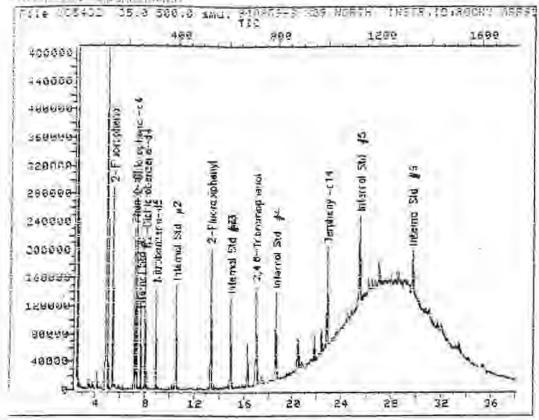
0.0 -	10.0 A. 25	7.7.	-
51-28-5	2,4-Dinitrophenol	910	U
100-02-7	4-Nitrophenol	910	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	910	U
534-52-1	4,6-Dinitro-2-methylphenol	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	3
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
17-81-7	bis(2-Ethylhexyl)phthalate	360	U
117-84-0	Di-n-octylphthalate	360	U
205-99-2	Benzo(b) fluoranthene	120	J
07-08-9	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
36-74-8	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





Oata File: >C5432::R2

Quant Output File: ^C5432;:QT

Name: 940259-3 X09 NORTH

MISC: INSTR. ID: ROCKY ASP91 WEBSTER ENG.

BTL#14

Id File: AQU91R: : EX

Id File: Muc.
Title: SEMI-VULATILE DRHAMIC
Last Calibration: 931128 15:31 Title: SEMI-VULATILE DRHANIC ANALYSIS FOR NYDEC CLP

Quant Time: 931121 03:21 Injected at: 931121 02:40

ESI FORM 1B SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

X10 SOUTH

E31 Sample ID: 940259-4 WEBSTER ENG. Client Name: E3I File Name: C5433 Client Project: SA48

SOIL Matrix: LOW Level:

30.0 G Sample wt/vol: 7.0 % Moisture:

1.0 mL Extract vol:

Associated Blank: C5431

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

Dilution Factor:

CAS NO.	COMPOUND	CONCENTRATION	UNITS:	ug/Kg	Q
---------	----------	---------------	--------	-------	---

108-95-2	Phenol	360	U
111-44-4	bis(2-Chlorcethyl)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
521-64-7	N-Nitroso-Di-n-propylamine	360	Ü
57-72-1	Hexachloroethane	360	U
8-95-3	Nitrobenzene	360	ū
78-59-1	Isophorone	360	U
8-75-5	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	ū
120-82-1	1,2,4-Trichlorobenzene	360	n
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	n n
37-68-3	Hexachlorobutadiene	360	Ü
59-50-7	4-Chloro-3-methylphenol	360	ū
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	ŭ
88-06-2	2,4,6-Trichlorophenol	360	
95-95-4	2,4,5-Trichlorophenol	900	u
91-58-7	2-Chloronaphthalene	360	ü
38-74-4	2-Nitroaniline	900	
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	ū
506-20-2	2,5-Dinitrotoluene	360	ū
99-09-2	3-Nitroaniline Acemaphthene	360	U

QUALIFIERS

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

PAGE 2

EZI FORM 1C SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE

XIO SOUTH

Client Name: WEBSTER ENG. E3I Sample ID: 940259-4 Client Project: SA48 E3I File Name: C5433 Associated Blank: C5431

Matrix: SOIL Level: LOW

Sample wt/vol: 30.0 G

% Moisture: 7.0 Extract vol: 1.0 mL Date Received: 11/17/93 Date Extracted: 11/18/93 Date Analyzed: 11/21/93

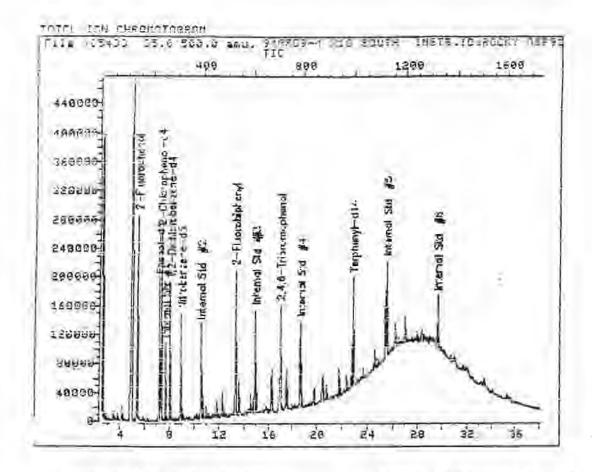
Dilution Factor: 1

CAS NO. COMPOUND CONCENTRATION UNITS: ug/Kg 0 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 U 84-66-2 Diethylphthalate 360 7005-72-3 4-Chlorophenyl-phenylether 360 U 86-73-7 U Fluorene 360 100-01-6 4-Nitroaniline U 900 534-52-1 U 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 350 U 87-86-5 Pentachlorophenol 900 U Phenanthrene 85-01-8 360 120-12-7 U Anthracene 360 84-74-2 Di-n-butylphthalate 120 JB Fluoranthene 206-44-0 95 J J 129-00-0 Pyrene 88 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 J Chrysene 63 117-81-7 bis(2-Ethylhexyl)phthalate 360 U U 117-84-0 Di-n-octylphthalate 360 205-99-2 Benzo(b) fluoranthene J 72 J 207-08-9 Benzo(k) fluoranthene 55 50-32-8 J Benzo(a) pyrene 56 Indenc(1,2,3-cd)pyrene U 193-39-5 360 U 53-70-3 Dibenzo(a,h)anthracene 360 U 191-24-2 Benzo(g,h,i)perylene 360 TT 86-74-8 Carbazole 430000

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



- Data File: >C5433::R2

Quant Dutput File: ^C5433::QT

Name: 940259-4 X10 SOUTH

Misc: INSTR. 10: ROCKY ASP91 WEBSTER ENG.

日TL#15

Id File: AQU91R::EX

Title: SEMI-VULATILE ORMANIC ANALYSIS FOR NYDEC CLP

11123/93

Last Calibration: 931120 15:31

Operator ID: MIKE

Quant Time: 931121 04:09 Injected at: 931121 03:29

E3I FORM 1B SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLKES

Client Name: WEBSTER ENG. Client Project; SA48

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

Matrix:

Level:

SOIL LOW

Date Received: 11/18/93

30.0 G Sample wt/vol:

Date Extracted: Date Analyzed: 11/21/93

% Moisture: 0.0 1.0 mL Extract vol:

Dilution Factor: 1

CAS MO

COMPOUND

CONCENTRATION UNITS: ug/Kg Q

CAS NO.	COMPOUND CONCENTRATION C	CONTRACTOR CONTRACTOR	-
108-95-2	Pheno1	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-chloroisopropy1)ether	330	ū
106-44-5	4-Methylphenol	330	U
521-64-7	N-Nitroso-Di-n-propylamine	330	U
57-72-1	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	a
120-83-2	2,4-Bichlorophenol	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
3B-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	830	T.
91-58-7	2-Chloronaphthalene	330	U
38-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
506-20-2	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
- Found in associated blank as well as sample 'B:
- Estimated value, below quantitation limit J: Estimated value, above calibration limit E:

Matrix:

Level:

SBLKE3

Client Name: WEBSTER ENG.

Client Project: SA48

SOIL LOW

Sample wt/vol: 30.0 G

% Moisture:

Extract vol:

0.0 1.0 mL E31 Sample ID:

S259 E31 File Name: C5431 Associated Blank: C5431

Date Received:

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

Dilution Factor:

CAS NO.

COMPOUND

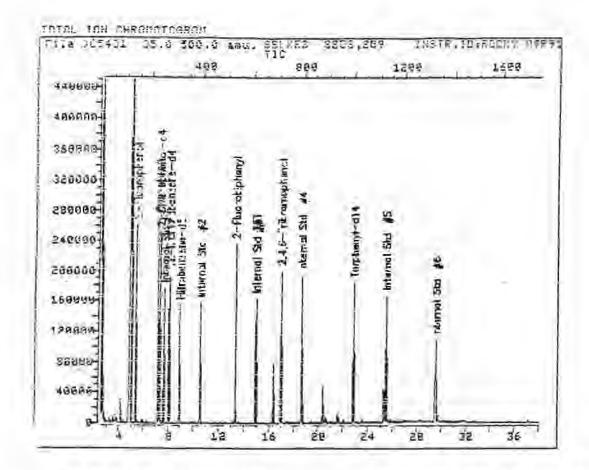
CONCENTRATION UNITS: ug/Kg Q

51-28-5	2,4-Dinitrophenol	830 830	U
100-02-7	4-Nitrophenol	330	ū
132-64-9	Dibenzofuran	330	ŭ
121-14-2	2,4-Dinitrotoluene	330	ŭ
84-66-2	Diethylphthalate	330	ü
7005-72-3	4-Chlorophenyl-phenylether		U
86-73-7	Fluorene	330	Ü
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	
86-30-6	N-Nitrosodiphenylamine	330	ū
101-55-3	4-Bromophenyl-phenylether	330	n
118-74-1	Hexachlorobenzene	330	a
87-86-5	Pentachlorophenol	830	n
85-01-8	Phenanthrene	330	Ü
120-12-7	Anthracene	330	10
84-74-2	Di-n-butylphthalate	160	1 1 1 1 1 1 1
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	Ü
218-01-9	Chrysene	330	
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	מ
193-39-5	Indeno(1,2,3-cd)pyrene	330	Ü
53-70-3	Dibenzo(a,h)anthracene	330	
191-24-2	Benzo(g,h,i)perylene	330	U
86-74-8	Carbazole	330	U

QUALIFIERS

Analysed for but not detected U:

Found in associated blank as well as sample J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



Data Fila: >C5431::R2

Quant Output File: ^C5431::QT

Mame: SBLKE3 S258,259

MISC: INSTR. ID: ROCKY ASP91 WEBSTER ENG.

BTL#13

Id File: AQU91R::EX

Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP

رالعنا الم

Last Calibration: 931120 15:31

Operator ID: MIKE

Quant Time: 931121 02:32

Injected at: 931121 81:52

EII FORM ZA SOIL SEMIVOLATILE ORGANIC SURROGATE RECOVERY

Client Name: WEBSTER ENG. Client Project: SA48

Date Received: 11/17/93 E3I Project #: 940259

Level: LOW

61 54	58		=====	Manager 1	(2FP)	(TBP)	(2CP)	 OUT
54	58 56 56	48 47 45	63 53 57	67 68 66	52 54 61	64 68 69	58 57 56	0 0
		\equiv						
				\equiv				Ξ
			\equiv			\equiv	\equiv	

QC LIMITS

SI	(NBZ)	= Nitrobenzene-d5:	23-120	
52	(FBP)	= 2-fluorobiphenyl:	30-115	
53	(TPH)	= Terphenyl-d14:	18-137	
54	(DCB)	= 1,2-Dichlorobenzene-d4:	20-130	(Advisory)
55	(PHL)	= Phenol-d5:	24-113	man Tarimaga
56	(2FP)	= 2-Fluorophenol:	25-121	
57	(TBP)	= 2,4,6-Tribromophenol:	19-122	
58	(2CP)	= 2-Chloropheno1-d4:	20-130	(Advisory)

^{* -} Values outside of required QC limits

D - Surrogates diluted out

PCB SURROGATE RECOVERY

Energy and Environmental Engineering, Inc. Lab Name:

Case No.: SA48 Lab Code: EJI

CLIENT	SI	S2
SAMPLE NO.	(TCX) #	(DCB)
PBLK59	102	113
X09 NORTH	91	95
X10 SOUTH	92	94

(TCX) = TETRACHLORO-M-XYLENE (DCB) = DECACHLOROBIPHENYL Values outside of QC limits 31 82

ADVISORY QC LIMITS (60-150)

- Column used to flag recovery values
- Surrogates diluted out D

1 D PCB ANALYSIS DATA SHEET

X9 NORTH

11/18/93

11/24/93

Lab Name: E3I Lab Code: E3I

*Moisture:

Decanted:

Case No.: SA48 SDG No.:

Matrix: Soil Extraction: Sonc

Lab Sample ID: 940259-3 Lab File ID: N18A149 Date Received: 11/17/93

Sample Size: 30.0 G Extract Volume: 10.0 mL Injection Vol.: 1.0 uL

Dil. Factor: 1 pH: 6.6

Date Extracted:

Data Analyzed:

GPC Cleanup: N

Sulfur Cleanup:

Concentration Units:

		Concentrate de Lon on	103.
CAS No.	COMPOUND	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	IJ
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	64	

(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:	EJI	Case No.:	SA48
Take	Code	BIT T	CDC No	

Lab Code: E3I SDG No.:

Matrix: Soil Lab Sample ID: 940259-4 Extraction: Sonc Lab File ID: N16A150

%Moisture: 7 % Date Received: 11/17/93 Decanted: N Date Extracted: 11/18/93 Date Analyzed: 11/24/93

Sample Size: 30.0 G
Extract Volume: 10.0 mL Dil. Factor: 1
Injection Vol.: 1.0 uL pH: 7.2

GPC Cleanup: N Sulfur Cleanup: Y

Concentration Units:

		collectic acton off	
CAS No.	COMPOUND	ug/Kg	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	72	V
11141-16-5	Aroclor-1232	35	ŭ
53469-21-9	Aroclor-1242	35	Ų
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

"-BSTER ENGINEERING CO., INC. BOX 275 DORCHESTER, MA 02121

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

DESTINATION						
DATE	LOAD NO.	GROSS	TARE	NET	TONS	CUM.
12/21/93	361340	106,360	35.150	71,210	36.43	36.43
12/21/99	N/A			0	0.00	36,43
12/21/93	351343	95,670	36,980	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
198		Card and the card		0	0.00	131.78

477	First 1
ept	Phone F
· INC.	so historial
· JOE P	From HAL



Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup

BWSC-012A

Release Tracking ramos **

BILL OF LADING (pursuant to 310 CM	R 40.0030) 2 - 0662
A. LOCATION OF SITE OR DISPOSAL SITE WHERE R	EMEDIATION WASTE WAS GENERATED:
Street:CAREY STREET -	Location Aid: STUDY AREA 48
City/Town: AYER	Zip Code:
Date/Period of Generation: / /_ to / /.	
Additional Release Tracking Numbers Associated with this Bill of Lading:	
	Limited Removal Action (LRA) taken prior to cking Number is not needed.
B. PERSON CONDUCTING RESPONSE ACTION ASSO	CIATED WITH BILL OF LADING:
Name of Organization: U.S. ARMY - FORT DEVENS	
Name of Contact: JAMES CHAMBERS Street. BUILDING 689 ENV.NGT.OFF. MCARTHUR AND	THE ENVIRONMENTAL MANAGED
City/Town FORT DEVENS AYER State	
Telephone: 508 - 796 - 3114 Ext.	Zip Code: 01433
	nsponer Other RP:
TRANSPORTER/COMMON CARRIER INFORMATION	
ansporter/Common Carner Name: MERRIMAC CARTAGE INC.	
OMEST Person: WILLIAM THOMPSON SR.	TWE: OWNER
210 HOLT ROAD	MA 70 Code: 01845 -
ntact Person: ROBERT STEELE 90 ROCHESTER NECK ROAD	TRON: PRESIDENT N.H. Zip Code: 03839 -
be of Facility: Asphali Batch/Cold Mix X Landfill/Dispo	incurrenter []
eck one) Asphalt Batch/Hot Mix X Landfill/Daily	Cover Temporary Storage
☐ Thermal Processing ☐ Landfill/Struc	
of Hazardous Division of Solid Waste	NH DES
ste/Class A Permit #: N/A Management Permit #:	30.0
ual/Anticipated Period of Temporary Storage (specify dates if applicable)	-/-/- to -/-/- N/A
son for Temporary Storage (if applicable);	



ime of Person (print):

rea 10/1/93

Massachusetts Department of Environmental Protection BWSC-012A Bureau of Waste Site Cleanup

City/Town:	State:	Zio Code	
F. DESCRIPTION OF REMEDIATION		149 2492	
(check all that apply)	WAS, L		
Contaminated Media (circle all that apply): ((Sall) Groundwater Surface	Water Other:	
Contaminated Debris (circle all that apply):	Demolition/Construction Waste	Vegenetics/Organic	Materials
Inorganic Absorbant Materials	Other		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Non-hazardous Uncontainenzed Waste (circle	The state of the s	ase Liquid Other:	
Non-hazardous Containerized Wasie (circle of		pes Containers	Drums
Engineered Impoundments	Other:		1000
Type of Contamination (circle all that apply): Gu	asoline Diesni Fuel #2	Oil # Oil	#6 Oil (Waste Oil)
Kerosene Jet Fuel Othe	er	-	
Estimated Volume of Materials: Cubic Yards: _	Tons:	150	10C
	M10		ald the
Contaminant Source (check one/specify) Tran	nsponation Accident 🔝 Undergro	duno storage rank L	Other:
Esponse Action Associated with Bill of Lading (circ	cie one): Immediate Respon	se Action Rele	asa Abatement Measure
Utility-Related Abatement Measura	Limited Removal Action (L	RA) Comprer	ensive Response Action
Other (specify):II_SARMY	FORT DEUFNS, AVER MA	CONTRACT #	DACA 33-93-C-0061
emediation Wasie Characterization Support Docum	magration anarhad:		
A Site History Information A Sampling and		X Laboratory Data	Field Screening Dina
supporting documentation is not appended, p			
formation was previously submitted to CEP	Iroyida di anasiminin samig sis	Song Sold III Sollington	an man man poorment aren
LICENSES CITE BROTTECIONAL III	COLORINOU.		
Name of Organization: Department of Et			
Name of Organization: <u>Department of Br</u> .SP Name:	nvironmental Protection	Title:	
Name of Organization: <u>Department of Br</u> SP Name:	nvironmental Protection	Title:	
Name of Organization: Department of Bruse SP Name: Selephone: 508-792-7653 Em	721	Title:	sed on this information, if is my
Name of Organization: Department of Brush SP Name: Selephone: 508-792-7653 Em. These personally examined and am familiar with the Opinion that the lesting and assessment actions un MR 40.0037 and that the facility or location can a	771 a information contained on and submit of the contained of the contain	Title: Barried with this form. Batterize the Remediation characteristics describe	Waste, in accordance with 310 d in this submittal. I am aware
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	221 sinformation contained on and submindertaken were adequate to charactecept remadiation wastes with the contained in possible fines and imprisonment in	Title: Better the form. Betterize the Remediation characteristics describe hay result if I wilfully such Seal:	Waste, in accordance with 310 d in this submittal. I am aware mit information which I know to.
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Massachusetts Department of Environmental Protection BWSC-0128 Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 210 CMR 40.0030)

Resease Tabling Victor

I. LOAD INFORMATION: LOAD 1: Signature of Transporter Repre	SER ATTACHED LOAD # 1.	Receiving Facility/Temporar	y Slovage Represents)
Date of Shipment Time of Shipment 18 / 21 / 23 08 1 30 Truck/Tractor Registration C98 - 237		Oale of Receipt: 12 / 21 / 93	Time of Record 11 06 (circle chale) = - 35.67
		Load Size (cu. yds flore)	
LOAD 2: Signature of Transporter Repres	ENIAINE SEE ATT LOAD # 033	Receiving Facility/Temporar	y Storage Regreseries is
Care of Shipment Time of Shipment 12/3/1/13 08:30 Tuck Tracks: Registration 822806	the one) On- Trailer Regulitation of anyl 37 070	Date of Researt: 13 / 31 / 93 Long Size (cu. you (0-5)	Time of Feres
LOAD 3: Signature of Transporte: Recres	SEE ATT LOAD # 04	Receiving Facility/Temps/an	Storage Recresements
Date of Shipmen: Time of Shipmen: 12 / 31 / 93 09 00 Truck-Tractor Registration 940 081	Traver Registration (.f. any)	Date of Recerci 12 / 31 / 93 Losed Size (cu, yes (cos)	Time of Federal 11:15 (circle that am = 29, 96
LOAD 4: Signature of Transporter Sepresi	SEE ATT LOAD # 05 7	Receiving Faculty/Temporary	Siplage Fecteser(s) ,a
_aie of Shipmer! Time of Shipmen: 12 / 31 / 93	(circle one @m)== Trailer Registration (in any) 61.660	Date of Receipt: 13 / 31 / 93 Load Size (cu. yds 669	Time or Federal 11 : 15 10 : 256 @0 = - 36 : 43
LOAD 5: Signature of Transporter Fabrese		Receiving Facility/Temporary	
Date of Shipment. Time of Shipment //	(circle one) arriom Trailer Registration (if any)	Date of Receipt:// Load Size (cyds Aons)	Time of Repe 3:
DAD 6: Signature of Transponer Represe		Receiving Facility/Temporary	Storage Replacementative
Date of Shipment Time of Shipment // /udWTractor Registration:	(circle one) amom Trailer Registration (if any)	Care of Receipt:	Time of Receipt;
OAD 7: Signature of Transporter Represen	najive	Receiving Facility/Temporary	Stotage Replesentative
Time of Shipment / / unit Tractor Registration	forcle one) am/oतः Trailer Registration (if any)	Date of Receion: // Load Size (cullyds rions):	Time of Fere st
LOG SHEET VOLUME INFORMA	i otal Volume	This Page (cu. vas(fions)	131,78



Massachusetts Department of Environmental Protection BWSC-012C Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)
SUMMARY SHEET ____ OF ____

	Release Tracking Number
2 -	0662

DATE OF SHIPMENT	DATE OF RECEIPT	NUMBER OF LOADS SHIPPED:	DAILY VOLUME SHIPPED (CU. YDS./TONS)
DEC 21,93	DEC 21, 93	4	
occ aijis	220 24 13		131. 78 TONS

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وتونية المناشد	L		
	 		
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SUMMARY S	HEET TOTAL SHIPPED.		
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WASTFUNDEREMENT PELNEY YEARS HIRE, INC 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.

WEIGH

MASTER: CHERYL PRESTON

TRUCK: W6

HAULER:

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

SIGN

WASTEUMANDEGEMENT OF LINE WHOMESHIRE, INC. 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.

WEIGH

HAULER: MASTER: CHERYL PRESTON

TRUCK: M6 WASTE: SPW CONT. SOIL

PROFILE: 189404

COUNTY: 02 MASSACHUSETTS

96620 LBS GROSS:

TARE: 36700 LBS KNOWLEDGE THIS TRUCK CONTAINS NO HAZARDOUS OR UNACCEPTABLE WASTE

TO THE BEST OF MY

NET: 59920 LBS 29.96 TONS

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.

WASTEUNDEGEMENT OF LINE OF ROCHESTER, NH (603) 332-2386

361345

DATE: 12/21/93

TIME: 11:12-11:30

CUSTOMER: 325 WEBSTER ENGINEERING CO., INC.

WEIGH

MASTER: CHERYL PRESTON

HAULER:

TRUCK: MIB

WASTE: SPW CONT. SOIL

PROFILE: 189404

COUNTY: 02 MASSACHUSETTS

146

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

DUT-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

text Downs

SIGN

Tha

WASTFUNNIEGEMENTFOELNEW HOMENIRE, INC 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.

WEIGH

MASTER: CHERYL PRESTON

HAULER:

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

tort Drusts

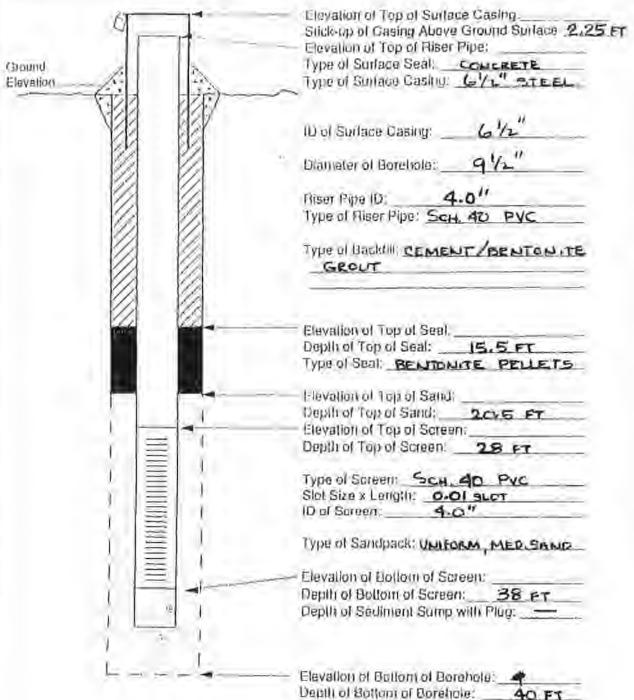
SIGN

APPENDIX C BORING LOGS AND MONITORING WELL CONSTRUCTION DIAGRAMS DECEMBER 1993 - JANUARY 1994

when in our

143

MONITORING WELL CONSTRUCTION DIAGRAM Project Fort Devens Study Area 48 Driller NH Barting / G. Twombley Project No. 7143.00 Boring No. BX 4804 Drilling Method 6/4" HSA Date Installed 16/08: 93 Development Method Field Geologist RPGILESPIE Elevation of Top of Surface Casing Stick-up of Gasing Above Ground Surface 2,25 FT



APPENDIX D FIELD DATA LOGS JANUARY 1994

ABB ABB ENVIRONMENTAL SERVICES, INC.

MONITORING WELL SAMPLING LOG

WELL NUMBER: MX4804	DATE: 01/07/44
SAMPLING PERSONNEL: MSD/HMC	LOCATION: MX4804
SHEET # 1 OF 1	CLIENT: OS COE-NED
WEATHER: SHOWY 25°	JOB NUMBER: 7143.00
WELL CONSTRUCTION MATERIAL: PVC	_STICK-UP (ff. from ground surface to top of casing - TOC): 2.0[
The second secon	DISTANCE FROM TOC TO TOP OF RISER (TOR): 0.44
WELL RADIUS (r = 1/2 id); 2 1/	OF RISER (TOR):
INITIAL PID measurements (ppm): 10 acts 100 =	& (Opr) PURGING METHOD: Whole prop(to bound to
WELL DEPTH (d; ft. from TOC of TOB circle one):_	40.25 PURGING EQUIPMENT While pump
STATIC WATER LEVEL (W: H. from TOC of TOR circ	le one): 31.42
STATIC WATER HEIGHT (h = d-w; ft.); & . 8	
STATIC WATER VOLUME (V) V = h (0.75); sallons for 2" well):	VOLUME 1 14.8 VOLUME 3 445 VOLUME 5 74.17
V = h (0.86); gallons for 4" well); V = h (01.5); gallons for 6" well);	VOLUME 2 29.7 VOLUME 4 59 Y
TOTAL VOLUME PURGED (GALLONS): 75	gals
STATIC WATER LEVEL AFTER PURGING (ft. from To	00):

6.21
1337
1337
1 2 2 2 2 2 2 2
0.04
s for

SAMPLE ID: MX4804X1 , MX4811X1	LABORATORY: Coest to Coast / COE
SAMPLE COLLECTION TIME:	PARAMETERS: VOCS SUOS Metals (fillered) TPH

$$\Re \left(\frac{19'}{2}\right)^2 = 2.83 \text{ ft}^2 \times \frac{1.91'}{2.93 \text{ ft}^2} \times \frac{1}{2.93 \text{ ft}^2}$$

ABB ENVIRONMENTAL SERVICES,	inc. SM						
FIELD DATA RECORD - GROUNDWA	TEN	FIEL	D EAMFLING NU	MOER MX 4	802X	Y.	
PROJECT WEATHANA FT. DEVENS	COE/N	ED	SITE		-202-2	-	-
€ 10 1 1 1 9 31		202-1	. 40B NU	MUER 7143		Uking St. County	11/194
LUCATION		7 762 70		TAM -0-		V200 - W21-02	-
ACTIVITY START	- END		a.			WEATHER CY	ear cold
ATER LEVEL / WELL DATA	B	TOP OF WELL	PROTECTIVE CASING STICE	200		OTECTIVE SINC/WELL DIFF.	
ELL DEPTH MC LE FT	MEASURED D	TOP OF CASING	(FROM DROL			HISER Y	140
ATER DEPTH			WELL INTE	GRITY:	TES NO WAS	ELEVATION	-
NEIGHT OF	13:49 5		CONCRETE	COLLAR INTACT	1 1 4	GROUNDWATER	
WATER COLUMN 8,03 FT	66± 10	TAL GAL PURGED	PVC WELL	GRITY: ING SECURE COLLAR INTACT ED CAP	8 8 8	ELEVATION	~
PID READING	e. Ana	TERT AIR COST	1	HOUTH DOOF		WELL 2 INCH	
	- 1	TEM WAY (196)) ten legge			METER 4 THEN	
PURGE DATA TIME	1025h	10.58	1056	1115	- 1135	SAMPLE OBS	PAVATIONS
PURGE YOLUME	a 18 GAL	9 Z F GAL	2 4 1 GAL	5 - 5 GAL	DES GAL	L CLEAR	
TEMP, DEG C	0/0	100	700	100	11.50	CLOUDY	
M, UNITS □pH PAPER PECIFIC COMOUCTIVITY umbos/c	5-635 122	113	16	119	6.30	DOOR	
						OTHER (SEE NOIES)
OUIPMENT DOCUMENTATION URGING SANTLING PERISTALTIC SUGMERSIBLE	PUMP ISCO # PUMP D2" D TUBING	41 0_ 8	CON FLUIDS US FOTABLE WATE LIGUINOU STEAN CLEANU	R 💆	ER LEVEL EQUIP ELECTRIC COND. FLOAT ACTIVATE PRESSURE TRANS	PHORE	O ELEVATION
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APPENDIX E PID AND NDIR SCREENING RESULTS DECEMBER 1993

ABB ENVIRONMENTAL BERVICES, INC.

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

Date Reported 12/14/93

Business (C)	Osel Combine	Princes Transference	TPH	Head space
Sacripie (E)	िमस्य अस्या (का स्य	Ostre Analyzed	(pgm) <50	VOEs (pant)
BX420305	12/10/93	12/14/93	230	0.9
BX480310				1.6
AKY80 315		No. of the last		1.4
8X480 320				1.5
8x480 335				0.7
6x9Pc330	*	4	4	0.7
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ABB ENVIRONMENTAL SERVICES, INC.

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

Date Reported 10/14/93

		1	TEN	Mana ape co
Sample D	Date Bamp ed	Date Analyzed	(speni)	VOCs (ppn))
BX4/040T	12/19/95	14/11/95	< 50	/3
8×980210				15
82981315	- 4		+	6.0
BX480 >20	1 1	13/11/13	250	2.0
delloss			1.50	1.4
64410 230			450	1.7
BX 80 105		1	450	1.4
((10			<50	1.3
05			€ 50 250	3,
120			450	3.4
125			< 50	3.8
P 130	4	*	< 50	1.0
6×480505	12/15/93	13/15/93	<50	0.4
5011	1			0.8
705				0.7
530	1			0.4
575				0.9
\$ 530		. 10	4	0.3
3×480415	relish3	13/15/93	160 16 2000	1/2
61480425	7.0		250	1.7
BA110930			650	1.6
Ex410 435	10/16/92	12/14/93	250	1.9
8V410440	4	1	4	64
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ABB ENVIRONMENTAL SERVICES, INC.

TOTAL PETROLEUM HYDROCARBONS (NDIR) AND HEADSFACE VOCS (PID)

Date Reported 1-/16/93

Balance Com	200	A	TPhilippe	t I wad space
Sample C	Cale asulting	Date Analyzed	(pani) VSD	. VOCs(part)
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ABB ENVIRONMENTAL BERVICES, INC.

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

Sample C	Date Sampled	Date Whalipzed	TPH (ppn) ≤ SO	Head space VOCs (pont)
6X410705	12/10/13	10/13/113	650	0.7 J. 3
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1/5			- 1	117
920	-	1-1		1.3
1 905		8 27 1	000	0.3
1 930	\$ ∂	4		1.6
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APPENDIX F CONTRACT LABORATORY ANALYTICAL REPORT DECEMBER 1993 & JANUARY 1994



Air. Water & Hazardous Waste Sampling. Analysis & Consultation Certified Hazardone Waste, Chemistry, Bacteriology & Binassay Laboratories

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Numberstein Division 340 Courty Road, No. 5 • P.O. Bas 720 • Weathrook, ME 04044

(207) 874-2400 Fax (207) 775-8029

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

TERRE ATAS ELEVANA SEENADRO ELITANS ENUGRIMO ESTREPHACE (LEVELANIA)

Is Haze: Coast to Coast Analytical	Constract: VBIKOI
Case No.:	\$25 Mg/:\$25 Mg/:
Macris: (soil Water) soil	Tab Sample II: Bkmk
sample wt/vol:	Lab 7114 ID: <u>Y9872</u>
Lavel: (low/zed) low	Data Radaived:
% Moisture: not dec. 100	Date Analyzed: 12/14/93
GC Calcan: RTX-624 II: 0.53 (ME)	Ofiction Factor: _100
Scil Excract Volume:(UL)	scil Aliques Valame:(ni
Number TICs Sound:	CONCENTRATION UNITS:

CAS NUMBER	COMPOUND NAME	<u> </u>	EST. CSMC.	Q
/24384	Carton Disside	1.92	8	J/V
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VOLATOLE DREAMING AMALYSIS DATA SKET TEMTATIVELI ISEMTETELE CAMPOLYNES

Tab Name: Coast to Co	out Analyted Com	VOIKOZ
Lab Sade:		: da.:
Matrix: (soil/water)	LONISE	ias sample II: Blonk
Sazpie wt/val:	5 (9/3L) w/	Lab 7510 ID:
Daval: (low/ted)	100	Data Redeived:
% Meisture: mor dec.		Data Analyzed: Colules
GC Column: RIX-1624	== <u>0.53</u> (==)	Dilution Factor: 10
Seil Extract Volume:	(uL)	Scil Aliquet Volume:(un
wither TICs found:		nd/T or salve) ne/F

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A Swally Story

VOLATILE DREAMING ANALYSIS SATA SKITT TENTRATIVELY ISENTIFIES COMPONIES

Las Haze: Coast to Coast Analytical Co	BX480930
Tep Code: Case No.: S	:ÁS ::
Matrix: (soil, water) soil	iah sabple II: WIT/S64 -/
Sample wt/vol:	Lat 717a 20:
Level: (low/sed) /ou	Data Received: _/a/14/95
* Moistire: not dec. 89	Data Analyzad: Naliyles
GC Column: RTY-624 II: 0.53 (=)	Diletion 72=1027 12 06 1/5/44
Soli Extract Volume:(ul)	. Seil Aliquet Velume:(HI)
Number TICs found:	CONCENTRACION UNITS:

COMPOUND NAME CAS NUMBER EST. CONC. 37 # 118797 23 28 Carbon Dioxide 1.89 1- 124399 JNB 10._ 11. 12. 13. 15._ 16. 17. 1 18._ 1 19. 1 20. 22. 24.__ 26. 27. 28._

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TOTATOTAL DEGALITÉS AMALMETS CATTA ERRET CENTRATOVELS CONFOUNDS

Las Haze: Coast to	Coast Analytical	Contract:	BX480330
<u> </u>	Case Wa.:	_ sas He.:	SIS 94.;
Macrix: (soil wate	Soil	Dan Sample	==: W51564-2
Sample WT/Vol:	5 (g/aLi_g	isb File I	: <u>Y#874</u>
Lavel: (low/zed)	1000	Cate Recai	vec: 12/14/93
% Moisture: not de			read: /2/14/13
GC Column: RTX-63	19 ==: 0.53 (==)	Dilution T	20000: 12 00 1/s/19
Sell Extract Volum	e:(uL)	Soil Aliqu	ca Volume:(al
Number TICs found	: _1	CONCENTRATION (TR	

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YOUGITE ORGANISE ANALYSIS CAMA SHETT TENTACINELL ISENTEFEED COMPOUNTS

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Las Name: Court to	Coast Analytical	Cantage :	THE PLANT
Lab Code:	Casa No.)	. SAS %q.:	\$03 Wa.)
dacrik: (soil/wata	= WATER	Lab 3	25515 II: WY1864-3
Sample wt/vol:	5 (3/3E) ml	Las ?	ile II: <u>Y99Y8</u>
Level: (lou/sed)	1000	Date	Received: /alight
s Molacures not de	e	Date:	Analyzad: /a/jules
c column: RTX-645	(_ ==: <u>0.53 (m=</u>)	pile	ion Factori _/.o
GLI Extract Volum	e:(ul)	, Soil	Miquot Volume:
Number TICs found	: <u> </u>	CONCENTRATE (ug/L or ug/	
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las Wame:	CAS	Zingradin_	ABB	SBLY
Lis Cade:	Case Na.:	\$35 Mg. 1 _	=== %c	y3
Harrin: (soil, va	SOIL	īa	a Sample ID:	SBLK 121613
Sample wo/wol:		<u>G</u> 14	a rije do: _	>21296
Level: (low/se	LOW	Ca	di Receivai: _	_
★ Moisture:) demanadd: (Y)	720 <u>w</u> 720	ta Extracted:	12/693
Concentrated Ext	radt Valume:/00	sc (iii) o	ta Analysed: 7	010694
Injection Volume	: <u>1 (ut)</u> /	DĪ.	iumion Factor:	1.0
GPC Cleanup: (2/X) <u>v</u> pH:			

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CONCENTRATION UNITS: KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141797	3-Penten-2-one ,4-methyl-	4,28	260	JNB
2. 721471	Hexane, 2, 34- Trimethy	4.81	150	IJN
1. 123422	Prentanone 4-hydroxy 4- wethor-	5.3	24000	JJVA
1.7438/401	methyl-1.3- eropakediyl estat	17.60	150	双
5. N/A	Alkane	18.86	170	D.
123284	Proponois action, 3,31-Thiobis-, didodesyl estet	36.56	460	JN
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Cab Nade: CCAS	Centrado	ABB	3 × 430430
Lar Code: Case No	5,0 \$8\$ Mov:	523 %	à. s
Matrix: (soil, vacar) SOIL		lab Sample II:	WJ1564-1
Sampla vt/Vol:	7/m1) <u>S</u>	ist file III	>21297
tevel: (tow/sed) LOV	V	Data Received:	121443
₹ Moisture: _/6_ decam	tad: (2/N)_P	Date Extracted:	171693
Concentrated Extract Toluze	500 (42)	Date Analyzed:	010794
Injection Volume: _/(E) f	Dilution Factor	: _1.0
GPC Cleanup: (Y/N) y	pH:		
Number TICs found:	concer (ug/l	TRACTION UNITES: of 119/3(9) <u>W.6/</u>	ike

CAS NUMBER	COMPOUND NAME	32	EST. CONC.	1 0
1. 141797	3-Penten-2-one, 4-methyl-	4.28	320	JIVB
2. 123422	2-Pertanone, 4-hydroxy-4-methyl-	5.29	25000	JNAP
3.74381401	2- Pentan one, 4 hydroxy 4 methyl-	17.60	220	JNB
4. Ht 123284	Preparaic acid 33-thiobis - didodecyl	36.55	220	JONB
5. 8/1894	ester			
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Sampia wa/woin	30 (at) 6	_ 125 3114 10	> 21798
Devel: (Lowyded)	LOW	Cats Recaim	ed: _17/493
& Moisture: /8	_ decamad: (Y/))"	N Sata Entrac	Tad: 121693
Concentrated Extra	oz 702ma:500	(ui) Saca Abalys	Ed: 010794
Injection Volume:	1 (22)	Diluzion Fi	27071
GPC Cleanup: (Y/	N) Y pH;		
		STATE OF THE PARTY	25.

Number TICs found: 3 (ug/L or ug/Kg) (ug/L or ug/Kg)

CAS NUMBER	ZMAN GNUOEMCS	322	EST. CONC.	Q
1.141797	3- Penten- 2-one, 4-methy/-	4.28	300	JNB
2. 123422	2- Pertangue + thydroxy	5,29	29000	JNAG
1. 74381401	Prestange the down	17.60	180	1501
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ABB-WATEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Number ; WJ-1564-1 Report Date: 01/25/94

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

Project. : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 1 of 23

SAMPLE DESCRIPTION		MATRIX		EAMPL	ED BY	SAMPLED I	ATE	PACEDIED
BX480930		Solid/S Sludge	oil/	A. CO	LBY	12/13/9	3	12/14/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	EY	NOTES
Solids-Total Residue (TS) Total Petroleum Hydrocarbons (TPH)	84. <25	wt \ mg/kgdirywt	1.0		CLP/CIP SOW 9071/418.1		JE GH	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific 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



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CLIENT: HERE COLEY

ABB-WAREFIELD

CORPORATE PEACE 128, BUILDING 3, BUTTE 25

WAREFIELD, MA 01880

Lab Number | WJ-1564-1 Report Date: 01/25/94

PO No.

□ MSA-93-01-78-MI

Project

7143.00

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DEMONST I	100	CATATAS	TOTAL COLD	DEPTH	TO

Page 2 of 23

SAMPLE DESCRIPTION		MATRIX		SAMPLED E	34	SAMPLED D	ATE	RECEIVED
EX480930		Solid/Soil/ Sludge	7	H. COLBY		12/13/91		12/14/93
PARAMETER	PESULT	UNITS I)F	* PQD	METHOD	AMALYZED	SÝ	NOTES
DIL Semivolatile Organics by USEPA 8270								2,3,3
Phenol	<4005	μg/kgdrywt 1.	àL	326	EUA E270	01/07/94	TG	
bis (2-Ohlorosthyl) ether	<400	µg/ligidirywt 1.				01/07/94	DG	
2-Chilorophenol	<400	Mg/kgdrywc 1				01/07/94	TG	
1,3-Dichlorobenzene	<400	µg/kgdrywt 1		100		01/07/94	TG	
1,4-Dicklorobensene	~400.	ug/kgdrywt 1.		15.57.71		01/07/94	-DG	
Bensyl alcohol	-A00.	µg/kgdrywt 1.		27.7		01/07/94	gg	
1,2-Dichlorobensene	~400·	plg/kgdrywt 1		330	EPA 8270	01/07/94	1/3	
2-Mathylphenol	<400:	ug/kgdrywt 1.		330	EPA 8270	01/07/3W	DG	
bis(2-Chloroisopropyl) other	<400.	ug/legarywt 1.		330	EPA 8270	01/07/94	Ŋ	
4-Methylphenol	<400.	Ag/Agdrywt 1.		330	EPA 9270	01/07/94	TO	
n-Nitroso-dipropylamine	<400	μg/kgdrywt 1.		330	EPA 8270	01/07/94	TG	

^{*} PQL (Fractical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '< values,

01/25/94

W0/kfg/jfg/lad

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

^{(2) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(3) &}quot;B" Flag denotes detection of this analyte in the laboratory method blank analyzed commutantly with the sample.



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Northeatern Division 340 County Raso, No. 5 • P.O. Boy 720 • Westbrook, ME 040/8 (207) 874-2400 Fax (207) 375-4020

CLIENT: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUTLDING 3, SUITE 25

WAIGEFIELD, WA DIRBO

Lab Number : WJ-1864 L Report Date: D1/25/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 3 of 23

SAMPLE DESCRIPTION		XISTAM		SAMPLED	92	SAMPLED I	ATE	RECEIVED	
EX(480930		Solid/Soil, Sludge		a. cotav		12/12/93		12/14/95	
PARAMETER	RESULT	UNITS	Dī/	*PQL	METHOD	ANALYSED	ΒĀ	MOTES	
Hexachloroethane	<400.	ug/kgdrywt	1.2	390	EPA 8270	01/07/94	TCI		
Mitrobentene	<400.	ug/kgdryw.	1.2	330	EPA 8270	01/07/94	IG		
Isophorone	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	IG		
2-NitrophenoI	<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/logdeywt	1.2	1500	EPA 8270	01/07/94	TG		
bis(2-dilorcethoxy)methane	<400.	µg/logdrywt	2,2	330	EPA 8270	01/07/94	TG		
2,4-Dichlorophenol	<400 -	ug/logdrywt	1,2	330	EPA 8270	01/07/94	TG		
1,2,4-Trichlorobensene	<400.	pg/logarywt	1.2	330	EPA 8270	01/07/94	TG		
Naphthalens	-:400_	µg/hgdirywt	1/2	330	EPA 8270	01/07/94	TG		
4-Chloroaniliae	<400 -	Ag/logdry-r.	1.2	330	EDA 9270	01/07/94	TO		
Hexachlorobutadiene	-400	ug/logidrywt	1,2	330	EPA 9270	01/07/94	TE		
4-Chloro-3-methylphenol	<400	µg/legdrywt	2.2	330	EPA 8270	01/07/94	TG		

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

01/25/94

LJO/kfg/jfg/Lad



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CLIENT: HERE COLBY

ARE-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA DISEC

Lab Number | WJ-1564-1 Report Date: 01/25/94

PO No.

T MSA-93-01-78-M1

Project

1 7143,00

REPORT OF AMALYTICAL RESULTS

Page 4 of 23

SAMPLE DESCRIPTION EX490910		MATRIX		SAMPLED	BA	SAMPLED I	ATE	RECEIVED
		Solid/Soil Sludge	7	H. COLBY		12/13/91		12/14/93
PARAMETER.	PESULIT	UNITS	DF	*PQL	METHOD	AMALYZHO	BY	NOTES
2-Methylnaphthalene	<400:	μg/kgdrywt	1.3	330	EPA 8270	01/07/54	374	1
Horarchilomocyclopentadiene	×400-	ug/kgdrywt	1,2	330	EEA 8270	01/07/94	TG	
2,4,6-Trichlorophenol	<400	μg/kgdrywc	1.2	330	EPA 8270	01/07/94	TG	
1,4,5-Trichlorophenal	<980.	µg/kgdrywt	1.2	BEO	BPA 8270	01/07/94	TG	
2-Chloronaphthalene	< 400 -	μg/kgdrywc	1.0	230	EPA 0270	01/07/94	TG	
2-Nitromiline	4980.	µg/kgdrywt	1.2	B20	EPA 5270	01/07/94	TG	
Dimethylphtbalate	<400	µg/lsgarywt	1.5	330	EPA 8270	01/07/94	75	
Acenaphthylene	-400:	/19/kgdrywt	1.2	330	EPA 8270	01/07/94	16	
2,5-Dinitrotoliene	-400.	jug/kgdrywt	1.2	330	EPA 8370	01/07/94	10	
3-Witroanuline	<980.	µg/kgdbywc	1.3	820	EPA 8270	01/07/94	TG	
Acenaphthene	<400.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dinitrophenol	<980.	ug/kgdrjwt	1.2	9.50	EPA 8270	01/07/94	TG	
4-Nitrophenal	<980.	µg/kgdrywt		220	EPA 8270	01/07/94	TG	

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

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CTIENT: HERR COLEY

ABB-WAREFIELD

CORPORATE PLACE 128, EUILDING 3, SUITE 25

WAKEFIELD, MA 01860

Lab Wumber + WJ-1564 L Report Date: 01/25/94

PO No.

: MSA-93-U1-70-M1

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REPORT OF ANALYTICAL RESULTS

Page 5 dE 13

SAMPLE DESCRIPTION		MATPIX		SAMPLED	BY	SAMPLED DATE RECEIVED			
BX480930		Solid/Soil, Sludge	7)	H. COLHY		15/13/93		12/14/93	
PARAMETER	PESULT	IMITS	DF	*FQL	METHOD	ANALYZED	EY	MOTES	
Dibenzofuran	<400,	µg/kadeywt	1,2	530	EPA 8270	01/07/94	IG		
1,4-Dimitrotoluene	<400	µg/Kodrywt	1.2	330	EPA 8270	01/07/94	10		
Diethylphthalats	<400	jug/kgdrywt	1:2	330	EPA 8270	01/07/94	TIG		
4-Chiorophenyl phenyl ether	< 0.00.	µg/Radeywt	1.2	330	EPA 8270	01/07/94	TG		
Pluorene	<400	//g/kgdrywt	1.2	330	EPA 8270	01/07/94	73		
4 Nitroamiline	<980.	ug/kodirywt	1.2	820	EPA 8270	01/07/94	JYT		
4,5-Dimitro-2 methylphenol	<990.	µg/kgdrywt	1,2	820	EPA 8270	01/07/94	TG		
n-Nitrosodiphenyl-mine	<400 ·	pg/kadrywt	1:2	310	EPA 8270	01/07/94	TG		
4 Bromophenyl phenyl ether	=400.	ug/ligdrywt	1:2	330	EPA 8270	01/07/94	TG		
Hexachlorohencene	3400 ·	wa/kodeywt	1.2	330	EPA 8270	01/07/94	26		
Fentachlorophenol	<980.	leg/kgdrywt.		820	EPA 8270	01/07/94	TG		
Phenanthrens	<100.	ug/kodrywt		330	EPA 8270	01/07/94	TG		
Anthracene	<200.	wa/kedirywt		330	EPA 8270	01/07/94	TG		

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-apecific limits are indicated by results annotated with '-' values.

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ABE-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUTTE 35

WAJEFIELD, MA 01880

Lab Mumber : WJ-156(-/ Report Date: 01/25/9)

PO Mo. : MSA-91-01-78 MI

Project : 7143:00

PEPORT OF ANALYTICAL RESULTS:

Page 6 p.E 21

SAMPLE DESCRIPTION		MATRIX		SAMPLED !	BY	SAMPLED I	ATE	RECEIVED
EX480930		Solid/Soil/ Sludge		H. COLBY		12/13/93 12/		12/14/91
PAIGNETER	RESULT	UNITS	DB	*PQI.	METHOD	ANALYZED	BY	NOTES
Di-n-bubylphthalate	JB140	µg/lgdrywt	1.2	330	EPA 8270	01/07/94	TX3	
Fluoranthone	-400,	ug/kgdrywt	1,2	930	EPA 8270	01/07/94	TG	
Pyseste	<400.	µg/kgdrywt	1,2	330	EPA 8370	01/07/94	TIG	
Butyl benzylphthalate	-400	ug/kgdzywt	1.2	530	EPA 8270	01/07/94	TG	
3,3'-Dichlorobenzidine	<400_	µg/kgdfywL	1,2	330	EPA 8270	01/07/94	TG	
Benzo (a) anchracene	<400.	Mg/kgdhywt	1,2	330	EPA 8270	01/07/94	TG	
Chrysene	<400.	//g/kgdzywt	1,2	630	EPA 8270	01/07/94	TG	
bis(2-Ethylhexyl)phthalate	<400 ₊	ug/kgdrywt	1,2	330	EPA 8270	01/07/94	113	
Di-n-octylphthalate	<400.	ug/kgarywt	1.2	330	EPA 9270	01/07/94	11,7	
Benzo (b) Fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 6270	01/07/94	TG	
Benzo(k) fluoranthene	-400±	ng/kgdrywt	1.2	330	EPA 6270	01/07/94	m	
Benzo (a) pyrene	<400.	ug/kgdrywt.				01/07/94	TO	
Indeno(1,2,3-cd) pyrene	<400.	ug/kgdrywc	1,2	330	EPA 8270	01/07/99	103	

^{*} NOD (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '< values.

01/25/94

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ABB-WAREFLELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01860

Lab Number : WJ-1564-1 Report Date: 01/25/94

PO No.

+ MSA-93-01-78-ML

Project

: 7143 00

REPORT OF ANALYTICAL RESULTS

Fage 7 of 23

SAMPLE DESCRIPTION	MATRIX				BY	SAMPLED DATE PECETVED			
EX480930		Sclid/Scil/		H. COLEY		12/13/93		12/14/93	
PARAMETER	RESULT	UNIOS	DF	+PQL	METHOD	ANALYZED	ВУ	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		330	EPA 8270	01/07/94	M3		
2-Fluorophenol (% Recovery)	64	%	1.2		EPA 0270	01/07/94	TG		
Phenol-d5 (* Recovery)	59.	9	1.2		EFA 9270	01/07/94	TG		
Nitrobenzene-d5 (% Recovery)	59.	è	1.2		EPA 8270	01/07/94	TG		
2-Fluorobiphenyl (% Recovery)	64.	4	1.2		EPA 8270	01/07/94	TIS		
2,4,6-Tribromophenol (% Recovery)	51	9	1.2		EFA 5270	01/07/94	TG		
Terphenyl-d14 (% Recovery)	68.	2	1.2		EPA 8270	01/07/94	TG		

PQD (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with

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CLIPATO HERS COLBY

ABB-WAYEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIRID, Ma 01880

Lab Mumber : WJ-1564 1 Report Date: V1/25/94

PO No. : MS

: MSA-33-01-79-M1

Project

: 7143 /00

REPORT OF AMALYTICAL PESULTS

Page 2 of 23

SAMPLE DESCRIPTION		MATRIX	SAMPLED	BX	SAMPLED DATE RECRIVED			
EX(460)930		Solid/Soil/ 1 Sludge		H. COLBY		12/13/93		12/14/93
PARAMETER	PESULT	UNITS	DF	*FQL	METHOD	WOTALED	BY	NOTES
TCL Volatile Organics by USEPA 8	340							1/2
Chloromathane	<17:	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Bromomethane	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Vinyl chloride	<1₹.	ug/kgdrywr.	1.2	10	EPA 8240	12/14/93	DG	
Chloroschane	<12.	µg/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
Methylene chlorida	JB5	Hg/kgdrywt	1.2	10	EPA 9240	22/14/93	DG	
Acetone	<18.	ug/kydrywt;	1.3	15	EPA 8240	12/14/91	DG	
Sariou desulfide	<12.	ug/kgdrywt	1.2	10	EPA 8240	12/14/93	DG	
1,1-Dichloroethero	<6.	ng/legdrywt	1.2	5	EPA 8240	12/14/91	DO	
1,1-Dichlorcethage	56	µg/kgarywt	1.2	5	EPA 8240	12/14/93	DG	
Total 1,2-Dichlorgethene	≪6	ug/kgdrywt	1.2	9	EPA 8340	12/14/93	DG	
Chloroform	<6 -	ug/logdrywt	1.2	5	EPA 8240	13/14/93	DG	
1,2-Dichloroethane	56	µg/kgdbrywt		5	EPA 9240	12/14/93	DG	
2-Butanone	<18.	µg/kgdrywt		15	EPA 8240	12/14/91	DG	

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

01/25/94

LJO/kig/jig/kwh

^{(1) &}quot;J" flog denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(2) &}quot;B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.



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ABB-WAREFIELD

CORPORATE FLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Leds Number : WU-1564-1 Report Date: DI/25/54

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

Project : 7149.00

PERCET OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION		MAURIX	SAMPLED BY			SAMPLED DATE RECEIVED				
BM480930		Solid/Soil/		H. COLBY			42/15/93		12/14/85	
PARAMETER	RESULT	UNITS	DF	*PQL	MET	HOID)	ANALYZEI)	BY	NOTES	
1,1,1-Trichloroethane	<6	µg/ltgdrywt	1,2	5	EPA	9240	12/14/93	pig		
Carbon tetracoloride	- বর্জ	µg/kgdrywt		5	KPA	8240	12/14/93	DG		
Vinyl acetate	e18:	ug/ligidaywt	1.2	15	RPA	8240	12/14/93	DG		
Bromodichloromethana	26.	ug/legdrywt	1.2	5	EPA.	8240	12/14/93	DG		
1,2-Dichloropropone	₹6.	ng/kgdrywt	1.2	9	EPA	8240	12/14/93	DG		
cis-1,1-Dichloropropene	×6.	µg/kgdrywt	1.2	5	SPA	8540	12/14/93	DG		
Trichlorosthese	<6.	µg/):gdrywt	1,2	19	EPA	8240	12/14/93	DG		
Dibromochlozometh me	<6.	µg/kgdrywt.	1,2	5	SPA	8240	12/14/91	DG		
1,1,2-Trichloreethane	<6.	µg/kgdrywt	1.2	5	SPA	8240	12/14/93	DG		
Benzene	46.	µg/kgdrywt	1.2	5	EPA	8240	12/14/93	DG		
trans-1,3-Dichloropropens	<e.< td=""><td>ng/kgdrywc</td><td>1.2</td><td>E</td><td>EPA</td><td>8240</td><td>12/14/93</td><td>DG</td><td></td></e.<>	ng/kgdrywc	1.2	E	EPA	8240	12/14/93	DG		
Bronoform	₹6.	µg/kgdrywt	1.2	5	SPA	8240	12/14/93	DG		
4-Methyl-2-pentanone	<7.B	pg/kgdrywt	1.2	15	EPA	8240	12/14/93	DG		
2-Hekanone	<1B.	µg/kadrywt	1,2	15	EPA	8240	12/14/93	DG		

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

01/25/64

DJD/kig/jfg/Jown



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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD MA 01880

Lab Mumber : WJ-1564-1 Report Date: 01/25/94

PO No. : MSA-93-01-78-W1

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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HAVELE DESCRIPTION		MATRIX		SAMPLED	BY	SAMPLED DATE PECEIVED			
BX48D93u		Solid/Soil/ Sludge		H. COLEY		12/13/93		12/14/61	
PARAMETER	RESULT	UNITS	DF	*PQI	METHOD	ANALYZED	ВY	MOTES	
Terrachlorcethesis	₹6.	μg/kgarywt	1,2	5	EPA 8240	12/14/93	03		
1,1,2,2-Tetrachloroethane	<6.	μg/kgdrywt.	1.2	5	EPA 8240	12/14/93	EX3		
Toluene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/14/93	ĐĞ.		
Chlorobenzene	361	ug/kgdrywt	1,3	5	EPA 8240	12/14/93	DG		
Ethylicenzene	~6.	μg/kgdrywt	1/2	5	EPA 8240	12/14/93	DG		
Styrene	36.	ug/igdrywt	1.2	5	EPA 8240	12/14/93	103		
Total Xylenes	<6.	wa/kgdrywt	1,2	5	EPA 8240	12/14/93	DG		
1,2-Dichloroethane (* Recovery)	EB.	1	1.2		EPA 8240	12/14/93	D3		
Toluene-dB (% Recovery)	93.	16	1.2		EPA 5240	12/19/93	DG		
p-Browofluorobenzene (% Recovery)	92	*	1,2		EPA 8240	12/14/93	DG		

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amnotated with 'c' values.

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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Mumber | WJ-1564-2 Report Date: 01/25/94

PO No. L MSA-93-01-76-M1

Project | 7143.00

REPORT OF ANALYTICAL RESULTS

Fage 11 of 33

SAMPLE DESCRIPTION	MARPIX Solid/Soil/ Sludge		SAMPLED BY		SAMPLED DATE RECEIVED			
EX480330					12/10/93		12/14/93	
PARAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZET	B¥	NOTES
Solids-Total Residue (TS)	82.	WIC &	1,0	0,10	CLP/CIP SOW	12/16/93	JE	ī
Total Pecroleum Hydrocarbons (TPH)	<25	iig/kgdrywt	1.0	25	9071/418,1	12/28/99	GH	-

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'a' values.

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

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



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CLIENT: HERE COLEY

ARB-WAKEFIELD

CORPORATE PLACE 128, BUILDING J. SUTTE 25

WAKEFIELD, MA OLBSO

Lab Mumber : WJ-1564 2 Report Date: 01/25/94

PO No. - MSA-53-01-78-MI

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 12 of 23

SAMPLE DESCRIPTION EX480330		MOVIRIX Solid/Soil/ Sludge		SAMPLED	BY	SAMPLED DATE PECETVED		
				H. COLEY		12/10/93		12/14/93
PARAMETER	RESULT	UNITS	DF	PÇIL	METHOD	ANALYSED	政	MOTES
TCL Semivolatile Organics by TSEPA								1,2,3
8270						-		
PhenoI	<400.	/ug/hgdrywt	1.2	330	EPA 8270	01/07/94	IC	
bis(2-Chloroethyl)ether	-400	µg/kgdrywt	1.2	330	EPA 8370	01/07/94	TG	
7-Chlorophenol	<400	µg/kgdrywc	1,2	330	ESA 9270	01/07/94	TO	
1,3-Dichlorobenzene	< 400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	IG	
1,4 Dichlord-nume	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Herayl alcohol	<400.	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<400	µg/kgdryw-	1.2	330	EPA 8270	01/07/94	103	
2-Methylphenol	< 100_	μg/ligdrywt		330	EPA 8270	01/07/94	TG	
bis(2-Chloroisogropyl) ether	<400.	µg/ltgdrywt		330	EFA 9270	01/07/94	TG	
4-Methylphenol	<400.	//g/hgdxywt				01/07/94	TG	
n-Nitroso-dipropylamine	< 400 -	µg/lgdrywt			EPA 8270		IG	

PQL (Practical Quantitation Devel) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample specific limits are indicated by results amounted with '<' values.

01/25/94

Tall/htg/jig/lad

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

^{(3) &}quot;I" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(3) &}quot;B" flag denotes detection of this analyte in the laboratory method blank analysed concurrently with the sample.



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ABB-WAKEFIELD

OCRPORATE PLACE 128, BUILDING 3, SUITE 25

WOODFIELD, MA 01880

Lab Number : WJ-1564-2 Report Date: 01/19/94

PO No.

: MSA-93-01-78-MI

Project

: 7143.00

REPORT OF ANALYTICAL RESULTS

Fage 13 of 23

SAMPLE DESCRIPTION	MATRIX	SAMPLE!	EL	SAMPLEO DATE RECEIVED				
5X480330		solid/soil/ sludge	H. COL	Ŷ	12/10/93		12/14/93	
PARAMETER	TUDERS	UNITS D	F *PQL	METHOD	AUALVZET	BY	49TES	
Hewachlorbethane	<400.	pg/legdicywt 1	2 32	II EPA 8270	01/07/94	TG		
Mitrobendene	4400	ug/ladrywt 1	2 33	0 EPA 8270	01/07/94	TG		
Isophorone	< 400:	ug/kgdrywt 1,	2 33	0 EPA 8270	01/07/94	EIL		
2-Nitrophenol	=400 -	ag/ligdrywt 1.	2 33	0 EPA 6370	01/07/54	76		
2,4-Dimethylphanol	<400.	//g/kgdrywt 1/	2 33	O EPA 8270	01/07/94	TVI.		
Benzoic acid	<1900.	/wg/kgdrywt 1.	2 160	0 EPA 8270	01/07/94	TG		
bis (2-Chloroethoxy) methane	<400.	μg/kgdrywt 1.	3 33	0 EPA 6270	01/07/94	TG		
2,4-Dichlorophenol	c400 -	ug/legdryst 1.	2 33	0 EPA 9270	01/07/94	TVI		
1,2,4-TrichLorobensene	c400,	µg/kgdrywt 1;	2 30	0 EPA 8270	01/07/91	TH		
Naphthalene	<400.	ug/kgdrywt 1.	2 32	O EPA 6270	01/07/94	TG		
4-Chloroaniline	<400.	μg/kgdrywc 1.	2 93	D EPA 8270	01/07/94	TG		
Hexachlorobutadiene	<400	µg/kgdrywt 1,	2 33	0 EPA 8270	01/07/94	D3		
4-Chloro-3-methylpherol	<400.	µg/kgdrywt 1.	2 33	O BPA 8270	01/07/94	IG		

^{*} POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amounted with '<' values.

01/25/54

Lio/kig/jig/lad



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CLIENT: HERE COLEY

ABB-WANEFIELD

COMPORATE PLACE 128, BUILDING 8, SUITE 25

WAKEFIELD, MA 01830

Lab Number : WJ-1564-2 Hoport Date: G1/25/99

TO No. - MEIA-93-01-78-MIL

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 14 of 23

SAMPLE DESCRIPTION EX480330		WATRIX Solid/Soil/ Sluage		SAMPLED	BĀ.	SAMPLED DATE RECEIVED		
				H. COLEY		12/10/93		12/14/93
PARAMETER	PESULI'	DNITS:	DF	*FQL	METSOD	AVALYZED	BY	MOTES
2-Methylnachthalene	<400.	μg/kgdrywt	1.2	930	EPA 8270	01/07/94	TG	
Herachlorocyclopontadiene	<400.	µg/kgarywt	1.2	330	BPA 8376	01/07/94	TG	
2,4,6-Trichlorophenol	<400.	μg/kgdrywt	1.3	930	EPA 8270	01/07/94	703	
2,4,5-Trichlerophenol	<980.	Hg/kgdrywt	1.2	920	EPA 8270	01/07/94	TG	
3-Chloromyhthalene	e400	ug/legdrywt	1.2	330	EPA 8270	01/07/94	TG	
I-Nutreamilins	4.980	µg/kgdrywii	1.2	R20	ECPA 8270	01/07/94	TO	
Dimethylphthalate	<400.	ug/kgdrywt	1.2	330	EPA 9270	01/07/94	TG	
Acenaphthylene	<400 L	ug/kadrywt	1.2	330	EPA 8270	01/07/94	TG	
1,6-Dinitrotoluene	4400.	ug/legdrywll	12	330	EPA 8270	01/07/94	TE	
3-Nitroaniline	<990.	ug/legdaywt		820	EPA 8270	01/07/94	TE	
Acenaphthene	<400.	ug/kodleywt	1.2	330	EPA 8370	01/07/94	TG	
2,4-Dinttrophenol	≪980.	ug/legtleywt	1.2	920	EPA 8270	01/07/94	TG	
4-Nitrophenol	<990.	ug/logdarywt		920	EPA 8270	01/07/94	TG	

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

01/25/94

LOO/kig/jfg/lad



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ASE-WARRFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WARRFIELD, MA OLHEO

Lab Number : WJ-1564-2 Report Date: WI/25/94

PO No.

MSA-93-01-78-ML

Project

: 7143.00

PEPCRI OF ANALYTICAL RESULTS

Page 15 of 31

SAMPLE DESCRIPTION EXABO330		MATRIX Solid/Soil/ Sludge		SAMPLED	BY	SAMPLED DATE RECEIVED			
				H COLBY		12/10/93		12/14/93	
PARAMETER.	PESULT	UNITS	DF	*PQL	WEIHOD	ANALYZED	BA	NO/res	
Dibenzofuran	<400.	ug/kgcrywt	1.2	330	EPA 8270	01/07/94	TG		
3,4-Dinitrotoluene	<400.	ug/kgdinwt	1.3	330	EPA 8270	01/07/94	TG		
Diethylphthalate	<400	μg/kgdrywr.	1.2	330	EPA 8270	01/07/94	TG		
4-Chlorophenyl phenyl ether	<400.	µg/kgdrywt	1.2	330	EPA 8370	01/07/94	TE		
Fluorene	<400.	µg/kgdrywc	1.3	330	EPA 3270	01/07/94	TG		
4-Nitroamiline	c980_	µg/kgdrywt	1:2	H20	EPA 0270	01/07/94	TI		
4,5-Dinitro-2-methylphenol	5980.	µg/kgdeywc	1.2	820	EPA 8270	01/07/94	773		
n-Nitrosodiphenylamine	<400	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG		
4-Bronophenyl phenyl athur	×:400 -	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TU		
Rexachlorobenzene	<400	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG		
Pentachlorophenol	<980.	pg/kgdrywt	1.2	820	EPA 8270	01/07/94	TG		
Phenanthrene	c400.	µg/kgdrywr	1:2	330	EPA 8270	01/07/94	TG		
Antimacene	c400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	IG		

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

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CLIENT: HERE COLBY

ABB-WAKEFTELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WANTEFIELD, WA 01880

Lab Mumber : WJ-1564-2 Report Date: 01/25/94

PO No.

: MSA-93 01-76-MI

Pzojest

7193.00

REPORT OF ANALYTICAL RESULTS

Page 16 of 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED	BY	SAMPLED D	ATE	RECEIVED	
EX480380	Solid/Soil Sludge	1	H, COLBY		12/10/9	13	12/14/93	
PARAMETER	RESULT	UNITTS	DF	*POL	METHOD	AVALYZED	Β¥	NOTES
Di-n-butylphthalate	JB200	µg/kgdrywt.	1.2	0.5.6	EPA 8270	01/09/94	TV3	
Fluoranthene	c400.	ug/kgdrywt	12	330	EPA 9270	01/07/94	TCI	
Pyrene	<400.	ug/kgdrywt	1,2	340	EPA 8270	01/07/94	TH	
Butyl bensylphthalata	<400 c	ug/kgdxywt	1,2	330	EPA 8270	01/07/94	.I.C	
3,31-Dichloroberridine	< 400 L	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TE	
Benzo (a) anthracene	<400.	ug/ligdrywt	1,2	330	EPA 8270	01/07/94	TE	
Chrysene	≥400	Jig/ kgdrywt	1.3	330	EPA 8270	01/07/94	TE	
bis(2-Ethylhexyl)phthelate	<400.	ug/kgdrywi.	1,2	330	EPA 8270	01/07/94	/00	
Di-n-octylphthalate	<400.	ug/lagdrywt	3,7	330	EPA 8270	01/07/94	TG	
Senzo(b) Fluoranthene	<400°	ug/kgdr/wt	1,2	330	EPA 8270	01/04/94	TG	
Benzo (k) fluoranthene	< 100	ug/kgdrywn	1,2	350	EPA 8270	01/07/94	TIL	
Benzo(s) pyrene	4500	µg/kgarywt	1,2	330	EPA 8270	01/07/94	73	
Indeno (1, 2, 3-cd) pyrene	<400	ng/kgdrywt	1.2	330	EPA 6270	01/07/94	TE	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotable with '<' values.

01/35/94

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ABB WAYEFIELD

CORPORATE PLACE 128, BUILDING 5, SUITE 25

WAKEFIELD, MA 01880

Lab Mumber + WJ-1564-2 Report Date: 01/25/94

PO No : MSA-93-01-79-NL

Project : 7143.00

PEPORT OF ANALYTICAL RESULTS

Page 17 DE 23

SAMPLE DESCRIPTION	MATRIX		SAMPLED	BY	SAMPLED D	PECEIVED 12/14/93		
EX480330	Solid/Soil Sludge	P	H. COLBY		12/10/5			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	HA	MOTES
Dibenso (a, b) anthracene	ح400 ـ	μg/kgdrywt.	1.2	330	EPA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<400	µg/logdrywt		330	EPA 8270	01/07/94	TYG	
2-Mucrophenol (% Recovery)	70	*	1,2		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	69.	*	1.2		EPA 8270	01/07/94	TVS	
Nitrobenzene-d5 (* Recovery)	63.	2	1,2		EPA 8270	01/07/94	TO	
2-Fluorobiphenyl (* Recovery)	60-	8	1.2		EPA 8270	01/07/94	TG	
2,4,6-Tribromophenol (% Recovery)	70.	ㅎ	1,2		EPA 8270	01/07/94	TO:	
Terphenyl-d14 (% Recovery)	70.	者	1,2		EPA 8270	01/07/94	0.3	

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



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CLIENT: HERB COLBY

ABB-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01380

Lab Number : WJ-1564-2 Report Date: 01/25/94

PO No. : MSA-93-D1-78-ML

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 18 of 13

SAMPLE DESCRIPTION	MATRIX		SAMPLED	BY		SAMPLED DATE RECEIVED				
BX480330		Solid/Soil Sludge	H. COLEY			12/10/9	ia.	13/14/93		
PARAMETER	PRSULT	LINITS	DF	+PQL	METT	HOD	ANALYZED	BY	WOTES	
TCL Volatile Organics by USEPA 8240			-						1,2	
Chloromethume	512.	ug/kgdzywt	1.2	2.0	EPA	9240	12/14/93	DG		
Bromertiane	₹12.	ug/kgdrywt		10	EPA	B240	12/14/95	DG		
Vinyl chloride	×13.	µg/Egdrywr	1.2	10	EPA	8240	12/14/93	DG.		
Chiloroethane	-922	µg/kgdrywt	1.2	10	EFA	B240	12/14/93	DG		
Mathylene diloride	JB4	ng/hadrywt	1.2	10	EPA	8240	12/14/93	DG		
Acetone	-18.	ug/kgdrywt	1.2	15	EPA	8240	12/14/93	TO		
Carbon disulfida	s12.	μg/kgdeywt	1.2	10	EPA	8240	12/14/93	DG		
1,1-Dichloroethese	eG.	ing/legitrywt	1.2	.5	EPA	8340	12/14/93	133		
1,1-Dichlorcethane	-5,	ug/legdrywb	1.2	5	EPA	8240	12/14/93	DO		
Total 1,2-Dichloroethene	<6,	ug/loodrywt	1.2	5	EPA	8240	12/14/93	DG		
Chloroform	s€,	ig/legdrywt	1.2	5	EDA	8240	12/14/93	133		
1,2-Dichloroethane	<6.	ug/kgdrywt	1.2	5	EPZ.	8240	12/14/93	DG		
?-Butanone	<1.B.	MB/MBdcyvit	112	1,5	EPA	8240	12/14/93	DG		

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

OE/25/94

LID/2 9/2011

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Fractical Quantitation Level.

 [&]quot;B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.



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CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01950

Lab Mumber : WJ-1564 2 Report Cate: 01/25/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 19 of 33

SAMPLE DESCRIPTION		MATRIX		SAMPLED	BY	SAMPLED DATE RECEIVED				
EX480330	Solid/Soll/ Sludge		H. COLBY		12/10/9	3	13/14/93			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES		
1, 1, 1-Trichlorcethans	«S.	ug/legdrywt 1	.2	5	EPA 8240	12/14/93	ZG			
Carbon tetrachloride	26	ug/kgdrywt 1	2	-5	EPA 8240	12/14/91	DG			
Viryl acetate	<18.	ng/kgdrywt 1	0.2	15	EPA 8240	12/14/93	DG			
Bromodichloromethane	×15,	ug/kgdrywt 1	.2	5	EPA 8240	12/14/93	DG			
1,2-Dichloropropage	<6.	ug/kgdrywt I	.2	5	EFA 8240	12/14/93	DG.			
eis-1,3-Dichloropropene	46	pg/kgdrywt 1	2	5	EPA 3240	12/14/93	DG			
Trichlorosthens	<£.	ug/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-Trichlozzetmane	<8)	ug/kgdrywt 1	12	5	EPA 8240	12/14/93	DG			
Bortzene	£6.	ug/kgdrywt 1	2	5	EPA B240	12/14/93	DO			
trans-1,3-Dichloropropene	≈B	ug/kgdryvt I	.2	5	EPA 8240	12/14/93	DG.			
Bromaform	<fr.< td=""><td>/g/kgdrywc 1</td><td></td><td>9</td><td>EPA 8240</td><td>12/14/93</td><td>DG.</td><td></td></fr.<>	/g/kgdrywc 1		9	EPA 8240	12/14/93	DG.			
4-Mathy1-2-pentanone	<18.	μg/kgdrywt 1	.2	15	RPA 8240	12/11/93	DG			
2-Hexanone	s10.	ug/kgdrywo I	.2	15	BPA 8240	12/14/93	DG.			

PQD (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amporator with "c" values.

01/25/94

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ASE-WAYEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01860

Lab Number J WO-1564-2 Report Date: 01/25/94

FO No: : MSA-93-01-78 ML

Project : 7145.00

REPORT OF AMALYTICAL PESUITS

Page 20 of 23

BAMPLE DESCRIPTION		MATELX		SAMPLED	BY	SAMPLED DATE RECEIVED				
EX480330	Sålid/Soil Sludge	/	H. COLEY		12/10/9	3	12/14/93			
PARAMETER	PESULT	UNITS	DF	PQI.	METHOD	ANALYZED	EY	NOTES		
Tetrachloroethene	36:	μg/kgdrywt	1.2	5	EPA 8240	12/14/93	DG			
1,1,2,2-Tetrachloroethane	c6 .	μg/kgdcywt	1.2	5	EPA 8240	12/14/93	TIC			
Toluene	×6	µg/kgdrywt	1.2	à	RPA 8240	12/14/93	DG			
Chlorobenzene	₹6.	µg/kgdrywt	1.2	5	EPA 9240	12/14/93	DG			
Ethylbenzene	46,	µg/kgdrywi_	1.3	5	EPA 8240	12/14/93	DG			
Styrene	46	µg/kgdrywt	1.2	5	EPA 9240	12/14/93	DG			
Total Xylenes	<6	ug/kgdrywt	1.2	5	EPA 8240	12/14/93	DG			
1,2-Dichloroechane (% Recovery)	94.	4	1:2		EPA 8240	12/14/93	DG			
Toluene-d8 (* Resovery)	59,	40	1.2		EPA 9240	12/14/93	DS			
p-Bromofluorobenzeno (% Recovery)	97	8	1.2		EPA 8240	12/14/93	DG			

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

01/25/94

LJG/Adg/Hwh



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IJJENT: HEPE COLBY

ABB WAKEFIELD

COPPORATE FLACE 120, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1564-3 Report Date: 01/25/94

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

Project : /143.00

REPORT OF AMALYTICAL RESULTS

Peach 21 of 2:

SAMPLE DESCRIPTION	MAT	5AMPLED		SAMPLED DATE RECEIVE					
TRIP BLANC	Aqueous			E. COLEY			12/13/9	3	12/14/93
PARAMETER	PESULT	UNITS	DF	†PQL	MEIL	40D	PNALYZED	EA	NOTES
TVL volstile Organics by USEPA 8240						- T			199
Chrocomethana	<10.	Mg/L	1,0	10	RPA	8240	12/16/93	DG	
Bromomethane	<10.	Mg/In	1.0	10	EBY	8240	12/16/93	DG	
Virtyl chuorida	<10.	µg/L	1.0	10	EPA	8240	12/16/93	DG	
Chicroethane	<10.	Ha/I	1,0	70	EPA.	8240	12/15/93	DG	
Methylene duloride	JES	129/E	I.D	10	EPA	8240	12/15/93	DG	
Acetone	<18.	49/L	1.0	15	EPA	6240	12/16/93	DG	
Carbon disulfida	<10	HE/L	1,0	2.0	EPA	8040	12/15/93	100	
i,i Dichloroethere	<5.	129/L	1.0	5	EPA	8240	12/15/93	DG	
1,1-Dichloro-thane	£51	MA/T	2.0	5	EPA	8240	12/15/93	DG	
Total 1,2-Dichloroethene	-5.	Mg/L	1.0	5	BEA	8040	12/16/93	103	
Childrolant .	e5.	Mg/L	T.O	5	EPA	8240	13/16/93	00	
1,2-Dichlaroethane	<5.	WH/E	1.0	5	EPA	6246	12/16/93	DC	
2-Butanore	<15.	Ma/L	4,0	15	EPA	8240	12/16/93	DO	
1,1,1-Trichlarcethane	<5.	Mg/I	2,0	5	EDV	8240	12/15/93	29	

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

01/25/94

LIO/kdg/kwn

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(2) &}quot;B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.



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Nonheasters, Division 340 County Road, No. 5 * P.O. Box 720 * Westhrook, M£ 04095 (207) 874-2400 Fax (207) 775-4029

CLIENT: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 35

WAKEFIELD, MA 01880

Lab Number : WJ-1554-3 Report: Dake: 01/25 34

PO No.

. MSA-93 C1 -78-M1

Project

7143.00

PEFORT OF ANALYTICAL RESULTS

Fage 22 of 23

SAMPLE DESCRIPTION	MASI	RIX		SAMPLED	BY	SAMPLED DATE RECEIV			
TRIP BLANK	Aqu		H. COLEY		12/13/9	3	12/14/93		
PARAMETER	PESULT	UNITS	DF	*PQL	CONTEN	ANALYZED	EY	NOTES	
Carbon tetracologide	-69.	pg/L	1,0	5	EPA 6240	12/16/93	DO)	
Vinyl acetate	×15.	Wa/L	1,0	15	EPA 8240	12/15/93	DG		
Bromodichlowomethane	≥5	pg/L	1.0	5	EPA 8240	12/16/93	Dig	a contract of	
1,2-Dichloropropane	<5.	HET/I	1,0	5	EPA 8240	12/16/93	DG		
dis-1,3-Dichloropropers	49.	49/L	1.0	5	EPA 8240	12/16/93	DG		
TrichLoroetbene	<5.	$\mu g/L$	1.0	5	EPA 8240	13/15/93	DG		
Dibromochloromethane	<5.	49/L	1,0	5	EPA 8240	12/15/93	DG		
1,1,2-Trichloroethane	<5.	49/1	1,0	. 5	EPA 8240	12/16/93	DG		
Senzene	×5.	$\mu g/L$	1.0	5	EPA 8240	12/16/93	DO		
craru-1,3-Bichlocopropene	<5.	MAL	1,0	5	EPA 8240	12/16/93	DG		
Bromoform	<5.	49/L	1,0	5	BPA 8240	12/16/93	DG		
4-Methyl 2 pentancoe	<15.	μ_B/L	1.0	15	EPA 6240	12/16/93	DO		
2-Hexanone	<15.	$\mu g/L$	1.0	15	EPA 8240	12/16/93	DG		
Tetrachloroethene	<5.	M3/L	1,0	5	EPA 8240	12/16/93	DG		
1.1 2.2-Tetrachloroethane	<5.	119/L	10			12/26/93	DG		

PQL (Practical Quantitation Lovel) represents laboratory reporting limits and may not reflect samplespecific reposting limits. Sample specific limits are indicated by results annotated with '<' values.

01/25/94

LiD/ktg/kwh



AL, William & Histardous Waste Sampling, Analysis & Consultation Credited Haseviller Warn, Commercy Becrerology & Blowsey Laboratories

San Lun Obispo, CA . Camarillo, CA . Beneta, CA . San Jose, CA Valparaiso, IN . Indianapolis, IN and Westbrook, ME

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(207) 874-2400 Fax (207) 775-4029

TIENT: HERE COLEY

ABB-WAFEFIELD

COPPORATE PLACE 128, BUILDING 3, SUTTE 25

WAKEFIELD, MA 01880

Lub Mumber : WJ-1564-5 Peport Date: 01/25/94

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

Project : 7143.00

PEPORT OF ANALYTICAL PESULTS

Page 35 of 23

MAT		SAMPLED	EĀ	SAMPLED DATE RECEIVED				
Aqu		H CCUBY	V	12/13/9	3	12/14/92		
RESULT	UNITS	DF	+ PQL	METHOD	ANALYZED	BY	Mores	
<5.	µg/L	3,0	5	EPA 8240	12/16/93	DG		
₹5	49/L	2,0	5	EPA 8240	12/16/93	DG		
<5.	ug/L	1,0	-5	EPA 8240	12/15/93	DG		
<5.	43/L	1.0	5	EPA 8240	12/16/93	DG		
<5.	PB/L	1.0	5	EPA 6240	12/16/93	DG		
96.	2	1.0		EPA 8240	12/16/93	DE		
97.	N.	1,0		EPA 8240	12/16/93	DG		
88.		1.0		EPA 8240	12/16/93	DG		
	Aqu RESULT <5. <5. <5. <5. <5. <5.	<5. µg/L <5. µg/L <5. µg/L <5. µg/L <5. µg/L <5. µg/L	Aquecus RESULT UNITS DF <5.	Aqueous H. COLBY RESULT UNITS DF *FQL <5. μg/L 1.0 5 <7. μg/L 1.0 5 <7. μg/L 1.0 5 <7. μg/L 1.0 5 <7. μg/L 1.0 5	Aqueous H. CCLBY RESULT UNITS DF *PQL METHOD <5.	Aqueous H. COLBY 12/13/9 RESULT UNITS DF *PQL METHOD ANALYZED <5.	Aqueous H. COLBY 12/11/93 RESULT UNITS DF *PQL METHOD ANALYZED BY <5.	

^{*} PQL (Fractical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

01/25/94

LJO/kfg/kwh

Respectfully submitted, COAST-TO-COAST ANALYTICAL SERVICES,

opinion of Oran period

Laura J. O'Meara

Supervisor, Client Services

CENED-DE-GL-T EANTIE CONTAINER RECEIPT FORM

FAC	1307: SA 48 (Bldg 202) EA 0083	Ø 1	
	tainer recaived on 1919 27 and impected on 191195 by: Mos Co	h off-	
1.	Shipper (USM, UPS, DHL, FEDEX, P/C, AIR EXF, HAND-DELIVERED	Y	
2.	Container type (Cooler) box, envelope, etc.)		
3.	Wars custody seals on outside of container?	N/A Yes	No
	How many & Whars: 2", seal date: 13:753, seal name	-	
4,	Ware custody papers taped to lid inside container?	N/A Yan	No
5.	Custody papers properly filled out? (inx, signed, etc.)	Yas	No
6.	Was project identifiable from quetody papers?	Yes	No
7,	Did you sign custody papers in appropriate place?	Pan	No
9.	Did you attach shipper's packing form to this form?	N/A Yes	No.
9.	Packing material (peanuta), vermiculita, bubble wrap) paper,	cans, oth	ar)
٥.	Was sufficient ice used? Temperature °C upon arrival	N/A Yes	No
11.	Ware all samples sealed in separate plastic bags?	N/A (198	No.
12.	Did all samples arrive in good condition?	¥93	No
11.	Sample labels complete? (F, date, analysis, preservation, s.	ign.) (188	No
14.	Did all sample labels agree with custody papers?	Yes	No
15.	Were correct sample containers used for tests indicated?	M/A (Yan	No
15.	Were correct preservatives used? (TM pH, CN- pH) (TOC pH, NUTRIENT pH, TOX pH, TPH pH, OTHER	N/A Yes	Ne
17.	Were VCA vials bubble-free (H2O) or no headspace (soil)?	N/A Yes	No (
15.	Was sufficient amount of sample sent in each container?	Yas	No
9.	Wers air volumes noted for air samples?	(NTA Yes	No
٥.	Were initial weights noted for pre-weighed filters?	W/A Yas	No
Dis	Crapancias: (1) NO TEMPERATURE VIRE - MESENT IN THE ECOLOR -	OUNT IZE P	28)0
	B) and tell Blank you vial has HEOSPACE.		

PROJECT NO.		OJECT N	71.71.00								SAI	APLE 1	YPE				
7143-1 SAMPLERS (SK	MATUHE	A48 Med	6	Bla	lg 2	02)	NO. OF CON-	Vial 6 A	Glass	4 02 6 10 65 TRPH							REMARKS INDICATE SOIL/WATER/AIR SEDIMENT/SLUDGE
STA NO.	DATE	TIME	COME	GRAB		STATION LOCATION	TAINERS	400	TOST NOT	100	l.						SEDIMEN (/SLUDGE
3K480930	12/13/93			×	+1		ч	2	r	v	į į				d d		SOIL
3X4803 30	12/0/93	1420		×			ч	2	Ä	ĵ.							SOIL
Trip Black	40.00			×	TBK	18NO1	2	2	+		On	K v	VĄC	HAS	HEAD	SPA	water
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				3	-10	pped Feder Al-bill # 1132	6557	20					H				
							E										
RELINOUISHE	P BY: (SIG	ATURE)		DATE/	TIME	RECEIVED BY: (SKGNATURE	i) RELINO	UISHE	D BY	: (SIGNA	TURE)	DA	TE/TI	ME	RECEI	VED I	BY: (SKGNATURE)
RELINQUISHE	BY (SIG	(TURE)			1615 TIME	RECEIVED BY: (SIGNATURE	RELINO	UISHE	D BY	: (SIGNA			TEM	015. Me			D. M. BY: (SKG/OTURE)
RELINQUISHE	D BY: (S)G/	MTURE)	C	DATE	TIME	RECEIVED FOR DISPOSAL (SKINATURE)	BY: DAT	E/TIM	E	REMAR	KS			_	J		

Mailing Adddre	ne	f Englineers O The Colby	Results Due Cilent I.D. No. Solid Wasti Data Docui Entered in Type of Samp List Any Haza	e Data File mentation Reg'd Computer
Sample Identification	Lab Numbers	Date Sampled	Sampled By	Analyses Required
BX 480930 BX 480930 Top Blank (TBK 48NOI)		12/13/93	DP/DG	FSVOC, VOC, TPH VOC
				TPH = 9071/418.1 SVOC - 8270 VOC - 8240



Ap., Water & Harandous Waste Sampling, Analysis & Consultation Consilied Hazardous Waste, Chemistry, Bacteriology, & Bioexast Laboratories

Sir, Luis Olhapo, CA * Camarillo, CA * Benius, CA * Sin Jose, CA Valparaiso, IN * Indianapolis, IN and Wentrook, ME

Numberstern Division
140 County Road, No. 5 * P.O. Box 720 * Westbrook, ME 04098

(207) 874-3400 Fast (207) 775-41(2)

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

LIO/dmt

Enclosure

ig DDD2 (da na disk alikaldada da ta shata Tanda doyada daaniga taasiga baasiga sa

=== 112== Coast to Coast Analy hood	CENCERCE: VBIKOI
Tad Sade: Gase Nov:	\$A\$ Mg.: \$2\$ Ma.:
Matric: (Spill Water) WATER	ish fample II:Blank
Sample Wm/vcl:	
Davel: (low/red) low	Cata Recaived:
\$ Moisture: not dec	East thatypad: 12/2/93
sc cabeen: RTX-644 II: 0.53 (22)	Differion Factor: 100
Soil Exceptor Volume:(ul)	. scil Aliques Volume:
Winter TICs found:/_	(ug/L of ug/Kg) _ve/L

CAS NUMBER	СОМРОБИВ НАМЕ	- J - 300	EST. CONC.	1 7
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The Waster States

tas Mase: Coast to Cass	+ Analytical	Cancers con :		SBEYBNOZ	<u> </u>
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Mastrim: (8412)48585)_	WATER	iab 6	dapie CO	W51608-	(
Sample Wil/Wol: _	5 15/21 ml	123 3	ije II:	_ 40093	
Lavel: (low/ded) _	low	Sata	Recalved	: Jalailas	_
% Molsquee: not dec	_	Eate	Azzlyced	12/20/23	
GC Colimn: 77x-629	==: <u>0.53 (==)</u>	91445	ien Fran	::: /.0	
seil Extract Velume:	(ul)	5012	Aliques 1	fely mes	700
Number TICs front: _	0	(ಗಡೆ\೯ ರಾ.ಗಿತ್ತ ರಾಗಡವಾಟಗಾರ			
CAS NUMBER	сэмэооло ма	1 3	2 Z5	T. ONC.	Ç
3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23.					
24- 25- 26- 27- 28- 29-					
30.					

SEMENTIATORE DESCRIPTION AND CONTROL OF THE SEMENTIATION OF THE SEMENTER OF TH

Lab Mame: CCAS Costs	ABB SBLH
Tem Code: SAS	Ne.: 503 Na.:
Macrin: (scill, water) Water	125 Pargle 10: 5814, 122293
Sample we/woi:	Tab File ID:
Level: (Low/ced) <u>Low</u>	Date Received: _ 12 2193
% Moisture: cacantad: (Y/N)	Sata Extraotad: /22293
Concentrated Extract Tolume: _1800 (ul)	Date Analyzed: _011294
Injection Volume:	Diletion Factor:
GPC Cleanup: (Y/N) gH:	
do do	NCENTRACION UNITS:

			(I)	CONCETTRACION UNITS:
Number	TICS	found:	1	(ug/L or ug/3g)

CAS NUMBER	COMPOUND NAME	3.0	EST. CONC.	Q
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FORM I SV-TIC

3/90

SENDMELÁTELS CROM DES MYROMATO CARA AMEDI TENTATIVELT ÉDINTÉRIES DIMPROVES

Lair Mame: CCA	5 Cántras	- ABB	58K43N02
tab Cide:	Case No.1 SAS We	s.: \$75	Ус.:
Macrix: (scil, Vacar	water	lab Sample ID:	WJ1608-1
Sazpie wz/vol:	1000 =/=I) ml	ias šiia in:	>21346
Level: (Low/zed)	Low	Jata Redei∵∈ir	122193
* Moisture:	decamed: (Y/Y) —	Data Extracted	:_122293
Condentrated Extrac	: Talume: 1000 (NL)	Dana Analysed:	011294
Injection Volume:	<u>1</u> (±=) = g=	Dilution Factor	:
GPC Cleanum: 17/N			

Number TICs found: 2

CONCERTRACION UNITS:

CAS NUMBER	COMPOUND NAME	3.00	EST. CONC.	l Q
1. N/A	Unknown	2 31 37	Way 5.0.3	J.
2. NA	Viskaowa	19.93) 5
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Air, Water & Hazardous Waste Sampling, Analysis & Consultation Certifical Hazardous Waste, Chemistry, flacteriology & Bjorssay Laboratones

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Northeastern Division
340 County Road, No. 5 * P.O. Box 720 * Wentbrook, ME 04098

(207) 874-2400 Fax (207) 775-4029

CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAVEFIELD, MA 01880

Lab Number : WJ-1608-1 Report Date: 01/26/94

PO No.

: MSA-93-01-78-W1

Project

17143.00

REPORT OF ANALYTICAL RESULTS

Page 1 of 10

SAMPLE DESCRIPTION	MATRIX			SAMPLED	SAMPLED DATE RECEIVED			
SBK46N02	Aqu		H. COLB	12/17/93		12/21/93		
PARAMETER	RESULT	ETTINU	DF	*PQL	METHOD	ANALYZED	BX	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.0	mg/L	1,0	1.	0 418.1	01/04/94	GR	1

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Eample-specific limits are indicated by results annotated with '<' values.

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

01/25/94

DJO/gfb



Air, Water & Hagandous Worle Sompling: Analysis & Consultation Consoled Hagandous Ways, Chemistry, Bactebulogy & Biraway Laboratories

San Luis Obispo, CA * Camarillo, CA * Benero, CA * San Just, CA Valpurato, IN * Indianapolis, IN and Westmook, ME

Northwayer Division

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"LIENT: HERE COLBY

ABB-WAYEFIELD

OPPORATE FLACE 128, BUILDING 3, SUTTE 25

WARRPIELD, MA 01880

Lab Wumber : WJ-1609-1 Report Date: 01/26/94

PO No. : MSA

: MSA-98-01-V8 M1

Project

: 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 10

SAMPLE DESCRIPTION		XIFFAM		SAMPL	ED FY	SAMPLED D	ATE	RECEIVED
SBK48N02		Aqueous			H, COLBY		12/17/93 12/21/9	
PARAMETER	BRSULT	UNITS	DF	+9QL	KENTOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								4,2)3
Phenol	×10.	MALT	1.0	10	EPA 6270	01/12/94	TO	
Bis(2-Chloroethyl)ether	<10.	$\mu \Omega/L$	1.0	10	E2A 8270	01/12/94	TG	
2-Chlosophenol	-10.	MH/L	1.0	1.0	EPA 8270	01/13/94	100	
1,3-Dichlorobervene	-10.	妈/压	1,0	1.0	EPA 8370	01/13/94	TG	
1,4-Dichlorobenzens	<10.	Mg, L	1,0	1.0	EPA 8370	01/12/94	10	
Benzyl alcohol	<10:	//e/TD	1-0	10	EPA 9270	01/12/94	777	
1,2-Idehlombenvene	<10:	ME/I	1.0	10	EPA 8270	01/12/94	TG	
2-Methylphenol	e10.	MAN, P	1.0	10	EPA 8270	01/12/94	TU	
bis(I Chloroisopropyl) ether	<01.	加克工	1.0	10	ESA 8270	01/12/94	TG	
4-Methylphensl	<10.	AT/L	1.0	30	EPA 8270	01/12/94	TG	
n-Nitroso-lipropylamina	<10.	MS/I	1,0	10	ERA 8270	01/11/94	113	
Hexachloroethane	<10,	ME / I	1.0	10	EPA 8270	01/12/94	JG	

[•] PM. (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '< values.

01/16/94

IJO/kfg/jfg/kwh

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

^{(2) &}quot;J" fleg denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(3) &}quot;8" flag denotes detection of this analyse in the laboratory method blank analysed concurrently with the sample.



Ale, Water & Hazardous Waste Sampling, Analysis & Consultation to muffed Gazardous Waste, Chemistry, Bustetiology & Bussia), Laboratorius

San Luit Obitpo, CA • Gamarillo, GA • Benicia, CA • San Jose, CA Valparasse, IN • Indianapolis, IN and Westbrook, MP

Rochestero Division

340 County Road, No. 5 * F.O. Box 720 * Westbrook, ME 04008

(207) #74-3400 Fax (207) #75-4029

lab Number : WT-160= 1
Pencert Date: 01/26/94

PQ No. : MSA-93-01-79-15

Project : 7143.00

TIENT: HERD COLBY

ABB WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

REPORT OF AMALYTICAL RESULTS

Page 3 of 10

SAMPLE DESCRIPTION MA		MATEIX		SAMPLED EL		SAMPLED DATE PECRIVED		
3EK48N02		Aqueous		H. CO	TBA	13/17/9	3	13/21/93
PARAMETER	RESULT	LINITS	DF	*PQL	MEDICO	AMALVZED	PY	NOTES
Witrobenzene	<10.	Ag/L	1,0	10	EPA 8370	01/12/94	1773	
Laophorone	¢10.	Ag/I	1,0	10	EPA 8270	01/12/94	TG	
3-Nitrophenol	<10.	Ag/L	1,0	10	EPA 8270	01/12/94	'I'G	
2,4-Dimethylphenol	<10.	pg/L	1.0	10	EPA 8270	01/12/94	TG	
Benzoic acid	<50:	MH/T	1.0	50	EPA 8270	01/13/94	113	
his (2 Chloroethoxy) wethern	c10.	HA/I	1,0	20	EPA 8270	01/12/94	TO	
2,4-Dichtorophenol	<10.	Hg/L	1.0	20	EPA 8270	01/12/94	T/3	
1,2,4-Trichlorobensene	<10.	Ag/L	1.0	10	EPA 8370	01/12/94	.IAT.	
Naphtho Lene	÷10.	A19/1	1,0	10	EPA 8270	01/12/94	TG	
4-Chiorcaniline	<10,	Mg/I	I.I	30	EPA 8270	01/12/04	DI	
Hexachlorobutadiens	<10:	Mg/L	1.0	10	EPA 8270	01/12/94	TG	
4-Chloro-3-methylphenol	<10.	Mg/L	1.0	10	EPA 8270	01/12/94	113	
2-Methylmaphthalene	<10.	/19/I	1,0	20	EPA 82'/0	01/12/94	TG	
Hexachlorocyclopentadiene	<10.	Mg/L	1.0	1.()	EPA 8270	01/12/94	TE	

PQL (Practical Quantitation Level) represente laboratory reporting limits and may not reflect samplespecific reporting limits. Sample specific limits are endicated by results annotated with '-' values.

01/26/94

LJO/kfg/jfg/lswh



Au. Ware & Hazardou Weste Sampling, Analysis & Consultation Georgia Hazardou Wate, Chemistry, Basteriology & Biography Laboratories

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Northeatern Division

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(207) 974-2400 Exs. (207) 775-4029

CLIENT, HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 138, BUILDING 3, SUTTE 25

WATEFIELD, WA 01850

Lap Number : WJ-1606-1 Report Date: 01/26/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 4 of 10

SAMPLE DESCRIPTION		MATRIX SAMPLED BY			ED BZ	SAMPLED DATE PECETVED			
SBK4BN02		Aqueous		H. COLEY		12/17/93 12/21		12/21/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALY ZED	вУ	MULS	
2,4,6-Trichlorophenol	-10-	119/L	1.0	10	ERA 8270	01/12/94	TG		
2, 4,5-Truchlorophenol	s25)	J/E J	1:0	-25	EPA 8270	01/12/94	16		
2-Chloromaphthalene	430.	加强/亡	1.0	20	EPA 8270	01/12/94	TG		
2-Nitroaniline	<25.	Ha/D	1.0	25	EPA 8270	01/12/94	TG		
Dimethylphthalate	<202	pig/L	1.0	1.03	EPA 8270	01/12/94	TG		
Acchaphthylene	<20.	$\mu \equiv /L$	1:0	10	EPA 8370	01/13/94	TG		
2,6-Dinitropolyane	<40.	H9/L	L_{+}	IO	EPA 8270	01/12/94	TG		
3-Nitroaniline	535	Ma/L	1.4	25	EPA 8270	01/12/94	TG		
Acenarhtbene	< 10:	49/L	1.0	10	EPA 8270	01/12/94	TG		
2,4-Dunitrophenol	×20:	μg/L	1.0	25	EPA 8270	01/12/94	TG		
4-Nitrophenol	<25.	WI/L	1.0	25	EPA 8270	01/12/94	ET		
Dibenzofuran	<10.	µg/L	Dog	2.02	SPA 8270	01/12/94	TG		
2,4-Dinitrotoluene	<10.	MB/D	I.O	10	EPA 8370	01/12/94	TG		
Diethylphthalate	J2	Ma/I	T. C	3.0	EPA 8270	D1/12/94	TG		

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

01/26/04

LTO/kig/jfg/kwo



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CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 125, BUILDING 3, SUITE 25

WASEPIELD, WA DIESO

Lab Number : WJ-1608-1 Report Date: 01/26/94

PO No.

: MSA-93-01-78-MT

Project

17143.00

REPORT OF ANALYTICAL RESULTS

Page 5 of 10

SAMPLE DESCRIPTION		MATRIX SAMPLED 8			ED BY	SAMPLED DATE RECEIVE			
SEIC4EINO2	Aqueous		H. COLEY		15/17/93		12/21/93		
PARAMETER	RESULT	UNITS	DE	*BOT	METHOD	AMALYMED	PY	NOTES	
4-Chlorophenyl phenyl ether	<10:	µg/L	1.0	10	EPA 8270	01/12/94	'IG		
Fluorene	<10.	$\mu g/L$	1.0	10	EPA 8270	01/12/94	TE		
4-Nitroaniline	<25.	MG/I	1.0	25	EPA 8270	01/12/94	IG		
4,6-Danitro-2-methylphenol	425.	MA/F	1.0	25	EPA 6270	01/12/94	TG		
n-Nitrosodiphenylamina	÷10.	加力工	1,0	10	EPA 8170	01/12/54	ET		
4-Bromophenyl phenyl other	210.	MG/T	1,0	10	EPA 9270	01/12/94	TG		
Hexachlorobensene	<10.	MG/D	1,0	10	EDN 8270	01/12/94	TG		
Pentachlorophenol	<25.	ME/L	1.0	25	EPA 8270	01/11/94	TG		
Phenanthrene	<3.0	MH/L	1.0	10	EPA 8270	01/12/94	TG		
Anthracene	<10.	MJ/L	I,D	20	EPA 8270	01/12/94	ZG		
Di-n-butydphthalate	<10.	AG/L	2.0	10	EPA 6270	01/13/94	TG		
Fluoranthena	<10	AG/L	1,0	10	EPA 8270	01/12/94	TG		
Pyrene	<10.	$\mu g/L$	1,0	10	EPA 8270	01/12/94	TG		
Butyl benzylphthalate	<10.	AG/L	1.0	10	EPA 5270	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

LJU/Lig/jfg/lown



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APR-WAKEFIELD

CORPORATE PLACE 128, BUILDING 5, SUITE 25

WAKEFIELD, MA DIESO

Lab Number : WJ-1608-1 Report Date: 01/26/94

PO No.

: MSA-93-01-78-WI

Project

7143.00

REPORT OF ANALYTICAL RESULTS

Page 6 of 10

SAMPLE DESCRIPTION		MATRIX		SAMIN	EXC BY	SAMPLED DATE RECEIVED			
SBNABNIC		Aqueous		H CO	LBY	12/17/9	12/17/93 12/		
PARAMETER	PESULT	UNITE	DF	*PQL	WEIHOD	AMALYSED	BY	NOTES	
3,31-Dichlorobenzidine	<10.	ug/L	1,0	10	EPA 9270	01/12/94	TG		
Senzo (a) anthracene	<10.	Mg/I	1.0	10	EPA 8270	01/12/94	TE		
Chrysene	<10.	pg/L	1.0	1(1	EPA 8270	01/12/94	TG		
bis(1-Sthylhewyl)phthalate	JEZ	PE/L	1.0	10	EPA 5270	01/13/94	TG		
Di-n-octylphthalate	<10	49/L	7,0	10	EPA 8270	01/12/94	DE		
Benzo (b) fluoranthene	<10	MG/L	2.0	30	EPA 8270	01/12/94	73		
Benno (k) fluoranthene	<10	M3/T	25.0	10	EPA E270	01/12/99	Tig		
Benzo (a) pyrene	<10.	$\mu_3/1$	1.0	10	EPA 8270	01/12/94	TG		
Indeno(1,2,3-cd)pyrene	<10.	Mg/L	1,0	2.0	EPA 8270	01/12/94	TG		
Lubenzo (a, n) anthracene	<10.	pg/L	1.0	10	EPA 8270	01/12/94	TG		
Benzo(g,b,i)perylene	<10.	UG/L	1.0	1.6	EPA 5270	01/12/94	TG		
2-Fluorophenol (* Recovery)	80.	8	1,0		BPA 8270	01/12/94	IG		
Phanol-d5 (% Recovery)	21.	3	1.0		EPA 8270	01/12/94	TG		
Nitrobensens-d5 (% Recovery)	72:	5	1,0		EPA 8270	01/12/94	TG		

^{*} PQL (Bractical Quantitation Lovel) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results anothated with 'a' values.

01/26/94

LJO/HIG/jig/kwh



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ABE-WAKEFIELD

COMPORATE PLACE 118, BUTLDING 3, SUITE 35

WAVEFIELD, MA 91890

Lab Number : WJ-1608-1 Report Date: 01/26/94

FO No.

: MSA-93-01-78-MI

Project

1 7143,00

REPORT OF ANALYTICAL PESULTS

Page 7 of 10

SAMPLE DESCRIPTION		MAIRIX		SAMP	LED BY	SAMPLED D	RECEIVED	
SBK49N02		Aqueous	3.	H. O	YELC	12/17/9	3	12/21/93
PARIMETER	PESULT	UNITS	DF	*FQL	METHOD	ANALYZED	BY	NOTES
2-Fluorobiphenyl (% Recovery)	74.	왕	1.0		EPA 8270	01/12/94	TG	
2,4,6-Tribromconerol (% Recovery)	75.	*	1.0		EPA 8270	01/12/94	TG	
Terphenyl-d14 (% Recovery)	51.	8	1.0		EPA 8270	01/12/94	TG	

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



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Tub Number : WJ 1658-I

Report Date: 01/26/94 BD No. : MSA-93-01-78-MI

Project : 7143 00

CLIENT: HERR COLSY

ABB WAKEFTFILD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WANTFIELD, MA 01860

REPORT OF AMALYTICAL PESULIS

Page 8 of 10

SAMPLE DESCRIPTION		MAIRIX		SAMPL	ED BY	SAMPLED DATE RECEIVED			
SEKABNO2		Адиевия		н, ф	LBY	12/17/9	13	12/21/91	
PARAMETER	RESULT	UNITS	L/F	*PQL	METHOD	ANALYZED	BY	MOTES	
DCL Volatile Organics by USEFA 8240								1,2	
Chloromethane	-10:	/lg/L	1.0	10	EPA 8240	12/22/93	DC		
Branomethane	-10-	ME/L	1.0	10	EPA 8240	12/22/93	DG		
Vinyl chloride	=3.0_	//E/L	1.0	10	EPA 8240	13/21/93	DU		
@11oroethane	<10.	ug/L	1.0	10	EPA 8240	12/22/93	DG		
Methylene chloride	J95	/JUJ/L	1.0	10	EFA 8240	12/22/93	133		
Adebone	<15.	超/L	1.0	15	EPA 8240	12/22/93	DG		
Carbon disulfide	<10	ME/D	1.0	10	EPA 8240	12/22/93	DG		
1,1-Dichloroethene	<5	µa/L	1.0	5	EPA 8240	12/32/93	193		
1,1-Dichloroethane	<51	UH/I	D.I	5	EPA 8240	12/22/93	ΣĞ		
Potal 1.2 Dichlorouthous	< 5.	MA/P	1,0	5	BLA 9240	12/22/93	DG		
Critorotom	<5.	A/EN	1.0	5	EPA 9240	12/22/93	DG		
1,3-Dichlorpethage	45.	/Jg/L	1.0	5	EPA 8240	12/22/93	DG		
2 Butanone	-15.	ME/D	7,0	1,5	BPA 9240	12/22/93	IC		
1,1,1-Trichtoroethene	<5.	/P	1.0	5	EPA 9240	12/22/93	DG		

^{*} PQL (Practical Quantitation Lovel) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-openitic limits are indicated by results annotated with "<" values.

01/26/54

LJO/kfg/jfg/kwh

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(2) &}quot;B" flag denotes detection of this analyte in the laboratory method black analyzed concurrently with the sample.



Ale, Wally & Hourdon Wate Strapling, Analytic & Consultation Cernified Handalus Waste, Chemisery, Bioteriology & Biotesty Laboratories

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CLIENT - HERE COLEY

ABB-WAYEFIELD

COMPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA DISECT

Rab Number ; WJ-1608-1 Report Date: 01/26/94

PO Mo.

1 MSA-93-01-78-02

Project

: 7143.00

REPORT OF AMALYTICAL RESULTS

Page 9 of 16

SAMPLE DESCRIPTION		MATPIX		SAMEL	ED BY	SAMPLED DATE RESET/ED			
SHRAHMOZ		Aqueous			LBY	12/17/9	13	12/21/93	
PARAMETER:	RESULT	UMI'IS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
Carbon tetrachiloride	25.	ug/L	Ĺ.ú	5	EPA 8240	12/22/93	DG		
Vinyl acetate	113.	Wg/L	1.0	15	EPA 8240	12/22/93	DG		
Browodichloromethans	10.5.	Mg/1.	1.0	-5	EPA 8240	12/22/93	DO		
1,2 Dichloroprovace	es.	ug/L	1.0	5	EPA 8240	12/22/93	DG		
cis-1,3-Dichloropropene	35.	MB/I	1.0	5	HDA 8240	12/22/93	DG		
Trichlomethere	×5.	Mg/I	I.D	5	EPA BR40	12/22/93	DG		
Tribropochloromethane	450	$\mu g/L$	1.0	5	EPA 8240	12/22/93	DG		
1,1,2-Trichloroethans	85.	MA/E	1-0	5	FPA 8240	12/22/93	DO		
Benzeno	×9	Mg/L	1.0	5	EPA 8240	12/22/93	DG		
Leans-1,3-Dichloropropene	85.	ha/T	1.0	9	EPA 8340	12/22/93	LC		
Bramoform	3551	ug/I	1.0	5	EPA 8240	12/22/93	DG		
4-Methyl-2-pentanone	-35.	$\mu g/I$	1.0	15	EPA 8240	12/22/93	DG		
2-Hexanone	:15.	$\mu g/L$	1.0	15	EPA 8240	12/22/93	DG		
Tetrachlorosthene	45.	MA/I	1-0	5	RDA 8240	12/22/95	DG		
1,1,2,2-Tetrachloroethane	29.	MJ/I	I.D	5	EPA 8240	12/22/93	DS		

POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'e' values.

01/26/94

Lato/kfg/jfg/kWh



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CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 1, SUITE 25

WANTEFIELD, MA 01880

Lab Mumber : WJ-1608-1 Report Date: 01/26/94

PO No.

- MSA-33-01-78-M1

Project

= 7143.00

REPORT OF AMAINTICAL PROULTS

Page 10 of 10

SAMPLE DESCRIPTION	PIPTION MATRIX SAMPLED BY		Y	SAMPLED DATE PECEIVED				
SBK48N02		Aqueous		H. COLBY		12/17/9	3	12/21/93
PARAMETER	PESULT	UNITS	DF	+PCT WEI	HOU	ANALYZED	BY	NOTES
Toluena	<5	/19/L	1.0	5 EP/	B240	13/22/93	DG	
Chilorobenzene	<5:	ug/L	1.70	S EPA	6240	12/22/93	DG	
Ethylbenzene	≪5.	ug/L	1.0	5 EPA	B240	12/22/93	DG	
Styrene	K5	Ma/D	1.0	S EPA	8240	12/22/93	DG	
Total Xylenes	<5.	Mg/I	1.0	5 EPA	B240	12/22/93	DG	
1,2-Dichloroethane (% Recovery)	94.	*	1.0	EPA	8240	12/22/93	DG	
Toluene-dB (% Recovery)	98	3	1.0	EPA	B240	12/22/93	DG	
p-Bronofluorobenzene (% Recovery)	102.	*	1,0	EP	8240	12/22/93	DG	

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

01/26/84

LCD/kfg/jfg/lown

Respectfully submitted,

COAST TO-COAST ANALYTICAL SERVICES. INC.

ears

Latria J. C. Minara

Supervisor, Client Services

E-10-0E-22RES KEOT TCIEDER REWIKINGS ELCKKE

20.00	13CT: 7143.00 SA48 - Fort Devens	- 100		
Cos	esteer received on 188193 and improved on 188193 by North	D. H.	_	
٠,	Shipper (USH, UPS, DHI, FEDER, P/C, AIR EXP, HAND-DELIVERED	3)		
2.	Container type (Coclet, box, envelope, etc.)			
3.	Ware custody seals on outside of container?	N/A		
	How many & where the manual manual page 1 and 100093 , seel name with	Henre	T (00)	371
4.	Were custody papers taped to lid inside container?		100	No
8.	Custody papers properly filled out? (inx, eigned, etc.)		(198)	No
6,	Was project identifiable from oustody papers?		Tag	No
7.	Did you sign custody papers in appropriate place?		231	
g.	Did you attach shipper's packing fore to this form?	N/A	200	Ne
	Packing material (seasure) vermiculite, Subble wrap, paper,	22.53	otha	=1
10.	Was sufficient ica dead? Temperature 'C upon aprival	N/A	(Yes)	Ne
ii.	Were all samples sauled in separate plastic bags?	N/A	Vag.	No
12,	Did all samples arrive in good condition?	1	¥33	No
13.	Sample labels complete? (#, date, enalysis, preservation, s	(Lgn.)	(Vea)	No
24,	Did all sample labels agree with quantity papers?		Yas	No
15.	Were correct sample containers used for tests indicated?	N/A	(Y88)	No
15.	Were correct preservatives used? (TM pH, CM- pH) (TOC pH, NUTRIENT pH, TOX pH, TPH pH 40.0, CTHES	N/A	100	No
17.	Ware VCA viale bubble-free (HgO) or no headspace (soil)?	N/A	Yes	No
23,	Was sufficient emount of sample sent in each container?	7	Yas	No
.9.	Were air volumes noted for air samples?	Bha	Yes	No
20.	Were initial weights noted for pre-weighed filters?	(STA)	Yas	No
110	PAPARCIASI (A) ME TEMETARE HAL WAS RECEIVED IN CONCER			

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Approved By pr	ojeci Manager Lab Numbers	Date Sampled	Sampled By	Analyses Required
SBK 48NOZ	Lab Numbers	13/17/a 3	Hw.C	VOC SUDC TRPH
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Mortheastern Envision

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(207) 874-2400 Pax (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: 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/drm

Enclosure

VOLATILE CROAKITÉ AMACYSIS DATA SKEET PENTATUYEL CENTEFIEZ COMPOUNCS

Las Haze: Coast to Co	est Analytical	25523CT:	NBIKOI
Tab Code:	Casa No.:	SAS No.: SDS	98.:
Macrix: (soil, water)	WATER	GaS Sample Di	: Blank
Sample wo/wol:	_5 (5/3L) <u>rl</u>	tab File ID:	_Y0003
Lavel: (low/med)	low	Date Redaived	
% Moisture: not dec.	_	Date Analyzed	: 12/18/13
GC Column: RTX-644	==: <u>0.83 (==)</u>	Diletion Fact	1.0
Sail Extract Volume:	(JE)	Seii Aliquez	Volumes(ut
Number TICs found:		CONCEMPATION UNITS (ug/L or ug/kg) <u>06/</u>	

CAS NUMBER	сомносий ижме	R2	EST. CONC.	5
1. <i>124381</i> 2. 3.	Carbon disside	1.89	8	JA
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AND STREET

TOURTEE CREAMERS ANALYSIS SATA SHEET TENTATTYELT IDENTIFIES GINFOVINGS

Is : 12= : Coast to coast Analytical	Constage:
Lab Code: Case No.:	_ \$85 %d.: \$05 %d.;
Macrix: (sqii, vater) wil	Ist Stople II: Blank
sample wa/vol:	Lab File ID:
Lavel: (low/zed) 1600	Date Received:
% Moisture: not dec. 100	Date Analyzed: /2/19/93
GC Column: 47x-634 II: 0.53 (am)	Dilusion Factor:
Sail Extract Volume:(uL)	. Soil Aliques Volume:(=_)
Number TICs found:	(nd/T or nd/gd) ne/ke

CAS NUMBER	COMPOUND NAME	R2	EST. CONC.	1 0
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5a5 C5de: Case No.:	SAS Me.: SIG Me. /
Matrix: (soil water) soil	las sample II: Blank
Sample wt/vol:	ias file ID: Youss
Tavel: (low/zed) 100	Date Received:
% Meisture: not dec. 100	Date Analyzed: _/a/a/
GO COLUMN: RTX-624 II: 0:53 (mm)	Diletion Factor: 1.0
Sail Extract Volume:(ub)	. Sail Aliquet Valume:(al)
Number TICs found:	(nd/p or st/kt) ne/kt

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ij.

VOLATILE ORGANIES AMADESES DATA SESSE TENTATIVELY IDENTIFIED COMPOUNTS

Las Maze: Court to Court Anolytical	Contract: DX Y80 220
Casa No.;	515 No.: 552 95.:
Matrix: (soil, veter) Soil	las Sample II: <u>WJ1897-1</u>
Sample we/vol:	Lab File ID: Y0035
Daval: (low/sei) low	Data Recalived: _/2/17/93
% Moisture: not dec. 95	Date Analysed: _/a/19/83_
GC Column: RTX-634 II: 6.53 (III)	Dilucion Factor: 10 mistry
Soil Extract Volume:(uL)	scil Aliquet Volume:(un
Number TICs found:	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>we/ke</u>

CAS NUMBER	COMPOUND NAME	T RC	EST. CONC.	
1. /24384 / 2.	Terbon dioxide	1.91	48	INB
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TOTATILE CROANIES AMACUSIS CATA GREET TENTATIVELL SOMMITS LES COMPOUNDS

Las Haze: Coast to Co	ast Analytical	Contract:	BX480115
E35 Coder	Casa No.:	SAS No. : S	15 Ke.:
Matrix: (soil/water	Soil	lab femple	==: <u>WF1597-2</u>
Sample WE/Wol:	_ 5 (c/al) g	Lab File in	: _Y00Y1
<pre>LaveI: (low/ted)</pre>	low	Data Receiv	ed: _/2/12/13_
% Moisture: not dec	85		ed: _12/19/93_
GC Column: RTMGay	_ ==: <u>0.53 (==)</u>	Dilution Fa	- Lea Wester
Sail Ektract Volume	:(uL)	Soil Alique	= Volume:(41)
M-ser TICs found:	T.	CONCENTRATION UNIT	

CAS NUMBER	COMPOUND NAME	3.2	EST. CONC.	Ş
1. /24382 2.	Carbondioxil	1.92	110	INB
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VOLATALE CROMITES ANALYSIS SATA SHEET TENTATURES COMPOUNDS

Laz : 12= =: Coast to Coast Apolytical	Contract: BX480515
Lab Code: Case Nov:	\$48 Wel: \$35 Well
Mattin: (Soil, Weter) Soil	225 Sample II: WF1547-3
Sample wo/vol:	Lab File II: _yoo38
Lavel: (low/sed) low	Data Received: _/2/11/93_
% Moistage: not dec. 94	Date Analyzed: /a/19/93
GC Column: TX-614 II: 0.53 (WH)	Dilusian Factor:
Soll Excract Volume:(ul)	. Soul Allquet Volume:(rd)
Number TICs found:	CONCENTRATION UNITE:

CAS NUMBER	COMPOUND	HAME	32	EST. CONC.	3
1. / 3436 9 2.	Carbondierids		1.92	47	SNB
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TOLATICE ERRANDIS ANALYSIS DATA SHEET JENTACEVELY CHENTEFIED COMPOUNTS

123 Mane: Coast to Co	ast Analytical			BX480415
145 Cod#;	Case Mc.:	sas no.: _	555	954 :
Matrix: (spil. vater)	أزه	Las	Simple II	W51597-4
Sample wt/vol:	<u>5 (ç/al)</u>	Las	sije m:	y0054
<pre>Level: (low/sed)</pre>	low	Dat	a Received:	12/17/23
% Moistire: not dec.	93		a Analyzad:	
GC Calumna RTX-624	(mm)	011	union Facto	1.00 lstay
Soil Extract Volume:	(ar)	sci.	l Aliquet V	dime:(11)
Number TICs found:	حباك		ion units: us/kg) <u>us (ks</u>	

CAS NUMBER	COMPOUND NAME		EST. CONC.	Ç
2. /24369	Cachon dioxidi	1.90	150	INB
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TELETA CERTANA ESENTANA ESENTANTA CATA ESERT ELITATANTO CETACTUSO L'ARRICULES

La= Waze: Coast to Coast Analytical	BX480630
Tab Code: Case No.:	SAS No.: \$33 da.:
Matrix: (soil/water) Soil	San Sannia ID: Wojsy7-5
sample wt/vol:	g Lab File ID: <u>Yooyo</u>
Level: (Low/tex) _/ow_	Date Received: _/a/17/93_
% Moisqure: not fec. 84	Date Analysed: _/2/19/13
GC Column: Rm-624 ID: 0.53 (22) Dilusion Factor: 1-0 PP/s/94
Soil Extract Volume:(uL)	, Soil Aligaot Volume:(i
Number TICs found: _	CONCENTRATION UNITS:

CAS NUMBER	сомродио иаме	30	EST. CONC.	- 4
1. /24369 2.	Curbon dioxide	1.92	32	ZNB
4. 5.				
7 ·				
1. 2.				
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POBONE NA V S

TEMPETE ERCHITET ANALYSIS CARA SERT TENTATIVELU ETENTIFIED CONFOUNTS

Tal Haze: Coast to Coast Analytical	BX98/115
Dan Gode: Case No.:	EAS No.: SEG Ns.:
Matrix: (soil, vacar) _soil	Las sample II: William meriser-C
Sample Wm/Yol:	Las File ID:
Tavel: (lcw/ted) _/ow_	Casa Received: _/2/12/93
% Moisture: not dec. 60	Data Analyzed: /a/20/43
GC Column: RTX-Gay II: p.ss (mm)	Dilution Factor:
Soil Extract Velume:(ut)	soil Alignos Volumes(ut)
Number TECs found: 9	CONCENTRACION UNITS:

CAS NUMBER	COMBOUND NAME	32	EST. CONC.	1 5
1. /24389	Carbon dioxide	1.92	42	IJNE
2	Unknown, HW = 281	18.02	7.3	
3	Unknown	18.68	13	
4	Catroon Comes	1 /8.51	24	
5	unknown	19.04	/2	
5. Wasser	Costien bonuc Alkane	17.15	38	200
7. 0	CyttaNo isomer		57	
8	Un known	19.88	110	
9.	Unknown	21.13	60	1
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TOTATOLE GROWING ANALYSIS DATA SKETT FENTATIVELY IDENTIFIES SOMEOWNES

Lat Name: Court to Coas	+ Analytical	CENTERECT	-	TBKYENOZ
Lat Codet	Case No.:	sas ne.	: \$53	Ma. (:
Matrix: (soil/water)	WATER		Zab Sabple ID	W5 1597-7
Sample wt/vol:	5 (9/3L) m		Eab File 52:	Y0009
Level: (low/med)	100		Data Received	12/17/93
% Moisture: not dec.			Date Analyzed	12/18/93
GC Calumn: RX-624	II: <u>0.53 (</u> 72)		Dilution Facto	2:
Soil Extract Volume:	(uL)	100	Seil Aliques V	7clme:(=
Number TICs found:	0	3 2 2 2 2 2	NTEATION ENTITS: OF PS/KS) <u>U6/L</u>	

CAS NUMBER	COMPOUND NAME	85	EST. CONC.	C
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GEMETTOLARILE ORGANICÓS ANALUSIS SATA SMELT SENTACIONELL ISENTÉFICO COMPONIES

Las Name: CCAS costs	aca: ABB SBLK
ا تعلق Cade: Case No.: \$43 }	Nc.: 833 Nc.:
Matrix: (scil/vatar)_Solk	lab Pample II: SBLK
Sample wm/vol:	Tab File ID: >2/2/9
Level: (low/med) Low	Data Receivad:
% Moisture: dasanted: (Y/N)	Data Extracted: 12/793
Concentrated Extract Volume: 500 (ul)	Data Analyzad:010794
Injection Volume:(uL) {	Dilution Factor:
GPC Cleanup: (Y/N) Y pH:	
202	NCENTRACION UNITS:

				CONCENTRACION UNITS:
Number	TICS	found:	_3_	(ug/L or ug/Kg) WG/KG

CAS NUMBER	COMPOUND NAME	200	EST. CONC.	Q
1. 141797	3-Penten-2-one, 4-milk	4.26	310	JN
2. 123422	3-Pentenone 4-hydrow -4 me	# 5.29	32000	1371
2. /23422 3. N/A 4.	2-Pentanone, 4-hydrony-4-me UNKNOWN	30.66	180	2
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SEMENOLLOS DESANCIS (ANADYS) LATA SHEET DENOLUTES COMPONICS

Les Name: CC	AS CERTE	acci ABB	BX480220
Tab Sode:	_ Case No.: Ski	Me.: 353	No.s
Macric (soil/wat	27 30/L	Lad Fample II	W J7597-1
Sample wt/wol:	30 (1/mi) S	Cas File II:	>21309
level: (low/sed	Low	Data Receivad:	121793
å Moisture:	decamad: (Y/Y)	Date Extracted	: 121793
Concentrated Extr	edt Talume: 500 (ul.	Data Analyzad:	010794
Injection Volume:		Dilution Facto	:: US 1.0
GPC Cleanup: (#	/N) <u>Y</u> pH:		A-11074
	_ 00	NCENTRACION UNITS:	4

Number	TICS	found:	2

CONCENTRATION UNITS:

CAS NUMBER	COMPOUND NAME	32	EST. CONC.	1 2
1. 141797	3-Penten-2-one, 4- methyl-	4.28	440	JNF
2. 723422	2-Pentanone, 4-hydroxy-4-methyl-	5.41	30000	JNAB
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SEMENTICATION OF STATES AND USES ON STATES OF STATES OF

Las Maga: <u>CC</u>	AS contra	ct: ABB	BX480]15
Tar Code:	Case Na.: ENS N	o. r \$23 %	2.:
Matrini soil, vata	=) <u>SOIL</u>	Cas Sample Cot	WJ1597-2
Sample wt/wol:	30 (7/mi) 6	그러가 카드로 프로	>213/6
Level: (low/sad)	LOW	Data Receivad:	
% Moisture: _15		Jata Extracted:	810 121793
Concentrated Extra	ct 7cluma: _500_(ul)	Date Analyzed:	010794
Injection Value:	(45) =	Dilution Factor	1.0
GPC Cleanup: (%/	N) Y pH;		
	anii.		

Number TICs found: 2

(ug/1 or ug/3g) u 6/KG

CAS NUMBER	COMPOUND NAME	37	EST. CONC.	Q
1. 141797	3-Penten-2-one, 4 methyl- 2-Pentanone, 4-bydroxy-4 methyl	4.30	410	DIVAL
2. 123422	2-Pentanone, 4-hydroxy-4-methyl	4.30 5.42	28000	DIVAL
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BENEVICUATION CREATER ANALYSIS SATA SHEET CENTRAT CREATMENT SET FOR CREATER SATA

Laz Hame: CCAS		ABB .	BX480515
يد (dde/	Casa No.: SAS No.	: 523 %	b.:
Mattik: (soil/wasar)	SOIL	Lab Sample ID:	WJ1597-3
Sample Wo, Vol:	30 (1/11) G	ias file II:	>213/
Level: (low/sed)	LOW	Cata Racelvai:	121793
% Moisture: 8	iedanted: (Y/N)	Data Extracted:	121793
Concentrated Extract	Tolume: <u>500 (w.</u>	Jata kmalyz≡č:	010794
Injection Volume:		Dilution Factor	: 1.0
GPC Cleanup: (1/N)	Y pH:		
	OUNCE	PERATION UNITS;	41

		COLUMN TARGETTICS AND THE TARGET TARG
Number TICs found	1:	CONCENTRATION UNITS:
Number TICs found		(ug/2 or ug/%g)

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	1 0
1. 141797	3-Penten-2-one, 4-methyl- 2-Pentanone, 4-hydrox-4-methyl-	4.29	340	JNE
2.123422	2-Pentanone 4-hydrox-4-methyl-	5.41	28000	DIVA
3.		A Laboration	1-4	
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BENYMMERATORE CREATERS ANALYSIS CATA SHEET TENTATINGES SERVERES SERVENCES

-	200	Water	
R	VL	u_{ZI}	445
10	1	0 "	713
100	7.5		14 6

Las Mame: OCAS	Contract: ABB	BX 480415
tab Code: Case S	16.: 3.5 No.:	_ SC3 Me.:
Matrix: (soil, water) Soil	L tam san	ple 22: W3/597-4
Sample wt/wdl: 30	_(5/ml) <u>6</u> Lab Fil	2 2 3/2
Level: (lawass) LOW) Data Re	cairai: 121793
& Moisture: 7 dacas	ted: (Y/N) Sale Sx	Tractad: /21793
Concentrated Emmaot Volum	na: <u>500 (ut)</u> Date An	alycad: _010794
Injection Volume:/((CL) f Dilumin	n F2000r:
GPC Cleanup: (7/N) Y	pH:	
Number TICs found: 8	CONCENTRATION (ug/l or ug/K	UNIES: IKG

ZION UNIIS
35/33) ME

CAS NUMBER	COMPOUND NAME	RI	EST. CONC.	1 0
1. 14/797	3- Penten-2-one, 4-methy	4.28	260	JTVB
2. 123422 2	- Pentanone, 4-hydron 4-method	5.38	23000	JNAB
3. N/A	UNKNOWN	10.96	220	7
4. N/A ***********************************	UNKNOWN	11.6	230	15
5.5483283636 1	H-Indehe octahydro-2,24,477-14-2008	15.57	250 550	JA
6. N/A	NHNOWN	16.76	180	105
7. N/A	AltaNE	18.97	55 a	
8. N/A	UNKNOWN	20.41	800	J
9. N/A	AIKANE	24.50	7700	15
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TEMENT TO SOUTH STEEL TOWNS OF THE SECOND STREET

Same Name: CCAS Contract	ET: ABB BX 48063	0
Tab Cide: Case %6.: 545 Mc	61: \$35 Next	
Matrix: (soli/water) Soll	Lab Sample II: WJ7597-	5
Sazgie WE/701: 30 (5/ml) 6	Las Fila II: 72/3/3	
Level: (Low/zed) LOW	Sata Received: 121793	
% Moisture: 16 decanted: (%/N)	Sate Extractad: 121793	
Concentrated Extract Tolume: 500 (ul.	Date Analysed:010794	
Injection Volume:(ul) f	Dilation Factor: _/.0	
GPC Cleanup: (Y/N) Y pH:		
	CENTRACION UNITS: (1 of 19/39) <u>MG(K</u> G	

	COMPOUND NAME	3.00	EST. CONC.	Q
1. 141797	3-Penten-2-one 4-methyl-	4.30	350	TNB
2. 123422 3	-Pentanone 4-kydroxy-4-methyl- UNKNOWN	5.42 27.44	27000	JWAB
3. NIA	UNKNOWN	27.44	470	3
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SEMENCIARTIE DESANCES ANAQUELI SATA EREBO TEMPLETICENTI TEMPLETICES

DIVILO	-111
BX48	1115

Les Meme: CCAS Compa	ESSE ABB DATONIS
Case No. : Ski	No.: 325 No.:
Matrix: (soil/water)_SOIL	Las sample II: WJ/597-6
Sample wt/701; 30 (/AL) 6	145 File ID: > 2/3/4
Level: (Lowysed) Low	Cate Received: 12/793
% Moisture: decanted: (Y/N)	Date Extracted: /2/793
Concentrated Extract Tolume: 500 (41)	Data Amalyzed: 0/0794
Injection Volume:/_(ui) f	Dilution Factor: 1.0
GFC Cleanup: (Y/N) Y pH:	
CO	NCENTRATION UNITS

Number	TICS	found:	_18_

(ug/1 or ug/3g) <u>NG/176</u>

CAS NUMBER	COMPOUND NAME	3.2	EST. CONC.	0
1.141797	3-Penten-2-one	4.30	200	JIVE
2. 123422	2- Fentanone 4- hydroxy-t-methyl	5.36	17000	UNAL
3. N/A	UNKNOWN	9.75	280	J
4.62338458	Bicyclo [222]octane 1236 Tetrametry	9.90	2/0	JN
5. NA	UNKNOWN	10.02	210	5
5. N/A	UNKNOWN	10.55	290	7
7 - N/A-	Phtholate	10.83	290	J
8. N/A	UNKNOWN	10.98	3/0	5
9. N/A	UNKNOWN	11.28	230	5
0. N/A	UNKNOWN	11-61	840	13
1.24949426	16-Tridecene 7-methyl-	1	280	JN
2.508763/8	Cyclohexaner 1,1,3,5- tetranethyl	13.94	2/0	IJN
I. N/A	UNKNOWN	14.37	430	
4- NIA	Cyclohexane isomer	14.82	210	F
5.54832836	1H-Indehe, octobydro-224477- hexantly	15.58	1300	JA
6. N/A	Alkane	15.90	220	15
7 + N/A	Alkane	18.98	2/00	T T
s. NA	Alkane	20.17	1800	10
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CLIENT: HERE COLBY

ABB-WATEFIELD

CORPORATE FLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Number : WJ-1597-1 Report Date: 01/26/94

PO No.

MSA-93-01-78-M1

Project

r 7143.00

REPORT OF ANALYTICAL RESULTS

Page 1 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPL	ED BY	SAMPLED DATE RECEIV				
BR480220		Sblid/Soil/ Sludge		R. GILLESPIE		13/14/93		13/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	MOTES	
Solids-Total Residue (TS)	95.	WE &	1.0	0,10	CLP/CIP SOM	12/22/93	JF	1	
Total Petroleum Hydrocarbons (TPH)	<25	mg/kgdrywt	1.0	25	9071/418.1	12/28/93	GH	3	

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

01/26/94

LJU/gfb/djo/org

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

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



Air, Winer & Hasterlius Wave Simpling. Analysis & Consultance Ortified Hipproous Were, Cheming, Bucrepology & Unionay Laboratories

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CLIENT HERB COLEY

ARB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 15

WARKFIELD, MA 01880

Lab Number : WI-1597-L Report Date: 01/26/94

PO MG . MSA 93 DI -78-ML

Project - 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 64

SAMPLE DESCRIPTION BX450220		MATRIX		SAMPL	ED BY	SAMPLED I	ATE	RECEIVED
		Solid/S Sludge	oil/	R. GI	LLESPIE	13/14/5	/3	PECETVED 12/17/93 MYTHS 1,2
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALY ZED	BY	PARTES
TCL Semivolatile Organics by USEPA 8270								1,2
FhenoI	~350.	μg/logdeywt	2×1	330	EPA 8270	01/07/94	TU	
blu (2-Chloroethyl) ether	<360.	Jug/NegdTywt	1.1	330	EPA 0270	01/07/94	TG	
2 - Critorcohenoi	<360.	µg/kgdrywt	1.1	330	BPA 8270	01/07/94	113	
1,3-Dichlorobenzene	<360	µg/logdrywt	1.1	330	EPA 8270	01/07/94	TO	
I, 4-Dichlorchenzene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Sensyl alochol	<360.	µg/lgdrywt	1.1	330	EPA 8270	01/07/94	17.3	
1,2-Dichlorobenzene	<260.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-wechylphenal	<360.	μg/kgdrywt	1,1	330	EPA 8270	01/07/94	D3	
bis(2-Chloroisopropyl) ether	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TX	
4-Methylphenol	<360.	//g/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
n-Nicroso-dipropylamine	<360_	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	To	
Hexachloroethane	<160.	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

rJO/kfg/jfg/Lail

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

^{(2) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.



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CLIENT: HERE COLBY

ABB-WAVEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 35

WARSFIELD, MA 01880

lab Number : WJ-1897-1 Report Date: 01/26/94

PO No. MEA-

: MEA-93-01-78-MI

Project : 7143.00

PEPOPT OF ANALYTICAL RESULTS

Page 3 of 61

SAMPLE DESCRIPTION EX480220		MATRIX		SAMPL	ED BY	SAMPLED D	ATE	RECEIVED
		Solid/So Sludge	oil/	B. GI	LLESPIE	12/14/9	13	12/17/93
PARIMETER	RESULT	UNITS	DF	*FQL	METHOD	AMALYZED	BY	NOTES
Nitrobenzene	×360	µg/kgdrywt	1.1	330	EPA 5270	01/07/94	DG	
Isophorone	<350	µg/kgdrywt	1:1	330	EFA 8270	01/07/94	TG	
2-Nitrophenol	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TC	
2,4-Dimethylphenol	<360.	µg/kadrywc	1.1	330	EPA 8270	01/07/94	TG	
Benzoic acid	<1.800:	µg/kedrywt	1.1.	1£00	EFA 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	µg/kgdrywt	1.1	330	EPA #270	01/07/94	TE	
1,2.4-Trichlorobenzene	<360.	ug/kgdrywt	171	330	EFA 8270	01/07/54	TG	
Napintina i ene	<360	ug/kgdrywt	1:1	330	EPA 8270	01/07/94	TO	
4-Chlorcaniline	<360.	Ma/Kagarywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorobutadiene	<350.	re/kedrywt	1.2	330	EFA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Methylmaphthalene	<360,	µg/logdrywt	1.1	330	EPA 8270	01/07/94	TXZ	
Herachlorocyclopentadien:	<350,	plg/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 amounted with '<' values.

01/26/94

1JO/kig/jfg/lad



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CLIENT: HERE COLEY

PER-WAKEFIELD

CORPORATE PLACE 138, BUILDING 3. SUITE 25

WAKEFIELD, MA DIBBO

Lab Mumber : WJ 1597-1 Report Date: 01/16/94

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

Project 1 7143.00

REPORT OF ANALYTICAL RESULTS

Fage 1 of 61

SAMPLE DESCRIPTION EX480220		MATRIX	SAMPL	ED BY	SAMPLED T	ATE	RECEIVED
		Solid/Soil/ Sludge	R. GI	LLESPIE	12/14/5) j	BY NOTES
PARAMETER	RESULT	UNITS DF	* PQL	METHOD	ANALYZED	BY	NOTES
2,4,6-Trichlorophenol	<360	µg/legdrywt 1.1	330	EPA 8270	01/07/94	TG	
2,4,5-Trichlorophenol	<900.	yg/ligarywt 1,1	820	BPA 8270	01/07/94	TIS.	
2-Chloronaphthalene	<350.	ug/kgdrywt 1.1	338	EPA 8270	01/07/94	TG	
2-Nitroamiline	<900	//g/legdrywt 1.1	836	EPA 8270	01/57/94	TG	
Directlylphthalate	<360,	pg/kgdrywt 1.1	33.0	EPA 8270	01/07/94	JA3	
Acenaphthylane	<350.	µg/kgdrywt 1,1	330	EPA 8270	01/07/94	TG	
2,6-Dinitrotoluene	<360.	µg/kgdrywt 1.1	330	EPA 5270	01/07/94	TG	
3-Nicroaniline	<900,	pg/kgarywt 1.1	820	EPA 8270	01/07/94	TG	
Adenaphthene	<350.	µg/kgdrywt 1.1	330	EPA 8270	01/07/94	TG	
3,4-Dinitrophenol	c900.	ug/legdrywt 1.1	520	EPA 5270	01/07/94	TG	
4-Nitrophenol	< 900,	ug/kgdiywr L.I	820	EPA 8270	01/07/94	TG	
Dibenzofuran	<360,	ug/kgdrywc 1,1	330	EPA 0270	01/07/94	ТЭ	
2,4-Dinitrotoluene	<360.	µg/kgdrywt 1.1	330	EPA 8270	01/07/94	TG	
Diethylphthalate	<360,	ug/lugdrywt 1.1	330	EPA B270	01/07/94	TIE	

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

02/26/94

Lata/ktg/jfg/lad



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ARR-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAIGPIELD, MA 01880

Lab Number : WJ-1597- | Report Date: 01/26/94

PO No. : 1

: MSA-93-01-76-M1

Project

: 7143:00

REPORT OF AMALYTICAL RESULTS

Page 5 of 64

SAMPLE DESCRIPTION MATRIX			EAMPI	SAMPLED BY SAMPLED DATE DETE				
BX480220		Solid/Soil, Sludge	R. GI	LLESPIE	12/14/9	3	12/17/93	
VARAVETER	RESUL/I	COTTS TO	+1901	METHICIT	ANALYZED	BY	NOTES	
4-Chlorophenyl phenyl ether	<360.	μg/kgārywt 1:	330	EPA 9270	01/07/94	TG		
Fluorene	<360.	µg/ligarywt 1.3	330	EPA 6270	01/07/94	103		
4-Nitroaniline	<900.	µg/kgarywt 1.3	920	EPA 8270	01/07/94	IG		
4,6 Dinitro-2-methylphenol	<900.	ug/kgdrywt 1.	920	EFA 8270	01/07/94	TG		
a-Nitrosodiphenylamine	<360.	ug/kgdrywt 1.1	330	EPA 8270	01/07/94	TYG		
5-Bromophenyl phenyl ather	<360	ug/ladrywt 1.1	330	EPA 8270	01/07/94	TG		
Restachlorobensene	<360	jeg/kgdrywt: 1.	330	EPA 8270	01/07/94	TG		
Pentachlorophenol	<900	ug/kgdrywt 1.3		EPA 8270	01/07/94	TO		
Phenanthrane	<360.	ug/kgdrywr 1.1	330	EPA 8270	01/07/94	TG		
Anthrasere	<360.	µg/kgdrywt 1.		EPA 8270	01/07/94	TG		
Di-n-butylphthalate	J180	µg/kgdrywt 1.3		EPA 8270	01/07/94	TO		
Fluoranthene	<360	kg/kgdrywt 1.1		EPA 8270	01/07/94	TE		
Pyrene	<360;	µg/kgdrywt 1,1		EPA 8270	01/07/94	TG		
Sutyl bensylphthalate	<360:	μg/kgdrywt 1.1		EPA 8270	01/07/94	TG		
		and divinights on a						

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/lanl



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ABS WAKEFIELD

COPPORATE PLACE 128, BUILDING 1, SUITE 25

WAPEFIELD, MA 01890

Lab Number : WJ-1597-(Ruport Date: 01/26/94

PO 145.

: MSA-93-01-76-M1

Project

: 71-43-00

REPORT OF ANALYTICAL RESULTS

Page 6 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPL	RID BY	SAMPLED D	ATE	RECEIVED	
B%480220		Solid/S Sludge	oil/	R. OI	LESPIE	12/14/9	13	12/17/93
PARAMETER,	श्लाम	DNITS	TOF	*PQL	HETHOD	ANALYKED	BA	NOTES
3,3'-Dichlerobenzidine	<360.	µg/kgdrywt	1,1	330	EPA 8270	01/07/94	TG	
Benzo (a) anthracene	<360	µg/kgdrywt	1:1	330	EPA B270	01/07/94	TE	
Chrysene	-360.	µg/kgdrywt.	1.1	530	EPA 8270	01/07/94	IG	
bis(2-Ethylbexyl)phthalace	<360.	pg/kgdrywt.	1.1	330	EPA 8270	01/07/94	TG	
Di-n-octylphchalate	<360.	ug/kgdrywt	1.1	330	EPA B270	01/07/34	IG.	
Benzo (b) fluoranthena	<360,	ug/ltgdrywt	1.1	330	EPA 6270	01/07/94	TG	
Benzo (k) Eluoranthene	<360.	pg/kgdcywl-	1.1	330	EPA 8270	01/07/94	10	
Benzo (a) pyrene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/54	ma:	
Indeno(1,2,3-cd)pyrene	<360.	ug/legdrywc	1.1	330	EPA 6270	01/07/94	TG	
Dibenzo (a, h) anthracens	<360.	ug/kgdrywl-	1.1	330	EPA 8270	01/07/94	TG	
Berzo (g, h, i) perylane	<360	pg/kgdrywt	1.1	330	EPA 8270	01/07/94	76	
2-Fluorophenol (* Recovery)	66.	N	1.1		ETA 8270	01/07/99	TO.	
Phonoi-d5 (* Recovery)	80.	*	1.1		EPA 5270	01/07/94	TG	
Nitrobenzene-d5 (% Recovery)	57:	*	1.1		SEA 8270	01/07/94	TO	

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

01/20/94

two/kig/jfm/lad



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ABE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, BUTTE 25

WAKEFIELD, MA 01980

Lab Number J WJ-1597-1 Report Date: 01/26/94

FO No. | MSA-93-01-78-M1

Project - 7143.00

REPORT OF AMALYTICAL RESULTS

Page 7 of 64

SAMPLE DESCRIPTION			DX.	SAMP	LEO BY	SAMPLED DATE RECEIVE			
BX460220		Solid/Soil/ R. GILLESPIE Sludge		12/14/9	/14/93 12/17/93				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	EY	MOTES	
2-Fluoropiphenyl (% Recovery)	65.	D.	1.1		EPA 8270	01/07/94	TG		
2,4,6-Tribromophenol (%	58,	No.	1.1		EPA 8270	01/07/94	IG		
Terphenyl-dl4 (% Recovery)	79.	Si .	1.1		EPA 8270	01/07/94	IG		

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

01/06/94

L30/kfg/jfg/lad



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ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WANTFIELD, MA 01880

Lab Number : WJ-1597:1 Report Date: 01/26/94

PO No. : MSA-93-01-76-MI

Project : 7143,00

PEPORT OF AMALYTICAL RESULTS

Page 8 of 64.

SAMPLE DESCRIPTION		MATRIX		SAMPLA	D BY	SAMPLED D	ATE	RECEIVED
BX480220		Solid/Soi Sludge	1/	R. GU	LESPIE	12/14/9	3	12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALIYED	BY	NOTES
TCL Volatile Doganics by ISEPA 8240								1
Chloromethane	<11 c	μg/kgarywt 1	-1	20	EPA BEAG	12/19/93	DG	
Bronomethane	<11.	μg/kgarywt 1			EPA 8240	12/19/93	DG	
Vinyl chloride	×1.1 -	uq/kgdrywt 1		10	EPA 8240	12/19/93	DO	
Chlorcethane	<11	ug/lightywic 1		10	EPA 8240	12/19/93	DG	
Methylene chloride	E21.	µg/kgāzywt 1	1.1	10	BPA 9240	12/19/93	DG	
Adetone	<17.	µg/ligatywt 1	1.1	15	EPA 8240	12/19/93	DO	
Carbon disulfide	<11	pg/kgjárjyvt 1	.1	20.	EPA 8240	12/19/93	DG	
1, 1-Dichlorcethens	< 6. □	µg/kgdrywt 1	hT:	5	EPA 8240	12/19/93	DG	
1, 1 Dichloroethane	×6:	ug/kgdrywt 1	1.1	9	EPA 8240	12/19/93	DO	
Total I,2-Dichloroethene	<5.	Ng/kgarywt 3	1.1	5	EFA 8240	12/19/93	DG	
Chleroform	¢6.	ug/hgdrywt 1	1.7	5	SPA HZAU	12/19/93	DG	
1,2-Dichloroethana	c6.	ug/ligdrywt 1		.5	EPA 8240	12/19/93	DG	
2-Butanone	<17_	wg/kgdrywt 1	L.	15	EPA BE40	12/19/93	DG	

PQL (Fractical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific limits are indicated by results associated with 'c' values.
 (1) "J" flag denotes an estimated value less than the Eaboratory's Practical Quantitation Level.

01/26/94

L20/kfg/jfg/kwh



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ABB-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAFEFIELD, MA 01990

Lab Number : WI-1597-1 Report Outo: 01/26/94

PO No.

- MSA-93-01-78-M1

Project

2 7133,00

REPORT OF AMALYTICAL RESULTS

Page 9 of 84

SAMPLE DESCRIPTION		MAIRIX	SAMPLED BY	SAMPLED DATE RECEIVED
BX480320		Solid/Soil/ Sludge	R. GILLESPIE	13/14/93 23/17/91
PARAMETER	RESULT	UMIS DP	*SCC METHOD	AMPLICATED BY NOTES
1,1,1-Trichloroethane	JI	μg/hgdrywt 1.1	5 BRA 8240	12/19/93 DG
Carbon cetrachloride	×6.	mg/kgdrywc 1.1	5 EPN 8240	13/19/93 DG
Vinyl acetate	<17	μg/kgarywt 1.1	15 EBA 9240	12/19/93 DG
Branodichloromethane	≪6.	pg/kgdrywt 1.1	5 EPA 8240	12/19/93 DG
1,3-Dichloropropane	46.	μg/kgdrywt 1.1	5 RPA 8240	12/19/93 DG
cis-1,3-Dichloropropene	<6.	μg/kgdrywt 1.1	5 EPA 5240	12/19/93 13
Trichlorosthene	iris.	µg/kgdrywt 1.1	5 EPA 8240	12/19/93 03
Dibromochloromethane	46.	μg/kgdrywt 1.1	5 EPA 8240	12/19/93 DG
1,1,3-Trichloroethane	r/6 ,	ug/kgdrywt 1.1	5 EPA 8240	12/19/93 DG
Benzene	-sē.	ug/kgdrywt 1.1	5 EPA 8240	12/19/93 DQ
trans-1,3-Dichloropropens	c6	μg/kgārywt 1.1	5 EPA 8240	12/19/93 DG
Branctorm	46.	ug/kommywt 1.1	5 EPA 8240	12/19/93 DG
4-Methyl-2-pentanone	€1.7	//g/kgdrywt 1.1	15 EPA 8240	12/19/93 DG
2-Hexanone	£17.	μg/kgdrywt 1.1	15 EPA 8340	12/19/93 DG
Tatrachlorosthene	-4B,	ug/kgtirywt 1.1	5 52A 8240	12/19/93 DC

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

01/26/94

W5/kfg/ifg/kwn



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ABB-WAKEFIELD

COSPORATE PLACE 128, BUILDING 3, SUITS 25

WAKEFIELD, MA 01880

Leb Number : WJ-1597-1 Report Date: D1/26/94

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

Project : 7143.08

ERPORT OF AWALYTICAL RESULTS

Page 10 of 64

SAMPLE DESCRIPTION		MATRIX		PAMPI	LED BY	SAMPLED I	ATE	RECEIVED
3/480220		Solid/Smil/ Sludge		R. GILLESPIE		12/14/93		12/17/93
PARAMETER	RESULT	UNITS	DF	+3QL	METHOD	AMALYZZO	FY	NOTES
1,1,2,2-Tetrachilomerhane	56.	ug/kgdrywt	1.1	-1	5 EPA 8240	12/19/93	DG	
Toluene	45.	my/hydrywt	1.1	.9	EPA 8240	12/19/93	DG	
Chlorobenzens	e6 .	µg/kgdrywt	1,1	3	5 EPA 8240	12/19/93	DG	
Ethylbenzene	≼6,	µg/legdrywt	1.1		5 EFA 8260	12/19/93	DG	
Styrene	×6.	pg/logelrywl	1.1	4	5 EPA 8240	12/19/93	DG	
Total Xylenes	-s6	ug/leadrywt	1:1	3	EPA 8240	12/19/93	DG	
1,2-Dichloroethane (* Recovery)	93.	8	1.1		EPA 8240	12/19/93	DG	
Toluene-d8 (% Recovery)	98.	F	1.1		BPA 8240	12/19/93	DE	
p-Bromofluorobenzene (%	97.	\$	1.1		EPA 8240	12/19/93	DG	

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

01/26/94

Lett/kig/jfg/kwhi



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CLIENT: HERE COLEY

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 ANALATICAL RESULTS

Page 11 of 64

SAMPLE DESCRIPTION		MAIRIX		SAMPL	BO BY	SAMPLED I	ATE	RECEIVED
BA480115		Solid/S Sludge	cil/	R GI	LLESPIE	12/14/5	23	13/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZE	BY	MOTES
Solids-Total Residue (TS)	85:	Wt &	1,0	0.10	CLP/CTP SCM	12/22/93	JI.	1
Total Petroleum Hydrocarbons (TPH)	90	ng/kgdrywt	1.0	25	9071/418,1	12/28/93	Œ	2

^{*} 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.

71/26/94

LID/gfb/djn/ding

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

⁽¹⁾ Sample Preparation on 12/27/93 by GH



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TLIENT HERB COLEY

ARR-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WARRETELD, MA 01680

Lab Number - WJ-1597-2 Report Date: NI/26/94

PO No.

- MSA-91-01-78-MD

Project

: 7143.00

REPORT OF ANALYTICAL RESULTS

Rage it of st

SAMPLE DESCRIPTION		MATRIX		SAMPL	ed er	SAMPLED E	ATE	RECRIVED
AX48011 5		Solid/Soi Sludge	11/	R. GI	LLESPIE	13/14/5	13	12/17/93
PARAMETER	RESULT	UNITS	D7	*PQL	METHOD	AMALYZED	BA	MOTES
TCL Semivolatile Organics by USEPA 6270								1,2
Phanol .	<400.	µg/kgdaywt 1	1/2	330	BBA 8270	01/67/94	TG	
bis(2-Chloroethyl) other	<400.	//g/logdrywt	1.2	330	EPA 8270	01/07/94	DE	
2-Chlorophenol	<400,	µg/kgdrywt	1,2	330	BPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	-400	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
1,4-Dichlorobenzeno	<400:	μg/kgdrywL	1.2	830	PPA 8070	01/07/94	Ur	
Benzyl alcohol	<400.	µg/kgdrywt:	1,2	330	EPA 8270	01/07/94	TG	
1, 1-Dichlorobenzens	-400.	μg/kgdrywt 3	1.2	330	EPA 8270	01/07/94	EVE	
2 Methylpherol	<400.	µg/kgdzywt	1.2	330	EPA 8270	01/07/94	TI	
bin(2-Chloroisopropyl) ether	<400.	µg/kgdbywt	1.2	330	EPA 8270	01/07/94	Dr	
1-Methylphenol	-400	µg/kgdrywt 1	1/2	330	EPA 6270	01/07/94	TG	
n Nitroso digropylamico	<400.	µg/kgdrywL	1.2	930	EPA 8270	01/07/94	707	
Hexachlorcethane	5400.	μg/kgdrywt 1	1.2	330	ERA 8270	01/07/94	TG	

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

01/26/94

WO/kfg/jfg/lad

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

^{(2) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.



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CLIENT HERE COLEY

ABB-WANEFIELD

COMPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, 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 PESUITS

Page 13 of 64

SAMPLE DESCRIPTION		MAIRIX		SAMPL	ED BY	SAMPLED I	ATE	RECEIVED
HX490115		Solid/St Sludge	oil/	r co	LLESPIE	12/14/5	i3	12/17/93
PARAMETER.	RESULT	UNITS	DF	*PQL	METHOD	AMALYZED	BY	NOTES
Nitrobenzene	<400.	μg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
Isophorone	<400_	µg/lgdr/wt	1,2	330	EPA 8270	01/07/94	TG	
1-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	
Penzoic acid	<1900.	µg/kgdrywt	2,2	1800	EPA 8270	01/07/94	TG	
his (1-Chiloroethoxy) methans	<400	µg/kgdrywt	1,2	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<400_	µg/kgdrywt	1.2	330	EPA 8270	01/07/96	DG	
1,2,4-Trichlorobenzene	<400.	pg/kgarywt	1.2	330	EPA 8270	01/07/94	TG	
Naphthalene	<400_	μg/kgdr/wt	1.2	330	EPA 8270	01/07/94	TG	
o-Chlorosniline	<400	ug/kgdrywt	1,2:	330	EPA 8270	01/07/94	TE	
Hetachlorobatadiene	<400	pg/kgdrywt	1,2	380	EPA 8270	01/07/94	TG	
4-Chloro-3-methylphenol	<400.	μg/legdrywt	1.2	330	EPA 8270	01/07/94	TG	
2-Methylnaphthalene	<400.	µg/\gdcywt	1.2	330	EPA 8270	01/07/94	TO	
Hekachlorocyclopentadiene	<400.	µg/lightywc	1.2	330	EPA 8270	01/07/94	TG	

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

01/26/94

Tuto/kfg/jfg/Lad



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CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 35

WAKEFLEED, MA 01880

Lab Mumber : W7-1597-2 Report Date: 01/26/94

DO May

- MSA-93-01-78-MI Project : 7143 00

REPORT OF AMALATICAL RESULTS

Page 14 of 64

SAMPLE DESCRIPTION		XISTAM	SAMPLED BY	SAMPLED DAT	E RECEIVED
EX480115		Sclid/Scil/ Sludge	e Gillespie	12/14/93	12/17/93
PARAMETER	RESULT	UNITS DF	POL METHOD	ANVLY ZEC E	BY NOTES
2,4,6-Trichlorophunol	<400.	µg/logdrywt 1,2	330 EPA 8270	01/07/94	1/3-
2,4,5-Trichlorophenol	980.	ug/kgdrywt 1.2	820 EPA 8270	01/07/94 1	ig.
2-Chloropaphthalene	<400.	ug/kgdryva 1.2	330 EPA 8270	01/07/94 0	DET.
2-Nitroaniline	₹980 -	ug/kgdry = 1.2	820 BPA 8270	01/07/94 9	g
Dimethylphthalate	<400.	µg/kgárvic 1.2	330 EPA 8270	01/07/94 1	773
Accompatbylene	<400	µg/kgdrywt 1.2	330 EPA 6270	01/07/94 7	Œ
2,5-Dirutrocoluene	-400-	µg/kgdrywt, 1.2	330 EPA 9270	01/07/94 3	TG .
3-Nitrosmiline	<980.	µg/kgdrywc 1,2	820 EPA 8270	01/07/94 7	13
Acepaphthene	-400	μg/kgdrywt 1.2	330 EPA 8270	01/07/94 3	G
3,4-birdtrophenol	- 980 -	µg/kgdrywt 1.2	820 FPA 8270	01/07/94 9	Ya .
G-Nitrophenol	<980.	ug/kgárywt 1,2	820 EPA 8270	01/07/94 7	G
Dibenzofuran	<400	µg/kgdrywt 1.2	330 EPA 5270	01/07/94 3	G
2,4-DistLroboluene	<400.	μg/kgdrywt 1.2	330 RPA 8270	01/07/94 3	32
Diethylphthalate	<400 €	µg/kgdrywt 1.2	330 EPA 8270	01/07/94 3	G

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

01/26/94

TJO/kig/jfg/lad



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Lab Mumber : WJ-1597-3 Report Date: 01/36/94

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FO No. 1 MS2

MSA-93-01-78-M:

Project

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TIENT HERE COLBY

ABB-WAYEFIELD

CORPORATE PLACE 128; EVILDING 3. SUITE 25

PRINCEPTELD, MA 01580

REPORT OF ANALYTICAL RESULTS

Page 15 of 54

SAMPLE DESCRIPTION	DESCRIPTION MATRIX			SAMPL	ati ev	SAMPLED DATE HE/CEIVE			
EX480115		Solid/So: Sludge	11/	R. Gi	LESPIE	12/14/9	g	12/17/93	
PARAMETER	PESULT	UNITE	Dà	*PQL	MEDICO	ANALYSED	ВV	NOTE	
4 Chlorophonyl phenyl ether	<400.	ug/kgdmywn	1,2	320	BPA 8270	01/07/94	TG		
Fluorens	<400.	ug/kgdrywt	LZ	330	EPA 8270	01/07/94	IG		
4-Nitroaniline	<980,	ug/legdry	1,2	820	BPA 6370	01/07/94	TG		
4,5-Dinitro-2-methylpherol	<980.	ug/kgdrywc	1.2	820	EPA 8270	01/07/94	TG		
n-Nitrosodiphenylamine	<400.	µg/kgdrywt		330	EPA 8270	01/07/94	25		
4 Bromophonyl phenyl miner	<400.	μg/kgdryw	1.2	330	EPA 8270	01/07/94	TC		
Hexach Lorobertsene	< 400 .	µg/kgdiryet:	L.B	330	EPA 8270	01/07/94	TG		
Pentachlorophebol	<980	µg/kgáxyws	1,2	820	EPA 8270	01/07/94	TU		
Phenanchreno	<400	ug/kgdrywa		330	EPA 8270	01/07/94	TG		
Anthracene	<400	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	THE		
Di-n-butylphthalate	J130	µg/kgarywt		33.0	EPA 8270	01/07/94	TG		
Fluoranthene	<400	μg/kgdrywt	50 Per	330	EPA 8270	01/07/91	TG		
Pyrene	< 400	ug/kgdrywt		330	EPA 8270	01/07/94	773		
Butyl benzylphthalate	~400.	ug/kgdrywt		330	EPA 8270	01/07/94	TO		

BQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amnotated with '~' values.

01/26/54

T.TC/kfg/jfg/lad



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CLIENT: RERE CYLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number WJ-1597-2 Report Date: 01/26/94

: MSA-93-01-79-MI PO No.

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 16 of 66

SAMPLE DESCRIPTION		MAIRIK		SAMPL	ED BY	SAMPLED L	ATE	RECEIVED
BX480115		Solid/S Sludge	211/	R. GI	LLESPIE	12/14/5)3	12/17/93
PARAMETER	PESULT	OMITS	DF	*POL	WETHOD	AMALYZED	BS	WOTES
3,11-Dichlorobenzidine	<400	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TO	
Bento (a) anthracene	<400.	ug/kgdrywr.	1.2	130	EPA 9270	01/07/94	TE	
Chrysene	<400	µg/kgdrywt	1.2	330	EEA 8270	01/07/94	TG	
bis(2-Ethylhesyl)phthalat≥	<400.	µg/kgdrywt	1.2	330	SPA 8270	01/07/94	TG	
Di-n-octylphthalate	×400_	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TY:	
Benzo (b) fluoranthene	c400.	µg/kgdrywt	1.2	330	EFA 8270	01/07/94	TG.	
Berco (k) fluoranthene	<400.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TG:	
Benzo (a) pyrosne	<400 ·	ug/kgdryvt	1.2	330	EPA 8270	01/07/94	TG	
Indepo(1, 2, 3-cd) pyrene	<400	µg/kgdrywt	1.2	330	EEA 9270	01/07/94	IG	
Diberzo (a, h) anthracene	<400.	ug/kgdrywt	1.2	330	EFA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<400.	ug/kgrirywt	1.2	330	EPA 8270	01/07/94	IG	
2-Fluorophenol (% Recovery)	65.	4	1.2		EFA 9270	01/07/94	TG.	
Phenol-d5 (% Recovery)	ao.	2	1.2		EPA 8270	01/07/94	TG:	
Nitrobensene ds (% Recovery)	65.	X	1.2		EPA 6270	01/07/94	TX	

[.] DOL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 's' values.

01/26/94

LGO/kig/jig/lad



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Mortheastern Division
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CLIENT HEFE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Number : WJ-1597-2 Report Date: 01/26/94

PO No ..

: MSA-93-01-78-ML

Project

7143.00

REPORT OF AMALYTICAL RESULTS

Page 17 of 64

SAMPLE DESCRIPTION		MATRI	cxc	SAMP	LED BY	SAMPLEO I	ATE	RECEIVED
EX480115		Solid	i/Soil/ re	R. C	ILLESPIE	12/14/9	3	12/17/93
PAPAMETER	RESULT	UNITS	DP	*PQL	METHOD	AMALYZED	BY	NOTES
2-Pluorobiphenyl (% Recovery)	59.	ok.	1,2		EPA 8270	01/07/94	TG	
2,4,6-Tribronopnenol (%	70	8	1.2		EPA 8270	01/07/94	TG	
Terphenyl-di4 (% Recovery)	76.	8	1.2		EPA 9270	01/07/94	TG	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample specific limits are indicated by results amnotated with '<' values.



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CLIENT: HERB COLEY

AHB-WANRFIELD

CORPORATE PLACE 128, EUILDING 3, SUTTE 25

WAREFIELD, MA D1880

Lab Mumber : WJ-1597-2 Report Date: 01/25/94

FC No.

: MSA-93-01-78-M1

Project

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REPORT OF ANALYTICAL PESULTS

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PARAMETER RESULT UNITS DF *PQL METHOD ANALYZED BY FCL Volatile Organics by OSEPA 8240 Chloromethane <12. µg/kgdirywt 1 2 10 EPA 8240 12/19/93 DG Bromomethane <12. µg/kgdirywt 1,2 10 EPA 8240 12/19/93 DG Vimyl Chloride <12. µg/kgdirywt 1,2 10 EPA 8240 12/19/93 DG Chloromethane <12. µg/kgdirywt 1,2 10 EPA 8240 12/19/93 DG Chloromethane <12. µg/kgdirywt 1,2 10 EPA 8240 12/19/93 DG Chloromethane <12. µg/kgdirywt 1,2 10 EPA 8240 12/19/93 DG Acetone <18. µg/kgdirywt 1,2 15 EPA 8240 12/19/93 DG Carbon disulfide <12. µg/kgdirywt 1,2 10 EPA 8240 12/19/93 DG	TVAT	ATE RECT	SAMPLED D	ED BY	GAMPI	MAURIX		SAMPLE DESCRIPTION
PCL Volatile Organics by OSSPA 8240 Chloromethane <12. µg/kgdrywt 1 3 10 EPA 8240 12/19/93 DG Bromomethane <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 DG Vimyl Chloride <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 DG Chloroethane <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 DG Methylene Chloride <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 DG Acetone <18. µg/kgdrywt 1,2 15 EPA 8240 12/19/93 DG Carbon disulfide <12. µg/kgdrywt 1,2 15 EPA 8240 12/19/93 DG	7/93	12/1	13/14/5	LESPIE	R. GI	The second secon		BX400115
8240 Chloromethane <12. µg/kgdrywt 1 3 10 EPA 8340 11/19/93 D3 Bromomethane <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 D3 Vimyl Chlorode <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 D3 Chloroethane <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 D3 Methylene chloride <12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 D3 Acetone <18. µg/kgdrywt 1,2 15 EPA 8240 12/19/93 D3 Carbon disulfide :12. µg/kgdrywt 1,2 10 EPA 8240 12/19/93 D3	NOTES	BY	ANALYZED	METHOD	*PQL	UNITS OF	PRSULT	PANAMETER
Bromomethan/ <12. µg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG Vinyl Chloride <12. µg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG Chloroethane <12. µg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG Methylen-chloride <12. µg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG Acetone <18. µg/kgdrywt 1.2 15 EPA 8240 12/19/93 DG Carbon disulfide <12. µg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG Carbon disulfide <12. µg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG	1							
Vinyl Chloride <12.		TX3	12/19/93	EPA HRAC	10	ug/kgdrywt 1 2	<12.	Chlorowethane
Chloroethans <12. #g/kgdrywt 1.2 10 EPA 8240 12/19/93 DC Methylene chloride <12. #g/kgdrywt 1.2 10 EPA 8240 12/19/93 DC Acetone <18. #g/kgdrywt 1.2 15 EPA 8240 12/19/93 DC Carbon disulfide :12. #g/kgdrywt 1.2 10 EPA 8240 12/19/93 DG		DG	12/19/93	EPAL 6240	10	μg/kgdrywt 1.2	<12.	Bromomethan
Methylene chloride <12.		DG	12/19/93	EPA 8240	1.0	ug/ligdrywt 1,2	<12.	Vinyl chloride
Acetone <18. Lg/kgdrywt 1.2 15 FPA 8240 12/19/93 DG Carbon disulfide :12. Lg/kgdrywt 1.2 10 EPA 8240 12/19/93 DG		230	12/19/93	EPA 8240	10	#g/kgärywt. 1.2	< 1.2.	Chloroethane
Carbon disulfide 412. µg/kgdrywt 1.2 10 E9A 8240 12/19/93 DG		DG	12/19/93	EPA 6240	10	ug/kgdrywt 1.2	<12.	Methylene chlomide
		DO.	12/19/93	FPA 8240	15	ug/logdrywt 1.2	<18.	Acetone
		DG	12/19/93	EPA 8240	20	eg/kgdrywt 1.2	412.	Carbon disulfide
Tit production and and and and and		23	13/19/93	EPA 8240	5	µg/legdrywt 1,2	£6.	1,1 Dichloroethera
1,1-Dichloroethans <6. µg/kgdrywt 1,2 5 EPA 9240 12/19/93 DG		DG	12/19/93	EPA 8240	5		d6 .	
Total 1,2-Dichlerosthens <6: ag/kgdrywt 1.2 5 EPA 8240 12/19/93 DG		23	12/19/93	EPA 8240	5		×6:	
Chloroform <6. µg/kgdrywt 1,2 5 EPA 8240 12/19/93 DG		DG	12/19/93	EPA 8240	5	4g/kgdrywt 1,2		Chioroform
1,2-Dichloroethane <6. µg/kgdrywt 1,2 5 EPA 8240 12/19/93 DC		700	12/19/93	EPA 8240	- 5	ug/kgdrywt 1,2		1.2 Dichloroethane
2-Butanche <13. µg/kgdrywt 1.2 15 EPA 8240 12/19/93 DG		DG	12/19/93	EPA 8240	25	The Control of the Co	<13.	

⁻ PQL (Practical Quantitation Lavel) represents laboratory reporting 'Units and may not reflect samplespecific reporting limits: Symplo-specific limits are indicated by results annotated with '<' values. (1) "I" Flag denotes an estimated value less than the Laboratory's Fractical Quantitation Level.

01/26/94

LJO/kfg/jfg/swi



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CLIENT HERE COLEY

ARE-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number - WJ-1597-2 Report Dare: 01/26/54

Po No.

: MSA-93-01-78-MI

Project

- 7143.00

RESORT OF ANALYTICAL RESULTS

Page 19 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPL	SID BY	SAMPLED 1	ÁTÉ	RECEIVED
EX480115		Solid/S Sludge	Solid/Soil/ Sludge		R. GILLESPIE		12/14/93 12/1	
PARAMETEE	PRSUIT	UNITS	DF	*FQI.	METERO	ANALYZED	BY	MOTES
1,1,1-Trichloroethana	J3	ug/kgdrywt	1.2	5	FPA 8240	12/19/93	D3	
Carbon tebrachloride	-05	pg/kgdrywc	1.2	5	EPA 8240	12/19/93	DG	
√inyl acetate	c18.	μg/kgārywt	1.2	15	EPA 8240	12/19/93	DG	
Bromodichleromethana	c6.	ug/kgārywi	1.2	5	EPA B240	12/19/93	DG	
1,2-Dichloropropane	<6.	µg/kgtin/wt	1.2	5	EPA 8240	12/19/93	DG	
gis-1,3-Dichloroproper	<6	pa/kgarywt	1.2	5	EFA 8240	12/19/93.	DO:	
Trichlorosthene	c6.	µg/kgčrywt	1.2	5	EPA 8240	12/19/93	DG	
Dibromochloromethane	<6	ug/logicywt	1.2	5	EPA 8240	12/19/93	IG	
1,1,2-Trichlorocthine	₹6	pg/kgarywl	1.0	5	RPA 8240	12/19/93	DG	
Echolone	56.	µg/kgarywt	1.2	5	BPA 8240	12/19/93	DG	
trans-1,3-Dichloropropens	×6.	ug/kginwt	1.2	5	EPA 9240	12/19/93	D3	
Bronoform	CF.	pg/kptrywl	1.3	9	EBA 8240	12/19/93	DG	
4 Methyl-2-perturns	:18.	μα/kgárywt		1.5	EPA 8240	12/19/93	DG	
2-Hexanone	<2.8	µg/kgarywt		1.5	EPA 8240	12/19/93	DJ	
Tetrachloroethene	<6	ug/kgarywt		5	EPA 8240	12/19/93	DG	

POL (Practical Quantitation Level) regresents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are initiated by results atmotated with '<' values.

01/26/94

LJC/kfg/jfg/le-h



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(LIENT) HERB COLEY

ARE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAFEFIELD, MA 01880

Tab Munice: ! WJ-1597-2

Peport Date: 01/26/94 PO No.

M9A-91-01-78-MI

Project = 7143.00

REPORT OF ANALYTICAL RESULTS

Page 20 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
BX480115	Solid/ Sludge		mil/ R. CILLESPIE			12/14/93		12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	EV	NOTES	
1,1,2,2-Tetrachloroethane	<6:	µg/ligitywt	1.2	5	EPA 8240	12/19/93	DG		
Toluene	×6.	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG		
Chilorobenzene	<5.	µg/kgdrywt	1,2	5	EPA 8240	12/19/93	DG		
Ethylbengene	<6.	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	DG		
Styrene	<5.	µg/kgdrywt	1.2	5	EPA 8240	12/19/93	IG		
Total Nylanes	<6	ug/kgarywt	1.2	5	EPA 8240	12/19/93	DG		
1 2-Dichloroethane (% Recovery)	92	Te .	1.2		EPA 8240	12/19/93	DG		
Taluane-d8 (% Recovery)	108.	8	1.2		EPA 8240	12/19/93	DG		
p-Bramofluorobenzene (%	92 -	%	1.2		EPA 9240	12/19/93	DG		

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

01/36/94

LID/kfg/jfg/lown



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CLIENT: HEPB COLBY

AHB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA C1880

Lab Mumbax : WJ-1597-3 Report Date: 01/26/94

PO No. : NS

. MSA-93-01-78-ML

Project

: 7143.00

REPORT OF AMALYTICAL RESULTS

Page 21 bt 6%

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVE				
BX480515		Solid/Soil/ Sludge		R. GILLESPIE		12/15/93		12/17/93	
PARAMETHE	FESULT	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 Hydrocarbosis (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 samplespecific 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



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ABB-WAXEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, NA 01880

Lab Number : WJ-1597-3 Report Date: 01/26/94

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

Project : 7103.00

REPORT OF ANALYTICAL RESULTS

Page 22. of Ed

SAMPLE DESCRIPTION EX480515		MATEIX		SAMPL	ED BA	SAMPLED DATE RECEIVED				
		Solid/Soil/ Slodge		R. GI	LIESPIE	12/15/9	15/17/93			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYPED	BY	WOTES		
TCL Semivolatile Organics by USEPA 8270								1,2		
Phenol	<350,	Har/Kagarywt	I.I	330	EPA 8270	01/07/94	10			
his(1-Chloroethyl)ether	-360_	ug/logdrywt		3.50	EPA 8270	01/07/94	TG			
2-Chlorophenol	-360_	µg/kgdrywt	1,1	330	EPA 8270	D1/07/94	TO			
1,3-Dichlorobenzene	<360.	µg/logdrywt	1,1	330	EPA 8270	DL/07/94	TG			
1,4-Dichlorobenzene	~360	//g/kgdrywt	1,1	330	EPA 8270	OL/07/94	273			
Benzyl alcohol	~360·	μg/ladrywt	1,1	330	EPA 8270	01/07/94	TG			
1,2-Dichlorobenzene	< 260	ug/);gdrywt	1.1	330	EPA 8270	01/07/99	IG			
2-Methylphenol	<360 c	pg/kgdrvwt.	2.1	330	EPA 6270	01/07/94	TE			
bis(2-Chloroisopropyl) ether	<360_	μg/legdrywt	211	330	EPA 8270	01/07/94	TG			
4-Methylphenol	<260	µg/kgdrywt		330	EPA 8270	01/07/93	T/G			
n-Nitroao-dipropylamine	<960.	wg/kgdrywt		330	EPA 8270	01/07/94	42			
Hexachloroethane	<360.	ug/kgdryvt		330	EPA 8270	01/07/91	TG			

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

01/26/94

1.00/kbg/jfg/la

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

^{(3) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.



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CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 35

WADEFIELD, MA 01880

Lair Number : WJ-1597-3 Report Date: 01/26/94

PO No. M

- MSA-93-01-78-MI

Project 1 7143.00

PEPORT OF AMAINTYCAL PERULIS

Page 23 of 64

SAMPLE DESCRIPTION EXASO515		MATRIX		SAMPLED BY		SAMPLED DATE BECEIVED			
		2olid/soil/ Sludge		R. GILLESPIE		12/15/93		12/17/93	
PARAMETER	RESULT	INITS	ñР	*109*	METHOD	AMALYMED	BY	MOTES	
Nitrobenzeba	≥360°.	µg/kgdrywt 1	.g.	330	EPA 9270	01/07/94	TG:		
Isophorone	<360,	µg/kgdrywl 1	1	330	EPA 8270	01/07/94	TY		
2-Ni trophenol	<360	μg/kgdrywt 1	.1	330	EPA 9270	01/07/94	TG		
3,4-Damethylphenol	<360	µg/kgdrywL 1	-1	330	EPA 9270	01/07/54	TG		
Benadic acid	<1800:	μg/kgdrywt 1.	. 1	1600	EPA 8270	01/07/94	TG		
bis (2-Chloroethony) methans	<360.	µg/kgdrywt 1	.1	330	EFA 8270	01/07/94	TG		
2,4-Dichlorophenol	<360.	µg/kgdrywt 1	_1	330	EFA 8270	01/07/94	TG		
1,3,4-Trichlorobenzene	-360.	µg/kgdrywt 1	.1	330	EPA 8270	01/07/94	TG.		
Naphthalene	<360	µg/kgdrywt I	V2	330	EPA 9270	01/07/94	TG		
4-Chlorpaniline	<360.	µg/kgdrywt 1	.1	330	EPA 8270	01/07/94	TO		
Herachlorobutadiene	<360.	μg/kgdrywt I	.1	330	EPA 8270	01/07/94	TG.		
4-Chloro-3-methylphenol	<360	µg/kgdrywt 1	.1	330	EBA 9270	01/07/94	TIS		
2-Methylmaphulalene	<360-	pg/kgdrywt 1		330	EPA 8270	01/07/94	TG.		
Herachlorocyclopentadiene	<360.	μg/kgdrywt 1		330	EPA 8270	01/07/94	TG		

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

01/26/94

LJO/kEg/jfg/lwi



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CLIENT: HERE COLEY

ARD-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WALTETELD, MA 01880

Lab Number : WJ-1597-3 Paport Date: 01/26/94

PO NO.

: MSA-93-01-78-MD

Project

: 7143.00

REPORT OF ANALYTICAL RESULTS

Page 24 of 64

SAMPLE DESCRIPTION	MAIRIN		8 GILLESPIE		SAMPLED DATE RECEIVED			
BM480515		selid/se Sludge			sil/	12/15/93		12/17/93
PARAMETER	RESULT	UNITS	DE	*PQL	METHOD	AMALYZED	BY	MOTES
2,4,6-Trichlorophenol	<360.	µg/kgdrywt	LL	330	EPA 8270	01/07/94	TG	
2,4,5-Tricklorophenol	<900	ug/kgtirywt	1.1	820	EPA 8270	01/07/94	TG	
2-Chloronaphthalene	<360,	ug/kgarywt	I.L	330	EPA 8270	01/07/94	TG	
2-Mitroaniline	<900.	µg/kgtirywt	1.1	820	EPA 8270	01/07/94	TG	
Dinethylphthalate	<360.	ag/kgűrywt	1.1	330	ERA 8270	01/07/94	TG	
Acenaphichylens	<360	µg/kgdzywt	1.1	330	EPA 8270	01/07/94	T	
2,6-Dinitrotoluene	<360	ug/kgdrywt	1,1	330	EPA 8270	01/07/94	TOS	
3-Nitroaniline	≥900	ug/kgdrywt	1/1	820	EPA 8270	01/07/94	TG	
Acenaphthene	<360 ⋅	ug/legárywt	1.1	330	EPA 8270	01/07/94	177	
2,4-Dimitrophenol	c900,	ug/lightywt	1.1	620	EPA 8270	01/07/94	DG	
4-Witrophenol	<900	µg/kgdrywt	1.1	820	EPA 9270	01/07/94	TG	
Dibenzofuran	<360:	μg/ligarywt	1.1	330	EPA 5270	01/07/9%	TG	
2,4-Dinitrotoluene	<360 ·	µg/kgarywt	11	330	EPA 6270	01/07/94	D3	
Diethylphthalace	<360	µg/kgdrywt		330	EPA 0270	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

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CLIENT: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 1, SUITE 25

WARRELELD, MA 01880

lab Number : WJ-1597-3 Report Date: 01/26/94

90 Mb. 7 MSA-93-01 78 ML

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 25 of 64

EXAMPLE DESCRIPTION EXAMPLE DESCRIPTION EXAMPLE DESCRIPTION		MATRIX		R. GILLESPIE		SAMPLED DATE RECEIVED			
		Solid/S Slvåge	til/			12/15/93		12/17/95	
PARAMETER	PESULT	UNITS	DF	⊬8QL	METHOD	ANALYZED	ev	NOTES	
4-Chlorophenyl phenyl ether	-3360°.	ug/kgdrywt	1.1	330	EFA 9270	01/07/94	TO		
Fluorene	<360.	ug/logdrywl	1.1	330	EPA 8270	01/07/94	TE		
4-Nitroaniline	<900.	ug/kgdrywe	1.1	920	EPA 8270	01/07/94	IS		
4,6-Dinitro-2-methylphenol	< 900.	ug/kgdrywt	1.1	B/20	REA 8270	01/07/94	TG		
n Mitrosodiphenylamine	€350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG		
4-Brumophenyl phenyl ether	¢360.	ug/kgdrywt	1.1	330	EFA 8270	01/07/94	TIS		
Hexachlorobenzene	4350.	µg/kgdrywt	1.1	330	EPA B270	01/07/95	TG		
Pentachilorophenci	<900.	/19/kgdrywt	1.1	920	EPA 8270	01/07/94	TS		
Phenant hrene	<360.	μg/kgdrywt	1.1	330	EEPA 8270	01/07/94	TG		
Anthracene	-3ED	µg/logdrywl.	1.1	330	EPA 8270	01/07/94	TG		
Di-n-butylphicalate	381	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG		
Fluoranthene	<350.	mg/legdrywe	1.1	330	EDA 8270	01/07/94	TG		
Pyrene	€36D.	ng/kgdrywe	1.1	330	EPA 8270	01/07/94	TG		
Sutyl benzylphthalate	₹360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	10		

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

01/28/93

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CLIENT: HERE COLBY

ARB-WAKEFIELD

COPPORATE PLACE 128, BUILDING 3, SUPIE 25

WAREFIELD, MA 01880

Lab Wunber : WT-1597 3 Report Date: 01/26/94

PO No.

: MEA-93-01-78-M1

Project

: 7145.00

DECEMBE	VOICE.	AND VITTORI.	DESTRUCTOR

Page 16 of 64

SAMPLE DESCRIPTION		MAIRIA		SAMPL	EV BY	SAMPLED I	ZTE.	RECEIVED
HX460515		Sqlid/S Sludge	oil/	e. gi	LLESPIE	12/15/9	ß	12/17/90
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	MOTES
3, 3'-Dichlorobenzidine	<360,	ug/hadrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo (a) anthracene	<360.	ng/kgdcywt	7.1	330	EPA 8270	01/07/94	TG	
Chrysepe	<360.	pg/kgdrywt	1.1	330	EPA 5270	01/07/94	TG	
bis (2-Ethylhexyl) phthalate	<360	µg/ltgdrywt	1.1	330	EPA 6270	01/07/94	IG	
Di-m-octylphthalate	<360.	µg/kgdrywt	1.1	330	SPA 8270	01/07/94	DG	
Benzo (b) fluoranthene	<360.	µg/kgdbywt	1.1	330	EPA 8270	01/07/94	113	
Benzo (k) fluoranthene	<360.	pg/kgdryxL	T.A.	130	EPA 6270	01/07/94	103	
Benzo (a) pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	70	
Indeno(1,2,3 od) pyrene	<360.	µg/kgdrywt	1.1	330	SPA 8270	01/07/94	TG	
Dibenzo (a, h) anthracene	c360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/91	26	
Benzo (g, h, i) perylene	<360.	ug/kgttrywt	1.1	330	ZPA 5270	01/07/94	IG.	
3-Fluorophenol (% Recovery)	57_	è	1-1		EBA 9270	01/07/94	IG	
Phenol-d5 (* Recovery)	74.	*	1.2		EPA 8270	01/07/94	16	
Nitrobensene-d5 (* Recovery)	57.	N	1.1		E/PA 8270	01/07/94	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.

01/25/94

iJB/kg/jfg/lad



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CLIENT HERB COLEY

ABB-WWEFIELD

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 AMALYTICAL RESULTS

Page 27 of 54

SAMPLE DESCRIPTION		MATRI	X	SAMP	LED BY	SAMPLED DATE RECEIVED			
EX480515		Solid Sludg	1/Sail/ je	R. G	LLLESPIE	12/15/3	73	12/17/93	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	AMALYZED	БҮ	WOTES	
2-Fluorobiphenyl (* Recovery)	59.	ŧ	1.1		EPA 8270	01/07/94	TG		
2,4,6-Tribromophenol (%	57.	4	1.1		EPA 8270	01/07/94	TG		
Terphenyl-dl4 (% Recovery)	71	8	1,1		BPA 8270	01/07/94	TG		

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CLIENT: HERE COLEY

ABB-WAKEFIELD

COMPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01680

Lab Number : WJ-1597-3 Report Date: 01/26/94

PO No. :

: MSA-93-01-78-W1

Project

1 7143.00

REPORT OF ANALYTICAL RESULTS

Page 28 65 64

SAMBLE DESCRIPTION		MATRIX	SAMPI	END BY	SAMPLED I	ATE	RECEIVED
3X480515		Solid/Soil Sludge	/ 2: GI	TLESPIE	12/15/5	13	12/17/95
PARAMETER	RESULT	UNITS D	F FPQL	METHOD	ANALYZED	EY	NOTES
TCL Volatile Organics by USEPA 8240							
Chloremethane	<11.	µg/legetrywt 1.	10	EPA 6240	12/19/93	203	
Bromenethane	<11.	ug/kgdrywt 1.		EPA 8240	12/19/93	DG	
Vinyl chloride	<11.	ug/kgdrywc 1			12/19/93	DG	
Chlorosthane	<11.	ug/kgdrywt 1		EPA 6240	12/19/93	DG	
Methylene chloride	<11.	ug/kgdrywt 1		EPA 8240	12/19/93	DG	
Acetone	<17-	ug/lgaryw. I.	1.5	EPA 8240	12/19/93	DG	
Carbon disulfide	<11.	µg/kgdrywt 1	10	EPA EZ40	12/19/93	DG	
1,1-Dichloroethene	×6.	wg/ligitsywt 1	5	EPA 6240	12/19/93	D3	
1,1-Dichloroethum	e6.	ug/logdowit 1.	9	EPA 6240	12/19/93	DG	
Total 1,2-Dichloroethere	<5.	ug/kgdrywc 1.	E -5	EPA 8240	12/19/93	DG	
Chlaroform	50 L	µg/kgticywt 1	5	EPA 8240	12/19/93	DG	
1,2-Dichlorcethanc	<6	µg/kgárywt 1	9	EPA 8240	12/19/93	DG	
2-Butanone	<17_	µg/kgdrywc 1.	1.5	EPA 8240	12/19/93	DG	
1,1,1-Trichloroethane	56 -	ug/ligticywt 1.	u 5	EPA 8240	12/19/93	DG	

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

01/26/94

LJO/dg/jfg/lwa



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CLIENT: HERE COLEY

ARE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Number . WT 1597-3 Report Date: 01/26/94

PO No. : MSA-33-D1-79-MD

Project - 7143.00

REPORT OF ANALYTICAL RESULTS

Page 19 of 64

SAMPLE DESCRIPTION		NEVERIX		SMPL	ED BY	SAMPLAD I	ATE	RECEIVED
BX480515		Solid/S Sludge	oil/	R. GI	LLESPIE	13/15/5	93	12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METROD	ANDLYZED	BY	NOTES
Carbon tetrachloride	×6.	µg/kgdiywt	1.1	3	EPA 8240	12/19/93	DG	
Vinyl acetate	≥6.	µg/legarywt	1.1	15	8PA 8240	12/19/93	DG	
Browndichloromethane	<6.	µg/kgdrywt		5	SPA 8240	12/19/93	DO:	
1,2-Dichloreprotane	¢6.	ug/kgdrywc	1,1	5	EPA 8240	12/19/93	DG	
cis-1,3-Dichloropropere	<6.	ug/kgdrywt	1.1	5	EPA 8340	12/19/93	DG	
Trichlorgethene	56:	µg/ligdrywt	1.1	5	EPW 8340	12/19/93	DG	
Dibroschleromthane	×6.	Jig/ligdrywt	I.I	5	EPA 8240	12/19/93	DG	
1,1,2-Trichloroethane	c5.	Ma/Kaarywc	Z. I	5	EPA 8240	12/19/93	DG	
Berizerie	< 6 -	ug/legdeywt	LL	5	EPA 6240	12/19/91	DG	
tranu-1,3-Duchileroprepana	<6.	ag/ladrywt		5	EPA 6240	12/19/93	DO	
Bromoform	<6.	pg/kgdrywt	I.I	5	EPA 8200	12/15/93	DC	
4-Mothyl-2-pentanone	<17.	ug/kgdrywt	LIL	15	EPA 8240	10/19/93	DG	
2-Rexamme	<17.	µg/ligdeywe	1,1	15	EPA 8240	12/19/93	DO	
Tetrachloroethens	×67	µg/legdrywc	1.1	5	EPA 8240	12/19/93	DG	
1, 1, 2, 3-Tetrachlomethane	<6.	ug/kgdrywt	1.1	5	EPA 6240	12/19/93	DG	
Toluene	<6.	pg/kgdrywt		5	EPA 6240	12/19/93	DG	

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

01/36/94

LUID/kfg/jfg/kwh



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CLIENT: HERB COLBY

ARE WANTFIELD

CORPORATE PLACE 128, BUILDING 3, SUITS 25

WAKEFIELD, MA 01880

Lab Number : W3 1597-3 Report Wate: D1/25/94

PO No. : MSA-93-DI-78-ML

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 30, of 64

SAMPLE DESCRIPTION		MAIRIX		SAMPI	FD BY	SAMPLED DATE PECETVED			
EX480515		Solid/Soil/ Sludge		P _c , Gl	LLESPIE	13/15/3	13	12/27/93	
PARAMETER	RESUL/T	UNITS	DF	*PQL	METHOD	ANALMEN	BY)outes	
Chlorobenzene	<6:	ug/kgdryvt	1.1	E	EPA 8240	12/19/91	DQ.		
Ethylbengene	<6.	µg/kgdrywt	1,1	2	EPA 8240	12/19/93	DG		
Styrene	<6.	µg/kgdrywt	1.1	5	EPA 8240	12/19/93	DG		
Total Xylenes	<6.	μg/legalcywa	1.1	9	EPA 8240	12/19/93	DG.		
1, 2-Dichloroethane (% Recovery)	89.	¢	1.1		EDW 8240	12/19/93	DG		
Toluene-ds (* Recovery)	105.	*	1.1		EPA 8240	12/19/93	DG		
p-Etomofluorobenzene (%	921	4	11.2		EPA 8240	12/19/93	DG		

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

01/36/94

LUO/kfg/jfg/kwb



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Lab Number : WJ-1597-4

Report Date: 01/26/94

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

Project : 7143.00

COPPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

ADB-WAREFIELD

REPORT OF ANALYTICAL RESULTS

Page 31 of 64

SAMPLE DESCRIPTION	SAMPLE DESCRIPTION			SAMPL	ED BY	SAMPLED DATE RECEIVED			
EX480415		Solid/S Sludge	oil/	R. dî	LIESPTE	12/15/6	13	12/17/93	
PARAMETER	RESULT	DVITS	DF	*PQL	METHOD	ANALYZEO	BY	noies	
Solids-Total Residue (TS) Total Petroleum Hydrocarbons (TPH)	93. 180,	wt % mg/kgdrywt	1.0 1.0		CLP/CIP SOW 9071/418-1		UF GH	1 2	

Min (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

LEO/gib

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

⁽²⁾ Gample Preparation on 01/03/94 by GH



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ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3 SUTTE 25

WARRETELD, MA 01880

Lab Mumber : WJ-1597-4 Paport Date: 01/26/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 32 61 61

SAMPLE DESCRIPTION		MATRIN		SAMPI	eti sy	SAMPLED I	ATE	RECEIVED
HX480415		Solid/Soil Sludge	1/-	F. GI	LLESPIE	12/15/9	3	12/17/93
CARAMETER	RESULT	UNITS I	DF	*PQL	METHOD	ANALYZED	ΒŲ	MOTES
TTL Semivolatile Organics by								1/4
USEPA 8270 Phenol	<360.	ug/kgáryna 1	77.0	330	EPA 6270	01/07/94	TG.	
bis (2-Chloroethyl ether	<360,	ug/kgdrywc 1			EPA 6270	01/07/94	TE	
2-Chlorophenol	<360.	ug/Rgarywt 1			EPA 6270	01/01/94	TG	
1,1-Dichlorobenzene	<160.	ug/kgdrywt 1			EPA 5270	01/07/94	TO	
1,4-Dichlorobenzene	<360,	ug/kgarywt 1			EPA B270	01/07/90	TG	
Behzyl alcohol	<360.	pg/kgdrywt_1			EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	<360.	ug/kgdrywt 1.		330	EPA 8270	01/07/94	TG	
2-Methylphenol	<360	ug/kgdrywt 1.		330	FPA 8270	61/07/91	T.	
bis(2-Chloroisopropyl) ether	<360.	µg/kgdrywt 1	.T	330	EPA 5270	01/07/94	TG	
4-Methylphenol	<360	ug/kodrywt 1		330	EPA 6270	01/07/94	TG	
n-Mitrosc-dipropylamina	<360,	ug/kgdrywt 1.	-I	330	EPA 8270	01/07/94	TO	
Hexachloroethane	<360,	wg/kgdrywc 1	I.	330	EPA 8270	01/07/94	IG	

Fig. (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sampleapocific remorking limits. Sample-specific limits are indicated by results annotated with '<' values: (1) Sample Preparation on 12/17/93 by LAG

12/26/94

iwo/kfg/jfg/lad

^{(2) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.



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J. IENT HERB COLEY

ABB-WANEFIELD

COPPORATE PLACE 129, BUILDING 3, SUITE 25

WAKEFIELD, MA 61860

Lab Number : WT-1597-4 Report Date: U1/26/94

PO No. : MSA 93 01-78-MG

Project : 7143.00

PEPORT OF ANALYTICAL RESULTS

Page 33 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED I	ATE	RECEIVED
PX480415		Solid/Sk Sludge	-11/	Ā GI	LLESPIE	12/15/5	9	is/19/9a
FAFAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrobenzene	<360.	µg/kgdiywt	1.1	330	E9A 8270	01/07/94	TG	
Isophorone	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nicrophenol	<360.	µg/kgdrywt	1,1	330	EPA 8270	01/07/94	TY	
2,4-Dimethylphenol	<560.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benzoic acid	< BOO.	//g/kgdrywt:	1.1	1500	EPA 6270	01/07/94	TO	
his (2-Chioroethoxy) methans	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
2,4-Dichlorophenol	<360 -	lig/kgdrywt	1,1	330	EPA 8370	01/07/94	70	
1,2,4-Trichlorobenzene	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Naphrhalene	<350:	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	76	
4-Chloroanilino	< 360 -	µg/kgdryw.	Jak.	330	EPA 8270	01/07/94	TU	
Hexachlorobutadiene	<360.	ug/logdrywt	1.1	330	EPA 8270	01/07/96	TG	
4-Chloro-3-methylphenol	<360.	ng/kg lrywt	1.7	330	EPA 8270	01/07/94	TG	
2-Mechylmaphululene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Hexachlorocyclopentadiens	<360.	µg/logdrywt	1.1	330	EPA 8270	01/07/94	TG	

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

01/26/94

LOD/kfg/jfg/lac



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Lab Mumber : WJ-1597 4

Report Date: 01/26/94

: MSA-93-D1-78-M1 PO No.

Project : 7143.00

CLIENT: HERB COLBY

ARE WAKEFIELD

CORPORATE PLACE 128 BUILDING 3, SUTTE 25

WARREFIELD, MA 01480

REPORT OF ANALYTICAL RESULTS

Page 34 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLI	ED EY	SAMPLED D	ATE	RECEIVED
EX480415		solid/so 810dge	5i1/	R. GI	LESPIE	12/15/9	G .	12/17/93
PARAMETER	RESULT	UNITE	DF	*PQL	METHOD	MALYZED	BA	NOTES
2,4,6-Tricklorophenol	<360	µg/lgdrywt	1,1	DEC	EPA 8270	01/07/94	TG	
2.4,5-Trichlorophenol	<900,	µg/ligdicywc	1.1	820	EPA 8270	01/07/94	T/3	
1-Chloronaphthalene	<360.	µg/lightrywt	1.1	330	EPA 8270	01/07/94	TG	
2-Nitraniline	<900.	µg/legdrywt	1.1	820	EPA E270	01/07/94	IG	
Dimethylphthalate	C350.	µg/kgdrywl.	1.1	330	EPA 8270	01/07/94	Œ	
Acenaphthylene	<350.	ug/kgdrywt	1.1	330	EPA 8270	D1/07/94	TG	
3,6-Dinitrotoluene	~360\	µg/kgdrywt	1,1	330	EPA 8270	01/07/94	703	
1-Nitroantline	c900.	µg/kgdrywt	1.1	820	EPA 5270	01/07/94	TG	
Acenaphthene	<360.	µg/kgdrwt	1.1	.330	EPA 6270	01/07/94	TI	
5,4-Dinitrophenol	<900.	µg/kgrirywt	1.1	820	EPA 8270	01/07/94	TG	
4-Witrophemol	<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	<350	H9/Kadrywe	1.1	330	EPA 8270	01/07/94	TG	
Dischylphthalate	=360.	ug/kgdrywt	101	330	EPA 8270	01/07/94	TG	

[.] PUL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '-' values.

01/26/94

1JD/kfg/jfg/laul



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Report Date: 01/26/94

PO No. : MSA-93-01 78 MI

Project : 7143.00

LIENT: HERB COLBY

ABB-WAKEFIELD

COPPORATE PLACE 128, BUILDING 1. SUTTE 25

WAKEFIELD, MA D1880

PEPORT OF AMALYTICAL RESULTS

Page 35 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPL	KD EV	SAMPLED D	ATE	RECEIVED
E01480415		solid/so sludge	oil/	A. Gr	LESPIE	11/15/9	Ó	12/17/03
PARAMETER	REGULII	UNITS	DF	+POL	METROD	AFIALYZED	BY	MOTES
4-Chlorophenyl phenyl sther	<360	pg/kgdrywt	1:1	330	EFA 2270	01/07/94	TG	
Phyorene	<3600	pg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
4-Mitroaniline	<900.	ug/kgdrywt	1.1	820	EPA 8270	01/07/94	TIG	
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	ug/kadry-t	1.1	330	EPA 8270	01/07/94	DG	
Hexachlorobenzene	<360;	µg/kgdrywt	1.1	330	EFA 5270	01/07/94	TY	
Pentackloropherol	<900:	µg/kgdrywt	1.1	820	EPA 5270	01/07/94	TG	
Phenanthrene	<360.	juq/kgdrystc	1.1	330	SPA 8270	01/07/94	TG	
Anthracene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TO	
Di-n-butylphthalate	J100	µg/kgdrywt	1.1	330	EPA 8270	D1/07/94	TG	
Fluoranthene	<36D.	µg/kgdrywt	1.1	330	EPA #270	01/07/94	TC	
Pyretie	<360.	µg/logdrywt	1.1	330	EPA 8270	01/07/94	TG	
Putryl benzylphtbalace	J210	μg/kgdrywt	1.1	330	EPA 8270	01/07/54	TG	

^{*} POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

01/26/94

LJO/kfg/jfg/lad



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CLIENT: HEFE COLBY

ARB-WAREFIELD

CORPORATE PLACE 128, BUILDING J. SUITE 25

WAKEFIELD MA 01980

Lab Number : WJ-1597-4 Report Date: 01/26/94

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

Project 7143.00

REPORT OF ANALYTICAL RESULTS

Page 36 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED D	ATE	PETETVEL
BX480415		Solid/S Sludge	oi1/	R. GI	LIESPIE	12/15/9	3	12/17/93
PARAMETER	ZESULT	LINITS	DF	*PQL	METROD	ANALYZED	BY	NOTES
3,3'-Dichleroberaldine	<360.	ug/kodrywt	1.i	330	EPA 6270	01/07/94	TOG	
Bengo (a) anthracene	c360.	µa/kgrimwt	1.1	330	EPA 0270	01/07/94	TG	
Chrysene	<360	ag/kgarywt	1.1	330	EPA 2270	01/07/94	TG	
bis(2-Sthylhexyl)phthalate	J190	µg/kgdrywt		330	EPA 8270	01/07/94	TO	
Di-n-octylphthalate	<360	ug/kgarywt	1,1	330	EPA 8270	01/07/94	TC	
Benzo (b) fluoranthene	e360	µg/kgdrywt	1:1	330	EPA 8270	01/07/94	TG	
Benzo (k) Fluoranthene	<360;	ug/kgirywt	1.1	330	EPA 6270	01/07/94	TG	
Benzo (a) pyrene	<360.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	DG	
Indeno(1, 2, 3-od) pyrene	<360.	µg/kgárywt		330	EPA 8270	01/07/94	TG	
Dikenzo(a,h)anthracere	<360	ug/kgarywt	200	330	EPA 8270	01/07/54	'DG	
Benzo (g, li, i) perylens	<360	µg/kgdzywt	1 1	330	EPA 8270	01/07/94	TO	
2-Fluorophenol (* Racovery)	55.	*	1:1		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	50.	V	1.1		EPA 8270	01/07/94	DS	
Mitrobenzene do (M Recovery)	47.	N.	1.1		EPA 8270	01/07/94	103	

^{*} FQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with (x) values.

01/26/94

TATO/kilg/dig/lad



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PO No:

MBA-93-01-78-M1

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WARRETELD, MA 01880

REPORT OF ANALYTICAL PESULTS

Page 37 of 64

BAMPLE DESCRIPTION		MAIRI	X	SAMP	DAD BY	SAMPLED DATE RECEIV				
EX480415		Solid/Soil/ Sludge		R. GILLESPIE		12/15/93		12/17/93		
LARAMETER	FESTILT	UNITS	DF	*PQL	METHOD	AMALYSED	PY	MOTES		
2-Fluorobiphenyl (% Recovery)	56	g.	1.1		EPA 8270	01/07/94	TG			
3,4,6-Tribromophenn1 (%	49,	告	1.1		EPA 8270	01/07/94	TG			
Terphenyl-d14 (% Recovery)	61,	ä	1.1		EEA 8270	01/07/94	TE			

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

01/26/94

LTO/kig/jfg/lad



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TATEMT: HERB COLBY

ABR-WAKEFIELD

COPPORATE PLACE 128, BUILDING 1, SUITE 15

WARDFIELD, MR 01880

Lub Number : WJ-1597-4 Report Date: 01/25/94

PO No.

: MBA 93-01-79-MI

Project

: 7143 00

REPORT OF AUGUSTICAL RESULTS

Page 38 of 54

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED E	MIE	E RECEIVED		
EX480415		Solid/Soil/ Sludge		R. GILLÉSPIE		13/35/99		13/17/99		
TARAMETER.	RESULT	ENTES	DF	*POL	METHOD	AMALYZED	BY	nores		
TCL Volatile Organics by USRTA										
9240										
Chloromethane	<11.	Ag/legdrywe	1.1	2.0	EPA 8240	12/20/93	DG			
Bromomethane	<11.	mg/kgdrywt	1.1	10	EFA 8240	12/20/93	DJ.			
Vinyl chloride	<11.	µg/kgdrywt	1.1	10	EPA 8240	13/20/93	DG			
Chloroethane	<11,	49/kgdrywt	1.1	10	EPA 9240	12/20/93	DS			
Methylene chloride	<11	ag/kgranywt_	1.1	10	EPA 9240	12/20/93	DG			
Acetone	5170	µg/kgdrywt	1.1	15	EPA 8240	12/20/93	DG			
Carbon disulfide	<11.	µg/ligdirjwt	1.1	10	2PA 8240	12/20/93	D/3			
1,1-Dichloroethane	r6	ug/kgdrywt	1.1	.5	EEN 8240	12/20/93	DG:			
1,1-Dichloroethane	≈ 6	µg/kgdrywt	1.1	5	EFA 8240	12/20/93	DG.			
Total 1,2-Dichloroethene	v.6	//g/kgrirywt	1.1	5	FITA 8240	12/20/93	DG			
Chloroform	<6,	mg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG			
1,2-Sichloroethane	≪6.	ug/kgdrywt	1.1	5	EPA 8240	12/20/93	DG			
2-Putaricus	<17.	µg/kgdrywt	1.1	15	EFA BE40	12/20/93	DG:			
1.1.1-Prichloroethane	<6 ,	μg/kgarywt	1.1	5	EPA 8240	12/20/93	DG.			

[•] MCL Prestical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amounted with '<' values.

01/26/94

IJD/kfg/jfg/kwh



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Lab Mumber - W.T-1597-4

Report Date: 01/26/94 : MBA-93-01-78-M1

PO NO.

Project 77143:00

CLIENT: HERB COLBY

ABB-WAYEFIELD

CORPORATE FLACE 128, BUILDING 3, SUITE 25

WAMBFIELD, MA 01880

REPORT OF ANALYTICAL FESULIS

Page 39 of 64

SAMPLE DESCRIPTION		MANIBLY		SAMPL	ED BY	SAMPLED I	DATE	G G G G			
BM480415		Solid/S Sludge	611/	R. GI	LLESPIE	12/15/5	13	12/1//91			
PARAMETER	RESULT	UNITS	DF	PPOL	METHOD	MALYZED	BY	NOTES			
Carbon tetrachloride	-vi6 :	μg/kgdrywt	1.1	5	EFA 9240	12/20/93	DG				
Vinyl acetate	<17.	μg/kgdrywt	1.1	15	EPA 3240	12/20/93	DG				
Bromodichloromethane	e6.	ug/ligdrywc	1.1	5	EPA 8240	12/20/93	DG				
1,2-Dichloropropane	eG.	µg/kgdxywt	1.1	5	EPA 9240	12/20/93	DG				
cia-1,1-Dichloropropene	-<6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG				
Trichlowethere	<6,	/ug/hgdrywt	1.1	5	EPA 8240	12/20/93	100				
Dibromochloromethane	-56,	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG				
1/1/2-Trichlomethane	⇒¢G.	µg/kgdrywt	1.1	8	BBA 8240	12/20/98	DG				
Benzene	<6.	µg/kgdrywt	1.1	9	EPA 8240	15/20/93	DG				
trais-1, i-Dichloroprepene	e6,	//g/kgdrywc	1.1	. 9	EPA 8240	12/20/93	DG				
Bromoform	s6.	µg/kgdrywt	1.1	5	EPA 8240	12/20/93	DG				
4-Methyl-2-pentanone	<17.	µg/kgdiywt	1.1	15	EFA 8240	12/20/93	DG				
2-Haxanone	<17,	μg/kgdrywc	1.1	1.5	ECA 8240	12/20/93	DG				
Tetrachloroethene	neG)	pg/kgdrywt	1.1	5	EPA B240	12/20/93	DG				
1,1,2,2-Tetrachloroethane	≪6_	ug/kgdrywt		5	EPA 8240	12/20/95	DG				
Toluene	₹6.	µg/kgdrywt		5	EPA 8240	12/20/93	IG				

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and way not reflect samplespecific reporting limits. Sample specific limits are indicated by results associated with 'all yalles,

DE/26/94

LBO/kfg/jig/kwn



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CLIENT: HERB COLBY

ASB-WAKEFIELD

CORPORATE PLACE 138, BUILDING 3, SLITE 25

WAKEFIELD, MA 01980

Tab Number : WJ-1597-4 Report Date: 01/26/94

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

Project ! 7143.00

REPORT OF ANALYTICAL RESULTS

Page 40 of 64

SAMPLE DESCRIPTION		MATRIX		SAMP	LED BY	SAMPLED DATE PECHIVEL		
BX480415		solid/s sludge	oil/	R. G	ILLESPIE	12/15/9	1/93 12/17/	
PARAMETER	RESULT	UNITS	DF	*POL	METHOD	ANALYZED	BY	MOTES
Chloroberzene	<δ.	μg/kgdrywt	1.1	9	EPA 8240	12/20/93	DG	
Bthylbenzens	<6.	µg/kgdrywt	1.1	- 3	5 EPA 8240	12/20/93	DG	
Stycene	<6.	µg/kgdrywt	1.1	3	EPA 8240	12/20/93	DG	
Total Xylenes	<6.	µg/kgdrywl	1.1	9	EPA 8240	12/20/93	IG	
1,2-Dichloroethane (% Recovery)	90.	q.	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 samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

01/26/94

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CLIENT: HERE COLEY

ABS-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1597-5 Report Date: 01/26/94

PO No. (to

(MSA-93-01-78-MD

Project

1 7143.00

REPORT OF AMALYTICAL RESULTS

Page 41 of 64

SAMPLE DESCRIPTION	MATRIX		SAMPL	ed by	12/16/93 12/17/93				
EX480630		Solid/Soil/ Sludge		R. GILLESPIE		12/16/93		12/17/93	
PARAMETER	FESULT	UNITS	DF	*FOL	METHOD	ANALYZED	BY	TOTES	
Solids-Total Residue (TS) Total Petroleum Hydrocarbons (TPH)	84. <25	wt a mg/kgdrywt	1.0		CLP/CIP SOW 9071/418.I	12/22/93 01/04/94		1	

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

01/26/94

WD/gfb

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

⁽²⁾ Sample Preparation on 01/03/94 by GH



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CLIENT: HERB COLBY

ABE-WAKEFIELD

CORPORATE PLACE 12H, SUILDING 3, SUITE 25

WAREFIELD, MA 01990

Lab Mumber : WJ-1597-5 Report Date: 01/26/94

PO No. - MSA-93-01-78-ML

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED I	ATE	RECEIVED
BX480630		Solid/Soil/ R. GILLESPIE Sludge		12/16/9	12/16/93 12/17/9			
PARAMETER	PESULT	UNITS	DF	*PCT	METHOD	CEL VIAMA	EV	NOTES
TCL Somivolatile Organics by USEPA 8270			7					1,2
Phenol	<400.	ug/logarywt	1.2	930	EPA 8270	01/07/94	TIE	
bis (2-Chloroethyl) ether	<400.	ug/logarywt:	1:2	330	EPA 9275	01/07/94	TG	
2-Chlorophanel	<400.	ug/legdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,3-Dichlorobenzene	<400.	ug/logdrywt	1.2	330	EPA 8270	01/07/94	TG	
1,4-DichlorOtenzene	<400.	ug/logdrywc	1.2	330	EPA 8270	01/07/94	TY:	
Benzyl alcohol	<4000	ug/legdrywt:		330	EPA 8270	01/07/94	TG	
1,2-Dichlorobenzene	-0400-	Har/keedarywit	1.2	330	EPA 8270	01/07/94	TG	
3-Methylphenol	<400.	µg/loadzywt	1.2	330	EEA 8270	01/07/94	TG	
bis(2-Chlornisopropyl) ether	-400:	ug/leadeywt	1.2	330	EPA 8370	01/07/94	TO	
4-Methylpherol	400	ug/kgdrywt	1.2	330	EPA 8270	01/07/94	TG	
n-Mitroso-dipropylamine	<400.	ug/kgdrywt		330	EPA 8270	01/07/94	TO	
Hetachloroethane	<400:	pg/legtlrywt:		330	EPA 8370	01/07/94	TG	

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

01/26/96

1JO/Kig/jfg/la6

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

^{(2) &}quot;J" flag denotes an estimated value less than the Laboratory's Proctical Quantitation Level.



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Cab Mumber - WJ-1597-5 Peport Date: 01/26/90

PO Mo. . MSA-93-01-78-ML

Project : 7143 00

CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 43 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED I	LYMBO SY NOTES 07/94 TG			
EX480630		Solid/Soi Sludge	11/	R. GI	LIESFIE	13/18/93		15/17/93		
PAPAMETER	RESULT	UNITS	DF	*PQL	METHOD	AMALYZED	38	NOTES		
Mitrobermene	<400.	μg/kgdrywt 1	2	330	EPA 8270	01/07/94	13			
Isophorone	e400.	µg/kgrirywt: 1	-2	330	EPA 8270	01/07/94	TG			
2-bit-ropherol	<400.	µg/kgdrywt 1	1.2	330	EPA 8270	01/07/94	TG			
2,4-Dimethylphenol	<400.	μα/kgdrywt 1	5.1	330	EPA 8270	01/07/94	TG			
Benzoic acid	<1900.	ug/kgdrywt 1	1,2	1500	EPA 8270	01/07/94	TG			
bis(2-Chloroethoxy)methans	<400:	ug/kgtirywt i	1.2	330	EPA 8270	01/07/94	TG			
2,4-Dichlorophenal	c400:	ug/kgdiywt i	2	330	EPA 8270	01/07/94	13			
1,2,4-Trichlorobenzens	<400.	ug/kgdrywc 1	1_2	330	EPA 3270	01/07/94	TC			
Naphthalene	<400	ng/kgdrywt 1	2	330	EPA 8270	01/07/94	TG			
4-Chicroaniline	<400.	ug/kgdrywt 1	1.2	330	EPA 8270	01/07/94	TO			
Meyachlorobutadiana	<400.	ug/kgdrywt 1	1,2	330	EPA 8270	01/07/94	TG			
4-Chioro-1-methylphenol	A00.	pg/kgdrywt. 1		330	EPA 8270	01/07/94	TG			
2-Methylmaphthalene	<400	ug/kgdrywt 1		330	EPA 8270	01/07/94	TG			
Herachlorocyclopentadiens	<400	ug/kgdrywt i	1/2	230	EPA 8270	01/07/94	TE			

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

01/26/94

LWO/kfg/jfg/lad



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CLIENT: HERB COLEY

AHB-WAMEFIELD

CORPORATE PLACE 128, BUILDING J, SUTTE 25

WAKEFIELD, MA 01880

Lab Number : WJ-1597-5 Report Date: 01/26/94

FO Wo. : MSA-93-01-78-ML

Project : 7143.00

PEPORT OF ANALYTICAL RESULTS

Page 44 of 64

SAMPLE DESCRIPTION		MAURIX		SAMPLE	ET BY	SAMPLED D	ATE	RECEIVED	
BX480630		Solid/So Sludge	odl/	R. GI	LLESPIE	13/16/9	YZED BY NO 7/95 TO 7/94 TG 7/94 TG 7/94 TG 7/94 TG 7/94 TG		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BA	MOTES	
2,4,6-Trichlorophenol	c400,	ug/kgdrywt	1,2	330	EPA 0270	01/07/95	703		
2.4.5-Trichlorophenol	<980.	pg/lgdrywt	1.2.	820	EPA 8270	01/07/94	TG		
2-Chloronaphthalene	<=00.	µg/liggrywt	1.2	330	EPA 8270	01/07/94	TG		
2-Nitroaniline	<980.	µg/legdrywt	1,2	610	EPA 8270	01/07/94	TG		
Dimethylphthalate	-400	µg/kgdrywt	1,2	330	EPA 2270	01/07/94	TG		
Acenaphthylere	~400	Mg/lightywt	1.2	330	EPA 8270	01/07/94	TG		
2,6-Dimitrotoluena	<400.	ug/lgdrywt	1.2	330	EPA 8270	01/00/94	IG		
3-Nitroamiline	<980.	ug/kgdrywt	1.2	820	EPA BETO	01/07/94	TG		
Acenaphthene	<400.	ng/kgdrywt	1.2	330	EPA 8270	01/07/94	1/3		
I, 4-Dinitropt≃nol	<980	µg/ligdrywt	1.3	620	EPA 5270	01/07/94	M		
4-Mitrophenol	<980	ug/lagdowt	1.3	820	EPA B270	01/07/94	TG		
Dibenzofuran	<400.	µg/kgdrywt	1.2	330	EPA B270	01/07/94	TC		
1,4-Dinitrotoluene	<4005	µg/legdrywt	1.3	330	EPA 6270	01/07/94	TG		
piethylphthalore	<400.	ua/kgdrywt	1.2	330	EPA 8270	01/07/94	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 'a' values.

01/25/94

LMD/kfg/jfg/lad



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CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Mumber : WJ-1597-5 Report Date: N1/26/94

PO No.

: MSA-93-U1-78-ML

Project

: 7143:00

REPORT OF ANALYTICAL RESULTS

Page 45 of 61

SAMPLE DESCRIPTION		MALERIX		SAMPL	ED BE	SAMPLED D	ATE	DECETVED
9X480630		Solid/So Sludge	Sil/	R. GI	ILESPIE	12/16/9	12/16/93 iz	
PARAMETER	PESULI	LIMITS	DF	+PQL	METHOD	ANALYEE)	ET	NOTES
4-Chlorophenyl phenyl ether	<400,	μg/hydrywt	1,2	330	EPA 8270	01/07/94	TG	
Fluorene	<400	µg/kgdrywt	1,3	330	EPA 8270	01/07/94	TG	
4-Witrosniline	<580 ⋅	ug/ligdrywt	1.2	820	EPA 6270	01/07/94	TG	
4,6-Dinitro-2-methylphenal	<980-	ug/lugdrywt	1,2	820	RPA 6270	01/07/94	TO	
n-Nitrosodiphenylamine	ca00.	µg/kgdrywt	1.2	330	EPA 8270	01/07/94	TO	
4-Bromophenyl phenyl ether	<400.	pg/Rgdrywt	9-1-1-3	3.50	EPA 8270	01/07/94	TG	
Herachlorobenzene	<400.	µg/lugdrywt	1.2	330	EPA 8270	01/07/96	TO	
Pentachlorophenol	<980	pg/ligiteywit	1,2	820	EPA 8270	01/07/94	TXE	
Thenanthrene	<400	ug/kgdrywt	1,2	390	EPA 6270	01/07/94	TG	
Anthracene	<400:	ug/kgdrywt	1.2	330	EPA B270	01/07/94	TV2	
Di-n-bucylphthalace	d99	µa/kgkirywc		330	EPA 8270	01/07/94	TG	
Fluoranthene	<4.00	pg/kgdrywt		330	EPA #270	01/07/94	TG	
Pyrene	<400:	ug/ligdrywt		330	EPA 5270	01/07/94	TG	
Bucyl benzylphthalate	<400	wg/kgdrywt		330	EPA 8270	01/07/94	TG	

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

01/25/94

LTE/kg/jfg/lad



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CLIENT: HERR COLBY

AGE-WAKEFIELD

CHECRATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01980

Lab Number : WJ-1597 5 Report Date: 01/25/94

PO No.

: MSA-93-01-78-01

Project

: 7143.00

REPORT OF ANDLYTICAL RESULTS

Page 46 of 60

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED HA	SAMPLED D	AIE	BY NOTES TG TG			
EN460630		Selid/ Sludge		R, SI	LLESPIE	12/16/5	13	12/17/93			
PAHAMETER.	RESULT	UNITS	DP	*PQL	METHOD	MALVEED	Br	Wilse			
3,3'-Dichlorobenzidine	<400.	ug/kgdryw	: 1.2	330	BPA 6270	01/07/94	TG				
Benzo (a) anthracene	<400.	µg/ligidryw	1.1	330	RPA 8270	01/07/94	TG				
Chrysene	<400	ug/kgdryw	2.10	330	BPA 9270	01/07/94	TG				
tis(2-Ethylhexyl)phthalate	J49	ug/kgdryw	1.2	930	EPA 8270	01/07/94	773				
Di-n-octylphthalate	< 400.	ug/ligdryw	1.2	330	RPA 8270	01/07/94	TG				
Beriso (b) fluoranthane	<400	µg/Vogdry v	1.2	330	EPA 8270	01/07/94	TG				
Benzo (K) fluoranthène	<400.	//g/kgdryw	1.2	330	EPA 8270	01/07/94	23				
Benso(a) pyrene	<400.	ug/ligitsyw	5 3 t 2	330	SPA 8270	01/07/94	TIT				
Indeno(1,2,3-cd)pyrene	<400	ug/logdry-	1,2	330	BPA 9270	01/07/94	TG				
Dibenzo (a, h) anthracene	<400,	µg/kgdryw	1,3	230	EPA 8270	01/07/94	16				
Senzo(g,h,i)perylane	<400	ug/legityw	1.12	330	EPA 8270	01/07/94	TG				
2-Fluorophenol (& Recovery)	65.	*	1/2		EPA 8270	01/07/94	TO				
Phenol-d5 (* Recovery)	71.		3.2		EPA 8270	01/07/94	TG				
Nitrobenzene-d5 (* Recovery)	60.	*	1.2		EPA 6270	01/07/94	73				

[·] POL (Practical Quantitation Lowel) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results armotated with 's' values.

01/35/94

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CLIENT: HERE COLBY

ABB-WIKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, 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

Page 47 of 64

PAMPLE DESCRIPTION	MAURI	X	SIMP	TED BY	SNIPLED I	SNIPLED DATE PLET				
EX480630		solid/soil/ Sludge		R. GILLESPIE		12/16/93		12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYSSI	BY	NOTES		
3-Pluorobiphenyl (* Recovery)	60.	青	1.2		EPA 8270	01/07/94	TG			
2,4,5-Tribromophenol (%	63	2	1.2		EPA 8270	01/07/94	TVI			
Terphenyl-d14 (% Recovery)	76	B.	1.2		EPA 8270	01/07/94	TG			

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

01/25/94.

LFD/Mfg/jfg/lad



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CLIENT: HERE COLBY

ARB-WATEFIELD

CORPORATE FLACE 128, EUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Mumber : WJ-1597 5 Report Date: 01/26/94

PO No. : MEA-93-D1-79-ML

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 48 of 64

HAMPLE DESCRIPTION		MATRIX		ITMAE	ED BY	SAMPLED I	ATE	PECETVED	
EX480630		Solad/Soil/ Sludge		R. GILLESPIE		12/15/93		13/17/93	
PARAMETER	RESULT	DITTS	DP	*PQL	METHOD	ANALYZED	BA	NOTES	
TCL Volacile Organics by USIFA 8240								3	
Chlorogethane	<12	μg/kgdrywt 1	. 2	10	EFA 8240	12/19/93	DG.		
Bronomethane	<12	ug/kqdrywt 1	1.2	10	EPA 8240	12/19/93	DG		
Vinyl chlorice	<12.	µg/kgdrywt 1	1.2	10	SEX 8240	12/19/93	DG.		
Chloroethane	≥125	ug/kgdrywt 1	1.2	10	EPA 8240	12/19/93	DG		
Methylene chloride	<12.	µg/kgdrywt 1	VØ.	10	EPA 8240	12/19/93	DG.		
Agebone	<18.	µg/kgdrywt 1	2	15	EPA 9240	12/19/93	DG		
Carbon disadfide	≥12	ug/kgdrywt	1.5	10	EPA 8240	12/19/93	DG		
1,1-Edchlorosthene	.05:	µg/kgdrywc 1	1.2	5	EPA 8240	12/19/93	TE		
1,1-Dichloroethene	36.	µg/kgdrywe 1	1.2	5	EPA 8240	12/19/93	DG		
Total 1,2-Dichlomethene	κ 6 -	/vg/kgdzywit_1	1.2	5	EPA 8240	12/19/93	DG.		
Chloroform	c6.	ug/kgdrywt 1	1.2	5	EPA 8240	13/19/93	DO:		
1, 2-Dichloroethane	c6,	ug/kgdrywe s	1.2	5	EDPA 8240	12/19/93	DG.		
2-Butamone	<12	ug/hgdrywc i		15	EPA 8240	12/19/93	DG		

^{*} POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific caporting limits. Sample-specific limits are indicated by results annotated with 'k' values.

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

01/25/94

L00/kfg/jfg/lwh



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CLIENT: HERB COLBY

ABB-WAKEFIELD

COMPORATE PLACE 128, BUILDING 3, SUITE 25

WAFEFIELD, MA 01850

Lab Number : WJ-1597-5 Report Date: 01/25/96

27 No.

: MSA-93-01 78 MI

Project

7143,00

REPORT OF ANDLYTICAL RESULTS

Page 49 of 64

5AMPLE DESCRIPTION 6X480630		MATRIX	SAME	LWD BY	SAMPLED TAIR REC			
		Solid/Soil, Sludge	R, G	ILLESPIE	12/16/93		12/17/93	
PARAMETER	FESULI'	UNITS D	*PQL	METHOD	ANTALVERO	BY	MOTES	
1,1,1-Trichloroethane	74	µg/kgdrywt 1 :	0	S RPA 8340	12/19/93	DG		
Carbon Latrachloride	×6	ug/kgdrywr 1.		5 EPA 9240	12/19/93	DG		
Vinyl acetate	<16.	µg/kgdrywt 1.3	1	5 EPA 8240	12/19/93	DG		
Branodichloromethane	<6.	ig/kgdrywt 1.3	. 3	5 FPA 8240	12/19/93	DG		
1,2-Dichloropropane	«G.	ug/kgdrywk i .		EPA 8540	12/19/93	Dir		
cia 1,3 Dichloropropens	<6.	µg/kgdrywt 1.5		5 EPR 8240	12/19/93	DG		
Trichlomethere	×G.	pg/kgdrywt 1.2		S EPA 8240	12/19/93	103		
Dibromochi oromethane	<6.	μg/kgdrywt 1.3		5 EPA 8240	12/19/93	DG		
1,1,2-Trichloroethane	<6.	#g/kgdrywt 1.3		5 BDA 8240	12/19/93	DG		
Benzene	<6.	ug/logdrywt 1.3	<u> </u>	EPA 9240	12/19/93	DG		
trans-1,3-Dichloropropene	<6	μg/kgdrywt 1 3	b .	5 EPA 8240	12/19/93	DG		
Hronoform	×15 -	µg/kgdrywL 1.3		5 EPA 8240	12/19/93	DG.		
4-Methyl-2-gentanone	<19.	µg/kgdrywt 1.3		EPA 8240	12/19/91	DG		
2-Hexanone	<18.	µg/kgdrywt 1 3		S BEA 8240	12/19/99	DG		
Tetrachloro thene	<6.	μg/legdrywt 1.3		5 EPA 8240	12/19/93	DG		

 ⁹QL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect camplespecific reporting limits. Sample-specific limits are indicated by results annotated with 's' values.

01/26/94

LIO/kfg/jfg/kwl



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AAB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Mumber : WJ-1597-5 Report Date: 01/26/94

PO No. : MSA-93-01-78-00.

Project : 7143,00

REPORT OF ANALYTICAL RESULTS

Page 50 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
BX480630	Solid/Soil/ Sladge		P., G.	LLLESPIE	12/16/93		13/17/93	
PARAMETER	RESULT	UNITS	DF	PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Terrachloroethans	<6.	ug/legdrywc	1,2	1	5 EPA 8240	12/19/93	03	
Toluene	₹6.	µg/kgdrywc	1.2	-	EPA 8240	12/19/93	DG	
Chlorobensene	<6.7	//g/kgdrywt	1.2	3	EPA 8240	12/19/93	DG	
Ethylbensene	<6,	μg/kgdryvt	1.2	ī	5 EPA 8240	12/19/93	DG	
Styrene	<6.	µg/kgdrywt	1,2		SPA 8240	12/19/93	DG	
Total Xylenes	-55	µg/kgdcywt	1.2	į.	SPA 8240	12/19/93	DG	
1,2-Dichloroethane (* Recovery)	96.	6	2.2		EPA 8240	12/19/93	DG	
Toluens-dB (* Recovery)	96.	*	1,2		EPA 8240	12/19/91	DG.	
p-Bromofluorobenzene (*	95	8	1.2		EPA 8240	12/19/93	DG	

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

01,76/94

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CLIENT: HERE COLEY

ABB-WAKEFIELD

COPPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Mumber : WJ-1597-6 Report Date: 01/26/94

PO No.

- MSA-93-01-78-M1

Project

: 7143.00

PEPOPT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION		MATRIX	MATRIX		SAMPLED BY		SAMPLED DATE R		
B)(481115		Solid/S Sludge	oil/	P. GI	LLESPIE	12/14/5	13	13/17/93	
PARAMETER	RESULT	LNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
Solids-Total Residue (TS)	88.	Wt &	1.0		CLP/CIP SOW		JF	1	
Total Petroleum Hydrocarbons (TPH)	110	ng/kgdrywt	1_0	25	9071/418_1	01/04/94	GH	3	

PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results associated with 's' values.

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

⁽²⁾ Sample Preparation on 01/03/94 by GH



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ABB-WAMERTELD

CORPORATE FLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Number : WJ-1597-6 Report Date: 01/26/94

PO No :

MSA-97-01-78-MI

Project

7143.00

PEPORT OF ANALYTICAL PESULIS

Page 52 bt 64

SAMPLE DESCRIPTION EXABILIS		MATRIX	SAMPL	SAMPLED EX		SAMPLED DATE RECEIVED		
		Solid/soil Sludge	/ B. GI			3	19/17/93	
PARAMETER	RESULT	UNITS D	* +NOT	WALLECD	AMALYZED	BY	NOTES	
TYL Semivolatile Organics by USEPA 8270				3			1,2	
Phenol	£360.	ug/ligdrywt 1.1	330	EPA 8270	01/07/04	TG		
bis (2-Chloroethyl) ether	<360,	ug/ligdrywt 1.	330	EPA 8270	01/07/94	TG		
2-Chlorophenol	<360.	wg/kgarywr 1.	330	EPA 8270	01/07/94	TG.		
1,3-Dichlorobensene	<360	µg/kgdrywt 1	330	EPA 8270	01/07/94	TG:		
1,4-Dichlorobenzene	<360.	ug/kgdrywt 1	330	EPA 8270	01/07/94	TE		
Benzyl alcohol	<360.	Ag/kgdrywc 1.	330	EPA 8270	01/07/94	TG.		
1,2-Dichlorobensene	<360	pg/kgdrywt 1.1	330	EPA 8270	01/07/94	TG		
2-Methylphenol	<360.	wg/kgdrywt 1:	330	EPA 8270	01/07/94	TO		
bis(2-Cilloroisopropyl) ether	<360.	Mg/Kgdrywc 1.:	1 330	EPA 6270	01/07/94	TYE		
4-Methylphenol	<360	ug/kgdrywt 1	330	BPA 8270	01/07/94	TG:		
n-Nibroso-dipropylamine	<360,	wg/kgdrywi 1		BPA 8270	01/07/94	TG		
Heachloroethane	<360.	µg/kgdrywc 1.	330	BPA 8270	01/07/94	TG		

POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '" values.

01/25/94

MO/kfg/jfg/lad

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

^{(3) &}quot;J" flag denotes an estimated value less than the Laboratory's Fractical Quantitation Level.



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Lab Mumber : WJ-1597-6

Report Date: 01/25/94 PO No. : MSA-83-01-78-NI

Project : 7143.00

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ARE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 53 of 64

SAMPLE DESCRIPTION BX481115		MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
		Solid/Soil/ Sludge	R. GHIMPSPIR	12/14/93 12/17/93			
PARAMETER	PESULT	units of	*POL METHOD	ANALYZED BY NOTES			
Microbensene	<360)	ug/legányvit 1.1	330 EPA 8270	01/07/94 TG			
Isophorone	<360.	ug/ligdrywt 1,1	330 EPA 8270	01/07/94 TG			
2-Mitrophenol	<360.	ug/kgarywc 1.1	330 EPA 8370	01/07/94 TG			
2,4-Dimethylphenol	<360.	μg/legdrywt 1.1	330 EPA 6270	01/07/94 TG			
Benzoic acid	<1800.	µg/kgdrywr 1.1	1600 EPA 9270	01/07/94 111			
bis(2-Chlordethoxy)methane	<360	ug/kgdrywe 1,1	330 EPA 8270	01/07/94 TE			
2,4-Dichlerophenol	<360.	pg/kgdrywt 1.1	330 EPA 8270	01/07/94 TG			
1, 2, 4-Trichlorobensena	<360-	ug/ladrywl 1.1	330 EPA 8270	01/07/94 TG			
Naphthalene	<360.	Mg/Mgdrywt I.I	330 EPA 8270	01/07/94 13			
4-Chlorcaniline	<360	ug/kgdrywt 1.1	330 EPA 8270	01/07/94 16			
Hovachlorobutadiene	<360,	#g/legdrywt 1,1	530 EPA 8270	OL/07/94 TG			
4-Chloro-3-methylphenol	<160,	µg/kgdrywt 1,1	330 EPA 8270	01/07/94 19			
3-Methylnaphthalene	<360.	ng/kgdrywt 1.1	330 EPA 8270	01/07/94 'RS			
Hexachlorocyclopentadiene	<360_	uq/lgdrywt 1,1	310 EPA 8270	01/07/94 TG			

PGL (Practical quantitation Lovel) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (4) values.

01/26/94

LJO/kfg/jfg/lad



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ARR WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WANTEFIELD, MA 01880

Tab Number : WJ-1597-6 Report Date: 01/26/94

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: MSA-93-01-78-M1 Pasject 17143.00

REPORT OF ANALYTICAL RESULTS

Page 54 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DAME RECEIVED			
BW481115		Solid/Soil/ Sludge			R. GILLESPIE)3	12/17/93	
PARAMETER	RESULT	LINTIS	DF	+ PQE	METHOD	AMMINZED	田文	NOTES	
2,4,6-Trichloroph≘nol	<360	μg/lagdrywt	1,1	330	EPA 8270	01/07/94	m		
2,4,5-Trichlorophenol	<900.	pg/logdrywc	1.1	920	EPA 8270	01/07/94	TG:		
2-Chloronaphthalene	<350	Hg/kgdrywt	LIL	330	EPA 8270	01/07/94	103		
2-Mitroaniline	<900	ug/kgdrywt	1.1	820	EPA 8270	01/07/94	TG		
Dimethylphthalate	<360-	ug/ledrywt	1.1	330	EPA 8270	DL/07/94	TG		
Acenaphthylene	<360,	Na/kgatywc	1.1	330	EPA 9270	01/07/94	TG		
2,6-Dinitrotoluene	<360.	ng/kgdrywt	1.1	330	EPA 6270	01/07/54	TG		
3-Mitroaniline	<9001	ug/ligdrywt	1.1	820	EPA 6270	01/07/94	TIG		
Acenaphthene	4360	ug/ligacywt	1.1	330	EPA 8270	01/07/94	TG		
2,4-Dinitrophenol	<900 ·	ug/kgarywt	1.1	820	EPA 8270	01/07/94	TG		
4-Mitrophenol	c900.	ug/liggrywt	1.1	820	EPA 8270	01/07/94	TO		
Dibenzofuran	c360,	µg/kgdrywt	1.1	330	EFA 9270	01/07/94	TG		
2,4-Dinitrotoluene	<360	pg/kgárywt	1.1	330	EFA 8270	01/07/94	TG		
Disthylohthalate	<360;	µg/kgdrywt		330	EPA 8270	01/07/94	TO		

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results ampointed with 'c' values,

01/26/94

IJO/kEg/jEg/l 1



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ABP-WANEFIELD

CORRUBATE PLACE 128, BUILDING 1, SUITE 25

WARRIELD, MA 01680.

Lab Mumber : WJ-1597-6 Report Date: 01/26/94

PO No.

- MSA-93-01 79 M1

Project

: 7143.00

REPORT OF ANALYTICAL PESULIS

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SAMPLE DESCRIPTION EVA61015		MATRIX	SMIPLED BY	SAMPLED DATE RECEIVED
		Solid/Soil/ Sludge	R, GILLESPIE	13/14/93 13/17/93
PARAMETER.	PESULT	UNITS DF	*POL METHOD	ANALYZED BY NOORS
4-Chlorophenyl phenyl ether	-360.	pg/kgdrywt 1.1	330 EPA 8270	01/07/94 TG
Fluorene	<360.	μg/kgdrywt: 1.1	330 EPA 8270	01/07/94 TG
4-Nitrospiline	e900.	ug/logdrywt 1,1	820 EPA 8270	01/07/94 19
4,6-Dinitro-2-methylphenol	< 900	μg/kgdrywt 1.1	820 EPA 8270	01/07/94 TG
n-Nitrosodiphenylamine	<360.	ug/legdrywt: 1:1	330 KPA 3270	01/07/94 TG
4-Bromophenyl phenyl ether	×160.	ug/legetrys/t 1.1	330 HPA 6270	01/07/94 TG
Retactionobenzene	<360.	pg/kgdrywr 1.1	330 EPA 3270	01/07/84 29
Pentachlorophenol.	<900	µg/kgdrywt 1.1	820 EPA 8270	01/07/94 TS
Phenanthrene	<360.	μg/ligdrywn 1,1	330 EPA 8270	01/07/94 TG
Anthracene	<360.	µg/kgdrywt 1,1	330 EPA 8270	01/07/94 79
Di-n-butylphthalate	176	ng/kgdrywt 1.1	330 RPA 8270	01/07/94 'US
Fluoranthene	<360.	ug/kgdrywt 1.1	330 EPA 8270	DI/07/94 TG
Pyrene	<260.	ug/Agdrywc 1.1	330 EPA 8270	01/07/94 TG
Butyl bentylphthalate	<360.	wg/kgdrywt 1.1	330 EPA 8270	01/07/94 73

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'e' values.

01/26/94

LKI/kig/jfg/lad



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WARRETELD, MA 01660

Lab Number : WJ 1597-6 Report Date: 01/26/94

PO No.

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: /143.00

REPORT OF AMALYTICAL RESULTS

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SAMPLE DESCRIPTION S00401215		MATRIX		SAMPLED BY		SAMPLED DATE PROGIVED		
		Sclid/Scil/ Sludge		R. GILLESPIE		12/14/93		12/17/91
PARAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZET	BY	bores
3,31-Dichlorobenzidine	<360	pg/kgdrywc	1.1	330	EEA 9270	02/07/94	TG	
Benzo (a) anthracene	<360.	µg/kgdrywt	1.2	330	EFA 8270	01/07/34	TG	
Chrysene	<360.	μg/kgdrywc	1.1	330	EPA 8270	01/07/94	TG	
bis (2-Ethylhexyl) phthalate	J360	µg/kgarywt	1.1	330	ERA 8270	01/07/94	TG	
Di-n-octylphthalate	<350.	µg/kgdrywt	1.1	330	EPA 8270	01/07/94	TG	
Benco (b) fluoranthene	<360:	µg/kgdhywt	1.1	330	EPA 8270	01/07/94	TO	
Benzo (k) fluoranthene	<360.	ug/kgdeywt	1.1	330	EPA 8270	01/07/94	TG	
Benzo(a) pyrene	<350.	pg/kgdrywt	1.1	330	EDA 8270	01/07/94	TG	
Indeno (1, 2, 3-cd) pyrene	<360.	µg/ltgdrywt	1.1	330	EPA 8270	01/07/94	TI	
Dibenzo (a, h) anchracens	<360.	ug/kgdrywt	1.1	330	EBA 8270	01/07/94	TG	
Benzo(g,h,i)perylene	<360.	ug/kgdrywt	1.1	330	EPA 8270	01/07/94	"IG	
2-Fluorophenol (* Recovery)	40.	W	1.1		EPA 8270	01/07/94	TG	
Phenol-d5 (% Recovery)	45	8	1.1		EPA 8270	01/07/94	TO	
Nitrobenzene-d5 (% Redovery)	37.	· 6	1.1		EPA 8270	01/07/94	TG	

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

01/25/54

LJO/kfg/jfg/lad



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CLIENT: HERB COLBY

ABE-WAKEFIELD

CURPORATE 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-ML

Project : 7143.00

REPORT OF ANDLYTICAL RESULTS

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SAMPLE DESCRIPTION			CX:	SAMPLED BY		SAMPLED DATE PECETY		
8X481115		Solid/Soil/ Sludge		R. G	ILLESPIE	12/14/93		12/17/93
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZEC	SA	MOTES
2-Fluorobiphenyl (% Recovery)	41.	2	1,1		SPA 8370	01/07/94	TG	
2,4,5-Tribromophenol (%	39	*	I I		EPA 9270	01/07/94	TG	
Terphenyl-d14 (% Recovery)	54,	*	1/1		BPA 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 undicated by results annotated with '<' values.

01/26/94

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Lab Number : WU-1597-6

Report Date. 01/26/94

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

Project : 7143.00

ABH-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUFFE 25

WAREFLELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 58 of 64

SAMPLE DESCRIPTION	IPTION MATRIX Solid/Soil/ Sludge		MATRIX		SAMPLED BY		SAMPLED DATE PECEIVE		
BX481115			R, GILLESPIE		12/14/93		12/17/93		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	17739	
TCL Volatile Organics by USEPA								1,2,3,4	
8240									
Chloromethane	<11,	µg/kgdrywt	1.1	10	EPA 8240	12/20/93	IG		
Bromomethane	<11	µg/kgdrywt	1:1	10	EPA 8240	12/20/93	DG		
Vinyl chloride	×16.	μg/kgdrywt	1.1	10	EPA 8240	12/20/93	DG		
Chloroethane	<11.	ug/kgdrywc	1-1	10	EPA 8240	12/20/93	DG		
Methylene chloride	JB6	µg/kgdrywc	1.1	10	EPA 8240	12/20/93	DG		
Acetone	<17.	μg/kgärywt	1.1	15	EPA 8240	12/20/93	DG		
Carbon disulfide	<11,	μg/kgdrywt	$J_{\infty}J$	10	EPA 8240	12/20/93	DG		
1,1-Dichlorcethene	×6.	µg/kgdrywt	1.1	5	WPA 8240	12/20/93	DG		
1,1-Dichloroethane	<6.	μg/kgarywt	1.1	5	EPA 8240	12/20/93	DG		
Total 1,2-Dichloroethene	4.6	μg/ltgdrywl	1-1	5	EPA 8240	12/20/93	DG		
TOLAL 1, 2-DICHIOLOGENERE	.0.	hard years and	404		EFF 0240	12/20/03	103		

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

01/36/94

LJO/kfg/jfg/kwh

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(2) &}quot;B" flag denotes detention 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) &}quot;5" flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.



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CLIENT: HERE COLEY

ARE-WATEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01860

Lab Number | WJ-1597-6 Report Date | 01/26/94

PO No.

MSA-93-01-78-M1

Project

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REPORT OF AMALYTICAL RESULTS

Page 59 of 61

SAMPLE DESCRIPTION	MATRIX	si	AMPLED BY	SAMPLED DATE RECEIVE		
BX481115	Solid/Soil/ Sludge		GILLESPIE	12/14/93	12/17/93	
PARAMETER PES	TILT ONT'S	DF *F(T METHOD	ANALYZED	BY ROTES	
Chloroform <6.	μg/kgdrywt 1	.1	S EPA 8240	12/20/93	DG	
1,2-Dichloroethane <6.	µg/kgdrywt 1		5 EPA 8240	13/20/93	DG	
2-Butarione <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 9240	12/20/93	Did	
Bromodichloromethane <6.	Hg/logdrywt L	.1	5 EPA 8240	12/20/93	DG	
1,2-Dichleropropana ve.	pg/kgdrywt. 1	.1	5 EPA 8240	12/26/93	DG	
cis-1,3-Dichloropropene <6.	μg/kgdrywt 1	.1	5 EPA 8240	12/20/95	DG	
Tricklorcethere 46.	//g/logorywt 1	T	5 RPA 6240	12/20/93	EG.	
Dibromochloromethane <6.	/lg/logidrywt 1	1	5 EPA 8240	12/30/93	DG	
1,1,2-Trichloroethane <6	ug/kgdrywt 1	(1)	5 EPA 5340	12/20/98	DG	

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

01/26/94

Lao/kfg/jfg/kwh



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Lab Mumber : WJ-1597-6 Report Date: 01/26/94

PO No.

MSA-93-01-78-MI

Project

7143.00

CLIENT: HEEB COLHY

ABB-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01860

REPORT OF ANALYTICAL RESULTS

Page 60 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED			
23/481115		Solid/Soil/ Sludge			R GILLESPIE		3	12/17/93	
PARAMETER	RESULT'	UNITS	DF	* DOF	METHOD	ANALYZED	BY	Notes	
Betriene	56,	μg/logdicywt	1.1	ō	EPA 8240	12/20/93	EKS		
trans-1,3-Dichloropiopene	46.	ng/kgdrywt	1,1	E	EPA BIGO	12/20/93	DG		
Bromoform	46.	μg/kgdrywt	1.1	1	EPA 8240	12/20/93	DG		
a-Methyl-2-pentanone	SIV.	ug/kgdrywt	1.1	15	EPA 8240	12/20/93	LKS		
2-Hexanone	<17.	μg/kgdsywt	1.1	15	EPA 8240	12/20/93	DG		
Tetrachloroethene	<.6	μg/logarywt	1.1	5	EPA 8240	12/20/93	DG		
1,1,2,2-Tetrachloroethane	J4	//g/kgdrywt	1.1	2	EPA 8240	12/20/93	DG		
Toluene	<6 ,	µg/kgdzywt	1.1	·	EPA 8240	12/20/93	DS		
Chlorobensene	≪6 /	µg/kgarywt	1.4	2	EPA 8240	12/20/93	DG		
Ethylkenzene	K6-	µg/kgarywi.	1.1	Ē	EPA 9240	12/20/93	DG		
Styrene	<6	µg/kgarywt	1.1	4	EPA 8240	12/20/93	DG		
Total Xylenes	<6	μg/kgarywt.	1.2	2	EPA 8240	12/20/93	DO		

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

01/25/54

LJU/ktg/jfg/km.



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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Number : WJ-1597-6 Report Date: 01/26/94

FO NO:

MSA-93 01-76-MD

Project

7143.00

REPORT OF ANALYTICAL PESULTS

Page 61 of 80

EAMPLE DESCRIPTION		MATRIX		JED BY	SAMPLED DATE FECTIVED		
	Salid/Sail/ Sludge		R. GILLESPIE		12/14/93		12/17/93
PESULT	UNITS	DF	*POL	METHOD	ANALYCED	BY	MOTES
91.	4	1.1		EPA 8240	12/20/93	DG	
\$134	*	1.1		EPA 8240	12/20/93	DG	
\$54	8	1.1		EPA 8240	12/20/93	DG	
	91. \$134	Solid Sludg PESULT UNITS 91. % \$134 %	PESULT UNITS DF 91. \$ 1.1 \$134 \$ 1.1	Solid/Soil/ R. G. Sludge PESULT UNITS DF *PQL 91. % 1.1 \$134 % 1.1	Solid/Soil/ R. GILLESPIE Sludge PESULT UNITS DF *PQL METHOD 91. % 1.1 EPA 8240 \$134 % 1.1 EPA 8240	901:d/Soil/ R. GILLESPIE 12/15/9 Sludge PESULT UNITS DF *FOL METHOD ANALYTED 91. % 1.1 EPA 8240 12/20/93 \$134 % 1.1 EPA 8240 12/20/93	9012d/Soil/ R. GILLESPIE 12/14/93 Sludge PESULT UNITS DF *POL METHOD ANALYTED BY 91. \$ 1.1 EPA 8240 12/20/93 DG \$134 \$ 1.1 EPA 8240 12/20/93 DG

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

01/25/94

LJO/kfg/jfg/kwh



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Northwatern Division

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(X)7) 874 1400 Fax (207), 173-4029

CLIENT: HERE COLEY

ARB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 2, SUTTE 25

WAKEFIELD, MA 01980

Lab Number : WJ-1997-7 Report Dute: 01/26/94

PO No. : M974-91-03-78-ML

Project : 7143.00.

PEFORT OF AUGLIVITICAL PESULTS

Page 52 of 64

SAMPLE DESCRIPTION		MATRIX	ATRIX SAMPLED BY SAMPLED DATE RECE					RECEIVED	
TEK4PNOZ		Aquebus		R. GI	LLESPIE	12/16/93		12/17/93	
PARAMETER	RESULT	UNITS	DF	∜PQL	METHOD	ANALYZED	ΕŸ	WOTES	
TCL Volatile Organics by DSEPA 8240					-1 /10				
Chloromethane	<10.	MF/I	1.0	10	EPA 8240	12/18/93	DG		
Bromomethane	-10,	Mg/L	1.0	10	EPA 8240	12/18/93	DG		
Vinyl chloride	<10	49/L	1.0	10	EPA 6240	12/18/93	DG		
Chloroethane	<10.	MH/L	1.0	10	EPA 9240	12/18/93	DO		
Methylene chlorida	- 10	WG/L	1.0	10	EPA 8240	12/18/93	DG		
Acetona	<15	119/14	1.0	15	EPA 5240	12/16/93	DG		
Carbon disulfide	<10,	µg/L	1.0	10	EPA 8240	12/18/93	DS.		
1,1-Dichloroethese	55	µg/L	1.0	5	EPA 8240	12/18/93	DG		
1,1-Dichtoroethane	<5.	四/1	1.0	8	EPA 8240	12/18/93.	DG		
Total 1,2-Dichloroothene	<5.	Hg/L	1.0	5	EPA 8240	12/18/93	IXG		
Chloroform	K5-	/13/L	1.0	5	EPA 8240	12/18/93	DG		
1,2-Dichlorosthane	<5	HE/D	1.0	5	EPA 8240	12/18/93	DG		
1-Butanone	<15	HB/L	1.0	25	EPA 8240	12/18/93	DG		
1,1,1-Trichloroethane	₹5+	Mg/L	1.0	5	EPA 8240	12/18/93	DO		
Carbon tetrachloride	<5,	Mg/I	1.0	5	EPA 8240	22/18/33	DG		
Venyl accepter	c15	(2g/1)	1.0	1.8	EPA R240	12/18/93	DG		

PCL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Somple-specific limits are indicated by results amoutated with '-' values

01/26/94

LJD/kEg/jfg/kwh



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CLIENT: HERB COLLEY

ABB-WAKEFIFID

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA DIEBD

Lab Number : WJ-1587-7 Report Date: 01/26/94

PO No. : 1

: MSA-93-U1-78-M2

Project

: 7143.00

REPORT OF ANALYTICAL RESULTS

Page 53 of 64

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED D	ATE	RECEIVED
TBI(45NQ3.		Aqueous	1	R. GI	LLESPIE	12/16/93		12/17/93
PARAMETER	BESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	MOTES
Browodichloromechane	<5.	µg/L	1,0	5	EPA 8240	12/19/93	DG	
1,2-Dichloropropane	<5.	ME/D	1.0	5	EPA 8240	12/18/93	DG	
cis-1,3-Dichloropropenc	₹5.	Ag/L	1.0	5	EPA 8240	12/18/93	DG	
Trichlorcethere	<5.	AB/L	1.0	- 5	EPA 8240	12/18/93	DG	
Dibremochloromethane	<5.	ME/D	1.0	5	EZA 8240	12/18/93	D3	
1,1,2-Trichloroethane	≥5.	Mg/L	1,0	5	EPA 3240	12/18/93	DG	
Santena	55:	AB/L	1.0	8	EPA 8140	12/18/93	DG	
trans-1, 3-Dichloropropens	25.	HE/D	1.0	- 6	EPO 8240	12/18/93	IG	
Brom'sform	×5.	MET/L	1.0	E	EPA 8240	12/19/93	DG	
J-Methyl-2-pentamone	÷15.	/19/L	1.0	15	BPA 8340	12/18/93	DG	
2-Hexanone	<15.	AG/I	1.0	15	EPA 8240	12/18/93	DG	
Tetrachlorosthene	<5.	µg/1	1.0	- 5	EPA 8240	12/18/91	DG	
1,1,2,2-Tetrachlorsethane	£5.	MA/P	1.0	5	EPA 8240	12/18/93	DG	
Toluene	×5.	MA/I	1,0	5	EPA 8240	12/18/93	DG	
Chlorobenzene	<5.	MOT/I	1.0	E	EPR 8240	12/18/93	DG	
Ethylbenzene	25.	#9/L	1.7	5	EPA 8240	12/13/93	DG	
Styrene	<5.	Mg/L	1.0	-5	EPA 9240	12/18/93	DG	

PVA (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results are stated with '<' values.

101/26/94

LJO/kfg/jfg/lob



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Northeasiern Division 340 County Road, No. 5 ■ P.O. Box 720 ■ Westbrook, ME 04098 (207) 874-2400 Faa (207) 775-4009

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-ML

Project: : 7143.60

REPORT OF ANALYTICAL RESULTS

Page 64 of 64

SAMPLE DESCRIPTION	MATRIX			SAMP	LED BY	SAMPLED DATE RECEIVE			
18/48/402		Acqueous	1	R, G	TLLESPIE	12/16/93 12/17/93			
PARAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	MOTES	
Total Mylenes	≭51	µg/L	1,0		5 EPA 8240	12/19/93	DG		
1,2-Dichloroechane (* Recovery)	102.	8	1.0		EPA 8240	12/19/93	173		
Tologne-dB (* Recovery)	98 ⋅	*	1.0		EPA 6240	12/18/93	DE		
p-Bronofluoroberizene (% Recovery)	94.	\$	1,0		EPA 8340	12/18/91	DG		

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

01/26/94

画の/kfg/jfg/わめ

Respectfully submitted, COAST-TO-COAST ANALYTICAL SERVICES

O'Meano

Langra J. O'Meura

Supervisor, Client Services

EXAMPLE CONTROL RECEIPT FORM

920	JECTI SA48 FORT DEVENS 7143.00			
Con	tainer received on 191793 and impected on 01793 by: 8000.	Diff.	_	
2,	Shipper (USM, UPS, DHL, FIDER, P/C, AIR EXF, HAND-DELIVERED	1):		
2.	Container type (2001sy, box, envelope, etc.)			
3.	Were custody seals on outside of container? Frank - hour with the post part No.	N/A (203	No ac bei
4.	Were custody papers taped to lid inside container?	N/A O	202	No
	Custody papers properly filled out? (ink, signed, atc.)			No
۵.	Was project identifiable from custody papers?	~	~	No
7.	Sid you migh custody papers in appropriate place?	7.3	-	No
	Did you attach shipper's packing form to this form?	N/A G	\equiv	100
	Packing material (geanuty, vermiculity, bubble wrap) paper,	1,0%	~	
	Was sufficient ice used? Temperature 'C upon arrival		_	
	Were all samples sealed in separate plastic bags?	N/A (Y	\leq	No
	Did all samples arrive in good condition?			No
	Sample labels compists? (#, dats, analysis, preservation, s			No
	Did all sample labels agree with custody papers?	A Charles W.		(Na)
	Were correct sample containers used for tests indicated?	N/A 6		
	Were correct preservatives used? (TM pH, CN- pH) (TOC pH, NUTRIENT pH, TOX pH, TPH pM, OTHER	(N/A) Y		
17.	Were VOA vials bubble-free (HgO) or no headspace (soil)?	N/A Y	es.	No
18.	Was sufficient amount of sample sent in each container?	O	38	No
	Were air volumes noted for air samples?	(N/A)		No
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PROJECT NO.	PRE	WECT N	AME	¥ 10	185	5448						SAM	PLET	/PE				2000
SAMPLERS (SIGN	MTURE		20.	VE	123	2440	NO. OF CON- TAINERS	1000	d de la	Ŧ	TAR	STAR.						REMARKS INDICATE SOIL/WATER/AIR SEDIMENT/SLUDGE
STA. NO.	DATE	TIME	COMP.	GRAB		STATION LOCATION	TAINERS	275	200	4	405 7	808						SEDIMENTIACOUSE
3×480/15	12/11/13	1305	×,	(X)	BX	0(15'	213		2	N		1						SOIL
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BX460415	121593	1455		A	BX	54 15	4	2			2							5044
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成461115	121493	1500		K	BX	11 15	4		2		2							581L
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RELINQUISHED	BY: (SIGN	ATURE)	C	ATE	TIME	RECEIVED FOR DISPOSAL (SIGNATURE)	BY: DAT	E/TIM	E	REM	ARK		Post E			4 3	(\$5	402 XUC - TALFA FL



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Northeastern Division
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(207) 874-2400 Fax (207) 775-4029

1953613

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

LIO/dmt

Enclosure



CLIENT: HERE COLBY

Air, Water & Hezardous Waste Sampling, Analysis & Consultation Certified Hazardous Waste, Chemistry, Biotemology & Bioastay Laboratories

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Northeastern Division

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(207) 874-2400 Fig. (207) 775-4029

Lab Number : WK-0032-1 Report Date: 02/14/94

PO No. : MSA 93-01-78-00

Project : 7143.00

CORPORATE PLACE 128, EUILDING 3, SUITE 25

WANTEFIELD, MA 01880

ABB WAKEFIFID

REPORT OF ANALYTICAL RESULTS

Page 1 of 70

N	PATRIT		SAMPLE	D BY	SAMPLED C	SAMPLED DATE		
A	queons		CLIENT		01/07/94		01/12/94	
RESULT	UNITS	DF	*PQL	WEIHOD	ANALYZED	BY	NOTES	
0.10	mq/I	Year	0:10	200.7/6010	00/02/94	W.	3.	
0.10	mg/L.	1.0	0.10	200.7/5010	02/02/94	KW	2	
0.005	mg/L	1:0	0.005	204.2/7041	01/25/94	AC	3.	
0.005	mg/I	1.0	0.005	204.2/7041	01/28/94	AC	.5	
0.005	mg/L	1.0	0,005	206.2/7060	01/21/94	BW	4	
0.005	ng/L	1.0	0,005	306.3/7060	01/21/54	XW	5	
0:005	mg/L	1.0	0.005	200.7/6010	02/03/94	XW	1	
0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	WDI	2	
0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	- 2	
0.005	ug/L	1.0	0.005	200.7/6010	02/03/94	KW	2	
0.002	mg/L	1,0	0.002	213.2/7101	01/24/94	30%	4	
0.002	mg/L	1,0	0.002	213:2/7131	01/24/94	300	5	
	PESULT 0.10 0.10 0.005 0.005 0.005 0.005 0.005 0.005 0.005	0.10 mg/L 0.10 mg/L 0.005 mg/L 0.005 mg/L 0.005 mg/L 0.005 mg/L 0.005 mg/L 0.005 mg/L 0.005 mg/L 0.005 mg/L	Aqueous DESOLT UNITS DF D.10 mg/L 1.0 D.10 mg/L 1.0 D.005 mg/L 1.0	Aqueous CLIENT PRESULT UNITS DF *PQL 0.10 mg/L 1.0 0.10 0.10 mg/L 1.0 0.005 0.005 mg/L 1.0 0.005	Aqueous CLIENT PESULT UNITS DF *PQL METHOD 0.10 mg/L 1.0 0.10 200.7/6010 0.10 mg/L 1.0 0.005 204.2/7041 0.005 mg/L 1.0 0.005 204.2/7041 0.005 mg/L 1.0 0.005 206.2/7060 0.005 mg/L 1.0 0.005 206.2/7060 0.005 mg/L 1.0 0.005 200.7/6010	Aqueous CLIENT 01/07/9 RESULT UNITS DF *PQL METHOD ANALYMED 0.10 mg/L 1.0 0.10 200.7/6010 02/02/94 0.10 mg/L 1.0 0.005 204.2/7041 01/28/94 0.005 mg/L 1.0 0.005 204.2/7041 01/28/94 0.005 mg/L 1.0 0.005 206.2/7060 01/21/94 0.005 mg/L 1.0 0.005 206.2/7060 01/21/94 0.005 mg/L 1.0 0.005 200.7/6010 02/03/94 0.005 mg/L 1.0 0.005 200.7/6010 02/03/94	Aqueous CLIENT 01/07/94 RESULT UNITS DF 'PQL METHOD ANALYZED BY 0.10 mg/L 1.0 0.10 200.7/6010 02/02/94 KW 0.00 mg/L 1.0 0.005 204.2/7041 01/28/94 AC 0.005 mg/L 1.0 0.005 204.2/7041 01/28/94 AC 0.005 mg/L 1.0 0.005 206.2/7060 01/21/94 KW 0.005 mg/L 1.0 0.005 206.2/7060 01/21/94 KW 0.005 mg/L 1.0 0.005 200.7/6010 02/03/94 KW	

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

02/14/94

LCO/gfb #A20ECPXW1

⁽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 D1/20/54 by JCD using 3020

⁽⁵⁾ Sample Preparation on 01/21/94 by JCD using 3020



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Fax (207) 775-4029

CLIENT: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Mumber : WK-0032-1 Report Dato: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 2 of 70

SAMPLE DESCRIPTION	- P	ATRIX		SAMPLE	D BY	SAMPLED E	SAMPLED DATE	
35(4804)CI		Aqueous				01/07/94		01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	27	NOTES
Calcium, Dissolved	9.0	mg/L.	1.0	0.050	200.7/6010	02/02/94	EW	1
Calcium, Total	9.0	mg/L	1.0	0.050	200.7/6010	02/03/94	EW	2
Chromium, Dissolved	<0.015	rog/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	EW	a a
Cobalt, Dissolved	<0:030	mg/L	1.0	0.030	200.7/6010	02/03/94	KW	1
Obbalt, Total	<0.030	mH/I	1,0	0.030	200.7/6010	02/03/99	HW	2
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	EW	1
Copper, Total	<0.025	mg/L	1.0	0.023	200.7/6010	02/02/94	EW	1 2
Iron, Dissolved	c0.025	mg/L	1,0	0.025	200.7/6010	02/04/94	KW	L
Iron, Total	<0.025	mg/L	1,0	0.025	200.7/6010	02/02/94	30%	
Lead, Dissolved	<0.005	ng/L	1.0	0.005	239,2/7421	01/21/54	YW	á
Lead, Total	<0.005	mg/L	1.0	0.005	239.3/7421	01/25/94	AW	4
Magnesium, Dissolved	1.1	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	2

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

03/14/94

EJO/gfb KAZOICEJOVI

⁽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 Proparation on D1/21/94 by JCD using 3020



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Lab Marber : WK 0032 1 Report Date: 02/14/94

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

Project : 7143.00

CLIENT: HERE COLBY ABB-WAKEFIELD

CORPURATE PLACE 128, BUILDING 1, SUITE 25

WAKEFIRLD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 3 of 70

SAMPLE DESCRIPTION	IV	MINIX		SAMPLE	D BY	SAMPLED D	ATE	RECEIVED
MX4804X1	· A	gueous		CLIENT		01/07/9	4	01/12/94
DARAMETER	RESULT	INITS	DF	*PQL	METHÓD	ANALYMED	BY	NOTES
Magnesium, Total	1/1	mg/L	1.0	0.050	200.7/6010	02/02/94	KW	
Manganese, Dissolvei	0.023	mg/L	1.0	0.005	200-7/6010	02/03/94	KW	2
Manganese, Total	0.021	mg/L	1.0	0.005	200.7/5010	02/03/94	KM.	1
Mercury, Dissolved	<0.20	p3/L	1.0	0.20	245.1	03/01/94	JD	3
Mercury, Total	<0.20	MA/I	1,0	0.20	245.1	02/01/94	JD	3
Michel, Dissolved	<0.040	mg/L	1,0	0.040	200.7/6010	02/04/94	EM	. 2
Nickel, Total	<0.040	mg/L	1.0	0.040	-200.7/6010	02/05/94	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	104	-1
Salenium, Dissolved	<0.005	mg/L	1.0	0.005	270.2/7740	01/25/94	KW	4-
Selenium, Total	<0.005	erg/E	1.0	0.005	276.3/7740	01/25/94	HW	3
Silver, Dissolved	<0.015	mg/I	1,0	0 015	200.7/6010	02/02/94	KW	2

PCL (Practical Quantitation Level) represents laboratory reporting limits and way not reflect samplespecific reporting limits. Sample specific limits are indicated by results annotated with '2' values.

02/14/94

LOD/gfb MAZIICPXWI

⁽¹⁾ Sample Preparation on 01/21/94 by JCD using 2010

⁽²⁾ Sample Preparation on 01/20/94 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 3030



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CLIENT: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Hab Number : WR-0033-1 Habort Date: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 4 of 70

SAMPLE DESCRIPTION	D	MIRIX.		SAMPLE	D BY	SAMPLED D	ATE	RECEIVED
MX4804X1	P	igueous		CLIENT		01/07/9	4	01/17/94
PARAMETER	RESULT	UNITS	DP	*PQL	METHOD	ANALYEED	BV	Works
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/02/94	WK.	3
Sodium, Dissolved	17,	mg/L	1.0	0.10	200.7/6010	02/02/94	DW	2
Sodium, Total.	TB	mg/L	1.0	0.10	200.7/6010	02/03/94	RW	1 2
Thallium, Dissolved	<0,005	mg/L.	1.0	0.005	279.2/7841	01/26/94	700	
Thallium, Total	-40,005	mg/L	1.0	0.005	279.2/7841	01/26/94	100	4
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/5010	02/03/94	KW	D
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/5010	02/03/94	ION	1
winc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	W	2
Zinc, Total	<0,025	mg/L	1.0	0.025	200.7/6010	02/02/94	100	2

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

02/14/94

LAD/gib KARIJCPXWL

⁽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



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Ann (6-5) ()

CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, FUTLINING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WK-0032-1 Report Date: 02/14/94

PO No.

MSA-93-01-78 ND

Project

7143.00

REPORT OF ANALYTICAL RESULTS

Page 5 of 70

SAMPLE DESCRIPTION	MAI	KIX		SAMPLED	HY	GAMPLED I	PECKIVED	
M04804X1	Aqı		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	0 418.1	02/02/54	/LA	1,2

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

02/14/94

WO/gfb/djn

⁽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.



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Lab Number : WR-0032-1 Report Date: 02/14/94

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

Froject 7143.00

CLIENT: HERB COLBY

ABB-WANTFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01980

REPORT OF AMALYTICAL RESULTS

Page 6 OE 70

SAMPLE DESCRIPTION		MIRIX		SAMPT	ED BY	SAMPLED DATE RECEIVED				
MX4804X1		Aqueous		CLIEN	T	01/07/5	4	01/12/94		
PARAMETER	RESULT	UMITS	DF	*PQL	METHOD	ANALYZED	EY	NOTES		
TCL Semivolatile Organics by USEPA								1,2		
8270					A. L		-			
Phenol	125	$\mu g/I_i$	1:0	7.0	EPA 8270	01/19/94	WF			
bis (I-Chloroethyl) Sther	<10:	/四/L	I.D	10	EPA 8270	01/19/94	WE			
z-Chlorophenol	<10.	MA/D	1.0	10	EPA 8270	01/19/94	WE			
1,3 Dichlorobenzene	<10.	AH/D	1.0	10	EDA 8270	01/19/94	WE			
1,4-Dichlorobensene	<10.	MJ/L	1.0	10	EPA 9270	01/19/94	WE			
Benzyl alcohol	<20.	Mg/L	1.0	10	EPA 8270	01/19/94	WE			
1,2-Dichloroberzene	<10.	Ng/L	1.0	10	EPA 8270	01/19/94	WE			
2-Makhylphenol	<20:	呵儿	1.0	10	EPA 8270	01/19/94	WE			
his (2 Chloroisopropy1) other	<10:	45/L	1.0	10	EPA 8270	01/19/94	WE			
4-Methylphenol	<10.	WI/I	1.0	10	EPA 8270	01/19/94	WE.			
n-Nitroso-dipropylamine	<10.	$\mu g/L$	1.0		EPA 8270	01/19/94	WF			
Hexachloroethane	×20.	pg/L	1.0		EDA 80.70	01/19/94	WF			
Nitrobensene	<10.	ME/I	1.0	10		01/19/94	WE			

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

03/14/94

EQU/kfg/jfg/kwh

⁽¹⁾ Sample Preparation on 01/13/94 by CAM

^{(2) &}quot;J" flag denotes an estimated value less than the Takuratory's Practical Quantitation Level.



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CLIENT: HERR COLEY

ABB-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

Lab Mumber : WK-0032-1 Report Date: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL PESULTS

Page 7 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	E) BY	SAMPLED D	ATE	RECEIVED
MX4804X1		Agueous			г	01/07/9	4	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	AMALYZED	BY	Nores
Lisophorone	<10.	μg/1	1.0	10	EPA 8270	01/19/94	WE	
2-Nitropherol	c10.	MG/L	1:0	10	EPA 8270	01/19/94	WE	
2,4-Dimethylphenol	~10.	µg/L.	1.0	10	EPA 5270	01/19/94	WE	
Bentoic acid	<50	MB/I	1.0	50	EPA 8270	DI/19/94	WE	
bis(2-Chlorosthory)methans	-c10.	pg/1	1.0	10	ESA 8270	01/19/94	WF	
2,4-Dichlorophenol	alā.	Hg/L	1.0	10	EPA 8270	01/19/94	WE	
1,2,4-Trichlombengene	410.	Mg/I	1.0	10	EPA 8270	01/19/94	WP	
Naphthalene	C10.	Mg/L.	4:0	10	EPA 8270	01/19/94	WE!	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 5270	01/19/94	WE	
RestachLorobutadiane	<10.	Hg/L	1.0	10	EPA 8270	01/19/94	W	
4-Chloro-3-methylphenol	sito.	Hg/L	1.0	10	EPA 9270	01/19/94	WE	
2-Mathylnaphthalene	<10.	Mg/L	1.0	10	EPA 5270	01/19/94	WE	
Reyachlorocyclopuntadicus	c10.	Ng/L	1.0	10	EPA 8270	01/19/94	WE	
2,4,5-Trichlorophenol	<10.	Mg/I	1.0	10	EPA 8270	01/19/94	WE	
2,4,5-Trichlorophenol	<25	AG/D	1:0	25	EPA 8270	01/19/94	WF	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'a' values.

01/14/94

LJO/kig/jfg/kwb



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CLIENT: HERE COLBY

ABE-WAREFIELD

CORPORATE PLACE: 128, PUTLDING 3, SUITE 25

WAREFIELD, MA 01860

Lab Mumber : WK-0032-1 Report Date: 02/14/94

PO No: : M9A-93-01-79-MI

Project : 7143 00

REPORT OF ANALYTICAL RESULTS

Page 8 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	SAMPLED BY SAMPLED DATE RE				
M014804X1		Aquenus		CLIEN	D	01/07/94		01/12/94	
PARAMETER	RESULT	UNITS	DF	* PQL	METHOD	ANALYZED	ay	MOTES	
2 Chloronaphthalene	e10.	ug/L	1.0	10	EPA 8270	01/19/94	WE		
2-Nitroaniline	525.	/lg/L	1.0	25	EPA 8270	01/19/94	ME		
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WE'		
Acenaphthylene	<10;	Mg/L	1.0	1,0	EPA 8270	01/19/94	WE		
7,6-Dinitrotoluene	510,	Hg/L	1.0	10	EPA 8270	01/19/94	WE		
3-Nitroansline	<25.	µg/L	1.0	25	EPA 8270	01/19/94	WE		
Acenaphthene	=10,	µg/L	1.0	10	EPA 8270	01/19/94	WE		
2,4-Dinitrophenol	425.	M3/F	1.0	25	EPA 8270	01/19/90	WE		
A-Witroph=nol	<25.	Ag/L	1.0	25	EPA 8270	01/19/94	ME.		
Bibangofuran	<1.0	//g/L	1.0	10	EPA 8270	01/19/94	WE		
2,4-Dinitrotoluene	<10,	Mg/L	1.0	10	EPA 8270	01/19/94	WE		
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WE		
a-Chlorophenyl phenyl ether	<10.	ug/L	1.0	10	EPA 8270	01/19/94	WE		
Fluorene	<10.	Ma/Tr	1.0	10	EPA 8270	01/19/94	Wē'		
4-Nitroansline	<25.	pg/L	2.0	25	EPA 8270	01/19/99	WE.		

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

03/14/94

LJO/kfg'jfg/lawh



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Lab Number J WK-0032-1 TJENT HERB COLBY Report Dates 02/14/96 ABB-WAREFIELD

PO No. - MSA-93-C1-78-M2

CORPORATE PLACE 128, BUILDING 3, SUITE 25 Progect 3 7143 00 WAKEFIELD, MA 01680

PEPORT OF ANALYTICAL RESULTS

Page 9 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	MPLED BY SAMPLED DATE RECE					
MX4804K1		Aqueous		*PQL METHOD ANALYZED E 25 EPA 8270 01/18/94 W 10 EPA 8270 01/19/94 W 10 EPA 8270 01/19/94 W 10 EPA 8270 01/19/94 W 25 EPA 8270 01/19/94 W 10 EPA 8270 01/19/94 W 10 EPA 8270 01/19/94 W 10 EPA 8270 01/19/94 W	4	01/12/94				
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	AMALYZED	BY	HOTES		
4,5-Diritro-2-methylphenol	<25.	ug/L	1.0	25	EPA 8270	01/18/94	ME.			
n Mitrosodiphenylamine	<1.00	MEYT.	1.0	10	EFA 8370	01/19/94	WF			
4-Brownbertyl phenyl other	<10.	$\mu \equiv /L$	1.0	10	EPA 82.70	01/19/94	WE			
Hexachlorobensene	<1.0	MENTE	1.0	10	EPA 8270	01/19/94	WF			
Pentachlorophenol	<25:	JUST/IL	1.0	29	EPA 8270	01/19/94	WF			
Phenanthrene	e10.	Mg/L	1:0	20	EPA 8270	01/19/94	WE			
Anthracene	<10.	Mg/L	1.0	10	EPA 8270	01/19/94	WE			
Di-n-butylphthalate	-1115	WE/T.	1.0	10	EFA 8270	01/19/94	WF			
Fluoranthene	<10.	$\mu g/L$	1.0	10	EPA 8270	01/19/94	WE			
Pycrene	eld.	14 Tu	1.0	0.0	ED4A 8270	01/19/94	WF			
Butyl benzylphthalata	510	MET/L	1.0	20	EPA 8270	01/19/94	WF			
3.3'-Dichlorobenzidine	<1Q.	ug/L	1.0	1.0	EPA 8270	01/19/94	WF			
Penzo (a) anthracene	<10.	My/L	1.0	10	EDS. 8270	01/19/94	ME			
Chrysene	<10.	//g/L	1.0	10	EPA 8270	01/19/94	WE			
bis(2-Ethylhex/1)phthalate	.74	#4/L	1.0	10	EPA 8270	01/19/94	WE			

^{*} FQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

Intil/Rig/jig/kwr.



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CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEPIELD, MA DISEO

Lab Number : WK-0032-1 Report Date: 02/14/94

PO No. 1 MSA-93-01-78 MD

Project : 7143.00

REPORT OF AMALYTICAL RESULTS

Page 10 of 70

SAMPLE DESCRIPTION		MAIRIX SAMPLED BY SAMPLED						DATE RECEIVED		
MX4804X1		Aqueous		CLIENT 01/07/9			4 01/12/94			
PARAMETER	PESULT	UNITS	DF	*P(L)	METHOD	ANALYZE	BY	NOTES		
Di-n-octylphthalate	<10.	₩ 3 /L	2.0	10	EPA 8370	01/19/34	WF			
Benzo(b) fluoranthene	-10-	mg/L	1.0	10	EPA 8270	01/19/94	MOP.			
Benzo (k) Eluoranthene	-10.	Mg/L	1.0	10	EPA 8270	01/19/94	WF			
Benzo(a) pyrene	-20:	ME/E	1.0	10	EPA 8270	01/19/94	WF			
Indeno(1, 2, 3-cd) pyrene	-20.	$\mu g/L$	1.0	10	EPA 6270	01/19/94	WE			
Dibenzo (a, h) anthracene	520.	MA/I	1.0	10	EPA 8270	01/19/94	WE			
Benzo(g,h,i)perylene	<10.	µ9/L	1.0	10	EPA 8270	01/19/34	WE			
2-Fluorophenol (* Recovery)	71.	3	1.0		EPA 8270	01/19/94	WE			
Phenol-d5 (% Recovery)	75.		1.0		EPA 8270	01/19/94	WF			
Nitrobenzene-d5 (% Recovery)	71.	*	1:0		EPA 8270	01/19/34	WE			
2-Fluorobiphenyl (% Recovery)	77:	8	1.0		EPA 8270	01/19/94	WE			
2,4,6-Tribromophenol (% Recovery)	68.		1.0		EPA 8270	01/19/94	WE			
Terphenyl-dl4 (* Racovary)	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 " values.

02/14/94

LJO/kfg/jlg/livh



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CLIENT: HERE COLEY

ARE-WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 15

WAREFIELD, MA 01860

Lab Number : WK 0032-1 Report Date: 03/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION		MVIRIX		SAMPL	ED BY	Y SMPLED DATE RE			
10(4804X).		Aqueous		CLIEN	Ť	01/07/9	4	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	AMALYZED	HY	NOTES	
TCL Volatile Organics by USEFA 824	Q					. 1229		1,2	
Chloromethano	-5LD3	mg/L	1.0	10	EPA 8240	01/17/94	DO		
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	DG		
Vinyl chloride	<10.	Mg/I	1.0	10	EPA 8240	01/17/94	03		
Chloroethane	-G10.	pg/1	1.0	70	EPA 8240	01/17/94	DG		
Methylene chloride	JB3	ug/L	1.0	10	EPA 8240	01/17/94	DG		
Acetone	<15	ug/L	1.0	15	EPA 8240	01/17/94	103		
Carbon disulfide	510:	$\mu g/L$	1.0	10	EPA 8240	01/17/94	DG		
1,1-Dichloroethene	<5.	ug/L	1.0	3	BPA 8240	01/17/94	DG		
1,1-Dichloroethane	×5.	ug/I.	1.0	5	EPA 8240	01/17/94	DO		
Total 1,2 Dichloroethene	₹5.	ug/I	1.0	5	EPA 8240	01/17/94	DG		
Chloroform	×5.	1/84	1.0	5	BPA 9240	01/17/94	DG		
1,2-Dichloroethame	<.5.	µg/L	1.0	5	EPA 8240	01/17/94	DG		
2-Butanone	<15.	Mg/L	1.0	15	EPA #240	01/17/94	DG		
1,1,1-Trichloroethane	<5.	Mg/L	1,0	5	EFA 8240	01/17/94	DG		

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

02/14/94

MO/kfg/jfg/lad

^{(1) &}quot;J" flag denotes an estimated value lass than the Laboratory's Fractical Quantitation Level.

^{(2) &}quot;B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.



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Lab Number : WK-0033-1 Report Date: 02/14/94

PO No. : MSA-93 01 78-701

Project : 7143.00

CLIENT: HERE COLBY

ABB-WAKEFIELD

COMPORATE FLACE 128, BUILDING 3, SUITE 25

MAKEFIELD, MA 01880

REPORT OF AMALYTICAL PESULTS

Page 12 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BA	RECEIVED		
MX4604X1		Aqueous		CLIENT		01/07/94		01/17/94
PARAMETER	RESUL/E	ONITS	DF	*PQL	WEIHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	JŠ,	mg/L	1.0	5	EPA 8240	01/17/94	Dd	
Vinyl acetate	<15,	49/L	1,0	15	EPA 9240	01/17/94	DG	
Bromodichloromethane	·48.	Mg/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Buchleropropane	88,	ug/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	e5.	49/L	1,0	- 5	EPA 8240	01/17/94	DG	
Trichlocoethere	cS.	Mg/L	1.0	5	EPA 8240	01/17/94	DG	
Dibromochlomomethane	35.	µg/L	1.0	5	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethine	-25	149/L	1.0	5	EPA 8240	01/17/94	DG	
Bengene	484	Mg/L	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	48,	ug/L	1.0	á	EPA 8240	01/17/94	LG	
Bromoform	≥8,	M3/L	1,0	-5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	<15,	HO/I	1.0	2.5	EPA 8240	01/17/94	DG	
2-Hexanone	<15	P9/L	1.0	15	EPA 6240	01/17/94	DG	
Tetrachloroethero	K5.	M3/1	1.0	.5	EPA 8240	01/17/94	DC	
1,1,2,2-Tetrachloroethane	45	µg/L	1,0	5	EPA 8240	01/17/94	DG	

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

02/14/94

LXX/Kig/jtg/lad



CLIENT: HEPB COLBY

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PO No. - MSA-93-01-78-MI

: 7143.00 Project

WAKEFIELD MA 01880

ABB WAFEFIELD

REPORT OF ANALYTICAL RESULTS

Page 13 of 70

HAMPLE DESCRIPTION		MATRIX		SAMP	ATE	01/12/94		
MX4804XI		Aqueous		CLIEND			01/07/94	
PARAMETER	FESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Toluene	<5.	µg/L	1.0	- 5	EPA 8240	01/17/94	DG	
Chlorobenzene	<5.	Mg/L	1.0	9	5 EPA 6240	01/17/94	DG	
Ethylbenzene	45.	MG/L	1.0		5 EPA 8240	01/17/94	DG.	
Styrene	<5.	M3/L	1.0		EPA 8240	01/17/94	DG	
Total Mylenes	· 45.	49/L	1.0		EPA 8240	01/17/94	DG	
1,1-Dichloroethane (% Recovery)	95.	*	1.0		EPA 8240	01/17/94	DG	
Toluene-ds (% Recovery)	99.	W	1.0		EPA 8240	01/17/94	DZ	
p-Bromofinorobenzene (% Recovery)	103.	*	1-0		EPA 8240	01/17/94	DG	

[.] BUL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'c' values.

02/14/94

LIO/kig/jfg/lad



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PO No. + MSA-93-01-78-NIL

Project : 7143.00

CTIENL: HEKE COTEA

ABB-WAKEFIELD

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WAREFIELD, MA 01830

REPORT OF ANALYTICAL RESULTS

Page 14 of 70

SAMPLE DESCRIPTION	İv	KIRIK		SAMPLE	D BY	SAMPLED DATE RECEIVE			
MX4811X1	1	queous		CLIENT	N .	01/07/9	4	01/12/94	
DAPAMETER	RESULT	UNITS	DF	*PQL	i/ETHOD	ANALYZED	SY	NOTES	
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	EW	L	
Aluminum, Total	0.11	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1	
Antimony, Dissolved	<0.005	mg/L	I D	0,005	204,2/7041	01/28/94	AC.	.2	
Antimony, Total	<0.005	ng/L	1.00	0.005	204.2/7041	01/28/94	AC	- 2	
Arcenic, Dissolved	<0.005	mg/L	1.0	0,005	206.2/7060	01/21/94	EQ4	3	
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	01/21/94	839	3	
Barrum, Dissolved	<0.005	mg/L	I.O.	0.009	200.7/6010	02/03/94	KW	1	
Barium, Total	<0.005	ng/L	1.0	0.005	200.7/6010	02/03/94	ECV	1	
Beryllium, Dissolved	<0.005	mg/L	1,0	0.005	300.7/6010	02/03/94	EW	1	
Beryllium, Total	<0.005	mH/L	1.0	0.005	200 7/6010	02/03/94	RM	1	
Cadmium, Dissolved	<0.002	ng/L	1.0	0.002	213.2/7131	01/24/94	HCM.	. 3	
Cadmium, Total	<0.002	mg/L	1.0	0,002	213.2/7131	01/24/94	RW	3	
Calcium, Dissolved	B.4	mg/L	1.0	0.050	200.7/6010	03/03/94	RW	1	
Calcium, Potal	8.6	mg/L	1.0	0.050	300.7/6010	02/02/94	HW	1	

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

02/14/94

tJO/gfb RAZOICZXWI

⁽¹⁾ Sample Preparation on DI/20/94 by JCD using 3010

^(%) Sample Preparation on 01/26/94 by JCD using 3010

⁽³⁾ Sample Preparation on 01/20/94 by JCD using 3020



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Report Date: 02/14/94 ; MSA-93-01-78-M1 PO Mo.

Project : 7143.00

CLIENT: HERB COLEY

AGE WANTEFIELD

CORPORATE PLACE 129, BUILDING 3, SUITE 25

WAREFIELD, MA 01580

REPORT OF ANALYTICAL RESULTS

Page 15 of 70

SAMPLE DESCRIPTION	j	ATRIX		OLIENT 01/07/94 DF *PQL METHOD ANALYZED 3 .0 0.015 200.7/6010 02/04/94 3 .0 0.015 300.7/6010 03/04/94 3		SAMPLED DATE		E RECEIVED	
MX4811X1	J	Aqueous				d	01/12/94		
PARAMETER	PESULI	UNITS	DF	*PQL	METHOD	ANALYZED	37	NOTES	
Chronium, Dissolved	c0,015	ng/L	1,0	0.015	200.7/6010	02/04/94	KW	-	
Chromium, Total	<0.015	mg/L	1,0	0.015	300.7/6010	03/04/94	KW	3	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	300.7/6010	02/03/94	MW	3	
Cobalt, Total	0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	WCK		
Copper, Dissolvei	<0.025	mg/D	1.0	0.025	200.7/5010	02/02/94	NO.	1	
Copper, Total	<0.025	mg/L	1.0	0.035	300.7/6010	02/02/94	WW		
Tron, Dissolved	<0.025	ng/L	1,0	0.025	200.7/6010	02/02/94	WW	1	
Iron, Total	<0.025	mg/L	1,0	0.025	200.7/6010	02/02/94	ICM	i i	
Lead, Dissolved	<0.005	og/L	1.0	0.005	339.2/7431	01/31/94	KW	. 2	
Lessi, Total	≥0.005	ng/L	1,0	0.005	239.2/7421	01/21/94	KW	. 2	
Magnesium, Dissclved	1.0	mg/L	1.0	0.050	200.7/6010	02/02/94	XW	3	
Magnesium Tabil	1/1	mg/L	1.0	0.050	200.7/6010	02/02/94	3CM	T	
Manganese, Dissolved	0.029	mg/L	1,0	0.005	200.7/6010	02/03/94	MOK	1	
Manganese, Total	0.017	mg/L	1,0	0.005	200.7/5010	02/03/94	KW	7	

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

02/14/94

LIO/qfb KAZ0ICPXW1

⁽¹⁾ Sample Preparation on 01/20/94 by JCD using 3010

⁽²⁾ Sample Preparation on 01/20/94 by JCD using 3020



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Project : 7143,00

CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

PEPORT OF ANALYTICAL RESULTS

Page 16 of 70

SAMPLE DESCRIPTION	D/	VALUE XINIAN SAMPLED BY				SAMPLED DATE HECET			
M0048113(1	P	Aqueoilla		CLIENT	1	01/07/9	4	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYTEL	BY	NOTES	
Mercury, Dissolved	<0.20	<i>µ</i> 9/₽	1.0	0.20	245.1	03/01/94	JD	, i	
Mercury, Total	<0.20	MA/T	1.0	0.20	245.I	02/01/94	JD	1	
Nickel, Discolved	c0.040	ma/L	1,0	0,040	200,7/6010	02/04/94	FW	2	
Nickel, Total	-0.040	mg/L	1.0	0.040	200,7/6010	03/03/94	KW	2	
Potassium, Dissolved	1.2	ng/L	1.0	0.50	200.7/6010	02/03/94	KW	2	
Potassium, Total	1.1	104/L	1.0	0.50	200,7/6010	02/03/94	FW	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.		
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	200,7/5010	03/03/94	-XW	2	
Sodium, Dissolved	18.	mg/L	1.0	0.10	300.7/6010	02/03/94	KW	2 2 2	
Section, Total	15.	mg/L	1.0	0.10	200.7/6010	02/03/94	FW	2	
Thallium, Dissolved	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	EM	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 now reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LOO/gfb

⁽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



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Lab Number : WK-0032-2 Report Date: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 17 of 70

SAMPLE DESCRIPTION	N	TATRIX		SAMPLE	01/07/94 01/12/			
MX4811X1	A	queous		CLIENT		01/07/5	94 01/12/94 BY NOTE XW KW	01/12/94
PARAMETER	PRSULT	UNITS	DF	*PQL	METHOD	ANALYMED	BY	NOTES
Vanadium, Dissolved	₹0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	7
Variadium, 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	200.7/5010	02/02/94	3CW	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 'a' values
 (1) Sample Preparation on 01/20/94 by JCD using 3010

02/14/94

LJD/gfb KAZOICPXWI



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CLIENT HERB COLBY

ABB-WAREFIELD

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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 AMALYTICAL RESULTS

Page 18 of 70

SAMPLE DESCRIPTION	MAT	MATRIX SAMPLED BY Aqueous CLIENT			BY	SAMPLED DATE RECEIV			
W4811X1	Aqu				CLIENT			01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
Total Petroleum Hydroxarbons (TPR)	<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 samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values (1) Sample Preparation on 01/31/94 by GH/(AD)

02/14/99

LJO/gfb/djn



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Lab Number : WK-0032-2 Report Date: 02/14/94

PO Wo. : MSA 93-01-78-M1

Project : 7143.00

REPORT OF AMALYTICAL RESULTS

Page 19 of 70

SAMPLE DESCRIPTION		XIBTAM		SAMPL	AD SY	SAMPLED I	HECETVED	
MD(4B11XI		Aqueous		CLIEN	T.	01/07/9	14	01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANAL YERD	83	MOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	35	µg/L	1.1	10	EPA 8270	01/19/94	WE	
his (2-Chloroethyl) ether	e11.	MA/T	1.1	10	BPA 8270	01/19/94	ME	
2-Chlorophenol	<11.	/IG/D	1,1	1.0	EPA 8270	01/19/94	ME	
1,3-Dichlorobensene	<11.	MI/D	1.1	10	EPA 8270	01/19/94	WE	
1,4-Dichlorobenzene	<11.	H9/14	1.1	10	EPA 8270	01/19/94	ME	
Benzyl alcohol	<12,	µg/1,	1.1	10	EPA 8270	01/19/94	WE	
1,2-Dichlorobensene	<11.	MJ/L	1.1	10	BPA 9270	01/19/94	WP	
2-Methylphenol	<11.	Mg/D	1,1	10	EPA 8270	01/19/94	WP	
his (2-Chloroisopropyl) ether	<12.	Mg/L	1.1	10	EPA 8270	01/19/94	WE	
4-Methylphenoi	<11.	$\mu g/L$	1.1	10	EPA 8270	01/19/94	WE	
n-Nitroso-dipropylamine	<21.	µg/L	1.1	10	EPA 9270	01/19/94	WE	
He)cachLoroethane	<11.	$\mu g/L$	1.1	10	EPA 8270	01/19/94	WE	

PQL (Fractical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results sunctated with 'c' values.

02/14/94

LJO/kfg/jfg/kwn

⁽¹⁾ Sample Preparation on U1/13/94 by CAM

^{(2) &}quot;J" flag denotes an entimated value less than the Laboratory's Practical Quantitation Level.

⁽²⁾ Insufficient sample was provided to enable laboratory to achieve the laboratory's standard Practical Quantitation Level.



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CLIENT: HERB COLBY

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Lab Number : WG-0032-2 Report Date: 02/14/94

PO No. - MSA-93-01-78-ML

Project : 7143.00

PEPOPT OF ANALYTICAL PESULTS

Page 20 of 70

HAMPLE DESCRIPTION M		MATRIX		SIAMPL	SAMPLED BY		ATE	RECEIVED	
W(49113(1		Aqueons			CLIBAL		14	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
Nitrobensene	<11.	ид/Б	1/1	10	EPA 8270	01/19/94	WE		
Leophozvane	<11.	Mg/L	1.1	10	EPA 8270	01/19/94	WP		
2-Nitrophenol	<11.	VG/L	I.I	10	BPA 8270	01/19/94	WE		
2,4-Dimethylphenol	<11.	µg/L	I,I	10	EPA 8270	01/19/94	WF		
Bergolc acid	K55.	ug/L	1.1	50	EPA 8270	01/19/94	WE		
bis (2-Chloroethoxy) methane	<11	ug/L	1,1	10	EPA 8270	01/19/94	WP		
2,4-Dichlorophenol	<11:	ug/1	1.1	10	EPA 8270	01/19/94	WF		
1, 2, 4-Trichlorocennese	€1.i.	µg/1	1.1	10	EPA 8270	01/19/94	WP		
Naphrhalane	<11.	PG/L	1.1	1.0	EPA 8270	01/19/94	WP		
4-Chlorcamiline	SII.	49/L	Lil	10	EPA 8270	01/19/94	WF		
Hekachlomoutadiene	<1.1	H9/1	1,1	10	EPA 9270	01/19/94	WF		
4-Chloro-3-methy/phenol	<11.	Ag/L	1.1	30	EPA 8270	01/19/94	ME		
2-Methylnaphthalene	<11:	µg/1	1,2	10	EPA 8270	01/19/94	WE		
Hexachiorocyclopentadiene	<11.	MB/I	1,1	10	EPA 8270	01/19/94	WF		

PQL (Peactical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with (a) value.

02/14/94

Lab/kfg/jfg/kwh



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Project : 7149.00

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ABB WANTFIELD

CORPORATE FLACE 128, BUILDING 3 SUFIE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 21 of 70

MASILLI		MATRIX Aqueous		CLIENT SY		SAMPLED D	ATE	PECEIVED	
						01/07/94		01/12/94	
PARAMETER	RESULT	ETIMU	DF	*PQL	METHOD	ANALYZED	87	NOTES	
2,4,6-Trichlorophenol	<11.	µg/L	1,1	10	EPA 9270	01/19/94	WE		
2,4,5-Trichlorophenol	528	ug/L	1.1	25	BPA 8270	01/19/94	WF		
1-Chloronaphthalene	≥11:	Mg/L	1.1	10	EPA 8370	01/19/94	WF		
2-Mitroaniline	<28.	ug/L	1.1	25	EPA 8270	01/19/94	WF		
Dimethylphthalate	Shio	Mg/L	1,1	10	EPA 8270	01/19/94	WE		
Acenaphthylene	<11.	ug/D.	T.I	1.0	EPA 8270	01/19/94	WE		
2,6-Dinitrotoluene	<11.	Ug/L	1.1	10	EPA 8270	01/19/94	WF		
3 Nitroanilino	<20.	ME/L	1,1	25	EPA 8270	01/19/94	WF		
Acenaphthene	<11.	ug/L	I,I	-10	EPA 8270	01/19/94	WP		
2,4-Dinitrophenol	<28.	MG/E	1.1	25	BPA 8270	01/19/94	WF		
4-Mitrophenol	<28.	ug/L	1.1	25	BPA 8270	01/19/94	WF		
Dibenzofuran	<11.	49/I.	I.I.	1.0	EPA 8270	01/15/94	WE		
2,0-Dinitrotoluene	c11.	ug/L	1.1	10	EPA 8270	01/19/94	WE		
Diethylphtholate	<14-	Mg/L	1,1	1.0	EPA 6270	01/19/94	WP		

 ²QL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

LOO/KEg/jig/kwh



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Northeatern Division

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(207) 878-2400 Fan (207) 775-4029

Lab Mumber - WH-0032-2

Report Date: 02/14/94

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

Project

: 7143,00

CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 15

WAREFIELD, MA DISSO

REPORT OF AMALYTICAL RESULTS

Page 32 of 70

SAMPLE DESCRIPTION		MATERIX		SAMPLED BY		SAMPLED DATE RECEI			
MX4811X1		Aqueous			CLIENT		4	01/12/94	
PARAMETER	RESULT	UNTTS	DF	*PQL	METHOD	ANALYSED	BY	MOTES	
4-Chlorophenyl phenyl ether	<11:	μg/L	1.1	10	KPA 8270	01/19/94	WF		
Fluorene	<11:	加力	1.1	10	EPA 8270	01/19/94	WE		
4-Nicrosniline	<29.	μετ/Li	1.1	25	EPA 8270	01/19/94	WE		
4,6-Dinitro 2-methylphenol	<2R.	AUT/To	1.1	25	EPA 8270	01/19/94	WE		
m-Nitrosodiphenylamina	≈11.	Mg/L	1.1	10	EPA 8270	01/19/91	WF		
4-Bromophenyl phenyl ethor	<11.	19/L	1.1	10	EPA 8270	01/19/94	WF		
Helachlorobenzene	-11-	/kg/f.	1.4	10	EPA 8370	01/19/94	WF		
Pentachlorophenal	<28.	HI/L	1.1	25	EPA 8270	01/19/94	WE		
Phenanchrene	<11.	(I/EW)	1.1	10	EPA 8270	01/19/94	WF		
Anthracene	<11.	MB/D	1.1	10	E2A 8270	01/19/94	WE		
Di-n-butylphthalate	≈11.	$\mu g/L$	1.1	10	EPA 8270	01/19/94	WF		
Fluoranthene	<0.1	44T/To	1.1	10	EPA 8270	01/19/94	WF		
Pyrene	<11.	µg/E	2,1	10	EPA 8270	01/19/94	WF		
Bubyl benzylphthalate	<11:	MI/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

LOO/htfg/jfg/hwh



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Northeatern Division

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Leb Number : WK-0032-2

Report Date: 02/14/94 PO No. PISIA-93-01-79-M1

Project. 7193.00

CLIENT: HERB COLBY

AHP WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

REPORT OF AMALYTICAL RESULTS

Page 23 of 70

SAMPLE DESCRIPTION MX4011X1		Aquecus		CLIENT BY		SAMPLED DATE RECEI		
						01/07/94		01/12/94
FARAMETER	RESULT	UNITS	DF	*PQL	WEIHOD	ANAL ?ZED	BY	NOTES
3,3'-Dichlorobensidine	<11.	ug/Su	1,1	10	EPA 8270	01/19/94	WE	
Benso (a) anthracene	<11	Mg/I	1.1	10	EBA 8270	01/19/94	WE	
Chrysene	<11.	Mg/L	1.1	10	EPA 8270	01/19/94	WE	
bis(2-Ethylhexyl)phthalate	371	μg/L	1.1	10	EPA 8270	01/19/94	WE	
Di-n-octylphthalate	<11	MG/D	1.1	10	EPA 8270	01/19/94	WP	
Benzo(b) fluoranthene	<11.	pg/D	1.1	10	EPA 8270	01/19/94	ME	
Benzo(k) fluorantheme	<11.	Mg/L	1.1	10	EPA 8270	01/19/94	WF	
Banco (a) pyrene	<21.	MA/TO	1.1	10	EPA 9270	01/19/94	WP	
Indena (1, 2, 3-od) pyrene	<11.	pg/L	1:1	10	EPA 8270	01/19/94	WB	
Dibenzo(a, h) antiracene	<11.	45/L	1.1	10	EPA 8270	01/19/94	WP	
Benzo(g,h,i)perylene	<11	ME/D	1.1	10	EPA 8270	01/19/94	WP	
2-Finorophenol (* Recovery)	80.	. 12	1.1		EPA 8270	01/19/94	WE	
Phenol-d5 (% Recovery)	79.	8	1.1		EPA 8270	01/19/94	WF	
Nitrobenzeno-d5 (% Recovery)	73,	E .	11		EPA 9270	01/19/94	WE	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and way not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'e' values,

02/14/94

LED/kfg/sig/kwh



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Northeastern Division

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CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUTTE 25

WAKEFIELD, MA 01880

Lab Number: WK-0052-2 Report Date: 02/14/90

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 20 of 70

	MATRIX		CLIENT		SAMPLED DATE RECEIVE			
	Aqueous				01/07/94		01/12/94	
RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES	
71.	8	1.1		EPA 8270	01/19/94	WP		
73 -	备	I.I		EPA 8270	01/19/94	WF		
32.	3	I,I		EPA 9270	01/19/94	WF		
	RESULT	RESULT UNITS	Aqueous RESULT UNITS DF	Aqueous (IAE RESULT UNITS DF *PQL 71. % 1.1 73. % 1.1	Aqueous (ILENT RESULT UNITS DF *PQL METHOD 71. % 1.1 EPA 8270 73. % 1.1 EPA 8270	Aqueous (IMENT 01/07/9 RESULT UNITS DF *PQL METHOD ANALYZED 71. % 1.1 EPA 8270 01/19/94 73. % 1.1 EPA 8270 01/19/94	Aqueous CLIENT 01/07/94 RESULT UNITS DF *PQL METHOD ANALYZED BY 71. % 1.1 EPA 8270 01/19/94 WP 73. % 1.1 EPA 8270 01/19/94 WF	

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



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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WMC-0032-2 Report Date: 02/14/94

FO No. : MSA-93-01-78-MI

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 25 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	හා නැ	SAMPLED DATE RE		RECEIVED
MV48112)	Aqueous			CLIENT		01/07/94		01/12/94
PARAMETER	PESULI	UNITS	DF	* PQI	METHOD	AMALYZED	BY	WOTES
TCL Volatile Organiza by USEPA 8240								1,2
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	01/17/94	00	
Bromomethane	-320	µ9/4	1.0	10	EPA 8240	01/17/94	DG	
Vanyl chloride	-510	pg/1	1.0	ID	EFA 8240	01/17/94	DG:	
Chloroethane	=20.	49/L	1.0	10	EPA 8240	01/17/94	DG	
Wathylane chloride	080	49/D	1.0	1.0	EPA 1240	01/17/94	93	
Acetone	515.	ug/L	1.0	15	EFA 8240	01/17/94	DG	
Carbon diswlfide	<1.0	Mg/L	1.0	TO.	EFA 9240	01/17/94	DG	
1,1-Dichloroethene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	100	
1,1-Dichloroethane	<5,	Mg/I	1.0	5	EPA 5240	01/17/94	DG	
Total 1,2-Dichloroethene	<50	µg/L	1.0	5	BPA 8240	01/17/94	DG	
Chloroform	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG.	
1,2-Dichloroethane	<5.	Mg/I	1.0	5	EPA 8240	01/17/94	DG	
2-Butanone	<15.	Mg/L	1.0	15	EFA 8240	01/17/94	DG	
1,1,1 Wrichlorouthage	JE1	/Ig/L	1.0	5	EPA 8240	01/17/94	TO	

^{*} AVL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results encotated with '<' values.

02/14/9#

LGO/kig/jig/lad

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(2) &}quot;8" flag denotes detection of this analyte in the laboratory method blank analysed concurrently with the sample.



Air, Wasse & Hazardon: Waste Sampling, Analysis & Consultation Certified Hazardon: Waste, Cheronity, flucter ology & Bioastay Laboratories

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Lab Mumber : WK-0032-2 Report Date: 02/14/94

PO 193. : MSA-93-01-78-ML

Project : 7143,00

CLIENT: HERE COLEY

ABB-WAIGFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WEXEFIELD, MA 01880

REPORT OF AMAINTICAL RESULTS

Page 26 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPLED BY		SAMPLED D	ATE	RECEIVED
MM(4811)(1		Aquesus		CLIENT		01/07/94		01/12/94
FARAMETER	KESULT	UNITS	DF	*PQL	WETHOD	ANALYZED	BY	NOTES
Carbon tetwichloride	-25.	µg/L	1.0	5	EPA 8240	01/17/94	DG:	
Vinyl acetabe	<15.	MB/F	1.0	15	EPA 8240	01/17/94	DG	
Branedichloromethane	<5.	/H/L	1.0	9	EPA 8240	01/17/94	DG	
1,2-Dichloropropane	<5.	Mg/L	1.0	5	EPA 8240	01/17/94	DG	
cis-1,3-Dichloropropene	<5.	WE/L	1.0	5	BPA 8240	01/17/94	DO	
Prichloroethene	<5.	MJ/L	1.0	5	EPA 8240	01/17/94	DG.	
Dibromochloromethane	e5.	MA/T	1.0	9	EPA 8240	01/17/94	DG:	
1,1,2-Trichlorosthane	<5.	烟儿	1.0	5	EPA 8240	01/17/94	DG	
Benzene	c5.	MIT/I	1.0	5	EPA 8240	01/17/94	DG	
trans-1,3-Dichloropropene	c5.	19/L	2.0	9	EPA 8240	01/17/94	DG:	
Bronoform	55.	LOG/L	1.0	25	EPA 8240	01/17/94	D3	
4-Methyl-2-pentanone	<15.	MI/I	1.0	15	EPA 8240	01/17/94	DG.	
2-Hexarione	<15.	13/1	1.0	1.5	EPA B240	01/17/94	DG:	
Tetrachloroethene	<5.	III/L	1.0	5	EPA 9240	01/17/94	DG	
1,1,2,2-Tetrachloroethane	<5.	MI/I	1.0	5	EPA 9240	01/17/94	DG	

PCD (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results sunotated with 'e' values.

02/14/94

LID/kfg/jfg/lad



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CLIENT: HERB COLBY

ARE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01890

Lab Number - WK-0032-2 Report Date: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL PESULTS

Page 27 of 70

SAMPLE DESCRIPTION MX4811X1		MATRIX		SAMPLED BY CLIENT		SAMPLED D	RECEIVED	
						01/07/94		01/12/94
PARAMETER	KRANTU	UNITS	D€	*PQL	METHOD	ANALYZED	BY	MOTES
Toloene	45.	Ag/L	1.0		5 EPA 5240	01/17/94	DG	
Chlorobenzene	×5:	Hg/L	1,0	3	5 EPA 8240	01/17/94	DS	
Ethylbenzene	<5.	ME/D	I,O	9	5 EPA 8240	01/17/94	DO	
Stylene	c5.	//g/L	1.0		5 EPA 8240	01/17/94	DG	
Total Xylenes	c5.	H9/1	1.0	3	5 EPA 8240	01/17/94	Dā	
1,2-Dichloroethane (% Recovery)	104.	-	1,0		EPA 9240	01/17/94	DG	
Toluene-d8 (% Recovery)	105.	*	1.0		EPA 8240	01/17/94	DG	
p-Brownfluorobenzene (% Recovery)	97:	*	1.0		EPA 8240	01/17/94	DG	

^{*} FQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

02/14/94

Tamo/Mcfg/jfg/lad



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Lab Mumber : WK-0031-3 Report Date: 02/14/94

PO No. : MSA 93 D1-78-MI

Project : 7143.00

CLIEW: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

REPORT OF AWALITICAL RESULTS

Page 28 of 70

RECEIVED		SAMPLED DE	D BY	SAMPLED BY		ATRIN	M	SAMPLE DESCRIPTION	
13/94	- 3	01/10/99		CLIENT		queous	A	0X4503X1	
NOTES	¥	IMALYZE:	WETHOD	*PQL	DF	UNITS	PESULT	PARAMETER	
1	OV.	02/02/94	200.7/6010	0.30	1:0	mg/L	<0.10	Aluminum, Disselved	
1	W	02/02/94	200.7/6010	0.10	1.0	mg/L	0_L3	Shumiram, Total	
2	10	01/28/94	204.2/7041	0.005	1.0	mg/L	<0.005	Antimony, Dissolved	
2	C	01/28/94	204.2/7041	0.005	1.0	mg/L	€0.005	Ancimony, Total	
3	34	01/21/94	206-2/7060	0.005	1.0	mg/L	<0.005	Amounic, Dissolved	
3	100	01/21/94	206.2/7060	0.005	1.0	19/L	<0.005	Arsenic, Total	
3	CVF	02/03/94	200.7/6010	0.005	1.0	mg/L	0.005	Barium, Dissolved	
i	QV.	02/03/94	200.7/6010	0.005	1.0	mg/L	<0.005	Rarium, Total	
1	W	02/03/94	200.7/6010	0.005	1.0	TE/L	<0.005	Beryllium, Dissolved	
1	W	03/03/94	200.7/6010	0.005	1.0	mg/I	<0.005	Peryllium, Total	
3	(9)	01/24/94	213.2/7131	0.002	1.0	mg/L	<0.002	Cadmium, Dissolved	
3	W	01/24/94	213.2/7131	0.002	1.0	mg/L	<0.000	Cadirdum, Total	
1	THE	02/02/94	200.7/6010	0.050	1.0	mg/L	19,	Calcium, Dissolved	
1	W.	02/02/94	200,7/5010	0,050	1/0	mg/L	17.	Calcium, Total	
		01/21/94 01/21/94 02/03/94 02/03/94 02/03/94 03/03/94 01/24/94 01/24/94 03/02/94	206.2/7060 206.2/7060 209.7/6010 200.7/6010 200.7/6010 200.7/6010 213.2/7131 213.2/7131 200.7/6010	0.005 0.005 0.005 0.005 0.005 0.002 0.002	1.0 1.0 1.0 1.0 1.0 1.0 1.0	10g/L 10g/L 10g/L 10g/L 10g/L 10g/L 10g/L	<0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.002 <0.002	Arsenic, Dissolved Arsenic, Total Barium, Dissolved Barium, Total Baryllium, Dissolved Peryllium, Total Cadmium, Dissolved Cadmium, Total Cadmium, Total Calcium, Dissolved Calcium, Dissolved	

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

02/14/94

LPO/gEd KADDICENNI

⁽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



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Lab Number J WK-0032-3

Report Date: 02/14/94

PO No. ; MSA-93-01-76-M1

Project: : 7143.00

CLIENT: HERB COLEY

ASB-WANEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA DISEC

REPORT OF ANALYTICAL RESULTS

Page 29 of 70

SAMPLE DESCRIPTION		MATRIX			SAMPLED BY		SAMPLED DATE RECEIVE				
MX4803/1	,A	Aqueous			CLIENT		4	01/12/94			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	ΒY	NOTES			
Chromium, Dissolved	<0.015	mg/L	1,0	0.015	200.7/6010	02/04/94	JON.	1			
Chrondum, Tobal	<0.015	ng/L	1.0	0.015	200.7/6010	02/06/94	EW	T.			
Cobalt, Dissolved	<0:010	ng/L	1.0	0.030	200.7/6010	02/03/94	FOV	1			
cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	02/03/94	EW	3.			
Copper, Dissolved	<0.025	mg/L.	1.0.	0.025	200.7/6010	02/02/94	KW	1			
Copper, Total	<0.025	ng/L	1.0	0.035	300.7/6010	02/02/94	AW	T.			
Iron, Dissolved	<0.025	mq/L	1,0	0.025	200.7/6010	02/02/94	HW	1			
Dron, Total	<0.025	mg/L	1,0	0.035	200.7/6010	02/03/94	EW	1			
Lead, Dissolved	<0.005	UB/L	1.0	0.005	233.2/7421	01/31/94	KW	3			
Tead, Total	<0.005	mg/I_1	1.0	0.005	239.2/7421	01/21/94	WA	. 2			
Magnesium, Dissolvei	2.2	ng/L	1.0	0.050	200.7/5010	02/02/94	PW	3			
Magnesium, Total	1.9	ng/L	1.0	0.050	200.7/6010	02/02/94	EW	1			
Manganese, Dissolved	0.018	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	3			
Manganese, Total	0.015	mg/L	1,0	0.005	300.7/5010	02/03/94	10W	1			

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

02/14/54

EADUICPXNI

⁽¹⁾ Sample Preparation on 01/20/94 by JCD using 1010

⁽⁵⁾ Sample Preparation on 01/20/94 by JCD using 3020



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CLIENT HERE COLEY

ABE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAFEFIELD, MA 01360

Lab Number : WK-0032-3 Report Dage: 02/14/94

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

Project | 7143.00

REPORT OF AVALYTICAL PESULTS

Page 30 of 70

EAMPLE DESCRIPTION MATE	MATRIX			SIMPLED D	01/12/94	
NX4803XI Rque				01/10/94		
PARAMETER RESULT UN	rts of	*PQL	METHOD	ANALYZED	87	borres
Mercury, Dissolved <0,20 kg	L 1.0	0.20	245.1	02/01/94	,ID	ì
Mercury, Total <0.20 µg/	L 1:0	0.20	245.1	02/01/94	JD.	5.
Nickel, bissolved 40,040 mg	t. 1.0	0,040	200,7/6010	02/03/94	WOR	2
Nickel, Total <0.040 mg.	L I.O	0.040	200,7/6010	02/03/94	FGW	. 2
Potassium, Dissolved 1.1 mg/	1. 1.0	0.50	200.7/6010	02/03/94	KW	3
Potassium, Total 1.4 mg	L 1.0	0.50	200.7/6010	02/03/94	KW	- 2
Selenium, Dissolved <0,005 mg,	1.0	0,005	270.2/7740	01/25/94	FOW	3
Selenium, Total <0.005 mg	/L 1.0	0.005	270,2/7740	D1/25/94	KW	
Silver, Dissolved <0.015 mg/	T.0	0,015	200.7/6010	02/02/94	WY	-2
Silver, Total <0.015 mg.	L 1.0	0,015	200,7/6010	02/02/94	FOW	2
Sodium, Dissolved 14. mg.	T. I.O.	0.10	200.7/6010	02/03/94	KW	-2
Sodium, Total 15. mg	L 1.0	0.10	200.7/6010	02/03/9%	WH	2
Thallium, Disaclyed <0,005 mg.		0,005	279,2/7841	01/26/94	POV	3
Thallium, Total <0.005 mg	L 1.0	0.005	279,2/7841	01/26/94	FW	3

^{*} POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific Limits are indicated by results annotated with '<' values.

72/14/94

LUD/grb

⁽¹⁾ Sumple 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



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CLIENT: HERB COLBY

ABB-WAKEFIELD

COPPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA. 01880

Lab Number - WK-0032-3 Report Date: 02/14/94

FO No. : MSA 93-01-78-MI

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 31 of 70

SAMPLE DESCRIPTION	Iv	KIRIK		SAMPLED BY SAMPLED DATE REC				
MX4803XI	A	queous		CLIENT		01/10/9	9/94 61/12/9 20 BY NOT 14 KW	61/12/94
PARAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Vanadium, Dissolved	<0.025	mg/L	1,0	0,025	200.7/6010	02/03/94	YON	à
Vanadium, Total	€0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	100	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200,7/6010	02/02/94	KJW	1
Zinc, Total	<0.035	mg/L	1.0	0.025	200.7/6010	02/02/94	BW	1

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific 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

LXO/gfb KA201CPXW1



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CLIENT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, SUILDING 3, SUITE 25

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

Page 32 of 70

SAMPLE DESCRIPTION	MAI	RIX	_	SAMPLED	MIE	E RECEIVED		
MX4803X1	Agu	Aquequs		CLIENT	01/10/94		01/12/94	
PARAMETER	RESULT	ONITS	DF	*PQL	METHOD	ANALYZED	ВУ	MOTES
Total Petroleum Hydrocarbons (TPH)	<1,3	mg/L	1,3	1.	0 418 1	02/03/94	/IA	1,2

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' Values.

(0/11/21

LOS/gE/dyn

⁽¹⁾ Sample Preparation on 01/31/94 by GR/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.



CLIENT: HERB COLEY

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Tab Mumber + WK-0032-2

Report Date: 02/14/94 PO No. : MSA-93-01-74-M.

7143,00

CORPORATE PLACE 128, BUILDING 3, SUITE 25 Project

WAKEFIELD, MA 01880

ARB-WAKEFIELD

REPORT OF ANALYTICAL RESULTS

Page 33 of 70

NAMPLE DESCRIPTION		MATRIX		SAMPI	MITE	ATT RECEIVED		
MX4803X3		Aqueous		CLIEN	rr ·	01/10/5	4	01/12/94
PARAMETER	RESULT	UNITE	DP	*PQL	METHOD	AMALYZET	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
PhenoI	12.	Mg/I	1,1	10	EPA 8270	01/25/94	WE	
bis (2 Chloroethyl) ether	<11.	ng/L	1.1		EPA 8270	01/25/94	WE	
2-Chlorophenol	c11.	µg/L	1.1	10	EPA 8270	01/25/94	WP	
1,3-Dichlorobensepe	<11,	H9/14	La	10	EPA 8270	01/25/94	WE	
1,4-Dichlorobentate	<11.	Ag/L	1.1	10	EPA 9270	01/25/94	ME	
Benzyl alcohol	<11.	Mg/I	1/1	10	EPA 8270	01/25/94	ME	
1,2-Dichlorobenzene	<11.	µg/L	1.1	30	EPA 8270	01/25/94	WE	
2-Methylphenol	<11.	Mg/I	1.1	7.0	EPA 8270	01/25/94	WE	
bis(1-Chloroisopergyl) when	<11.	pg/L	1.1	10	BPA 8270	01/25/94	WE	
4-Methylphenol	<11.	ME/I	1.1	30	EPA 8270	01/25/94	WE	
n-Mitroso-dipropylamine	<11.	Ag/I	1,1	10	EPA 8270	01/25/94	WE	
Hexachloroethane	<11.	49/L	2.1	10	EPA 8370	01/25/94	WE	

[&]quot; FOL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sumple specific limits are indicated by results annotated with < values.

02/14/34

Law/httg/kwh

⁽¹⁾ Sample Preparation on 01/13/94 by CAM

^{(2) &}quot;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 Fractical Quantitation Level.



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CLIENT: HERE COLEY Réport Date: 02/14/94

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

Project : 7141.00

COPPORATE PLACE 128, BUILDING 3, SUITE 25
WANGEFIELD, MA 01880

ARB-WAKEFIELO

REPORT OF ANALYTICAL RESULTS

Page 34 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	SAMPLED BY SAMPLED DATE F					
MX4803X1		Aqueous	5	CHEN	Γ	01/10/9	4	01/12/94		
PARAMETER	RESULT	LIGHTE	DF	*PQL	METHOD	ANALYZED	BY	MOTES		
Nitrobenzene	≈11.	49/L	1.1	10	EPA 8270	01/25/94	WE			
I sophorone	ell.	Ag/L	1.1	10	EPA 9270	01/25/94	WE			
2-Natacoptienol	<11.	pg/L	1,1	10	EPA 8270	01/35/94	WP			
2.4-Dinethylphenol	-11	pg/L	1.1	10	EPA 8270	01/25/94	WE			
Benzoic acid	<551	MH/L	1.1	50	EPA 8270	01/25/94	WF			
bis (2-chloroothoxy) mothan-	= 1.1 ·	HA/I	1.1	10	EPA 8270	01/25/94	WE			
2,4-Dichlorophenol	<11.	MG/I	1,1	ID	EPA 8270	01/25/94	WF			
1,2,4-Trichlorobenzene	c11.	M9/1	1.1	10	BPA 8270	01/25/94	WE			
Naphthalene	~11.	A9/1	1.1	10	EPA 8270	01/25/94	WF			
4-Chloroaniline	<11.	Mg/I	1,1	10	EPA 8270	01/25/94	WF			
Hexachlorobutadiene	<11.	/49/L	1.1	1.0	EPA 8270	01/25/94	WF			
4-Chloro-3-methylphemol	e3.1:	Mg/L	1.1	10	EPA 8270	01/25/94	WF			
2-Methylnaphthalene	<11.	MB/D	1.1	10	EPA 3270	01/25/94	WP			
Hexachlopocyclopentadiene	<11.	Ag/L	1.1	10	EPA 8270	01/25/94	WF			

^{*} POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample specific limits are indicated by results annotated with '<' values.

02/14/94

LJO/kfg/kwin



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CLIENT: HERE COLEY

ASE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 35

WARRETELD, MA 01860

Lab Number - WK-0012-3 Report Date: 02/14/94

PO No. : MSA 91-01-78-MI

Project : 7143.00

REPORT OF AMALYTICAL RESULTS

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SAMPLE DESCRIPTION		MATRIX		SAMPLI	E) BY	SAMPLED D	50,000			
MO(4B03KI		Aqueous		CLIEN	r	01/10/94 01/12/				
PARAMETER	RESUUT	UNITS	DF'	*PQL	METHOD	ANALYZED	ву	NOTES		
3,4,6-Trichlerophenol	~11 ₁	ug/L	1.1	10	EPA #270	01/25/94	WE			
2,4,5-Trichlorophenol	52B.	Hg/L	1.1	25	SPA 8270	01/25/94	ME			
2-Chloronaphthalene	<11.	MG/I	1.1	10	EPA 6270	01/25/94	WD			
2-Nitromiline	c2B.	$\mu g/L$	1.1	25	EPA 9270	01/25/94	WE			
Dimethylphthalace	≥11	ug/L	1.1	10	EPA 8270	01/25/94	WE			
Acenaphthylene	k11.	uq/L	1.1	10	EPA 8270	01/25/94	WE			
2,6-Dinitrotoluene	411	ug/L	1.1	10	EPA 8270	01/25/94	WE			
3-Nitroaniline	-925)	/19/tu	1.1	25	EFA 8270	01/25/94	WE			
Acenaphchene	:11.	Mg/5	1.1	10	EPA 8270	01/25/94	WE			
2,4-Dimitrophenol	<20,	$\mu g/L$	1.1	25	EPA 6270	01/25/94	WE			
4-Nutrophenol	can.	pg/I	1.1	25	EFA 8270	01/25/94	WE			
Dibenzofuran	≥1.1.	µg/L	1.1	10	EPA 6270	01/25/94	WE			
2,4-Dimitrotoluene	<11.	H9/L	1,1	10	EPA 8270	01/25/94	WE'			
Diethylphthalate	ve1.1	$\mu g/L$	1.1	10	EFA 8270	01/25/94	WF			
0.7					And the second second					

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

02/14/94

LID/Julg/Anti



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CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUDTE 25

WAREFIELD, MA D1880

Lab Number : WK-0032-3 Report Date: 02/14/94

PO No.

MEA-93-01-78-MI

Project

7143,00

REPORT OF ANALYTICAL RESULTS

Page 36 of 70

SAMPLE DESCRIPTION		MAIFIX		SAMPL	ED BY	SAMPLED I	ATE	RECEIVED
MX4803X1		Aqueous CLIENT		T [*]	01/10/94		01/12/91	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BA	MODES
4-Chiprophenyl phenyl ether	÷11.	μg/L	1.1	10	EPA 8270	01/25/94	WE	
Fluorene	421.	NE/L	1.3	1.0	EPA 8270	01/25/94	WE	
4-Nitroaniline	<20:	MI/I	1.1	25	EPA 8270	01/25/34	WF	
4,6-Dinitro-I-methylphenol	428	MA/T	1.1	25	EFA 8270	01/25/94	WF	
n-Vicrosodiphenylamine	÷21:	ug/I	1.1	10	EPA 8270	01/25/94	WE	
4-Bromophenyl phenyl other	<11.	HG/L	1.1	10	EPA 8270	01/25/94	WF	
Hexachlorobenzene	<11.	AH/L	1.1	10	EPA 8270	01/25/94	WE	
Pentachlorophenol	<23.	MI/L	1.1	25	EPA 8270	01/25/94	WE	
Phenauthrene	-11.	$\mu a/L$	1.7	1.0	EPA 8270	01/25/94	WE	
Anthracene	<11	MJ/I	1.1	10	EPA 8270	01/25/94	WF	
Di-n-butylphthalate	=11.	MA/F	2.1	1.0	EFA 8270	01/25/94	WE	
Fluoranthene	=11:	Mg/L	1.1	10	EPA 8270	01/25/94	WE	
Pyrene	<11.	ME/I	1.1	10	EPA 8270	01/25/94	WE	
Butyl benzylphthalate	<11.	$\mu g/L$	1.2	10	EPA 8270	01/25/94	WE	

PQE (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits: Symple-specific limits are indicated by results annotated with < values.

02/14/94

LJO/kfg/lash



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Lab Number : WK-0032 3 Report Date: 02/14/94

PO No. - MSA 93 01-78-MI

Project : 7143.00

CLIENT: HESE COLBY

ABB-WAKEFTELD

COMPORATE PLACE 128, BUILDING 3, SUITE 25

WARRFIELD, MA 01885

REPORT OF AMALYTICAL RESULTS

Page 37 of 70

NAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	RECEIVED		
MX4803X1		Aqueous		CTIEN	T ¹	01/10/9	4	01/12/94
FARAMETER	RESULT	UNITS	DF	*FQL	MENTHOD	DNALYZED	BY	NOTES
1,1 -Dichlardenzidine	<11.	µg/L	1.1	10	RPA 8270	01/25/94	WE	
Benzo (a) anthracene	<11.	M3/L	1.1	LO	EFA 9370	01/25/94	WF	
Chrysene	JE	µg/L	1.1	10	EPA E270	01/25/94	WE	
bis(2-Ethylhexyl)phthalate	J	Mg/L	1.1	10	EPA 8270	01/25/94	100	
Di-n-octylphthelate	=11.	Wg/L	1.1	10	EPA 8270	01/25/94	WE	
Berizo (b) fluoranthene	×11.	ag/L	1.1	10	EPA 8270	01/25/94	WE	
Benzo(k) fluoranthene	≥11.	09/L	1.1	10	EPA 8270	01/25/94	WE	
Penzo(a)pyrene	<11.	ug/L	1.1.	10	BPA 8270	01/25/94	WF	
Indeno (1,2,3-cd) pyrene	<11.	49/L	1.1	10	EPA 8270	01/25/94	WF	
Dibenzo (a; h) anthracene	c11:	$\mu g/L$	1.1	10	EPA 9270	01/25/94	WF	
Benzo(g,h,i)perylene	×11:	ug/L	1.1	10	EPA 8270	01/25/94	WE	
2+Fluorophenol (% Recovery)	99.	*	1.1		EPA 8270	01/25/94	WF	
Phenol-d5 (% Redovery)	95.	8	1.1		EPA 9270	01/25/94	WE	
Nitrobenzene-d5 (* Recovery)	8b:	*	1.1		EPA 0270	01/25/94	WF	

PCL (Bractical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 'a values.

02/14/94

LATER HELD / WILL



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Lab Number : WK-0032-3 Report Date: 02/14/94

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

Project 7143,00

CLIENT: HERB COLBY

ARE-WAKEFIELD

CORPORATE PLACE 120, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 38 of 70

SAMPLE DESCRIPTION		MATRIX		SAMP	LED BY	SAMPLED D	RECEIVED	
WX4803X1	Aquiedus		CLIENT		01/10/94		01/12/94	
PARAMETER	RESULT	UNTIS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
3-Fluorobiphenyl (% Recovery)	101.	્રે	1.1		EPA 8270	01/25/94	WP	
2,4,6-Tribromophenol (* Recovery)	74 -	ŧ	1.1		EPA 8270	01/25/94	WE	
Terphenyl-dl4 (% Recovery)	121.	*	1.1		EPA 8270	01/25/94	WF	

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

02/14/94

LJU/kEg/kwh



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E-SECO-XW : sedmiN dal Report Date: 02/14/94

PO NO. - MBA 93-01-78-ML

Project : 7143:00

CLIPMY: HERE COLBY

ABB WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA U1880

REPORT OF AMALYTICAL RESULTS

Page 39 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPI	ED BY	SAMPLED I	ATE	PECSIVE)	
MX4903X1		Agueous	Aqueous CLIENT		T	01/10/94		01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	MOTES	
TCE Volatile Organics by USEPA 8240								1,2	
Chilorometiane	<10.	烟石.	1.0	10	EFA 8240	01/17/94	DG		
Bromomethane	<10	pg/D	1.0	10	EFA 8240	01/17/94	DG		
Vinyl chloride	c10.	µg/L	1.0	10	EFA 8240	01/17/94	DO		
Chloroethane	<10	ME/L	1.0	10	EPA 8240	01/17/94	DG		
Methylene chloride	JB3	119/1	1.0	-10	EPA 9240	C1/17/94	DG		
Acetone	<15.	Mg/L	1.0	15	EPA 8240	01/17/94	DG		
Carpon disulfide	<10	MH/L	1.0	10	FPA 8240	01/17/95	DG		
1,1-Dichloroethene	55	MG/L	1.0	5	EPA BR40	01/17/94	DG		
1,1-Dichloroethane	e5.	Mg/L	1.0	5	EPA 8240	31/17/94	DG.		
Total 1,2-Dichloroethene	v5-	49/L	1.0	5	EPA 8240	01/17/94	DQ		
Chloroform	55,	Mg/L	1,0	5	EPA 8240	01/17/94	DG		
1,2-Dichloroethane	K5.	PG/11	1.0	5	EPA 8240	01/17/94	133		
2-Butanone	£15_	Mg/L	1.0	15	EPA B240	01/17/94	DG		
1,1,1-Trichloroethane	JBI	43/I	1.0	5	EPA 8240	01/17/94	DG		

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

02/14/94

LDO/kfg/jfg/lad

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Fractical Quantitation Level.

^{(2) &}quot;B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.



Air, Water & Hazardous Waste Sampling, Analysis & Comultation Certified Hazardous Waste, Chemistry, Bacteriology & Bioastay Laboratories

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TALENT: HERB COLSY

ABB-WAREFIELD

COPPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

Lab Number : WK-0032-3 Report Date: 02/14/94

PO No.

: MSA-93-01-75 M1

Project

: 7143.00

REPORT OF AMALYTICAL RESULTS

Page 40 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	EO BA	SAMPLED DATE RU		
WX4803X1		Aqueous	1	tring	T	01/10/9	4.	01/12/94
PARAMETER	EESULT	UNITS	DF	*PQL	METHOD	ANALYSED	BY	MOTES
Carbon tetrachloride	<5.	Ag/L	1.0	5	EPA 8240	01/17/94	DG	
Vinyl acetate	<15.	Mg/L	2.0	15	EPA 8340	01/17/94	DG	
Bromodichloromatisma	<5.	H9/I	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloropropana	¢9.,	µg/L	1,0	5	EPA 8240	01/17/94	DG	
cis-1,1-Dichloropropene	<9	Wg/I.	1.0	.5	EPA 8240	01/17/94	DG	
Trichloroethene	45.	PG/L	Total-	5	EPA 8240	61/17/94	DG	
Dibromochloromethene	-65	US/T	1.0	.5	EPA 3040	01/17/94	DG.	
1, 1, 2-Trichloroethams	<5;	Hg/L	I.O.	5	EPA 8245	01/17/94	DG	
Senzene	25.	AG/L	2:0	5	EPA 8340	01/17/94	DG	
crame-1, A-Dichloropropene	<5.	四/上	1:0	5	EPA 8240	01/17/94	DO	
Bromoform	es.,	.ug/Li	1.0	5	EPA 8240	01/17/94	DG	
4 Methyl-2-pentanene	<15.	//g/T.	1.4	15	EPA 8240	01/17/94	DG	
2-Revanione	<15.	49/L	1.0	15	EPA 8240	01/17/94	DG	
Tetrachloroethens	<\$/	MB/T	L,O	5	EFA 8240	01/17/94	DG.	
1,1,2,2-Tellrachlomethane	<5.	$\mu g/L$	1.0	9	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.</p>

02/14/94

LOD/kig/jig/lad



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(207) 874-2400 Fax (207) 775-4029

Lab Mumber : WK-0032-3 Report Date: 02/14/94

PO No. ⊥ MSA-93-01-78-M1

Project + 7143.00

CLIENT: HERE COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, EUILDING 3, SUITE 25

WAKEFIELD, MA 01860

REPORT OF ANALYTICAL RESULTS

Page 41 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	ATE	RECEIVED			
WX4803X1	Aqueous			CLIENT		01/10/94		01/12/94	
PARAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	MOTES	
Tol vene	e5.	μg/L	1.0	5	EPA 8240	01/17/94	DĞ		
Chlorobenzene	₹5.	49/L	1.0	.5	EPA 8240	01/17/94	DG		
Striy1benzene	-45.	19/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	-05,	//g/L	1.0	5	EPA 8240	01/17/94	DG		
1,2-Dichlorcethane (% Recovery)	106	\$	1.0		EPA 8240	01/17/94	DG		
Toluene-da (% Recovery)	105	3	1.0		EPA 8240	01/17/94	DG		
p-Bromofluorobenzene (% Recovery)	96	1	1.0		EPA 8240	01/17/94	DG		

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



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Northeastern Division

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

(207) 874-2400 Fax (207) 775-4029

Lab Number: WK-0032-4 Report Date: 02/14/94

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

Project : 7143.00

CLIENT: HERB COLEY

ARB-WAKEFIELD

CORPORATE PLACE 12B, BUILDING 1. SUITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Fage 42 of 70

SAMPLE DESCRIPTION	N	ATRIX		SAMPLE	DBY	SAMPLED D	RECEIVED		
MX4801X1	P	lqueous		CLIENT		01/11/94		01/12/94	
FARAMETER	RESULT	ONITS	DF	# PQL	METHOD	ANALYZED	BY	NOTES	
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/02/94	KW	1	
Alumirum, 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	
Rarium, 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	ng/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	ION	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	

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

02/14/94

LJO/gfb RA20ICPXW1

⁽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



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Lab Number | WHT-0032-4 Report Date: 02/14/94

PO Mc. J MSA-93-01-78 TIL

Project 1 7143.00

CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 1, SUTTE 25

WAKEFIELD, MA D1890

REPORT OF ANALYTICAL RESULTS

Page 43 of 70

SAMPLE DESCRIPTION	j _y	WIRLX		SIMPLE	D BY	SAMPLED D	ATE	RECEIVED	
MX4801X1	A	ndqecare		CLIENT		01/11/94		01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	AUALYZED	EY	NOTES	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/04/94	PW	1	
Chromium, Total	<4.015	mg/L	1,0	0.015	200 7/6010	02/04/94	KW	1	
Cobalt, Dissolved	OE0.0>	mg/L	I cu	0,030	200.7/6010	02/03/94	FW	. 2	
Cobalt, Total	OED.Q=	ng/L	1.0	0.030	200.7/6010	03/03/94	FW	1	
Copper, Dissolved	<0.025	mg/L	1-0	0,025	200.7/6010	02/02/94	KW	I	
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/5010	02/02/94	F39	30	
Iran, Dissolved	<0.025	mg/L	1.0	0.025	200-7/6010	02/02/94	HW	1	
Iron, Total	<0.025	ng/L	I.O.	0.025	200.7/6010	02/02/94	WM	L	
Lead, Dissolved	<0.005	mg/L	1.0	0,005	239,2/7421	01/21/94	EW	2	
Lead, Total	<0.009	mg/L	1.0	0,005	239,2/7421	01/21/94	SM	.2.	
Magnesium, Dissolved	1.8	ng/L	1:0	0.050	200.7/6010	02/02/94	KM	1	
Magnasium, Total	1,8	mg/T.	1.0	0,050	200.7/6010	02/02/94	HW	i	
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	02/03/94	FW	30	
Manganese, Total	<0.005	mg/L	1 0	0.005	200.7/6010	02/03/94	KW	L	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with 's' values.

112/14/94

Lab/gfb FAZOICEAWI

⁽¹⁾ Sample Preparation on 01/20/94 by JCD using 3010

⁽³⁾ Sample Preparation on 01/20/94 by JCD Union 3020



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TIENT HERE COLBY

AEB-WAKEFIELD

EXPORATE PLACE 120, BUILDING 3, SUITE 25

WAKEFIELD, WWW 01880

Dab Mumber : WM-0032 & Report Date: 02/14/94

PO No.

: MSA-93-01-72-M)

Project

: 7143,00

REPORT OF ANALYTICAL RESULTS

Sage 44 NE 70

HAMPLE DESCRIPTION	ív	ATRIX	SAMPLED BY			SAMPLED DATE RECEIVED			
MX48(01X1)	A	queous		CLUENT	CLUMP		4	01/12/94	
PARAMETER.	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	MOTES	
Mescury, Disestrad	e0.20	µg/L	1.0	0.20	245.1	02/01/94	JD	1	
Mercury, Total	<0.20	M9/I.	1.0	0.20	245.1	02/01/94	7D	1	
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	-3	
Nickel Total	0:042	mg/L	1.0	0.040	200.7/6010	03/03/94	EW.	-2	
Potassiam, Dissolved	1.2	mg/L	1.0	0.50	300.7/6010	02/07/94	EW	- 3	
Potassium, Total	1.9	mg/L	1,0	0.50	200.7/6010	02/03/94	KW	-2	
Selendian, Dicsentived	<0.005	ma/L	2.0	0.005	270.2/7740	01/25/94	KW	3	
Selanium, Ubtal	<0.005	ng/L	1.0	0.005	270.2/7740	01/25/94	KW	. 3	
Silver, Dissolved	<0.015	na/L	1.0	0.015	200.7/6010	02/02/94	KW	2	
Silver, Total	<0.015	mg/1_	1,0	0.015	200.7/6010	02/02/94	KW	-2	
Sodium, Dissolvai	31,	mg/L	I.O.	0.10	200.7/6010	03/03/94	KW	- 2	
Sodium, Total	32.	ng/L	1.0	0.10	300:7/6010	02/03/94	1920	2	
Thallium, Dissolved	<0.005	mg/L	I.Q	0.005	279.2/7841	01/26/94	KW	3	
Thallium, Potal	<0.005	mg/L	1.0	0.005	279.2/7841	01/26/94	EM	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.

02/14/94

1.70/gfp

⁽¹⁾ Sample Preparation on 01/31/94 by JCD using 245.1

⁽³⁾ Sample Preparation on 01/20/94 by UCD using 3010

⁽³⁾ Sample Preparation on 01/20/94 by JCD daing 3020



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CLIENT: HERB COLBY

ABE-WAFEFIELD

CORPORATE PLACE 128, BUILDING 1, SUITE 25

WAKEFIELD, MA 01880

Lab Mumber : WK-0033 4 Report Date: 02/14/94

PO NO. - MSA-93-01-76-MI

Project : 7143.00

REPORT OF ANALYTICAL PESULTS

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SAMPLE DESCRIPTION	Ī	MIRIX		SAMPLE	D BY	SAMPLED D	PECETVED		
MX48013,1	A	Aqueous				01/11/94		01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZBO	BY	NOTES	
Vanadium, Dissolved	<0.075	mg/L	1,0	0.025	200.7/6010	02/03/94	KW	1	
Variadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	KW	1	
Minc. Dissolved	c0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	FW	1	
Zinc, Total	<0.025	ma/To	1,0	0.025	200.7/6010	02/02/94	KW	i	

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,
 Sample Preparation on 01/20/94 by JCD using 3010

02/14/34

LHO/gfb RABUICTXWI



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Lab Mumber : WK-0032-4 Report Date: 02/14/94

PT No VIS

: MSA-93-01-78-M1

Project : 7143.00

CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 46 of 70

SAMPLE DESCRIPTION	MAG	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED		
MCCHEOIXI	Aqueous			CLIENT		01/11/9	01/11/94		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	ВУ	NOTES	
Total Petroleum Hydrocarbons (TPH)	د, 15	mg/L	1.3	1.	0 418,1	02/02/94	/LA	1,2	

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

03/14/94

wo/gfb/djn

⁽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.



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ABB-WAKEFIELD

CORPORATE PGACE 128, BUILDING 3, SUTTE 25

WAREFIELD, MA 01980

Lab Mamber : WK-0032-1 Report Date: 02/14/94

PO No. : MSA-91-01-78-ME

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 47 of 70

SAMPLE DESCRIPTION		MAURIM		SAMPL	SAMPLET E	DATE RECEIVED			
MX4801XI		Aqueous		CLIEN	CLIENT		4	01/12/94	
PARAMETER	PESULIT	UNITS	DF	*PQL	METHOD	ANALYSES	BY	NOTES	
MCL Semivolatile Organics by USEPA 8270								1	
Phenol	17	M3/L	1.0	10	EPA 6270	01/19/94	WF		
bis(2-Chloroethyl)ether	<10.	ug/L	1,0	10		01/19/94	WIF		
2-Chlorophenol	<10.	Mg/L	2.0	10	EPA 8270	01/19/94	WF		
1,3-Dichlorokenzene	<10.	#3/I.	2.0	1.0	EPA 8270	01/19/94	WF		
1,4-Dichlorobenzene	<10.	43/L	1.0	10	EPA 8270	01/19/94	WF		
Benzyl alcohol	<10,	H9/L	1.0	10	EPA 9270	01/19/94	WE		
1,2-Dichlorobenzene	<10.	M3/I	1.0	10	EPA 8270	01/19/94	WF		
3-Methylphenol	<10.	µg/L	3.0	10	EPA 5270	01/19/94	WE		
bis(2-Chloroisopropyl) ether	<10	Ma/L	1,0	10	EPA 8270	01/19/94	WH		
4 Methylphenol	<10.	Mg/L	1,0	10	EPA 8270	01/19/94	WE		
n-Mitroso-dipropylamine	<10.	Ag/L	2.0	1.07	EPA 8270	01/19/94	WE		
Herachloroethane	<10.	MJ/L	1.0	16	EPA 5270	01/19/94	WF		
Nitrohensene	<10	49/L	1,0	10	EPA 8270	01/19/94	WE		
Isophorone	<10:	Ag/5	2.0	10	EPA 8270	01/19/94	100		

PCL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific toporting limits. Sumple-specific limits are indicated by results annotated with '<' values.
 (1) Sample Preparation on 01/13/94 by CAM

02/14/94

LJO/ktg/kwh



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LIENT: HERB COLBY

ASE-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01860

Lab Mumber : WK-0032-4 Report Date: 02/14/94

PC No. + MSA-93-01-78 MI

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 48 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED SY	SAMPLED I	DATE FECTIVE		
M14801X1		Aquecus		CLIEN	Ī	01/11/94		01/12/94	
PARAMETER	RESULT	UNITS	DF	PQL	METHOD	ANALYZED	EV	NOTES	
2-Nitropherol	<10	ug/tu	1.0	10	EDPA 8270	01/19/94	WE		
2,4-Dimethylphenol	<10.	µg/L	Y.D	10	EPA 8270	01/19/94	WF		
Benzoic acid	<50.	$\mu g/L$	1.0	50	EPA 8270	01/19/94	WF		
bis (2-Chloroethcocy) methan-	<10.	Mg/L	1.0	10	EPA 8270	01/19/94	WE		
2,4-Dichlorophenol	<10.	MAT/I	1.0	10	EFA 8270	01/19/94	WF		
1,2,4-Trichlorobenzene	< 20.	四/上	1.0	10	EFA 8270	01/19/94	WF		
Naphuhalene	<10.	Mg/L	1:0	10	EPA 8270	01/19/94	WE'		
4-Chiloroaniline	<10.	Mg/L	1.0	10	EFA 8270	01/19/94	WE		
Hekachlorobutadzene	<10.	pg/=.	1:0	10	EPA 8270	01/19/94	WF		
4-Chloro-3-metnylphenol	<10.	µg/L	1.0	10	EPA 8270	01/19/94	WF		
2-Methylnaphthslene	c10.	#4/L	1.0	10	EPA 8270	01/19/94	WE		
Hexachlorocyclopentadiene	<10.	144/21	1.0	10	EFA 8270	01/19/94	WF		
2,4,5-Trichlerophenol	<10:	ug/L	1.0	10	EPA 8270	01/19/94	WE		
1,4,5-Trichlorophenol	<25.	M3/E	1.0	25	EPA 8270	01/19/94	WE'		
2-Chicronaphthalene	<10.	Mg/L	1.0	10	EPR 8270	01/19/94	WF		
2-Nitrosniline	<25.	119/2	L.O.	75	EPA 8270	01/18/94	WE		

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

02/14/94

LJO/kEg/kwh



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CLIENT: HERE COLEY

AMB-WANEFIELD

COMPORATE PLACE 129, EUTLDING 3, SUITE 25

WAREFIELD, MA 01280

Lab Number : WK-0032-4 Report Date: 02/14/95

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

Project : 7143.00

REPORT OF AMALYTICAL RESULTS

Page 49 of 70

SAMPLE DESCRIPTION		MATRIX		SPMIL	ED BY	SAMPLET DATE PI				
MX4801X1		Aqueous		CLIEN	r	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	WP	7		
Acenaphthyl ene	<10.	Mg/I	J.0	10	ERN 8270	01/19/94	WP			
1,5-Dinitrotaluens	e10.	P9/1	J./D	10	EPA 8270	01/19/94	WF			
3-Nitroemiline	<25.	AD/I	1.0	25	EPA 8270	01/19/94	WE			
Acenaphthene	<10.	Ag/I	1,0	10	ERA 8270	01/19/94	WE			
2,4-Dim trophesol	-25.	19/L	100	25	EPA 3270	01/19/94	WF			
4-Nitrophenal	<25:	pg/L	1.0	25	EPN 8270	01/19/94	WF			
Dibenzofuran	<10.	AB/T	1.0	10	EPA 8270	01/19/94	MIS			
2,4-Dinitrotolum#	<1D.	pg/L	2.0	10	EPA 8270	01/19/94	WP			
Diethylphthalace	<10.	P9/1	1.0	30	EPA 8270	01/19/94	WF			
4 Chlorophonyl phenyl ether	<10.	AB/I	6,0	10	EPA 8270	01/19/94	WF			
Fluorene	<10.	Ag/L	3.0	30	EPA 8270	01/19/94	WF			
4-Nitroaniline	-25,	49/L	1.0	25	EPA 8270	01/19/94	WE			
4,6-Dinicro-2-methylphenol	<25:	µg/L	1.0	. 25	EPA 8270	01/19/94	WF			
n-Nitroscorphenylamine	c10.	MB/I	1,0	10	EPA 8270	01/19/94	ME			
4 Bromophenyl phenyl ether	<10.	Ag/L	1.0	10	EPA 8270	01/19/94	WF			

^{*} POD (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

02/14/94

ωσ/kfg/kwh



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ABE-WAREFIELD

DORPORATE PLACE 128, BUILDING 3, SUFFE 25

WAIGETELD, MA 01890

Lab Mirmber : WK-0032-4 Report Date: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 50 of 70

SAMPLE DESCRIPTION		MATRIX		SWEL	ED BY	SAMPLED I	RECEIVED	
otk4801)(1		Aqueous		CLIDA	T	01/11/9	14	01/12/94
PARAMETER	RESUL/I	CHITS	DF	*PQI	METHOD	ANALYZED	BA	NOTES
Hexachlorobentane	<10.	Ag/L	1,0	10	EPA 8270	01/19/94	ME	
Pentachlorophenol	<23	MEN	1.0	35	EPA 8270	02/19/94	WE	
Phenanthrene	c10:	Mg/L	1,0	10	RPA 8270	01/19/94	WE	
Anthracene	<10	Mg/1	1.0	10	EPA 8270	01/19/94	WP	
Di-n-butylphthalate	<lo.< td=""><td>M3/E</td><td>2.0</td><td>10</td><td>EPA 6270</td><td>01/19/94</td><td>WF</td><td></td></lo.<>	M3/E	2.0	10	EPA 6270	01/19/94	WF	
Fluoranthene	<10 -	MB/L	1.0	10	EPA 9270	01/19/94	WE	
Pyrene	cLO,	49/1	1.0	10	EPA 8270	01/19/94	WE	
Butyl benzylphtralate	<10	Hg/L	1.0	20	EPA 8270	01/19/94	WE	
3/31-Dichlorabenaidine	<10	μg/L	1.0	10	EPA 8270	01/19/94	WF	
Eengo (a) anthracens	<101	MB/D	1,0	10	BPA 8270	01/19/94	WP	
Chrysene	<10.	MG/L	1.0	10	EPA 8270	01/19/94	WP	
bis(2-Sthylhexyl)phrhalate	<1.0	$\rho_{\mathcal{G}}/T_{i}$	1.0	10	EPA 8370	01/19/94	WE	
Di-m-sctylphthalate	<10.	MG/I	1.0	10	EPA 8270	01/19/94	WF	
Benzo (b) fluoranthene	<10.	49/1	1.0	20	EPA 8270	01/19/94	WP	
Benzo (k) fluoranthene	<10.	Hg/I	7.0	20	EPA 8270	01/19/94	WF	
Benze (a) pyrene	<10.	Ma/E	1.0		EPA 8270	01/19/94	WE	

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

02/14/94

Lio/kdg/kwh



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(207) 874-2400 Pax (207) 775-4029

Lab Number : WE-0032-4 Report Date: 02/14/94

PO No. : MSA-91-01-78-M1

Project : 7143.00

TIENT: HERE COLBY

ABB WAKEFIELD

COFFERNIE PLACE 128, BUTLDING 3. SJITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 51 or 70

SAMPLE DASCRIPTION		MATRIX		SAVPL	ATE RECEIVED				
10X4801X1	Aqueous			CLIEN	T	01/11/94		01/13/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYERD	EX	NOTES	
Indeno(1, 2, 3-od) pyrens	<10.	µg/L	1.0	10	EPA 5270	01/19/94	WE		
Dibenzo(a, h) anthracene	<10.	ME/I	1.0	10	EPA 8270	01/19/94	WE		
Benzo(g,h,i)perylene	<10.	ME/I	1.0	1.0	EFA 8270	01/19/94	WE		
2-Fluorophenol (% Recovery)	81.	*	1.0		EPA 8270	01/19/94	WE		
Phenol-d5 (% Recovery)	BI.	-	1.0		EPA 8270	01/19/94	WE		
Mitrobenzene-d5 (≰ Recovery)	72.	8	1:0		EFA 5270	01/19/94	WE		
2-Fluorobiphenyl (% Recovery)	70.	4	1.0		EPA 5270	01/19/94	WE		
2,4,6-Tribromophenal (* Recovery)	65.	8	1.0		EPA 8270	01/19/94	WE		
Terphenyl-d14 (% Recovery)	79.	4	1.0		EFA 8270	01/19/94	WE.		

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

12/24/94

JO/kEg/lewh



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Dab Number : WK-0092-4

Report Date: 02/14/94 : MSA-95-D1-78-MI PO No

Project - 7143.00

CLIENT: HERB COLEY

MEB-WAKEFIELD

COMPONATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 52 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	PID BY	SAMPLED D	RECEIVED	
MX4801X1		Aqueous		CLIEN	T	01/11/94		01/12/94
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics by USEPA 8340								1,2
Chloromethane	<10.	49/1	1.0	10	EPA 8240	01/17/94	DG	
Bromomethane	<10.	49/1	1,0	10	EPA 8240	01/17/94	DG	
Vinyl chloride	<10.	ug/L	I.D	10	EPA 8240	01/17/94	DG	
Chloroethane	<10.	//g/L	1.6	10	EPA 8340	01/17/94	DG	
Methylene chlorida	JB2	49/I	1.0	2.0	SPA 8240	01/17/94	DG	
Acetone	<15.	pg/L	1,0	15	EPA 8240	01/17/94	DO	
Carbon disulfide	<10.	Ag/L	1.0	-20	EPA 8240	01/17/94	DG	
1,1-Dichloroether	<5.	Hg/I	1.0	5	EPA 8240	01/17/94	00	
1,1-Dichloroethane	<5.	//g/I	1.0	5	EPA 8240	01/17/94	DG	
Total 1,2 Dichlorsethers	<5.	Mg/L	T. C	9	EPA 8340	01/17/94	DG	
Chloroform	<5.	pg/L	1,0	5	EPA 6240	01/17/94	DG	
1,2-Dichloroethans	×5.	ug/L	1,0	5	EPA 9240	01/17/94	DG	
2-Rutanone	<15.	49/L	1.0	19	EPA 8240	01/17/94	DG	
1,1,1-Trichlorsethane	JH1	pg/L	100	5	EPA 8240	01/17/94	DG	

⁻ POL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with /</ values.

02/14/94

Lab/kfg/jtg/lad

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

^{(2) &}quot;B" flag denotes detection of this analyte in the laboratory method blank analysed occurrently with the sample.



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Lab Number : WK-0032-1 Report Date: 02/14/94

PO No. : MSA-99-01-78-M2

Project : 7143,00

CLIENT: HERB COLBY

ABB WAREFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 35

WAKEFIELD, MA 01680

REPORT OF ANALYTICAL RESULTS

Page 51 of 70

ueous		17.4					
Aqueous			CLENT		4	01/12/94	
MITS	DF	*PQL	METHOD	AMALYZED	BY	NOTES	
g/L	1.0	5	EPA 8240	01/17/94	DG		
g/L	1.0	15	EPA 8240	01/17/94	DG		
	1.0	5	EPA 8240	01/17/94	DG		
g/T	1,0	5	EPA 8240	01/17/94	DG		
g/I	1.0	5	EPA 8240	01/17/94	DG		
	1.0	5	HPA 8240	01/17/94	DG		
9/1	1.0	5	HPA 8240	01/17/94	DG		
g/L	1.0	5	EPA 8240	01/17/94	DG		
	1.0	5	EPA 8240	01/17/94	DG		
	1.0	5	FPA 8240	01/17/94	DG		
g/L	1.0	5	BPA 8240	01/17/94	DG		
9/1	1.0	15	EPA 3740	01/17/94	DG.		
g/L	1.0	15	EPA 8240	01/17/94	DG		
9/1	1.0	5	EPA 8240	01/17/94	DG		
g/L	1.0	5	EPA 8240	01/17/94	DO		
	NITS 5/L 5/L 5/L 5/L 5/L 5/L 5/L 5/L	MITS DF E/L 1.0 MITS DF *PQL E/L 1.0 5 MITS DF *PQL METHOD E/L 1.0 5 EPA 8240 E/L 1.0 15 EPA 8240 E/L 1.0 5 EPA 8240	MITS DF *PQL METHOD ANALYZED g/L 1.0	MITS DF *PQL METHOD ANALYZED BY g/L 1.0 5 EPA 8240 01/17/94 DG g/L 1.0 15 EPA 8240 01/17/94 DG g/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 sunctated with '<' values.

02/14/94

JJD/kfg/jfg/lal



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Lab Number : WK-0032-4 Report Date: 02/14/94

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

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CLIENT: HERE COLEY

ARE-WAKEFIELD

COMPORATE PLACE 128, BUILDING 3, SUITE 25

WAREFIELD, MA 01880

REPORT OF AMALYTICAL RESULTS

Page 54 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPI	ed by	SAMPLED D	RECEIVED		
MARGIXI	Agueous			CLIEN	T	01/11/94		01/12/94	
PARAMETER	RESULT	UNITS	DF	*FQL	METHOD	ANALYZED	ΞY	NOTES	
Toluene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG		
Chlorobenzene	<5,	119/L	1.0	5	EPA 8240	01/17/94	DG		
Ethylbensene	<5.	Mg/I	1.0	5	EFA 9240	01/17/94	DG		
Styrene	<5.	ug/L	1.0	5	EPA 8240	01/17/94	DG		
Total Kylenes	<5,	ug/I	1.0	5	EPA 6240	01/17/94	DC		
1,2-Dichloroethane (% Recovery)	107.	·	1.0		EPA 9240	01/17/94	DG		
Toluene-dB (% Recovery)	103.	ş	1.0		EPA 8240	01/17/94	DG		
p-Bromofluorobenzene (% Recovery)	100,	8	1.0		EPA 6240	01/17/94	DG		

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



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CLIENT: HERB COLBY

AMB WAKEFIELD

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WAREFIELD, MA. 01880

Lab Mumber | WK-0032-5 Report Date: 02/14/94

DO NO.

: MSA 93-01-78-MI

Project

7143,00

REPORT OF AVALATICAL RESULTS

Page 55 of 70

MPLE DESCRIPTION MATRIX SAMPLED BY				D BY	SAMPLED D	ATE	BECEIVED	
P004602X1	ļ	Adrisoma		LIEN		01/11/9	4	01/12/94
PARAMETER	RESULT	UNITS	DF	+pgt	WEIROD	ANALYZED	ΒY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1,0	0.10	200,7/6010	02/02/94	F.W	1
Aluminum, Total	<0, <u>1</u> 1)	mg/L	T.D	10-10	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	1,00	0,005	204,2/7041	01/28/94	AC	- 2
Arsenic, Dissolved	<0.005	ng/L	1.73	0.005	206.2/7060	01/21/94	KW	-3
Arsenic, Total	<0.005	()国/上	1.0	0,005	206.2/7060	01/21/94	MM	
Barium, Dissolved	0.007	mg/L	1.0	0.005	200,7/6010	02/03/94	FJA	1
Barium, Total	0.009	mg/L	1.0	0.005	200.7/6010	02/03/94	KW	L
Recyllium, Dissolved	<0.005	mg/L	1,0	0.005	200.7/6010	02/03/94	17W	L
Beryllium, Total	50.005	frg/L	1.0	0,005	200,7/6010	02/03/94	FCW.	1
Cadmium, Dissolved	<0.002	mg/L	1.0	0,002	213,2/7131	01/24/94	KW	3
Carmium, Total	<0:002	mg/L	1.0	0.002	213 2/7131	01/24/94	KM	3
Calcium, Dissolved	11-	mg/L	1.0	0,050	200,7/6010	02/02/94	MM	L
Calcium, Total	11.	mg/L	1.0	0.050	200.7/6010	02/02/94	FD/F	1

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

D2/14/94

LJO/gEb KAZDICPXWL

⁽i) Sample Preparation on 01/30/94 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



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ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Bage 56 of 70

SAMPLE DESCRIPTION	4	XLTIM		SIMPLED BY SIMPLED DATE KALE				
MX4802X1	.3	dreorg		*PQL NETHOD ANALYZ 0.015 200.7/6010 02/04/9 0.015 200.7/6010 02/04/9 0.030 200.7/6010 02/02/9		01/11/9	4	01/12/94
PARAMETER.	RESULT	UNITS	DF	*bOr	METCHOD	ANALYZE:	ВY	MOTES
Chromium, Dissolved	<0.015	ng/L	1:0	0.015	200.7/6010	02/04/94	KW	ī
Checonium, Total	<0.015	ng/L	1.0	0.015	200.7/6010	02/04/94	KW	I
Cobalt, Dissolved	<d.030< td=""><td>mg/L</td><td>1.0</td><td>0.030</td><td>200.7/6010</td><td>02/02/94</td><td>RW</td><td>L</td></d.030<>	mg/L	1.0	0.030	200.7/6010	02/02/94	RW	L
Cobalt, Total	DEO, OBa	mg/1_	T.G	0.030	200.7/6010	02/03/94	RW	Ī
Copper, Dissalved	<0.025	mg/L	1.0	0.025	200,7/6010	02/03/94	HW	L
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1
Iron, Dissolved	<0.035	mg/T_	4.0	0.025	200.7/6010	02/02/94	KW	Ī
iron, Tetal	D_028	mg/L	1,0	0.025	200,7/6010	02/02/94	KW	1
Lead, Dissolved	<0.005	mg/D	1.0	0.005	239.2/7421	01/21/94	HW	2 2
Lead, Total	<0.005	mg/L	D.O	0.005	239.2/7421	01/21/94	KM	2
Magnesium, Dissolved	1.4	mg/L	1:0	0.050	200.7/6010	03/03/94	KW	1
Magnesium, Total	1,4	may L	0.1	0.050	200,7/6010	02/02/91	TOW	L
Manganese, Dimsolved	<0.005	mg/L	1.0	0,005	300,7/6010	02/03/94	RW	1
Manganese, Total	<0.005	ng/L	2.0	0.005	200.7/6010	02/03/94	KW	Ī

PQF. (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are unlighted by results armotated with '<' values:

112/14/94

IJO/gfb FA201CPXWI

⁽¹⁾ Sample Preparation on 01/20/94 by JCD using 3010

⁽³⁾ Sample Preparation on 01/20/94 by JCD using 3020



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CLIENT: HERB CCLBY

ABB-WAKEFIRLD

CORPORATE PLACE 128, BUILDING 3, SUPTE 25

WAKEFIELD, MA D1880

Lab Number + WK-0032-5 Repart Date: 02/14/94

PO No. | MSA-93-01-78 MI

Project : 7143.00

REPORT OF AMALYTICAL RESULTS

Page 57 of 70

DAMPLE DESCRIPTION	(3)	MIRIM		SAMPLE	D BY	SAMPLED D	412	PECETVED
MX4802X1	P	Andeous		CLIENT 01/CL/94			BY MOTES JE JE RW JE	
PARAMETER	RESULT	UNITS	OF	*PQL	METHOD	ANALYZED	БУ	NOTES
Mercury, Dissolved	<0.30	/g/L	1.0	0.30	245.1	02/01/94	JD	1
Mercury, Total	<0.20	$\mu g/L$	D.I	0.20	245,1	02/01/94	JE	1
Nickel, Dissolved	<0.040	mg/L	1,0	0,040	200.7/6010	02/03/94	EW.	2
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	02/03/94	KW	2
Potassium, Dissolved	1-1	mg/T.	1-0	0.90	200.7/6010	02/03/94	KW	2:
Potassium, Total	1.2	mg/L	1.0	0.50	200.7/6010	02/03/94	EW-	.2
Selemium, Disselved	<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/I	1.0	0,019	200.7/6010	02/02/94	KW	2
Silver, Total	<0.015	mg/L	1:0:	0.015	200.7/6010	03/02/94	KW	2
Sodium, Disselved	19.	:03/1	1.0	0.10	200.7/6010	02/03/94	HOM	
Sodium, Total	19.	mg/L	D.I	0.10	200.7/6010	02/03/94	KW	3
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	WH	3

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

02/14/94

LID/gfb

⁽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



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CLIPAT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, EUILDING 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

Page 58 of 70

SAMPLE DESCRIPTION	IV.	AIRIX		SAMPLE	D BA	SAMPLED I	ATE	RECEIVED
M(4802X1	A	drisona		CLIENT		01/11/9	4	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	VOV	1.
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/03/94	IOM	L
Zinc, Dissolved	<0.025	mg/L	3.0	0.025	200.7/6010	02/02/94	W	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	02/02/94	KW	1

^{*} PQL (Practical Quantitation Lavel) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values. (1) Sample Preparation on 01/20/94 by JCD using 2010

02/14/94

LED/gfb MAZOICPXW1



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(207) 974-2400 Fix (607) 775-4029

CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01980

Lab Momber : WK-0032-5 Report Dabe: 02/14/94

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

Project : 7143.00

REPORT OF ANALYTICAL RESULTS

Page 59 of 70

SAMPLE DESCRIPTION	MAI	MATELY SAMPLED BY SAMPLED				DATE RECEIVED		
MX48U2X2	Aqueous			CLIENT	01/11/94		01/12/34	
PARAMETER	RESULT	UNTIS	DF	*PQL	METHOD	ANALYZED	BV	NOTES
Total Petroleum Hydrocarbons (TPH)	<1.2	mg/L	1.2	1,	418.1	02/02/94	/LA	1,2

[•] PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' vilvas (1) Sample Preparation on 01/31/94 by CH/LAD

02/14/94

Luc/afb/djn

⁽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:



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CLIEVT: HERE COLEY

ABB-WAKEFTELD

CORPORATE PLACE 126, BUILDING 3, SUITE 25

WAREFIELD, MA 01860

Lab Number : WK-0032-5 Report Date: 02/14/94

PO No:

IM-87-10-18-MI

Project

7143:00

REPORT OF AMALYTICAL PRODUTS

Page 50 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPI	ED BY	SAMPLED I	ATE	RECEIVED
M0(4802K1		àqueous		CLIE	(T	01/11/9	4	01/12/94
PAPAMETER	PESULT	UNITS	DF	*FQL	METHICO	AVALYZED	BY	OUTES
TCL Semivolatile Organics by USEPA								¥
8270					5.7. 55	The A. Switz	-	
Phenol	11.	149/1.	1.0	2.0	EPA 6270	01/19/94	WE	
bas (2-Chicroethyl) ether	<10.	143/L	1.0	10	EPA 9270	01/19/94	WE	
3-Chlarophenol	<10.	49/L	1.0	16	EFA 8270	01/10/94	WE	
1, i Dichlorobensene	<10-	<i>四</i> 写/L	1.0	1.0	EDA 8270	01/19/94	WE	
1,4-Dichlorobenzene	510.	14g/D	1.0	10	EPA 5270	01/19/94	WE*	
Bencyl alcohol	<10.	49/L	1.0	10	EPA 8270	01/19/94	WF	
1,2-Dichlorabenzene	10.	$\mu \equiv /1$.	1.0.	10	SPA 8270	01/19/92	WE'	
2-Methylphenol	<10.	45/L	1.0	10	EPA 9270	01/19/94	WF	
bis(2-Chloroisopropy1) ether	<10	M3/F	1.0	16	EFA 8270	01/19/94	WE	
4-Methylphenal	-10-	μg/L	1.0	1.0		01/19/94	WE'	
n-Witroso-dipropylamine	c10.	M3/1	1.0	1.0	EPA 8270	01/19/94	WF	
Hetachloroethane	<10:	Ag/L	1.0	10		01/19/94	WF	
Nitrobenzene	<10.	Mg/L	1:0	10		01/19/94	WF	
Isophorone	-10.	ug/L	1.0		EPA 8270	01/19/99	WE	

^{*} 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

02/19/99

LJO/kfg/kwh



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(207) 874-2400 Fax (207) 775-4029

Tab Mumber : 187-0032-5

Report Date: 02/14/94

90 No. MSA-93-01 78 MD

Project ; 7143,00

CLIEVT: HERB COLBY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFIELD, MA 01890

REPORT OF AMALYTICAL RESULTS

Page 61 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	ED BY	SAMPLED D	WIE	RECEIVED	
MX4802X1		Aquecus	i	CLIEN	T	01/31/9	4	01/12/94	
PARAMETER	RESULT	UNITE	DF	*PQL	METHOD	ANALYZED	HY	NOTES	
2-Nitrophenal	÷10.	pg/E	1.0	10	EPA 8270	01/19/94	WE		
2,4-Dimethylphenol	<10.	AG/T	1.0	10	BEA 8270	01/19/54	WF		
Hendole acid	<50.	$\mu g/I_i$	0,0	50	EPA 8270	01/19/94	WF		
bis(2-Chloroethoxy)methane	<10.	/1g/L	1.0	ĺū	EPA 8270	01/19/94	WF		
2, 4-Dichlorophenol	< 10.	MAYD	1,0	10	EPA 8270	01/19/94	WE		
1, 2, 4-Trichlorobenzene	<10.	MG/D	1.0	10	EPA 8270	01/19/94	WP		
Maghthalene	<10.	Ag/L	1.0	10	EPA 8270	01/19/94	WF		
4-Chloroaniline	< (0,	AGI/D	1,0	1.0	EDA 8270	01/19/94	WE		
Hereachlorobutadiese	<10.	μg/L	0.1	10	EPA 8270	01/19/94	WE		
1-Chioro-i-methylphenol	<100	AG/L	0.4	10	EPA 8270	01/19/94	WE		
2-Methylnaphthalene	c10.	AH/L	0.1	10	EPA 8270	01/19/94	WE		
Resachlorocyclopentaciene	<10.	MINT.	1.0	10	EPA 8270	01/19/94	WP		
2,4,6-Trichlorophenol	<10.	Ma/F	1.0	10	EPA 8270	01/19/94	WF		
2,4,5-Trichlorophenol	<29.	AS/L	1.0	25	BENA 8270	01/19/94	WE		
2-Chloronaphthalene	<10.	MI/L	1.0	10	EPA 8270	01/19/94	WF		
1-Nitroaniline	<25.	µg/L	1.0	. 25	EFA 8270	01/19/94	WF		

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

02/14/94

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Northeatern Division

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(207) 974-2400 Fax (207) 175-4029

Lab Mumber : WK-0052-5 Prexort Date: 02/14/94

PO No. : MSA-91-01-78-M1

Project : 7143.00

CLIENT: HERE COLBY

ARE-WAREFIELD

CORPORATE MLACE 128, EUILDING 3. SUITE 15

WASCEFILLIN, MA 01880

REPORT OF ANALYTICAL PRSULTS

Eage 62 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	SAMPLED BY SAMPLED DATE					
MX480231		Aquecus	3	cier		01/11/94		01/12/94		
PARAMETER	RESULT	UNITS	DF	* PQL	METHOD	ANALYZED	BY	NOTES		
Dimethylphthalate	<10	Hg/L	1,0	10	EPA 8270	D1/19/94	ME			
Acenaphthylers	<10	pg/L	1.0	10	EPA 8370	01/19/94	WI			
2,6 Dinitrocolueue	<10_	MG/L	1,0	10	EPA 8270	01/19/94	WF			
1-Nitroandline	< 2,5 ,	Mg/I	1.0	25	EPA 8270	01/19/94	WF			
Acenaphthene	<10 -	M3/L	L. D.	1.0	EPA 8270	.01/19/94	ME			
2,4-Dinicrophenol	<25.	ug/L	1.0	25	EPA 8270	01/19/94	WE			
4-Nitrophenol	<125.	HB/L	1,0	25	EPA 8270	01/19/94	WE			
Dibenzofuran	<10	43/L	1.0	10	EPA 8270	71/19/94	WE			
2,4-Dinitrotoluene	£10.	µg/L	1.0	10	EPA 8270	01/19/94	WE			
Diethylphthalate	<10.	ug/L	1.0	20	EPA 9270	01/13/94	WF			
4-Chlorophanyl phonyl other	<10	/457/I	1.0	1.0	EPA 8270	01/19/94	WE			
Fluorene	<10.	09/1	1.0	10	EPA 8270	01/19/94	WF			
4-Mitroamiline	525.	49/L	1,0	25	EPA 8270	01/19/94	WE			
4.6-Dinitro-2 methylphenol	<25.	112/1	1.0	25	EPA 8270	01/19/94	WF			
n-Nitrosodiphenylambe	<10.	1/24	1.0	10	EPA 8270	01/19/94	WP			
4-Bromophenyl phenyl ether	<10.	Ma/I	1.0	10	EPA 8370	01/19/94	WE			

PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sampleapecific reporting limits. Sample-specific limits are indicated by results amounted with /e/ values.

02/14/94

LOD/leftg/ftwis



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(207) 274-2400 Fax (207) 775-4029

Lab Number : WK-0032-5 Report Date: 02/14/94

PO No. + MBA-93-01-78-M1

Project : 7143.00

CLIENT: HERB COLEY

ABB-WAKEFIELD

CORPORATE PLACE 129, SUITE 25

WAKEFIRLD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 63 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	WIFE	TE PECTIVED		
N0(4802)(1		Pqueous		CLUEN	Ţ	ANALYZEE BY 01/19/94 WE 01/12/94		
PARAMETER	PESULT	UNITS	DF	*PQL	METHOD	ANALYZED	ВУ	DOTES
Hexachlorobensene	<10.	µg/L	1,0	10	EPA 8270	01/19/94	WP	
Pentachlorophenol	-25.	/四/上	1.0	25	EPA 8270	01/19/54	WE	
Phenanthrene	<10:	四/五	1.0	10	EER 8270	01/19/94	WE	
Anthracene	e10.	MEY'D	1.0	10	EPA 8270	01/19/94	WE	
Di-n-butylphthalate	<10.	A9/D	D., C	1.0	E2A 8370	01/19/95	WE	
Fluoranthene	<10.	四/工	1.0	10	EPA 8270	01/19/94	WE	
Fyrene	<10.	WAY'E	1.0	10	EPA 8270	01/19/94	WE	
Butyl bentylphthalate	<10.	/m/D	1,0	10	EPA 8270	01/19/94	WF	
3,3 -Dichlorobenzadine	<1.Q :	AJ/D	1.0	10	EPA 8270	01/19/94	WF	
Benzo (a) anchracere	<10.	HA/T	1.0	10	EPA. 8270	01/19/94	WP	
Chrysene	<10.	pg/D	1.0	10	EPA 8270	01/19/94	WE	
bis(2-Ethylhenyl)phthalate	<10.	//g/L	1.0	10	EPA 5270	01/19/94	WF	
Di-n-octylphimlate	<10,	49/L	1,0	10	EPA 8270	01/19/94	WE	
Benzo (b) fluoranthene	<10.	pg/L	1.0	70	EPA 5270	01/19/94	WE	
Benzo(k) fluoranthene	<10.	Mg/L	1.0	10	EPA 6270	01/19/94	WF	
Benza (a) pyrene	<10,	Hg/L	1.0	10	EPA 8270	01/19/94	WE	

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

02/14/84

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(207) 874-2400 Pag (207) 775-4029

Lab Number : WK-0032-5

Report Date: 02/14/94 PO No. : MSA-93-01-78-M1

Project : 7143.00

CLARAT: HERE COLRY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 25

WAKEFTELD, MA 01880

REPORT OF ANALYTICAL RESULTS

Page 64 of 70

SAMPLE DESCRIPTION		MATEIX	-	JAMPL	MIE	RECEIVED		
ND(4802)C1	1	Aqueous CLIENT		T	01/11/9	14	01/12/94	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALY3ED	81	NOTES
Indeno (1,2,3-cd) pyrene	<10.	µg/L	1,0	10	EPA 9270	01/19/94	WP	
Dibenzo (a, h) anthracene	<10.	49/D	3.0	10	EPA 8270	01/19/94	WP	
Benzo(g,h,i)perylene	<10.	$\mu g/L$	1.0	10	EPA 8270	01/19/94	WF	
2-Fluorophenol (* Recovery)	75.	N	1.0		EPA 8270	01/19/94	WP	
Phenol-d5 (* Recovery)	BO.	青	2.0		EPA 8270	01/19/94	WE	
Nitrobenzene-d5 (% Recovery)	76.	者	1.0		EPA 8270	01/19/94	WF	
2-Fluorobiphenyl (% Recovery)	70.	4	1,0		EPA 8270	01/19/94	WF	
2,4,6-Tribromophenol (% Recovery)	63.	香	1.0		EPA 8270	01/19/94	WF	
Tarphenyl-dl4 (% Recovery)	79.	音	1.0		EPA 8270	01/19/94	WF	

[·] RQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amnotated with "<" values,

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1.70/kg/lown



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ABE-WAKEFIELD

CORPORATE PLACE 128 BUILDING 3, SUITE 25

WAKEFIFLD, MA 01860

Lab Number : WK-0032-8 Report Date: 02/14/94

PO No.

- MSA-93-01-78-MI

Project

: 7143.00

PEPORT OF ANALYTICAL PESULTS:

Page 65 of 10

SAMPLE DESCRIPTION		MAIRIX		SAMPL	ED BY	SAMPLED DATE R		
/Q/480231		Aqueous		CLIEN	r	01/11/94		01/12/94
PARAMETER	PESULT	DNITS	DF	+PQL	METHOD	ANALYZED	BY	biomes
TCL Volatile Organics by USEPA 8240		-						
Chloromethane	<10.	19/6	1.0	20	REA H240	01/17/94	133	
Bromomethane	<10.	µg/L	1.0	10	EPA H290	01/17/94	DG	
Vinyl chloride	<10	M9/L	1,0	10	EPM 6240	01/17/94	DG	
Chloroethane	510,	//g/L	1.0	10	EPA 8240	01/17/94	DX3	
Methylene chloride	<10.	ug/L	1:0	10	EPA H240	01/17/94	DG	
Acetone	c15.	49/4	1.0	15	EPA 8240	01/17/94	DG	
Carbon disulities	~10.	Mg/L	1.0	10	EPA 8240	01/17/94	DC	
1,1-Dichloroethene	45.	µg/L	1.0	5	EPA H290	02/17/94	DG	
1,1-Dichloroethane	<5,	UH/I	1.0	8	EPA 6240	01/17/94	DG	
Total 1,2-Dichlorosthems	-5	pg/L	1:0	5	EPA 8240	03/17/94	23	
Chloroform	<5.	49/L	1.0	5	EPA 8240	01/17/94	DG	
1,2-Dichloroethane	25	/49/In	1.0.	8	EPA E240	01/17/94	300	
2-Butanone	<15.	Mg/L	1.0	15	EPA 8240	01/17/94	DG	
1,1,1-Trichloroethane	₹5.	Mg/L	1.0	5	EPA 8240	01/17/94	DG	
Carbon tetrachloride	<5.	四/四	1.0	5	EPA 8240	01/17/94	DCI	
Vinyl acetale	<15,	µg/L	1.0	15	EPA 8240	01/17/94	DG	

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

02/14/94

TJO/kig/jfg/lad



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lab Maruber : WK-0050-5

Report Date: 02/14/94 PO No. : MSA-93-01-78-M1

Project : 7143.00

CLIENT: HERE COLEX

ARB-WAKEFIELD

CORPORATE PLACE 128, BULLDING 3, SUTTE 25

WAKEFIELD, MA 01880

REPORT OF AMALYTICAL RESULTS

Page 56 of 70

SAMPLE DESCRIPTION		MATERIA		SAME	ATE	TE RELEIVED			
MM48D3X1		Agueous		CLIE	T	01/11/5	塘	01/13/84	
PARAMETER	RESULT	UNIT2	DB	*PJL	METHOD	AMALYZED	SV	MOLES	
Bromodichloromethane	ķ\$.	ug/L	1.0		5 KPA 8240	01/17/94	DG		
1,2-Dichloropropane	×5:	UE/L	1.0	- 4	5 EPA 8240	01/17/94	DG		
cis-1,7-Dichloropropene	-5.	Hg/L	1,0	ě	S EPA 8240	01/17/94	DG		
Trickliproethene	≥5.	M9/1	1.11		S BPA 8240	01/17/94	DG		
Dibrorochloromethane	<5.	Mg/1	1.0	8	5 BPA 8240	01/17/94	DG		
1,1,2-TrichLowethame	×5.	Mg/I	1,0	2	5 HPA 8240	01/17/94	DG		
Benzene	₹5	A9/1	3.0		BPA 8240	01/17/94	DG		
trans-1, 3-Dichloropropens	<5.	MG/L	1.0		5 E2A 8240	01/17/94	DG		
Bromoform	×5.	HB/D	1.0	3	EPA 8240	01/17/94	D3		
4-Methyl-2-pentanone	<15.	AG/L	1.7	100	5 EPA 8240	01/17/94	DG		
2-Rexamone	<15.	四江	1.0	13	S REA 8240	01/17/94	DG		
Tetrachloroethene	k5.	pg/I	1,0	3	5 HPA 8240	01/17/94	DS		
1,1,2,2-Tetrachlorcethane	c5	49/L	1.0	3	5 EPA 3240	01/17/94	DG		
Toluene	×5:	μg/L	1.0	3	5 RPA 8240	01/17/94	DG		
Chlorobenzene	×5.	Hg/Li	1.0		5 EPA 8240	01/17/94	DG		
Ethylbenzene	<5.	Ag/L	1.0	3	5 BRA 8340	01/17/94	DG		
Styrene	<5.	43/L	1.0		5 EPA 8240	01/17/94	DG		

PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results amnotated with (<) Values.

02/14/94

LJT://dg/jfg/lad



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Mortheamern Division

340 County Road, No. 5 . P.O. Box 720 . Westbrook, ME 04098

(207) 874-2400 Fax (207) 775-4029

Lab Number: WK-0032-5 Report Date: 02/14/94

PO NO IN

- MSA-93-01-78-M1

Project

: 7143.00

CLIENT: HERE COLEY

ABB-WAVEFIELD

CORPORATE PLACE 128, BUILDING 3, SUITE 29

WAYEFIELD, MA 01880

REPORT OF AMALYTICAL RESULTS

Page 67 of 70

SAMPLE DESCRIPTION MKA802XI		MATRIX		SAMP	LED BY	SAMPLED DATE RECEIVED		
		Aqueous		CLIENT		01/11/94		01/12/54
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Total Xylenes	<5.	µg/L	1,0	16	5 EPA 8240	01/17/94	DG	
1,2-Dichloroethane (% Recovery)	103.	4	1.0		EPA 8340	01/17/94	DG	
Toluene-d8 (* Recovery)	104	5	1+0		EPA 8240	01/17/94	DG	
p-Bromofluorobenzene (% Recovery)	95	1	1,0		EPA 8240	01/17/94	DG	

^{*} PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect samplespecific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.</p>

02/14/94

LID/kfg/jfg/lad



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Northeastern Division 540 County Road, No. 5 * P.O. Box 720 * Westbrook, ME 04098

(207) 874-2400 Fax (207) 775-4039

CLIENT: HERB COLBY

ABE-WAKEFIELD

CORPORATE PLACE 126, BUILDING 3, SUITE 25

WAREPLELD, MA. 01880

Report Date: 02/14/94

90 No. : MSA-93-01-78-MI

Project : 7143.00

REPORT OF AMALYTICAL RESULTS

Page 68 of 70

SAMPLE DESCRIPTION		MATRIX		SAMPL	ed by	SAMPLED L	MIE	RECEIVED
TEXABNO3	Aqueaus		CLIENT		01/11/94 01/12		01/12/94	
PARAMETER	RESULT	UNTIS	DP	*PQL	METHOD	ANGLYZED	BA	MOTES
TCL Volatile Organics by USEPA 9240								1,2
Chloromethane	<10.	Ma/1	1.0	10	ECPA 8250	01/17/94	DG	
Bromometnarie	-10	mg/L	1.0	10	EPA 9240	01/17/94	DG	
Vinyl chloride	e10.	µ9/L	1.0	TO	EPA 8240	01/27/94	DG	
Chloroethane	-0.0	ug/L	1.0	10	EPA 8240	01/17/94	DG	
Methylene chloride	JBA	Wa/L	1.0	LO	EPA 8245	01/17/94	DG	
Acetone	-15:	Mg/I	1.0	15	RPA 9240	01/17/94	DG	
Carbon disulfide	ē20.	US/L	1.0	LO	EPA 8240	01/17/94	103	
1,1-Dichloroethene	25.	M4/7	1.0	5	EPA 9240	01/27/94	DG	
1,1-Dichloro-Chane	<5.	mg/L	1.0	9	EPA 8240	01/17/94	UG	
Total 1,2-Dichloroethene	<5.	Mg/L	1.0	S	EPA B210	01/17/94	DG	
Chloroform	<5.	Mg/L	1.0	5	EPA 9240	01/17/94	DG	
1,2 Dichloroethane	<5:	pg/L	1.0	5	PEA 8240	01/17/94	DG	
2-But mone	-15	u2/1	1:0	15	EPA 8240	01/17/94	103	
1,1,1-Trichlorpethane	JB1	μg/1	1.0	S	EPA 8240	01/27/94	DG	

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

02/14/94

LJD/kfg/jfg/lad

^{(1) &}quot;J" flag denotes an estimated value less than the Laboratory's Fructical Quantitation Level

^{(2) &}quot;B" flag denotes detection of this analyse in the laboratory method blank analyzed concurrently with the sample.



Air, Water & Hazardous Waste Sampling, Analysis & Consultation Certified Hazardous Waste, Chemitry, Bacteriology & Blossay Laboratories

San Luis Obupo, CA • Camarillo, CA • Benkis, CA • San Jote, CA Vulpitalio, IN • Indianapolis, IN and Westbrook, ME

Northeastern Division

340 County Ross, No. 5 * P.O. Box 720 * Westbrook, ME 04098

(207) 874-2400 Fax (207) 775-4029

Lah Mumber : WK-0052-6 Report Dute: 02/14/94

PO NO. : MSA-92-01 78-01

Project : 7143.00

CLUBAL: HESE COLEA

ABB-WAKEFIELD

CORPORATE PLACE 128, EXTIDING 3, SUFFE 28

WAREFIELD, MA 01890

REPORT OF ANALYTICAL RESULTS

Page 59 of 70

SAMPLE DESCRIPTION		MATRIX,		SAMPI	ED BY	SAMPLED I	ATE	RECEIVEL
TBMABN03	Aqueous		CLIENT		01/11/94		01/12/94	
PAPAMETER	RESULT	UNITS	DF'	*PQL	METHOD	ANALMEED	BY	Потня
Carron tetrachloride	k5.	µg/L	1,0	á	EPN 8240	01/17/94	DO	
Vinyl acetate	<18.	ug/1.	1.0	35	SPA 8240	01/17/94	DG	
Bromodiphloromethane	35.	49/1	1.0	- 6	EPA 8240	01/17/96	DG	
1,2-bichloropropane	105	ug/L	1.0		EPA 9240	01/17/94	DG	
cis-1,3-Dichloropropene	55.	PS/I	1.0		EPA 8240	01/17/94	DG	
Trichloroethene	<5.	49/L	1.0		EPA 8240	01/17/94	DG	
Dibromochloromethane	<5:	Pa/1	1.0	ě	EPA 8240	01/17/94	DG	
1,1,2-Trichloroethane	×5.	Mg/L	2.0	6	EPA 8240	01/17/94	Da	
Benzene	89.	P9/L	1.0	.5	EPA 6240	01/17/94	DG	
trans-1,3-Dichloropropene	<5.	49/I	1,0	- 5	EPA 8240	01/17/94	DG	
Bromoform	45,	Hg/L	1.0	-5	EPA 8240	01/17/94	DG	
4-Methyl-2-pentanone	€28,	49/5	1.0	15	EPA 8240	01/17/94	DG	
2-Havarione	<15:	KG/L	1,0	1.0	EPA 8240	01/17/94	DG	
Tetrachloroethene	<5.	µg/L	1.0	8	EPA 6240	01/17/94	DQ	
1,1,2,2-Tetrachlocoethane	≪5.	#9/L	3.0	2	EPA 8240	01/17/94	DG	

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

02/14/94

DANAKtg/jtg/lad



Alz, Water & Harardons Waste Sampling, Analysis & Consultation Certified Hazanium Waste, Chemistry, Bacteriology & Bioosay Laboratories

Sun Lum Obispo., CA . Camarillo, CA . Benkia, CA . San Jose, CA Valpraiso, IN . Indianapolis, IN and Westbrook, ME

Northeastern Division

140 County Road, No. 5 * P.O. Box 720 * Westimook, ME 04098

(207) 374-2400 Fus (207) 775-1029

Lab Number : WE-0032-6 Report Date: 02/14/94

PO No : MSA 93-01-78-ML

Pro ect

: 7143.00

CLIENT: HERE COLEY

ABB-WAKEFIELD

CORPORATE PLACE 128, BUILDING J. SUITE 25

WAKEFIELD, MA 01990

REPORT OF AMALYTICAL RESULTS

Page 70 of 70

SAMPLE DESCRIPTION		MAURIX SAMPLED BY		LAD BY	SAMPLED DATE RECEIVED			
TBP46N03	Aqueaus		CLIENT		01/11/94. 01/12/9		01/12/94	
PARAMETER	RESUL/I	ETIMU	DB	\$PQL	METHOD	AMAL/ERD	BÄ	MOTES
Toluene	<5.	/49/L	1.0		5 EPA 8240	01/17/94	DG	
Chlorobenzene	<5 .	MG/I	1.0	103	S EPA 8240	01/17/94	105	
Ethylbenzene	<5	HG/I	1.0	3	S EPA 8240	01/17/94	DG	
Styrene	<5.	ME/L	3.00		5 BPA 8340	01/17/94	DG	
Total Xylenes	K5.	4g/1	1.0	13	5 EPA 8240	01/17/94	DG	
1,2-Dichloroethane (% Recovery)	101	1	1,0		EPA 8240	01/17/94	DQ	
Toluene-dB (% Recovery)	105	\$	1.0		EPA BEAD	01/17/94	DG	
p-Bromofluorobenzene (% Racovery)	94.	8	110		EPA 8240	01/17/94	DG	

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

02/14/94

LJD/kfg/jfg/lac

Respectfully submitted,

COAST-TO-COAST AWALYTICAL SERVICES, INC.

(My) cuma (Yauna A Laura D'o'Meara

Supervisor, (Tient Services

EANDE CENER-BE-GL-S EANDE TELECER REGISTERED ELEKAS

-20	JECT: 5448 FORTOMING 7/43.00	V
cas	tainer required on Olney and impeded on Olney by:	56,00
ż,	Shipper (USH, UPS, DKL, FEDEX) P/C, ALR EXP, MAND-DELIVERED)
2.	Container type (Copier, box, envelope, etc.)	
3.	Were custody seals on outside of container?	N/A (YBE) No
	How many & whomas 2; One on front , seal date: Olliet , seal mane	AMB
4.	Were dustody papers taped to lid inside container?	N/A (Yas) No
3.	Custody papers properly filled out? (inx, signed, etc.)	Wee No
6.	Was project identifiable from oustody papers?	Yay No
7.	Did you sign custody papers in appropriate place?	Yas No
9.	Did you attach shipper's packing form to this form?	N/A (Yas) No
٠.	Packing material (reanuta) vermioulite, bubbie wrate paper.	cans, other)
10,	Was sufficient ice used? Temperature 'C upon arrival	N/A (Na (
11.	Were all samples sealed in separate plastic bags?	N/A Yes No
12.	Did all samples arrive in good condition?	(Yag) No
11.	Sample labels complete? (#, date, analysis, preservation, s	ign.) Yea No
14.	Did all sample labels agree with custody papers?	Yas No
12,	Were correct sample containers used for tests indicated?	N/A GA No
15.	Were correct preservatives used? (TM pH, CN- pH) (TOC pH, NUTRIENT pH, TOX pH, TPH pH ZZ, OTHER	N/A Yes No.
17.	Were VCA vials bubble-free (HgO) or no headapace (soil)?	Was No
:B.	Was sufficient ascunt of sample sent in each container?	Yaa No
29.	Were air volumes noted for air emples?	AND Ass Ac
20.	Were initial weights noted for pre-weighed filters?	Yas No
CC	AS Cooler prejet forms used for goders 2-4. D to Temperatures	

SEMETERATE ENGLISES AMACYSSE CATA SMELT TENTATEMENT COEMTERTES COMPOUNTS

tab Mame: CCAS	Constant: Ft. pevens	SBLK
Tab Code: Case No.	: \$25 No.: \$2	3 Ac.:
Matrix: (soil/valar) Watet	laz. Sample II	: SBLK
Sample wt/vol:(000_(g/mL) ML lab File II:	>21422
Level: (low/med) Low	Date Receives	i;
% Moisture: decante	d: (Y/N) Data Extract:	ed: 01/394
Concentrated Extract Volume:	1000 (ui) Date Amalyzes	: 011994
Injection Volume:[_(ul) [Dilution Fact	or: _/. 0
GPC Cleanup: (Y/N) N	pH:	
	CONCENTRATION UNITS	5:

Number TICs found: 2 (ug/L or ug/kg) MG/L

CAS NUMBER	COMPOUND NAME	37	EST. CONC.	Q
1. 10 5088 1,	4 - Cyclopexanedimethare/ UNKNOWN	15.03	5	24
2. N/A	UNKNOWN	31.17	4	
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SEMENTATIONE CREAMINGS AND THE BARRY SAFETY OF THE SAFETY

Lab Name: CCAS		: MC : EZZ No.:
Matrix: (soil/water)_	vater	lab sample II: W K0032-1
Sample wt/vol: _	960 (S/ML) ML	1ab File ID: _ > 2/423
Level: (low/sed) _	Lon	Data Received: 0/1294
% Moisture:	iecanied: (Y/N)	Date Extracted: 011394
Concentrated Extract T	701ume: 1000 (uE)	Data Analyzač: 0/1994
Injection Voluze: _	(uL) ¿	Dilution Factor: _ / 0
GPC Cleanup: (Y/N) 1	✓ pH:	
Number ETGs found:	3	CONCENTRATION UNITS:

CAS NUMBER	COMPOUND NAME	3.7	EST. CONC.	i Q
1. 60322	Hexanoic acid, 6-amino-	13.49	46	JN
2. N/A	UNKNOWN	25.41	9	15
3. N/A	UNKNOWN	31.23	8	JB
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SEMBUTATELE ORGANICIS ANALYSIS DADA SHEIT TENTRATINEZU DEMBUTELEO IIMPOUNTS

Lag Name: CCAS Conti	== Ft. Devens MX4811X1
'Ain Code: Case No.: 5A3	No.: SSS No.:
Matrix: (soil/water) water	Lab Sample II: Wkoo32-2
Sample we/wol: 920 (g/mL)_mL	Iat File ID: 221425
Level: (Yow/ded)	Data Received: _ 011294
% Moisture: decanted: (Y/Y)	Date Extracted: 01/394
Concentrated Extract Volume: 1000 (ul)	Data Analyzed: 011994
Injection Volume:(uL) =	Dilution Factor:
GPC Cleanup: (Y/N) pH:	
VY _ J _	DNCENTRACION UNITS:

CAS NUMBER	COMPOUND NAME	30	EST. CONC.	Q
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SEMÉTICAREOS ERBACIOS ALACABOT CATA BASCT ESMEÁTETISES CARMETETES EMPROYES

Laz Maza: CCAS COME	Esc: Ft. Devens MX4803X1
Car Code: Case No.: 342	No.: 535 Ne.:
Matrice (soil/water) WATER	tas imple to: WK0032-3
Sample wt/Tol: <u>890 (g/ml)ML</u>	Las Tille ID: 22/475
Level: (low/ped) LOW	Sate Receivad: 011294
% Moisture: decented: (Y/N)	Date Extracted: 01/394
Concentrated Extract Tolume: 1000 (41)	Date Analyzed: 0/2594
Enjection Volume:/_(uL) ;	Dilution Factor: _1.0
GPC Cleanup: (Y/N) N pH:	
	NCENTRALLY UNITS:

CAS NUMBER I	COMPOUND NAME	322	EST. CONC.	1 0
1.	UNKNOWN	31.17	5	34
	PAH; M.W. 278	33.28	5	퍞
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SEMINATURE CREATER ANALYSIS CARA EXECT SEMINATURES COMMUNICACIONES

| Las Name: _ CC | CAS cixir | act: FT. Devens N | 1X4801X1 |
|------------------|------------------------|-----------------------|----------|
| lab Code: | Oase Na.: SAS | No.: 523 No. | 7 |
| Matrix: (soil, 2 | eter) water | iab Simple: II: 🔃 | NK0032-4 |
| Sample wo/mol: | 1060 (3/AI) ML | 142 (114 II) <u>2</u> | 21427 |
| level: (Low/p | EA: Low | Data Recaived: _0 | 11294 |
| % Moisture: | decanted: (T/N) | Date Extracted: _ | 011394 |
| Concentrated Ex | mact Toluma: 1000 (um) | Date knalyzed: _0 | 011994 |
| Injection Volume | e: | Dilution Factor: | 1.0 |
| GPC Cleanup: | (A/A) N bH: | | |
| Number TICs for | and: 0 con | NCENTRATION UNITS: | |

| CAS NUMBER | COMPOUND NAME | 727 | EST. CONC. | Ç |
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SEMENTIAMENE ERGANIGS ANALYSIS CATA SHEET CANTACTIVELS COEMERSES SOMEOWINGS

| Lab Name: (oas) - | ho-coant estados | MX4802X1 |
|----------------------|--------------------------|-------------------------|
| Lab Code: | Casa No.: SAS No. | : |
| Matrix: (scil/water) | water | laz sample ID: wkoo32-5 |
| Sample wc/vol: | 1030 (J/ml) ML | las 711e II: >21428 |
| Level: (low/zed) | Low | Data Received: 0/294 |
| % Moisture: | dacanted: (Y/N) <u>P</u> | Data Extracted: 01/394 |
| Concentrated Extract | 701ume: 1000 (ul) | Date Analyzed: 011994 |
| Injection Volume: | (ul) / | Dilution Factor:1.0 |
| GPC Cleanup: (Y/N) | N 5H: | |

Number TICs found: 900012694

CONCEMPRATION UNITS:

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TOTATOLE CREATED ANALYSIS DATA SHEET ISMITATORES COMPOUNTS

| Tan Mana: Coast to Coast Analytical | Congresor: VBJK 01 |
|-------------------------------------|--------------------------|
| tab Cade: Case No.: | sas no.: \$55 de.: |
| Matrix: (soil Water) water | las sample II: Blank |
| Sazgle 47/vol:S(g/35)_ml | Lab File ID: YoyiG |
| Tevel: (low/red) /ow | Data Received: 1/12/94 |
| % Moistage: not dec | Date Analyzed: 1/17/94 |
| GC Column: <u> </u> | Dilusion Factor: |
| Soil Except Volume:(ul) | soti Aliquet Volume:(ul) |
| | CONCENSOR VICEN INC. |

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

| CAS NUMBER | CONFOUND NAME | 27 | EST. CONG. | - 5 |
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| | פסקורומסס עוביינדיגרום | | |
|--|---|------------------------------|--|
| | Coast Analytical | | MXYBOYXI |
| | Case Mo.: | | 523 %a.: |
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| | | | === == WK0032-1 |
| mable Ac\Aol: | _5_(5/5L)_M | Lab File | Y0Y17_ |
| evel: (lcw/sed) | low | Data Red | maived: ///s/gy |
| Moisture: not de | ić. <u>—</u> | Data Ana | 11728d: 1/17/94 |
| column: RTX-624 | L =: 0.53 (==) | gilecion | Factor: _/ 0 |
| il Extract Volum | | | ques Volume: |
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| umber TICs found | : 0 | CONCENTRATION (ug/L or ug/Kg | |
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VOLATILE INGANIES ANALYSIS IATA SHEET TENTATIVELY ISENTITES INNEUNIOS

| 22: MEZE: Coast to Coast Analytical | Cintract: Mx48//x1 |
|-------------------------------------|---------------------------|
| Cas Code: Case Nort | SAS No.: SDG No.; |
| Massin: (soil, water) water | Lab Sample II: wknog2-2 |
| sample wt/vol: _5_(e/al)_ml | Lab File II: |
| Lavel: (1cv/ted) <u>low</u> | Data Received: _//12/94 |
| % Moisture: not dec | Date Analyzed: _//19/94 |
| GC Calumn: RTX-634 ==: 0.53 (mm) | Oilumian Factor: _/.o |
| Soil Extract Volume:(ul) | soli Aliquot Volume:("ii) |
| Number TICs found: | CONCENTRATION UNITS: |

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TENTATUE OFFICES ANALYSIS CATA SHEET

| Las Wazet Coast to C | east Analytical | C:0523GC: | MX4803X1 |
|----------------------|--------------------------|---------------------------------|-------------------|
| Dat Code: | Casa %c,: | SAS No. 5 | \$24 Md.6 |
| Matrix: (soil water | water | EAS Same | ::a ::: WK0032-3 |
| Sample WT/VCli | _5 (e/==) ml | Lab File | 13: <u>yoyal</u> |
| Level: (Low/med) | Jaw | Date Red | eived: _//a/ay_ |
| % Moistare: not dec | | Date And | 11/22d: _1/17/94_ |
| GE column: RTX-604 | _ == : <u>0.53 (==</u>) | Dilation | Factor: _/.0 |
| Soil Extract Volume | :(ub) | , Soli Ali | quat 701'ze:(F1) |
| Number TICs found: | 2 | CONCENTRATION
(Mg/L or Mg/Kg | |

| CAS NUMBER | COMECOND NAME | 1 32 | EST. CONC. | 0 |
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LATILE DROWNES AMALYSIS DATA SHEET TENTATUTELL TOENTEFIED COMPCUMES

| Las Haze: Coast to Coast Analytical | Contract: MX4801X1 |
|--|----------------------------|
| Tab Code: Gase No.: | \$35 No. 1 \$25 No. 1 |
| Matrix: (soil water) water | lab Sample II: WK0032-4 |
| Sample wt/vol: | Lab File ID: Yoycz |
| Lavel: (low/med) _/ow | Date Received: 1/12/94 |
| \$ Moisture: not dec | Date Analyzed: 1/17/94 |
| GC Column: <u>Rtx-629</u> II: <u>0.53</u> (am) | Dilution Factor: _/.o |
| Soil Extract Volume:(uL) | . Soil Aliquot Volume:(ul) |
| Number TICs found:Z | CONCENTRATION UNITS: |

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

| CAS NUMBER | COMPOUND NAME | 37 | EST. CONC. | 5 |
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| Tan Haze: Coast to Coast Analytical | MX9802XI |
|--|-------------------------|
| Tab Code: Case No.: | SAS 550, 6 855 Da. 8 |
| Matrix: (soil/water) water | Tab Sample II: Wkon32-5 |
| Sample WT/VCI: | Lab File ID: |
| Lavel: (low/sed) <u>low</u> | Date Received: _[[12 94 |
| % Moisture: Not dec | Data Analyzed: _1/11/94 |
| GC Column: RTX-634 II: 0.53 (DD) | Dilecton Factor: |
| Soil Extract Volume:(uL) | , Sail Aliquet Voltae:(|
| Number TICs found: _O | CONCENTRATION UNITS: |
| (and the second | |

EST. CONC. CAS NUMBER COMPOUND NAME 9. 1 10. 111. 12. 1 13. 1 14. 1 15. 1 16. 1 17-18. 1 19. 20. 1 21. 1 22. 23.

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25. 26. 27. 28. 29.

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| == 112==: Coast to Coast Analytical = | TBK48NO3 |
|---------------------------------------|-------------------------|
| 142 1360) Dása (c.) | 335 Ma.: \$25 Ma.: |
| Massin: (soil/water) matur | ist Sample II: WE0032-6 |
| sample wo/voi: _5_ 5/mi ml | lab File ID: <u></u> |
| Lavel: (low/ted) low | Data Recaired: _///a/94 |
| t voistura: not dec | Data Analyzad: _////99 |
| GC Column: RTX-624 II: 0.53 (II) | pilusion Featar:/,o |
| Soil Extract Volume:(uL) | soii Aliquet Volume:(ui |
| Number TICs found: | CONCENTRATION DILITS: |

| CAS NUMBER | COMPOUND NAME | 32 | EST. CONC. | 1 4 |
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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

| PARAMETER | OA LABORATORY | CONTRACTOR LABORATORY |
|----------------------|------------------------|-----------------------|
| VOA's | 8260 | 8240 |
| SVOC's Water
Soil | 3510/8270
3540/8270 | 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)

- N₁<MDL₁ and N₂>MDL₂ but <MDL₁
- 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 <5x difference for all matrices

Volatiles TPH, BTEX

Pesticides <5x difference for liquids <10x difference for solids Herbicides

PCB's

Alkalinity <2x difference for all matrices Hardness, Ammonia (water quality, etc.)

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:
 - N₁<MDL, and N₂>MDL, and the difference between values N₂ and MDL, 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

2x<difference<5x for waters,TCLP extracts</pre> Metals

10x<difference<20x for solids, oils

3x<difference<5x for airs

Semivolatiles, 5x<difference<10x for all matrices

VOA, TPH, BTEX

5x<difference<10x for liquids Pesticide/PCB Herbicides 10x<difference<20x for solids

Alkalinity 2x<difference<5x for all matrices

Hardness, Ammonia

(water quality, etc.)

- 4 Major data discrepancy, disagreement serious, if any one of the following apply:
 - N₁<MDL₁ and N₂>MDL₂ and the difference between values N₂ and MDL₁ 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 AND CONTRACTOR RESULTS

PROJECT: Fort Devens - SA48

ANALYSIS PERFORMED: Total Petroleum Hydrocarbons
UNITS: mg/kg - soil, mg/l - water

| * | SAMPLE | SAMPLE
MATRIX | CONTRACTOR
SAMPLE NO. | CONTRACTOR
FIELD ID | QA LAB | QA FIELD
ID | CONTRACTOR
RESULTS | QA LAB
RESULTS | С |
|----------|-----------|------------------|--------------------------|------------------------|--------|----------------|-----------------------|-------------------|------|
| ** | ***** | ***** | ****** | **** | ***** | **** | **** | ***** | **** |
| k | 12/14/93 | Soil | WJ-1597-2 | BX480115 | 24397 | BR480115 | 90 | 6800 | 4 |
| * | 1/7/94 | Water | WK-0032-1 | MX4804X1 | 24697 | MR4804X1 | | | 0 |
| k - | | | | | | | | | |
| • | 12/17/93 | Water | WJ-1608-1 | SBK48N02 | 24424 | SBR4802 | <1.0 | 2.0 | 3 |
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COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

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 | * | Potasium | 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

TOTAL 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 | |
|----|-----------|-------|----------|------------|-----|-----------|-------|---------|------------|----|
| k | | C | RESULTS | RESULTS | * | | C | RESULTS | RESULTS | 1 |
| ** | ****** | ***** | **** | **** | *** | ***** | ***** | **** | *** | ** |
| k | Aluminum | 3 | J 0.026 | 0.10 | * | Manganese | 0 | 0.020 | 0.021 | |
| * | Antimony | 0 | | | * | Mercury | 0 | | | * |
| | Arsenic | 0 | | | * | Nickel | 0 | | | * |
| W | Barium | 0 | J 0.0062 | 0.005 | * | Potasium | 0 | 1.2 | 1.6 | |
| | Beryllium | 0 | | | * | Selenium | 0 | | | 1 |
| * | Cadmium | 0 | | | * | Silver | 3 | 0.29 | <0.015 | 4 |
| * | Calcium | 0 | 8.6 | 9.0 | * | Sodium | 0 | 11 | 16 | - |
| k | Chromium | 0 | | | * | Thallium | 0 | | | , |
| h | Cobalt | 0 | | | * | Vanadium | 0 | | | 1 |
| * | Copper | 0 | | | * | Zinc | 0 | 0.0093 | <0.025 | 1 |
| * | Iron | 3 | 0.042 | <0.025 | * | | | | | 1 |
| * | Lead | 0 | | | * | | | | | |
| | Magnesium | 0 | 0.96 | 1.1 | * | | | | | 1 |

ELEMENTS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS

QA SAMPLE NO.: 24397 CONTRACTOR'S SAMPLE NO.: WJ-1597-2
QA FIELD ID: BR480115 CONTRACTOR'S FIELD ID: BX480115
QA ANALYSIS DATE: 12/22/93 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 | 1 |
|----|--------------------------|------|---------|------------|-----------|---------------------------|-----|---------|------------|------|
| * | | C | RESULTS | RESULTS | * | | C | RESULTS | RESULTS | |
| ** | *** | **** | ****** | **** | de ale wi | ***** | *** | ****** | **** | riki |
| * | 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 | | | 1 |
| * | Acetone | 1 | J 11 | <18 | * | trans-1,3-Dichloropropene | 0 | | | 1 |
| * | Carbon disulfide | 0 | | | * | 1,1,2-Trichloroethane | 0 | | | |
| * | Methylene chloride | 1 | B 23 | <12 | * | Tetrachloroethene | 0 | | | |
| * | trans-1,2-Dichloroethene | 0 | | | * | 2-Hexanone | 0 | | | |
| * | 1,1-Dichloroethane | 0 | | | * | Dibromochloromethane | 0 | | | 1 |
| * | cis-1,2-Dichloroethene | 0 | | | * | Chlorobenzene | 0 | | | |
| * | 2-Butanone | 0 | | | * | Ethylbenzene | 0 | | | |
| * | Chloroform | 0 | | | * | m/p-Xylenes | 0 | | | - |
| * | 1,1,1-Trichloroethane | 3 | <0.70 | J 3 | * | o-Xylene | 0 | | | |
| * | Carbon tetrachloride | 0 | | | * | Styrene | 0 | | | 1 |
| * | Benzene | 0 | | | * | Bromoform | 0 | | | 1 |
| * | 1,2-Dichloroethane | 0 | | | * | 1,1,2,2-Tetrachloroethane | 0 | | | 3 |
| * | Trichloroethene | 0 | | | * | | | | | 1 |

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

QA SAMPLE NO.: 24424 CONTRACTOR'S SAMPLE NO.: WJ-1608-1
QA FIELD ID: SBKR48NO2 CONTRACTOR'S FIELD ID: SBK48NO2
QA ANALYSIS DATE: 1/6/94 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 | | 38.7.15 | * | 2-Nexanone | 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

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 L | AB | CONTRACTOR | × |
|----|--------------------------|------|---------|------------|-----|---------------------------|-----|-------|-----|------------|----|
| * | | C | RESULTS | RESULTS | * | | C | RESUL | TS | RESULTS | * |
| ** | *** | **** | ****** | **** | *** | ******* | *** | **** | *** | ***** | ** |
| * | Chloromethane | 0 | | | * | 1,2-Dichloropropane | 0 | | | | * |
| * | Vinyl chloride | 0 | | | * | Bromodichloromethane | 0 | | | | * |
| * | Bromomethane | 0 | | | * | 4-Methyl-2-pentanone | 0 | J 1. | 6 | <15 | * |
| * | Chloroethane | 0 | | | * | cis-1,3-Dichloropropene | 0 | | | | * |
| * | 1,1-Dichloroethene | 0 | | | * | Toluene | 0 | | | | * |
| * | Acetone | 1 | J 6.0 | <15 | * | trans-1,3-Dichloropropene | 0 | | | | * |
| * | Carbon disulfide | 0 | | | * | 1,1,2-Trichloroethane | 0 | | | | * |
| * | Methylene chloride | 1 | B 9.9 | J,B 3 | * | Tetrachloroethene | 0 | | | | * |
| * | trans-1,2-Dichloroethene | 0 | | | * | 2-Hexanone | 0 | J 0. | 46 | <15 | * |
| * | 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 | B 1. | 3 | <5 | * |
| * | Carbon tetrachloride | 0 | | | * | Styrene | 0 | B 1. | 2 | <5 | * |
| Ħ | Benzene | 0 | 0.76 | <5 | * | Bromoform | 0 | | | | * |
| * | 1,2-Dichloroethane | 0 | | | * | 1,1,2,2-Tetrachloroethane | 0 | | | | * |
| * | Trichloroethene | 0 | | | * | | | | | | * |

| CHIDDOCATE | RECOVERIES | 191. |
|------------|------------|------|
| SUKKUGATE | KELUVERIES | (4): |

| 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

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 | | | * |
| w | 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 | | | ń |
| * | 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 | | | * | | | | | w |

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

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 | CONTRACTO | R |
|----|--------------------------|------|---------|------------|-----|--|-----|---------|-----------|-----|
| * | | 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 |
| * | 1,1-Dichloroethene | 0 | | | * | Toluene | 0 | | | |
| * | Acetone | 1 | J 6.1 | <15 | * | trans-1,3-Dichloropropene | 0 | | | |
| * | Carbon disulfide | 0 | | | * | 1,1,2-Trichloroethane | 0 | | | |
| * | Methylene chloride | 1 | B 12 | J,B 4 | * | Tetrachloroethene | 0 | | | |
| * | trans-1,2-Dichloroethene | 0 | | | * | 2-Hexanone | 0 | J 2.1 | <15 | |
| * | 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 | 0.39 | J,B 1 | * | o-Xylene | 0 | B 1.3 | <5 | |
| * | Carbon tetrachloride | 0 | | | * | Styrene | 0 | | | |
| * | Benzene | 0 | | | * | Bromoform | 0 | | | * |
| * | 1,2-Dichloroethane | 0 | | | * | 1,1,2,2-Tetrachloroethane | 0 | | | * |
| * | Trichloroethene | 0 | | | * | and the same and the same and a second | | | | |

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

QA SAMPLE NO.: 24397 CONTRACTOR'S SAMPLE NO.: WJ-1597-2
QA FIELD ID: BR480115 CONTRACTOR'S FIELD ID: BX480115
QA EXTRACTION DATE: 12/21/93 CONTRACTOR'S EXTRACTION DATE: 12/17/93
QA ANALYSIS DATE: 1/13/94 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 | CONTRACTO | R |
|----|-----------------------------|-----|---------|------------|-----|----------------------------|-----|---------|-----------|-----|
| * | | C | RESULTS | RESULTS | * | | C | RESULTS | RESULTS | 9 |
| ** | ****** | *** | ***** | ***** | *** | ***** | *** | **** | **** | ** |
| * | Aniline | 2 | | NR | * | 3-Nitroaniline | 0 | | | |
| Ħ | Phenol | 0 | | | * | Acenaph thene | 0 | | | 3 |
| × | Bis(2-chloroethyl)ether | 0 | | | * | 2,4-Dinitrophenol | 0 | | | 3 |
| × | 2-Chlorophenol | 0 | | | * | 4-Nitrophenol | 0 | | | 18 |
| * | 1,3-Dichlorobenzene | 0 | | | * | Dibenzofuran | 0 | | | |
| * | 1,4-Dichlorobenzene | 0 | | | * | 2,6-Dinitrotoluene | 0 | | | - 3 |
| * | 1,2-Dichlorobenzene | 0 | | | * | 2,4-Dinitrotoluene | 0 | | | × |
| * | Benzyl alcohol | 0 | | | * | Diethylphthalate | 0 | | | |
| * | 2-Methylphenol | 0 | | | * | 4-Chlorophenyl-phenylether | 0 | | | 1 |
| * | Bis(2-chloroisopropyl)ether | 0 | | | * | Fluorene | 0 | | | |
| * | 4-Methylphenol | 0 | | | * | 4-Nitroaniline | 0 | | | 10 |
| * | N-Nitroso-di-n-propylamine | 0 | | | * | 4,6-Dinitro-2-methylphenol | 0 | | | |
| * | Hexachloroethane | 0 | | | * | N-Nitrosodiphenylamine | 0 | | | 18 |
| * | 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 | | | |
| k | Bis(2-chloroethoxy)methane | 0 | | | * | Anthracene | 0 | | | B |
| × | 2,4-Dichlorophenol | 0 | | | * | Di-n-butylphthalate | 1 | <38 | J 130 | d |
| * | 1,2,4-Trichlorobenzene | 0 | | | * | Fluoranthene | 0 | | | 9 |
| * | Napthalene | 0 | 77 | <400 | * | Pyrene | 0 | | | - |
| * | 4-Chloroaniline | 0 | | | * | Butylbenzylphthalate | 0 | | | + |
| * | Rexachlorobutadiene | 0 | | | * | 3,3'-Dichlorobenzidine | 0 | | | 100 |
| W | 4-Chloro-3-methylphenol | 0 | | | * | Benzo(a)anthracene | 0 | | | 1 |
| × | 2-Methylnapthalene | 0 | | | * | Bis(2ethylhexyl)phthalate | 1 | 910 | <400 | |
| de | 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 | | | |
| n | | | | | * | Benzo(g,h,i)perylene | 0 | | | |
| * | ******* | *** | ***** | ***** | *** | ******* | *** | ***** | ***** | ** |
| | SURROGATE RECOVERIES (%): | | | | | | | | | |
| | SURROGATE | | QA | CONTRACTOR | | SURROGATE | | QA | CONTRACTO | R |
| | 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

QA SAMPLE NO.: 24424 CONTRACTOR'S SAMPLE NO.: WJ-1608-1

QA FIELD ID: SBR48N02 CONTRACTOR'S FIELD ID: SBK48N02

QA EXTRACTION DATE: 12/27/93 CONTRACTOR'S EXTRACTION DATE: 12/22/93

QA ANALYSIS DATE: 1/11/94 CONTRACTOR'S ANALYSIS DATE: 1/12/94

MATERIAL DESCRIPTION: WATER
DATE SAMPLED: 12/17/93

UNITS: UG/L

| *1 | ********** | *** | ******** | ******* | ** | ******* | **** | **** | ***** | ** |
|-----|-----------------------------|-----|----------|--------------|------|----------------------------|------|---------|------------|----|
| * | PARAMETER | | QA LAB | CONTRACTOR * | * | PARAMETER | | QA LAB | CONTRACTOR | |
| * | | C | RESULTS | RESULTS * | * | | C | RESULTS | RESULTS | |
| # 1 | *********** | *** | ***** | ***** | ** | *********** | **** | ****** | ***** | ** |
| * | Aniline | 2 | | NR * | r | 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 | | 9 | de . | Dibenzofuran | 0 | | | * |
| * | 1,4-Dichlorobenzene | 0 | | | * | 2,6-Dinitrotoluene | 0 | | | * |
| * | 1,2-Dichlorobenzene | 0 | | | R. | 2,4-Dinitrotoluene | 0 | | | * |
| * | Benzyl alcohol | 0 | | * | h | Diethylphthalate | 1 | 0.12 | J 2 | * |
| * | 2-Methylphenol | 0 | | | * | 4-Chlorophenyl-phenylether | 0 | | | |
| * | Bis(2-chloroisopropyl)ether | 0 | | | dr. | Fluorene | 0 | | | * |
| * | 4-Methylphenol | 0 | | | * | 4-Nitroaniline | 0 | | | * |
| * | N-Nitroso-di-n-propylamine | 0 | | - 1 | * | 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 | | | k | Hexach Lorobenzene | 0 | | | |
| * | 2,4-Dimethylphenol | 0 | | | * | Pentachlorophenol | 0 | | | |
| * | Benzoic acid | 0 | | | k | 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 | | | R | Butylbenzylphthalate | 1 | J 0.60 | <10 | * |
| * | Hexachlorobutadiene | 0 | | 3 | k | 3,3'-Dichlorobenzidine | 0 | | | * |
| * | 4-Chloro-3-methylphenol | 0 | | | * | Benzo(a)anthracene | 0 | | | |
| * | 2-Methylnapthalene | 0 | | | k | Bis(2ethylhexyl)phthalate | 1 | J 1.8 | J,B 2 | |
| * | Hexachlorocyclopentadiene | 0 | -3 | | ٠ | Chrysene | 0 | | | |
| * | 2,4,6-Trichlorophenol | 0 | | | de . | Di-n-octyl phthalate | 0 | | | * |
| * | 2,4,5-Trichlorophenol | 0 | | | dr | Benzo(b)fluoranthene | 0 | | | W |
| * | 2-Chloronaphthalene | 0 | | | k | Benzo(k)fluoranthene | 0 | | | |
| * | 2-Nitroaniline | 0 | | | * | Benzo(a)pyrene | 0 | | | |
| * | Dimethylphthalate | 0 | | 4 | * | Indeno(1,2,3-cd)pyrene | 0 | | | * |
| * | Acenaphthylene | 0 | | * | 4 | Dibenz(a,h)anthracene | 0 | | | * |
| * | | | | | × | Benzo(g,h,i)perylene | 0 | | | |
| w | ****** | *** | ******* | ******** | *** | ****** | **** | ***** | ***** | ** |
| 1 | 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

QA SAMPLE NO.: 24697

QA FIELD ID: MR4804X1

QA EXTRACTION DATE: 1/14/94

QA ANALYSIS DATE: 2/10/94

CONTRACTOR'S SAMPLE NO.: WK-0032-1

CONTRACTOR'S FIELD ID: MX4804X1

CONTRACTOR'S EXTRACTION DATE: 1/13/94

CONTRACTOR'S ANALYSIS DATE: 1/19/94

MATERIAL DESCRIPTION: WATER

DATE SAMPLED: 1/7/94 UNITS: UG/L

******* PARAMETER QA LAB CONTRACTOR * PARAMETER QA LAB CONTRACTOR * C RESULTS RESULTS C RESULTS RESULTS 2 Aniline 3-Nitroaniline 0 NR 3 <0.69 J 5 Acenaphthene 0 Phenol 0 Bis(2-chloroethyl)ether 0 2,4-Dinitrophenol 2-Chlorophenol 0 4-Nitrophenol 0 1,3-Dichlorobenzene 0 Dibenzofuran 0 2,6-Dinitrotaluene 0 1,4-Dichlorobenzene 0 1, Z-Dichlorobenzene 0 2,4-Dinitrotoluene 0 Benzyl alcohol 0 Diethylphthalate 1 B 0.47 <10 0 0 2-Methylphenol 4-Chlorophenyl-phenylether 0 Bis(2-chloroisopropyl)ether 0 Fluorene 4-Nitroaniline 0 4-Methylphenol 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 Hexach Lorobenzene 0 2,4-Dimethylphenol n Pentach Lorophenol 0 Benzoic acid 0 Phenanthrene 0 Bis(2-chloroethoxy)methane Anthracene 0 0 Di-n-butylphthalate 2,4-Dichlorophenol 0 0 1,2,4-Trichlorobenzene 0 Fluoranthene 0 Napthalene 0 0 Pyrene 4-Chloroaniline 0 Butylbenzylphthalate 0 Hexachlorobutadiene 0 3,3'-Dichlorobenzidine 0 4-Chloro-3-methylphenol Ò Benzo(a)anthracene 0 0 2-Methylnapthalene Bis(2ethylhexyl)phthalate 1 7.2 J 4 Hexachlorocyclopentadiene n 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 0 0 Dimethylphthalate Indeno(1,2,3-cd)pyrene 0 0 Acenaphthylene Dibenz(a,h)anthracene Benzo(g,h,i)perylene 0 SURROGATE RECOVERIES (%): SURROGATE QA CONTRACTOR SURROGATE QA CONTRACTOR Nitrobenzene-d5 99 71 2-Fluorophenol 70 71 51 75 2-fluorobiphenyl 91 77 Phenol-d6 105 105 4-Terphenyl-d14 96 2,4,6-Tribromophenol 68

> * = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE COMPOUNDS WITHOUT VALUES ARE ALL BELOW DETECTION LIMITS SEE APPENDIX B FOR KEY TO COMMENTS

| | | IPLE TYPE | AMI | | | 1 | 10 | | OJECT NO FACORS | | | | | PROJECT NO. |
|---------------------------------------|---------|-----------|--------|-------|---------|-------|------|--------------------|------------------------------|----------|-------|-------|----------|------------------------------|
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| SEDIMENT/SLUDGE | | | | | T KL | VOC. | | TAINERS | STATION LOCATION | GRAB | COMP. | TIME | DATE | STA NO. |
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| water | | | | | | 2 | | 2 | | x | | 1100 | 11/44/43 | TBK48NII |
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| | | | | | | | - | | - 1 - A. L. | | | | | |
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RELINQUISHED |

REVISED ON 4-15-

CENED-ED-OL-E BANJLE CONTAINER EZCEIPT FORM

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| ٤, | | County and | 1 | EX, P/C, AIR EXP, HAND-D | ELCVERED) | |
| 2, | Cents | tiner ty | pa (Cooler, box | (envelope, etc.) | | |
| 3. | Wars | custody | seals on gutat | de of container? | N/A Ya | s No |
| | How : | any & w | hara: | TIA febra dates MAN, se | MAL MAZEL NEW | 2 |
| 4. | Wase | custody | papers taped t | o lid inside container? | N/A Ye | s Mo |
| 5. | Chate | dy papa | es proparly fil | lad out? (inx, signad, at | cc.) <u>Ya</u> | s No |
| 6, | Was y | roject | idantifiable fr | on custody papers? | ¥.e | 4 No |
| 7. | sic s | you algm | onstody bapers | in appropriate place? | Ye | s No |
| 8. | cid y | you atta | ch shipper's-pa | oking form to this form? | N/A Ye | a Xc |
| 9. | Pack | ing mate | יובות (בובת | vermiculita, bubbla wrap | paper, cans, ot | har) |
| 10. | Was s | suddiete. | nt les sad? | Temperatura 47 c upon | arrival N/N Ye | S No |
| 11. | Ware | all sam | plas saalad in | separate plastic bags? | N/A Ys | 5 No |
| 12. | bid a | all samp | ies arrive in g | cod condition? | Ya | s No |
| 13. | Samp! | a labat | s complete? (#, | date, analysis, preserve | stion, sign.) Ya | 8 No |
| 24, | Did a | ali eamp | le labels agree | with custody papers? | Ya | s No |
| 15, | Wera | 0022862 | sample contain | mars used for tests indica | atad? N/A (Ya | B No |
| 15, | Wera
(TOC | px | preservatives
NUTRIENT pH_ | used? (TX pH, CX- pH, TPH pH | OTHER DH | a No |
| 17. | Haza | VCA Via | eest-eiddud ei | (H,O) or no headspace (so | (11)? N/A(Ye | a No |
| 15. | Was a | oufficia. | nt amount of sa | mple sent in each contain | ner? (Ya | a No |
| 19. | Were | air vol | umas noted for | air samples? | (N)A YO | s No |
| 20. | Ware | initial | waights noted | for pre-weighed filters? | M/A Ye | s Ho |
| Dis | rapa | nciesi | 400000000000000000000000000000000000000 | The second second | | |

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| 71 | USIMO | 15 | A 48 | 1 | Fort Devens | | | | | | | - | | REMARKS | | | | |
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CON- | . AB | CCD | 计区 | | | | | | INDICATE
SOIL/WATER/AIR
SEDIMENT/SLUDGE | | | | | |
| 4 | CH AT | DATE | TIME | 3 | GRAB | 1 | STATIO | N LOCATION | TAINERS | 700 | 500 | TRPH | | | | | | SEDIMENTISCOGE |
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SAMPLE CONTAINER RECEIFT FORM

| TECT: Port Devens SA 48 |
|--|
| container received on 12.21.9 and inspected on 12.219 by: Salah |
| . Shipper (USM, UPS, DHL FEDEX, P/C, AIR EXP, HAND-DELIVERED) |
| . Container type (Cooler, box, envelope, etc.) |
| How many & where: 2 Over un, seal date: 5/20/46eal name: 10 Alex |
| . Were custody papers taped to lid inside container? N/A Wes N |
| . Custody papers properly filled out? (ink, signed, etc.) |
| S. Was project identifiable from custody papers? |
| 7. Did you sign custody papers in appropriate place?. |
| 3. Did you attach shipper's packing form to this form? N/A Yes y |
| Packing material (peanut), vermiculite, (bubble wrap) paper, cans, other) |
| . Was sufficient ice used? Temperature A. 5 "C upon arrival N/A (Yes)N |
| 11. Were all samples sealed in separate plastic bags? N/A Yes N |
| 12. Did all samples arrive in good condition? Yes N |
| 13. Sample labels complete? (#, date, analysis, preservation, sign.) (Yes N |
| 14. Did all sample labels agree with custody papers? |
| 15. Were correct sample containers used for tests indicated? N/A (Yes)N |
| 15. Were correct preservatives used? (TM pH, CN- pH) N/A Yed N (TOC pH, NUTRIENT pH, TOX pH, TPH pH, OTHER pH) |
| 17. Were VOA vials bubble-free (H2O) or no headspace (soil)? N/A (es) N |
| 18. Was sufficient amount of sample sent in each container? |
| 19. Were air volumes noted for air samples? NDA Yes N |
| 20. Were initial weights noted for pre-weighed filters? N/A Yes N |
| Discrepancies: |
| |
| |

| PROJECT NO. | PF | OUECT N | AME | | _ | | | | | | 11 | ড | SAMP | LE TYPE | | - | | |
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| я. | pid you area | ch shipperis of | foxtue ques es | this form? | S/X | 758 | No |
| 9. | | | Amenicultus, 1 | | | other | :: |
| | Was sufficia | n: 104 waad? | Tamperatura (2 | .2 c upon a | retari N/Y | Yes | No |
| 11. | Ware all sam | ples sagisd in | separate plas | tic bags? - | N/A | Yes (| Ne |
| 12. | Did all samp | las arriva in s | good condition | ? | | (233 | No |
| 17. | Sample largi | s dompiats? (# | , data, amalya | is, praservat | ion, sign.)(| Yas |)No |
| 24. | Did all samp | lo labels agrad | with custody | papars? | | Yes | 1 |
| 11, | Mela collect | sample contain | dars used for | tests indicat | ad? N/A | Yas | Ne |
| 15. | 1 | The state of the s | used? (TX pH, TOX pH | | N N/A
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| 17. | Wara VCA via | la bubbla-fraa | (H ₂ O) or no he | eadapada (act | 1)7 S/A | Yas | Ne |
| L ā. | Was sufficia | nt amount of so | ample sent in | each containe | 127 | Yas | No |
| 49. | Here air vol | umes notal for | air samples? | | (8/3) | Yas | No |
| 20. | Here initial | walghts noted | for pra-weigh | ed filters? | MIN | Yas | No |
| Dis | repancies | | | | | | |

APPENDIX H TANK REMOVAL MONITORING REPORT, EG&G NOVEMBER 1989

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INFO. ON SA 43-H, 43-I, + SA 48 (8) 202)



Environmental Engineering & Geotechnics, Inc. 379 Broadway
Suite 202
Lynnlield, MA 01940
(617) 596-2160

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 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



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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).

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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 form 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 |
|------------------------|-----------------|-----------|-------------|
| IVII. DIEVE IVICCALLLY | Mail Medialical | OCI VICES | 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

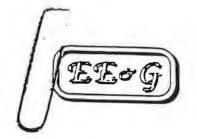
1771 Washington Street

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 Fort Devens Military Reservation / Fort Devens, MA. Project Number 89.1027MA Wednesday, November 15, 1989 Page 4 of 15



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 pad. Screening of the excavated soil encountered levels varying between 1.4 and 9.0 ppm.

Tank Specifications:

Size
Dimensions
Quantity of Sediment
Quantity of Product
Product Storage
Depth to Top of UST
Depth to Groundwater

1,000 gallons
129 inches by 49.5 inches
Half of a 55 gallon drum
300 gallons
Waste Oil
4.5 Feet
3.5 Feet

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Project Number 89.1027MA
Wednesday, November 15, 1989
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Building Location 602

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
Dimensions
Quantity of Sediment
Quantity of Product
Product Storage
Depth to Top of UST
Depth to Groundwater

1,000 gallons
129 inches by 49.5 inches
Half of a 2 55 gallon drum
500 gallons
Waste Oil
4.5 Feet
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
Dimensions
Quantity of Sediment
Quantity of Product
Product Storage
Depth to Top of UST
Depth to Groundwater

1,000 gallons 129 inches by 49.5 inches Haif of a 55 gallon drum 900 gallons Waste Oil 3.5 Feet

Not Encountered

Building Location 202

SA 4-8

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.

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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

Dimensions

Quantity of Sediment

Quantity of Product Product Storage

Depth to Top of UST

Depth to Groundwater

1,000 gallons

129 inches by 49.5 inches

One and a Half - 55 gallon drums

300 gallons

Waste Oil 4.0 Feet

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. Fort Devens Military Reservation / Fort Devens, MA. Project Number 89.1027MA Wednesday, November 15, 1989 Page 7 of 15



 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 I photoicnization 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)

 Bituminous Pavement, approximately 1.5 inches thick, was encountered at the surface of test borings B-1 and B-2.

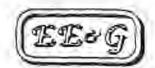


TABLE I

| | | Sunimary a | nalyses, Test Borin
of Photovac Tip I R | | e/b 315 | |
|---|--------------|------------|--|--------------------------|---------|--|
| | | 1 | 1 | (in part per million - t | (mm) | |
| 5ampline | Depth (Fest) | B-1 | B-2 | B.1 | B.4 | |
| 0.0 | - 2.0 | 0.2 | 0.0 | 0.0 | 0,4 | |
| | - 7.0 | 0.5 | 0.1 | 0.2 | 0.3 | |
| 10.0 | - 12.0 | 0.0 | 0.0 | 0.1 | 0.1 | |
| 12.0 | - 14.0 | | | 0.1 | 0.0 | |
| 100000000000000000000000000000000000000 | - 15.0 | 2.2 | | 0.1 | 0.0 | |
| 2.373 | 18.0 | 354 | 100 | 0.0 | 0.1 | |
| | - 20.0 | *** | 2.00 | - 150.0 | 0.0 | |
| 20.0 | - 22.0 | 26 | 1400 | 0.2 | 0.0 | |
| 22.0 | - 24.0 | 14.6 | 194 | 0.2 | 0.0 | |
| 24.0 | - 26.0 | | 2.0 | 0.1 | 0.1 | |
| 11 22 21 1 | - 28.0 | 266 | 1490 | 0.2 | 0.5 | |
| 28.0 | - 30.0 | 545 | 11.64 | 0.3 | 0,2 | |
| 30.0 | - 32.0 | 1,695 | 1,774 | 0.2 | 0.0 | |
| Terminati | ion Depth | 11.5 | 11.0 | 32.0 | 12.0 | |
| | ster Depth | 3.5 | 4.0" | 29.0 | 29.0 | |

Note: Limiting criteria established in the Fort Devers UST Removal Bid Documents as 10 ppm.

- 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.
- Grey / Brown Silty Gravel (GM): was encountered underlying the gravely sand layer in test borings 8-1 and 8-2, 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 1-2/8 inch inside diameter by 2 inch outside diameter split-spoon sampler the last 12 inches of an 18 inch sumpling interval.

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Building 202 (Boring B-3 & B-4)

- 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.
- 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. <u>Tan / Grey Brown Silty Sand (SM)</u>: 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:

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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
- Date
- Sampler's Name
- Analysis to be Performed

- Project Number
- Time
- Location

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.

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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:

| | TPH Concentrations (in pom) | | | | | |
|--------------------|-----------------------------|-----------------|--|--|--|--|
| Building Locations | 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 preformed 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

| Analysis Performed | Results In poin |
|--------------------|-----------------------|
| PCB'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 |
| Zine | 0.19 |
| Initial pH | 6,32 |
| Final pH | 4.52 |
| Resctivity | |
| Cyanide | 0.200 |
| Sullides | 12.0 |
| Flash Point | > 160 ° P |
| Corrosivily | 6.32 |
| Total Metals | |
| Lead | 14.0 |
| Chromium | 9.0 |
| Nickel | 30.0 |
| Zinc | 57.0 |
| ТРН | 6,000 |
| VOC's | Below Delection Limit |



TABLE 3

Sail Analysis

Summary of Consolidated Weste Services Results

| | | Davide to have | |
|--------------------|-----------------------------|-------------------------------------|--------------|
| Analysis Performed | Building 202 | Results in ppm
Building 602/2517 | Building 604 |
| FCB's & Pesucides | € 1.0 | < 1.0 | ₹ 1.0 |
| EP Toxicity Metals | | | |
| Arsenic | < 0.01 | < 0.01 | < 0.01 |
| Darium | = 0.5 | < 0.5 | < 0.5 |
| Cadmium | 0.01 | 0.02 | < 0.01 |
| Chromium | 0.4 | < 0.1 | < 0.2 |
| Lead | < 0.1 | < 0.1 | 0.1 |
| Mereury | < 0.002 | < 0.002 | < 0.002 |
| Scienium | - < 0.01 | < 0.01 | < 0.01 |
| Silver | 0.1 | < 0.1 | < 0.1 |
| | | The second second | 470 |
| Initial pH | 5.56 | 5.26 | 6.58 |
| Final pH | 4.94 | 5.04 | 4.81 |
| Reactivity | | | |
| Cyanide | Negative | Negative | Negative |
| Sulfides | Negetive | Negative | Negative |
| Flash Point | > 160 * P | > 160 * F | > 160 ° F |
| Corresivity | 5.32 | 5.65 | 6.67 |
| Ethylene Glycol | Below Delection Limit (BDL) | BOL | 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 I of this report.

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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. Fort Devens Milliary Reservation / Fort Devens, MA. Project Number 89.1027MA Wednesday, November 15, 1989 Page 15 of 15

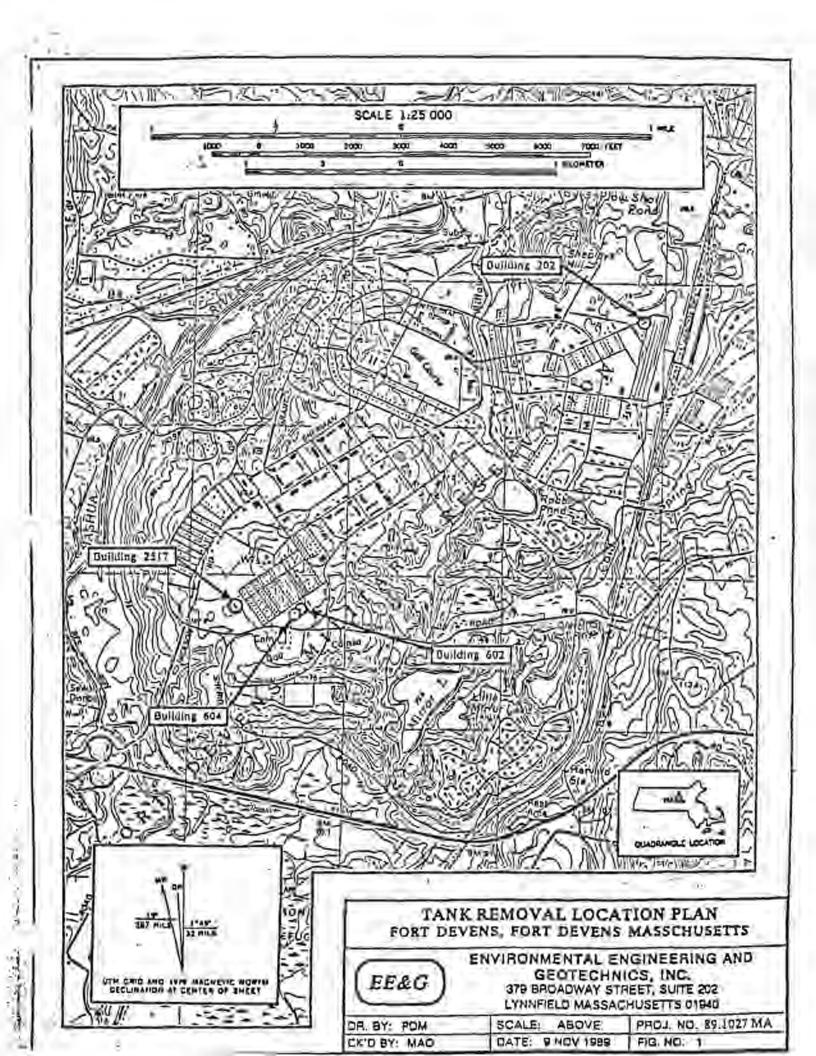


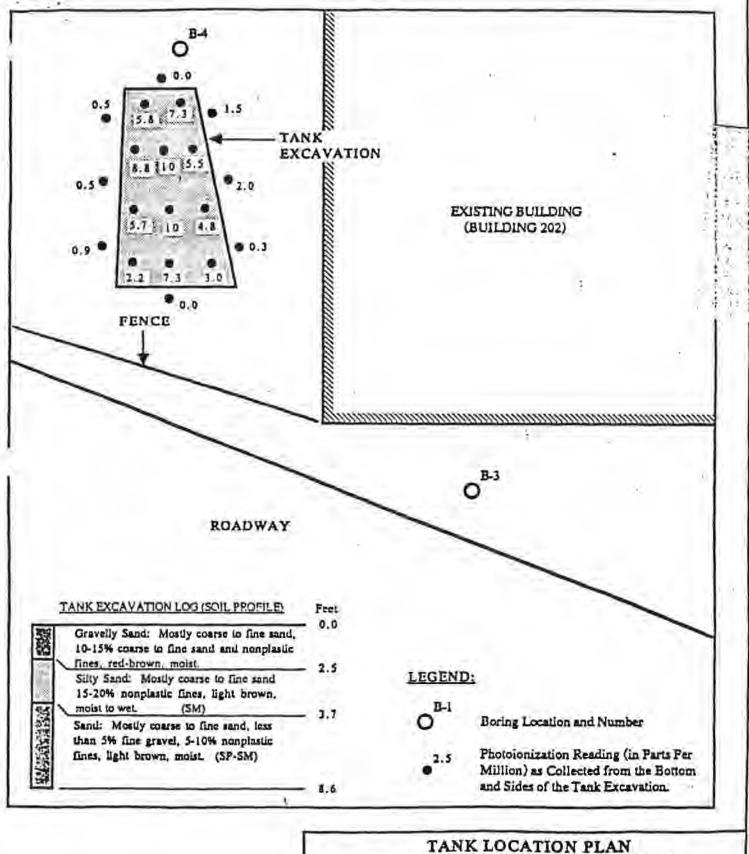
 Perform a Phase I: Limited Site Investigation of the UST excavations located at building locations 202, 602 and 2517. This investigation program should be implemented to obtain specific groundwater information and provide further information on the nature of the contamination concern. The installation 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 LOCATION PLAN BUILDING 202, FORT DEVENS, AYER, MA.

EE&G

ENVIRONMENTAL ENGINEERING AND GEOTECHNICS, INC. 379 BROADWAY, SUITE 202 LYNNFIELD MASSACHUSETTS 01940

DR. BY: PDM SCALE: 1" = 10" PROJ. NO. 89.1027MA
CK'D BY: MAO DATE: 31 MAY 1989 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. <u>Summary:</u> 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. <u>Purpose:</u> 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 reexcavate 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 Approximately 100 cubic yards of soil were reportedly d. 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 reanalysis. 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, rubbertired 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).

| Sample Location | TPH (ppm) |
|----------------------------|-----------|
| 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.

| Sample Location | TPH (mgg) |
|-----------------|-----------|
| 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. 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.

| Depth | Sample Location | TPH (ppm) |
|-------|-----------------|-----------|
| 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:

| | | | | Amb | ient Air Over Soil | Headspace |
|----------------|----|--------|----|----------------|--------------------|-----------|
| Depth/Location | | | | PID Rdq. (ppm) | PID Rdg. (ppm) | |
| 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 laboaratory analyses have been performed on the duplicate samples. The NDIR results are shown below.

| Depth | Sample Location | TPH (ppm) |
|-------|----------------------|-----------|
| 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.

| Sample Location | TPH (ppm) | | |
|-----------------|-----------|--|--|
| 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:

| | | | | | | Side | of Bucket | |
|-----|-----|---|----|----|-----------|-------|-----------|-------|
| Der | oth | | | | Condition | North | Middle | South |
| 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.

| Depth | Sample Location | NDIR
TPH (ppm) | Laboratory
TPH (ppm) |
|-------|----------------------|-------------------|-------------------------|
| 15 ft | North Side of Bucket | 4,322 | 16,100 |
| 15 ft | South Side of Bucket | ND | NA |
| 15 ft | South Wall | ND | NA |
| 20 ft | North Side of Bucket | 2,127 | NA |
| 20 ft | South Side of Bucket | ND | ND* |

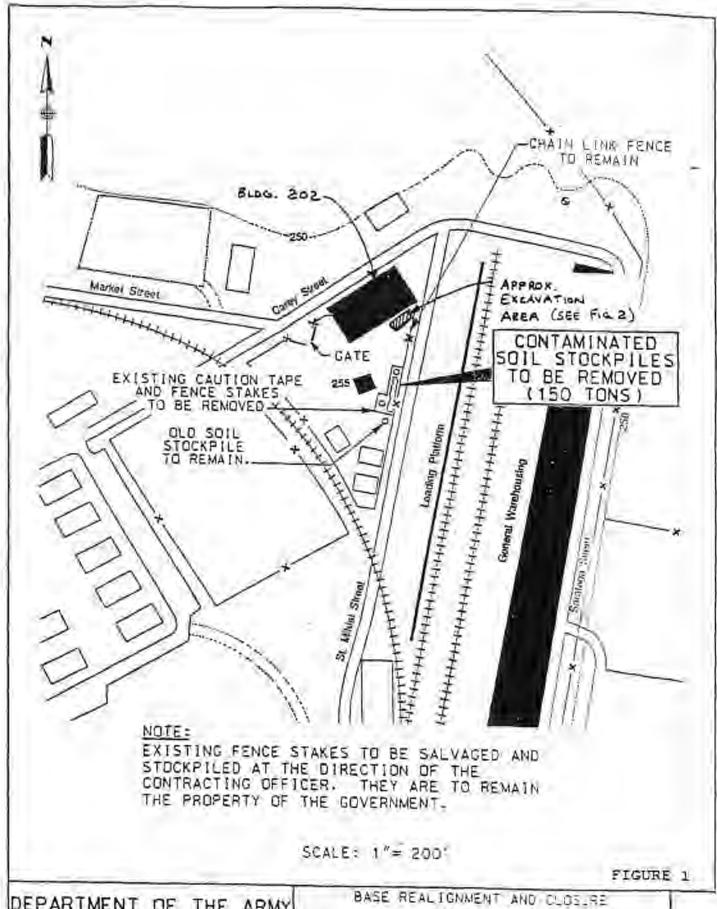
^{*} Laboratory Detection Limit = 31.3 ppm.

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 paramaters) 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.

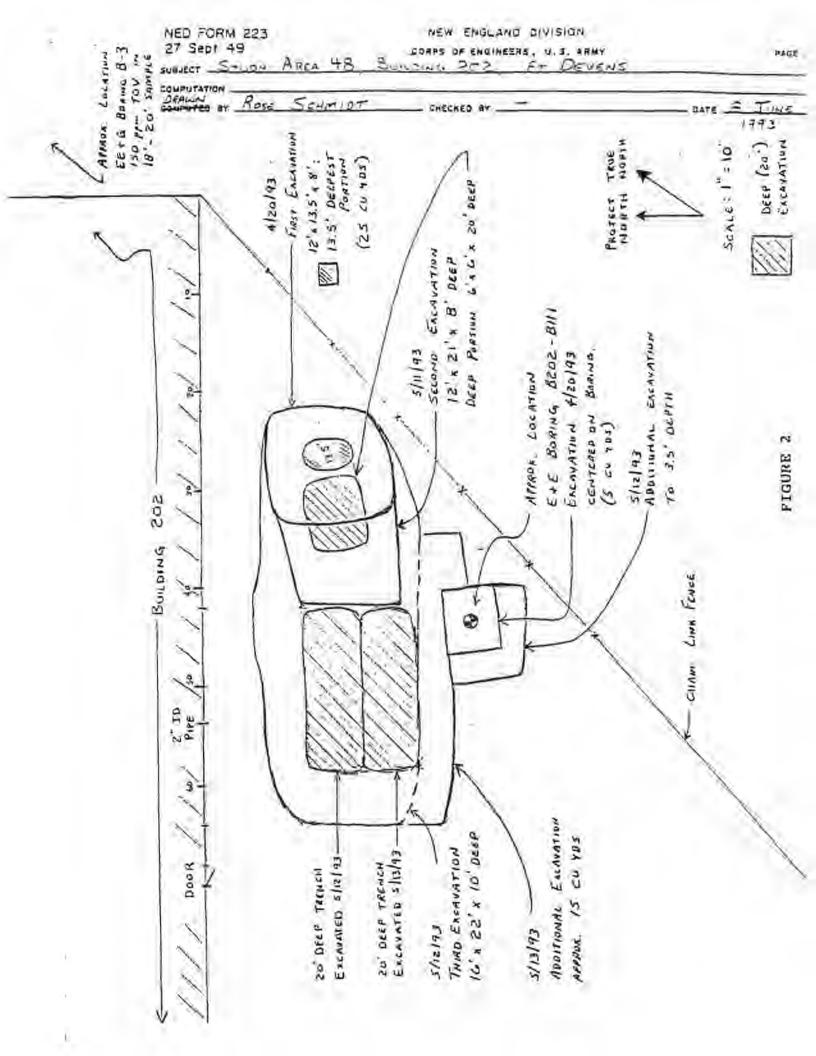
Rosemary A. Schmidt, Geologist U.S. Army Corps of Engineers

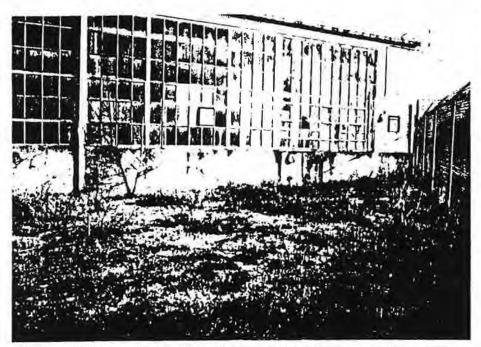


DEPARTMENT OF THE ARMY NEW ENGLAND DIVISION CORPS OF ENGINEERS WALTHAM, MASS.

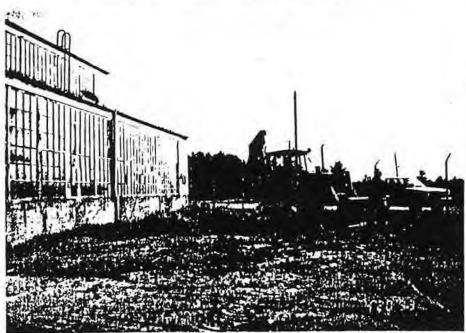
AYER . MA.

FT. DEVENS SITE PLAN - SA-48





(1) Building 202, looking northeast (project). Ends of former UST excavation staked.



(3) Backhoe set up to start excavation at former tank location (4/20/93).



(2) Staked location of E & E boring B202-BH1. Building 202 in background. (Looking north.)



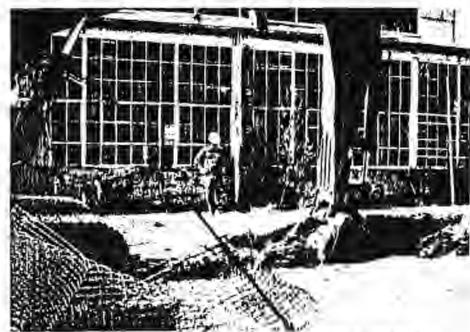
(4) Excavation at boring B202-BH1 (4/20/93).



(5) large excavator mubilized to resume excavation at former usy on 5/11/93 (looking west).



(6) Excavation of marked off area to 10 ft; first 20 It hole being backfilled.



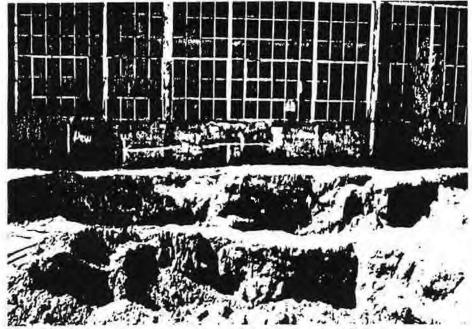
(7) Start at second 20 ft hold on west end of excavation on 5/11/93 (looking north).



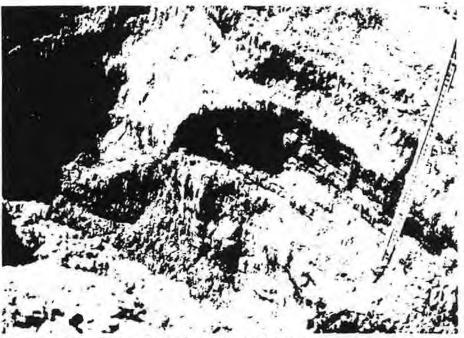
(8) hast and of ald tank excavation found during eleavation of second 20 ft hale (looking north).



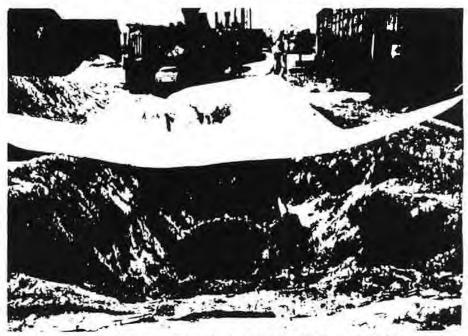
(9) First 20 ft trench on floor of new excavation at correct location of former UST (5/12/93).



(11) View of excavation, looking north.



(10) Gray discolored soil below about 12 ft depth on the north wall of first 20 ft trench.



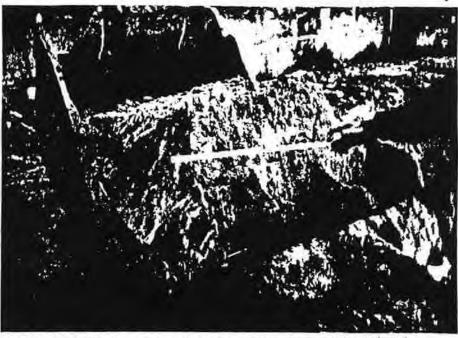
(12) Lining first 20 ft trench with plastic.



(13) Second 20 it trench, immediately south of and parallel to first; looking west (5/13/93).



(15) Backfilling of excavation (5/13/93).



(14) North (left) side of bucket still highly contaminated; south (right) side clean.



(16) Stockpiled contaminated soil, covered with plastic (looking south).

APPENDIX J "STATUS OF SA48 REMOVAL ACTION", ECOLOGY AND ENVIRONMENT MAY 1993

HH: 5 32 5149 FROM ECULEGY AND SMILLBON

F GF DOE

ECOLOGY & ENVIRONMENT, INC. 1700 NORTH HOURE STREET, SUITE 1610 ARLINGTON, VA, USA 22209 TELEPHONE: 703-322-5065 VAI: 703-558-7950

DATE: 15 HAT 1993

PROJECT: PT. DEVENS

MUMBER OF PAGES: 3

NUMBER: UC4046

FAX NUMBER: 1-410-671-1635

ATTENTION: CEARLES GEORGE

USABC

STATUS OF SA 48 RENOVAL ACTION

FRONT

SUBJECT:

KEITH DAVISON

DC:

ROBERT J. KING BUFF VALTER

The removal action at MA AS (Building 202 DST) has been stopped by the Army Corps of Engineers - New England Division (COE). An unknown quantity of petroleum hydromerbon contaminated soil was left on sits between the accavation and Building 202. This contaminated soil was not removed due to GOE concerns about damaging the atructural integrity of the building. It is not clear what, if any, further remedial actions are planned for this gits.

In eccordance with the Action team written by Capt, Pease, the COB set out to resediate two areas at SA 46. These two areas were the former underground waste oil storage tank site and an erea 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 become a single escavation. A diagram of the final extent of this excavation is attached. The excavation was being backfilled by the COB when the E 6 E team demoned from site on 11 May.

The seat significant eres of contamination discovered during excevation was between 15' and 20' BGS, on the north wall of the excevation. This wall was roughly parallel to \$207. Soi uncovered at this depth was pale gray in color and had a detectable hydrocarbon odor. The maximum TPEC level detected by NDIR analysis of this saterial was \$370 pps. Contamination from the UST did not epread southward (away from the building) beyond the excevation. HDIR samples collected from the south wall of the excevation between 15' and 20' BGS reported TPMC levels less than 50 pps.

Two TCLF masples were collected from the approximately 100 cubic yards of contaminated soil stockpiled of site. These two samples, and one TPSC sample to confirm the accuracy of the NDLR, were sent to 5555 for analysis. A 11-day turneround time on the emples was requested. E 4 % will submit a formal letter report on this removal action then the analytical report from 5562 becomes available.

PIELD SCREENING RESULTS OF SANFLES COLLECTED BY B & B TH SUPPORT OF REMOVAL ACTION AT SA 46

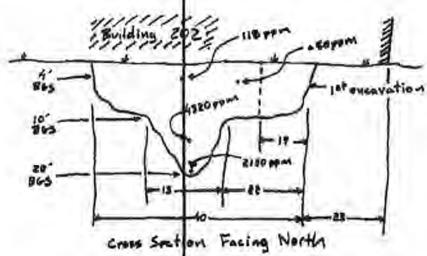
| SAXPLE
NAME | DATE | TIME | DEPTH
(PT. MGS) | | (IN PPN) |
|---|--|--|---|--|---|
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Draften I

mpy 5 /34 SIAS FROM ECOLOGY AND ENVIRON

Extent of Final Excavation At BOOZ (SA 48)

Building EOE - Batimated location of TPHC-contamination 32 cross section (below berehole BEOL-BHI-1



(Semples collected from north wall of excavation shown)

.

MAY 5 '94 5146 FROM ECOLOGY AND ENVIRON

PAGE BES



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

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

E: 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 analyses of interest. The TCLP methods and the Total Petroleum Hydrocarbons (TPHC) followed procedures in Test Methods for Evaluating Solid Wastes, SW846, November, 1986. The method 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



P.O. Box 1703 Gnindeville, PL 32602-1703

one (904) 372-3318

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