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NMED Hazardous Waste Bureau

April 17, 2006

New Mexico Environment Department
Hazardous Waste Bureau
Permits Management Program
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Attention: Mr. John E. Kieling
Program Manager

Subject: Final RCRA Facility Investigation Report, Officers Club Site SS-57, Holloman Air Force Base, New Mexico

Dear Mr. Kieling:

Bhate Environmental Associates, Inc. (Bhate) is pleased to submit the above referenced document for your review and comment.

If you have any questions, please feel free to call me at 303-386-6454.

Sincerely,
Bhate Environmental Associates, Inc.

Frank Gardner, PG
Program Manager

cc w/enclosures: Cornelius Amindyas, Holloman AFB Team Lead, NMED/Hazardous Waste Bureau, 5500 San Antonio NE, Albuquerque, NM 87109.

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FINAL

RCRA FACILITY INVESTIGATION REPORT

OFFICER'S CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO

Prepared for:

49 CES/CEV
Holloman Air Force Base
New Mexico

Under Contract To:

U.S. Army Corps of Engineers
Omaha, Nebraska
Contract No. DACA45-03-D-0023
Task Order No. 07

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Bhate Project No. 9050043

April 2006
Revision No. 00

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FINAL

RCRA FACILITY INVESTIGATION REPORT

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F Geotechnical Data
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LIST OF ACRONYMS

AAF	Army Air Field
AFCEE	Air Force Center for Environmental Excellence
amsl	Above mean sea level
AS/SVE	Air sparging/soil-vapor extraction
ASTM	American Society for Testing and Materials
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylenes (total)
°C	Degrees Celsius
CFA	California Fertilizer Association
CFU/g	Colony forming units/gram
CH	Clay (high plasticity)
CL	Clay (low plasticity)
cm	Centimeters
cm/sec	Centimeters per second
COPCs	Chemicals of potential concern
CSM	Conceptual Site Model
DPT	Direct push technology
DQO	Data quality objectives
DRO	Diesel range organics
EM	Exposure model
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
ESA	Ecological Scoping Assessment
°F	Degrees Fahrenheit
FWENC	Foster Wheeler Environmental Corporation
GP	Gravel (poorly-graded)
GRO	Gasoline range organics
GTI	Groundwater Technology, Inc.
HA	Health Advisory
HAFB	Holloman Air Force Base
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
IDW	Investigation Derived Waste
IWC	Inches of water column
J&E	Johnson and Ettinger
MCL	Maximum contaminant level
MS/MSD	Matrix Spike and Matrix Spike Duplicate
µg/g	Micrograms per gram
µg/kg	Micrograms per kilogram
$\mu g/m^3$	Micrograms per cubic meter
µg/L	Micrograms per liter
mg/L	Milligrams per liter

mg/kg	Milligrams per kilogram
NAD	North American Datum
NFA	No Further Action
NIOSH	National Institute for Occupational Safety and Health
NMED	New Mexico Environment Department
NMRBCA	New Mexico Risk-Based Corrective Action
NMWQCC	New Mexico Water Quality Control Commission
NOD	Notice of Deficiency
OVA	Organic Vapor Analyzer
PAHs	Polycyclic aromatic hydrocarbons
ppm	Parts per million
PRT	Post-run tubing
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QCSR	Quality Control Summary Report
RCRA	Resource Conservation Recovery Act
RFI	RCRA Facility Investigation
ROEs	Routes of exposure
ROI	Radius of Influence
scfm	Standard cubic feet per minute
SCS	Soil Conservation Service
SH&B	Sergent, Hauskins & Beckwith, Consulting Geotechnical Engineers
SM	Silty Sand
SOP	Standard Operating Procedure
SQCSR	Sample and Quality Control Summary Report
SSLs	Soil Screening Levels
SSTLs	Site-Specific Target Levels
SVOC	Semi-volatile organic compound
SWMU	Solid Waste Management Unit
TDS	Total dissolved solids
TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TPH	Total petroleum hydrocarbon
TPHCWG	Total Petroleum Hydrocarbon Criteria Working Group
TPH-DRO	Total Petroleum Hydrocarbon-Diesel Range Organics
TPH-GRO	Total Petroleum Hydrocarbon-Gasoline Range Organics
TPH-ORO	Total Petroleum Hydrocarbon-Oil Range Organics
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
UST	Underground storage tank
VET-01	Vapor Extraction Trench Number 1
VOC	Volatile organic compound
WRCC	Western Regional Climate Center
WSMR	White Sands Missile Range

EXECUTIVE SUMMARY

Environmental Restoration Program (ERP) Site SS-57 (The Officer's Club) is located at the corner of West 8th Street and West New Mexico Avenue, Holloman Air Force Base (HAFB), New Mexico. In response to hydrogen sulfide odors detected in the building in the fall of 1991, numerous investigations have been conducted at the site. These have resulted in the installation of several groundwater monitoring and soil-vapor wells, collection and analysis of groundwater samples, soil samples, and soil-vapor samples. Additionally, an air sparge/soil-vapor extraction system operated at the site from about 1996 to 2002.

This Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) report includes a comprehensive site-specific risk assessment conducted at the site to determine whether the residual soil and groundwater concentrations of petroleum hydrocarbons result in an unacceptable risk. The risk assessment consisted of the following steps:

- Review of site history and compilation of relevant data
- Development of an exposure model (EM) for the identification of the complete routes of exposure (ROEs)
- Comparison of maximum soil, groundwater, and soil-vapor concentrations with New Mexico Environment Department (NMED) soil screening levels (SSLs), lowest groundwater standards (refer to Section 8.2.2), and air inhalation target levels (New Mexico Underground Storage Tank Bureau, 2000), respectively
- Application of the Johnson and Ettinger (J&E) model to estimate soil and groundwater target levels protective of indoor inhalation
- Speciation of total petroleum hydrocarbon-diesel range organics (TPH-DRO) data into aromatic and aliphatic fractions using the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG) approach
- Calculation of site-specific target levels (SSTLs) for each fraction for the primary ROEs

The results of the above tasks are summarized below:

1. The primary ROEs which have been quantitatively evaluated based on the site-specific receptors include:
   a. Commercial Worker
      i. Dermal contact with surficial soil
      ii. Ingestion of surficial soil
      iii. Outdoor inhalation from surficial soil
      iv. Indoor inhalation from subsurface soil
      v. Indoor inhalation from groundwater
   b. Resident
      i. Dermal contact with surficial soil
      ii. Ingestion of surficial soil
      iii. Outdoor inhalation from surficial soil

iv. Indoor inhalation from subsurface soil
v. Indoor inhalation from groundwater

c. Construction Worker
i. Dermal contact with surficial soil
ii. Ingestion of surficial soil
iii. Outdoor inhalation from surficial soil
iv. Indoor inhalation from groundwater
v. Dermal contact with groundwater

2. Review of site-specific data indicates that the residual concentrations are "very low". As an example, the maximum detected concentration of benzene in groundwater is 0.35 micrograms per liter (µg/L), which is significantly less than the federal groundwater standard of 5 µg/L.

3. None of the maximum soil and groundwater concentrations exceed NMED SSLs and groundwater standards respectively except for TPH-DRO.

4. None of the soil and groundwater concentrations exceed target levels protective of indoor inhalation using the J&E model. Note this step was necessary because the NMED SSLs do not consider indoor inhalation as a pathway.

5. SSTLs were calculated for TPH-DRO and its carbon fractions. Maximum detected concentrations did not exceed any of the SSTLs for the above identified primary ROEs for neither the TPH-DRO nor the carbon fractions.

Based on the above evaluation, the residual soil, groundwater, and soil-vapor concentrations are protective of current and reasonable future receptors at the site. These concentrations are anticipated to reduce in time due to natural attenuation processes which are expected to further reduce the risk.

1 INTRODUCTION

Bhate Environmental Associates, Inc., (Bhate) has been retained by the U.S. Army Corps of Engineers (USACE), under contract DACA45-03-D0023, Task Order No. 07, to conduct a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for Environmental Restoration Protection (ERP) Site SS-57 (The Officer's Club) at Holloman Air Force Base (HAFB), New Mexico. The primary objective of this data collection effort was to fill in the data gaps to complete a comprehensive site-specific risk evaluation. RFI data collection activities were initiated in February 2004 and were completed in August 2004 to support closure of the site based on guidance from the New Mexico Environment Department (NMED).

Initially, the site investigation activities at SS-57 were conducted for the purpose of performing a comprehensive Risk-Based Evaluation Report. However, upon reviewing the *Risk-Based Evaluation Officer's Club, Site SS-57* Report (Bhate, July 2005) NMED issued a Notice of Deficiency (NOD) on January 26, 2006. The NOD (NMED, January 2006) determined that a complete RFI Report should be submitted including the conclusions presented in the Risk-Based Evaluation. This RFI Report for SS-57 has been prepared in accordance with the State of New Mexico requirements and following the guidelines set forth under HAFB's RCRA Permit, Appendix 4-B, RFI Outline (NMED, February 2004).

1.1 Objectives

The objective of the RFI at Site SS-57 is to: 1) determine if any soil, groundwater, and/or soil vapor contamination exists at the site, 2) delineate the current horizontal and vertical extent of the contamination, and 3) to collect the proper data meeting the data quality objectives to support closure of the site. The primary objective of this RFI is to determine whether the current residual soil and groundwater concentrations of petroleum hydrocarbons and associated contamination result in an unacceptable risk. During this process, required data were collected to support the closure of the site based on guidance from the NMED. The ultimate objective is to achieve No Further Action (NFA) approval for site closure from NMED.

1.2 Purpose of the RCRA Facility Investigation

The primary objective of the RFI is to comply with the requirements of RCRA Permit number NM6572124422 by completing the sampling program identified in the Scope of Work and applying site-specific data quality objectives identified in the HAFB Quality Assurance Project Plan (QAPP) (Bhate, 2003). The data quality objectives include:

- Generate data to characterize contaminant sources
- Determine to the extent possible the nature and extent of contamination in the site media

1.3 Scope of Work

The following summary of the work performed under this RFI is detailed in the *Data Acquisition Plan for Risk Assessment Officers Club, Site SS-57, Holloman AFB, New Mexico* (Bhate, February 2004) and included:

- Review existing information about the site
- Conduct a site and environs reconnaissance
- Identify potential receptors
- Evaluate all information collected

For this site, a focused RFI was completed to meet the project objectives. To meet the RFI objectives, the following activities were performed by Bhate from late February through August 2004 and February 2006:

Feb. 2004 Five soil borings (SB01 to SB05) were drilled; 10 soil samples and 5 groundwater samples were collected. Three dual completion soil-vapor borings (SV01 to SV03) were drilled; six soil samples were collected for lab analysis as well as for analyzing geotechnical parameters. Boring GB-01 was drilled at a non-impacted area and also sampled for geotechnical data. Groundwater samples from MW01 to MW03, MW05, and MW07 were collected including a duplicate from MW07. The samples were analyzed for the following:

- Volatile Organic Compounds (VOC) using Environmental Protection Agency (EPA) Method 8260B (soil and groundwater)
- Semi-Volatile Organic Compounds (SVOC) using EPA Method 8270C (soil)
- Total Petroleum Hydrocarbons (TPH) using Texas Method 1005 (soil and groundwater)
- Carbon Fractions using Texas Method 1006 (soil)

Geotechnical samples were analyzed for the following parameters:

- Moisture Content using American Society for Testing and Materials (ASTM) Method 2216
- Dry Bulk Density using ASTM Method D2937
- Specific Gravity using ASTM Method D854
- Fractional Organic Carbon Content using ASTM Method D2974

Apr. 2004 Six samples from dual completion soil-vapor borings (SV01 to SV03) were collected and sent for soil vapor analysis for the following:

- Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) compounds using EPA Method TO-15
- TPH - Gasoline Range Organics (GRO) using EPA Method TO-03

- TPH-Diesel Range Organics (DRO) using National Institute for Occupational Safety and Health (NIOSH) Method 1550

Aug. 2004 Soil boring SB06 was drilled and two soil samples, including one duplicate sample, were collected and analyzed for the following:

- VOCs (BTEX only) using EPA Method 8260B
- SVOCs using EPA Method 8270C
- TPH using Texas Method 1005
- Carbon Fractions using Texas Method 1006 (Note: Texas Method 1006 was not run if all Texas Method 1005 analytes were not detected)

A groundwater sample from MW04 was collected and analyzed for the following:

- VOCs (BTEX only) using EPA Method 8260B
- TPH using Texas Method 1005
- Carbon Fractions using Texas Method 1006 (Note: Texas Method 1006 was not run if all Texas Method 1005 analytes were not detected)

Feb. 2006 Monitoring wells MW-01 through MW-04 were sampled for Total Dissolved Solids (TDS) by EPA Method 160.1

1.4 Document Organization

This RFI Report has been modeled after the format suggested in the RFI Report Requirements found in the HAFB RCRA Permit NM6572124422 (Appendix 4-B of the Permit). The document contains the following 10 sections:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Environmental Setting
- Section 4 – Source Characterization
- Section 5 – Field Activities
- Section 6 – Laboratory Analysis and Data Validation Summary
- Section 7 – Nature and Extent of Contamination
- Section 8 – Risk Based Evaluation
- Section 9 – Conclusions and Recommendations
- Section 10 – References

The tables and figures referenced throughout this Officer's Club, Site SS-57 RFI Report are included following the text (after Section 10).

This report also includes the following seven appendices:

- Appendix A – Historical Data from Previous Investigations
- Appendix B – Soil Boring Logs
- Appendix C – Field Sampling Documentation
- Appendix D – Analytical Data Packages
- Appendix E – Quality Control Summary Reports
- Appendix F – Geotechnical Data
- Appendix G – Johnson and Ettinger Output

2 SITE BACKGROUND

2.1 HAFB Site Description

HAFB is located in southeastern New Mexico in Otero County, New Mexico, approximately 100 miles north-northeast of El Paso, Texas and six miles west of Alamogordo, New Mexico (Figure 2-1). HAFB was first established in 1942 as Alamogordo Army Air Field (AAF). From 1942 through 1945, Alamogordo AAF served as the training grounds for over 20 different flight groups, flying primarily B-17s, B-24s, and B-29s. After World War II, most operations had ceased at the base. In 1947, Air Material Command announced the air field would be its primary site for the testing and development of un-manned aircraft, guided missiles, and other research programs. On January 13, 1948, the Alamogordo installation was renamed Holloman Air Force Base, in honor of the late Col. George V. Holloman; a pioneer in guided missile research. In 1968, the 49th Tactical Fighter Wing arrived at HAFB and has remained since. Today, HAFB also serves as the training center for the German Air Force's Tactical Training Center.

2.2 Officer's Club (Site SS-57) Site Description

HAFB is located directly west of Alamogordo, New Mexico. The Officer's Club (Building No. 531) is located at the corner of West 8th Street and West New Mexico Avenue, HAFB. Figure 2-2 shows the general location of the Officer's Club. The Officer's Club was designed in early 1957 and subsequently constructed as an addition to an existing dining hall. The swimming pool and bath house were also part of this construction project. In mid-1985, there was a design project for the wholesale alteration and remodeling of Building No. 531 which was subsequently constructed.

In addition, there was a separate project for the replacement of the swimming pool and there was a project in 1992 for the repair of leaks around the swimming pool. The refurbishment of the swimming pool confirmed that there were numerous leaks with significant leakage from the swimming pool return gutter (Wilson & Company, 1992). The grounds around the Officer's Club are landscaped along the southwestern and western sides of the building while the northern and eastern portions of the site are paved with asphaltic concrete (Figure 2-3).

Site SS-57 was identified in the fall of 1991 when hydrogen sulfide odors were detected in the Officer's Club building. These were assumed to result from the natural anaerobic organic degradation of diesel fuel hydrocarbons which leaked from an underground storage tank (UST) prior to 1991. This tank was located near the southwestern corner of the Officer's Club and was removed prior to 1991.

2.3 Officer's Club Previous Investigations

Since 1991, the Officer's Club (Site SS-57) has been the subject of a series of environmental investigations related to evaluating the soil and groundwater conditions to determine the cause of the hydrogen sulfide odors present in the Officer's Club building (Wilson & Company, 1992). This section provides an overview and chronology of the previous investigations and remedial actions conducted at the Officer's Club from 1991 through 2002.

The first investigation was conducted by Sergent, Hauskins & Beckwith in October 1991 and involved a geotechnical investigation (Sergent, Hauskins & Beckwith, 1991). The follow-on investigation was completed in May 1992 to determine the source of the odors and make recommendations to alleviate this problem (Wilson & Company, 1992). Radian conducted a third investigation at the site during November 1992, with the objective of collecting data to better define the horizontal and vertical extent of petroleum hydrocarbon contamination (Radian, 1993a).

In April 1996, Groundwater Technology, Inc. (GTI), performed an Air Sparging/Soil Vapor Extraction (AS/SVE) pilot test to determine the feasibility of using air sparging in conjunction with SVE to minimize the hydrogen sulfide generation (Foster Wheeler and GTI, 1996). A preliminary risk assessment conducted by Foster Wheeler in April 2002 indicated that diesel concentrations exceeded the NMED residential, as well as industrial target levels. A follow-on investigation was conducted in May 2002 to better define the source of the odors and provide any recommendations (Foster Wheeler, 2003).

The chronology of previous investigations at the site, based on reports reviewed is outlined below. Selected boring and sampling locations for these previous investigations are shown on Figure 2-4.

2.3.1 Officer's Club Geotechnical Investigation

A geotechnical investigation was performed by Sergent, Hauskins & Beckwith (SH&B) in October 1991 to evaluate soil and groundwater conditions to determine the source of hydrogen sulfide odors emanating from the subsurface below the Officer's Club. Nine soil borings (B-1 to B-9) were advanced to depths ranging from approximately 1 to 29 feet below existing grade. Three monitoring wells (MW05, MW07, and MW09) were installed at three of the nine borings (Sergent, Hauskins & Beckwith, 1991). The following samples were collected and submitted for laboratory analysis:

- Nine water samples from the nine borings (B-1 to B-9) were analyzed for standard water quality parameters and organic halogens in order to characterize the groundwater in the area.
- Three water samples from the three test holes nearest to the partial basement (B-1, B-2, and B-3) were analyzed for VOCs to ascertain the presence of odor. It should be noted that the VOC method of analysis is not known and also not critical for risk assessment since this is pre-remediation and 15 year old data.
- Three air samples were collected from three boreholes (B-1, B-2, and B-3) for sulfur and

VOC analysis.

- One water sample was collected from the seep in the basement access stairwell to confirm the presence of diesel fuel.
- Geotechnical parameters such as moisture content, grain-size analysis, Atterberg limits tests, and consolidation tests were performed on selected samples.

The results presented in SH&B's Geotechnical Investigation report indicated that caution should be taken during any dewatering operations. Any dewatering should not take the groundwater level below the footings of the partial basement and access stairwell (Sergent, Hauskins & Beckwith, 1991). The groundwater, soil, and air samples collected during this investigation were collected by SH&B field technicians and submitted by Wilson and Company to various laboratories for analysis. The results of the geotechnical analyses are included in Appendix A. The results of the three ambient air samples and the nine groundwater samples are included with the results from the *Engineering Report For Study to Determine Source of Odor at the Officer's Club,* Wilson and Company, June, 1992 presented in Appendix A. The soil boring logs for this investigation are included in Appendix B.

2.3.2 Study to Determine Source of Odor at the Officer's Club

A follow up investigation was conducted by Wilson and Company in May 1992 to determine the horizontal extent of the gray-colored, odorous soil that was discovered during the SH&B geotechnical investigation in 1991. The field work conducted during this second phase of the investigation consisted of drilling five boreholes (B-10, B-12, B-13, B-14 and B-15) to a depth of about 15.5 feet below grade. An attempt was made to hand drill a soil boring inside the Officer's Club. The boring (B-11) was abandoned after a hard impenetrable slab was encountered at 33 inches below grade (Wilson & Company, 1992). The soil boring logs for this investigation are included in Appendix B. The following samples were collected and submitted for laboratory analysis:

- Five water samples were collected from the five soil borings and analyzed for standard water quality parameters, DRO, and VOCs in order to further characterize the groundwater in the area.
- A soil sample was collected from B-13 to compare the results of VOCs and DROs from the groundwater samples.
- Air samples collected in Tedlar bags were also collected from the borings in which the gray odorous soil was encountered (B-12, B-13, and B-15) and one from the new sump in the access stairwell outside the mechanical room. These air samples were analyzed for sulfur compounds.

The investigation concluded that the odors primarily consisted of hydrogen sulfide and carbon disulfide. This investigation also identified DRO in groundwater at concentrations ranging from 2 to 130 milligrams per liter (mg/L). The results of the groundwater analyses verified the presence of diesel contamination (1,500 milligrams per kilogram [mg/kg]) detected in the soil

samples collected at 14 to 15.5 feet below ground surface. In addition, the analytical results for VOCs detected in the air samples confirmed the presence of VOCs (chloroform and trichloroethene) detected in the groundwater samples collected near the partial basement (Wilson & Company, 1992).

The analytical data collected from the first two investigations indicated the source of the hydrogen sulfide odors to be attributed to the degradation of diesel fuel hydrocarbons which leaked from the UST or pipeline prior to 1991. As a result of these investigations a positive pressure air-handling system was installed at the Officer's Club to prevent nuisance odors from accumulating in the building. The complete results of the samples collected during the first two investigations at SS-57 are presented in the *Study to Determine Source of Odor at the Officer's Club,* Wilson and Company, June, 1992. The groundwater, air, and soil analytical data collected during this investigation are included in Appendix A of this RFI report.

2.3.3 Officer's Club Soil Investigation

The subsurface investigation conducted by Radian in November 1992 consisted of drilling four vertical borings (VB-01 to VB-04) and two angle borings (AB-01 and AB-02) near the southern corner of the Officer's Club. Soil samples were collected from the surface to 31 feet below ground surface. The soil boring logs for this investigation are included in Appendix B. The objectives of this investigation were to better define the horizontal and vertical extent of the hydrocarbon contamination, determine the source of the offensive odor and to gather data necessary to enable the selection of a remedial action for the site (Radian, 1993a). The following samples were collected and submitted for laboratory analysis:

- Twenty five soil samples were collected and analyzed for TPH as diesel using Modified ASTM Method D3328
- Thirteen soil samples were analyzed for a bacteria enumeration study and a biological screening

The investigation concluded that the maximum TPH as diesel concentration was encountered at 18 feet below ground surface (bgs) in boring AB-02 with a concentration of 12,000 micrograms per gram (μg/g). It appears from this investigation that most of the contamination exists primarily in the saturated zone. Diesel concentrations greater than 1,000 μg/g were detected in 14 of the 25 subsurface soil samples collected and analyzed. Bacteria counts indicated that 8 of the 13 samples analyzed exceeded the minimum bacteria counts required before initiation of remediation in accordance with EPA guidance documents. Likewise, Radian's evaluation determined that the nutrient (nitrogen and phosphates) concentrations were too deficient to support bioremediation and recommended that the site be remediated using an in-situ technique (Radian, 1993a). The report determined that the remedial alternative with the highest potential to reduce soil, water, and air contamination at the Officers Club is biosparging and SVE. The results from this investigation are presented in Appendix A.

2.3.4 Air Sparging/Soil Vapor Extraction Pilot Test

Installation of the AS/SVE system was conducted by Foster Wheeler Environmental Corporation (FWENC) and GTI in March 1996. A total of eight wells and one vapor extraction trench were installed under this scope of work. One well installed was a triple-nested air sparge well (SP-01) screened from 18 to 20 feet, 28 to 30 feet, and 37.5 to 39.5 feet bgs. Three wells were triple nested sparge monitoring wells (SMP-01, SMP-02, and SMP-03). Each of these wells has three nested monitoring points screened at 18 to 20 feet, 28 to 30 feet, and 38 to 40 feet bgs (except 37 to 39 feet bgs for SMP-02). The four other wells were single casing groundwater monitoring wells (MW01 to MW04) that were advanced to depths ranging between 14 and 17 feet bgs. The soil boring logs for this investigation are included in Appendix B. Two soil samples from each sparge monitoring point and the air sparging well, and one sample from each groundwater monitoring well were selected for laboratory analysis (FWENC and GTI, 1996). A total of 14 soil samples (including two duplicates) were collected and analyzed for the following:

- TPH as diesel fuel by Modified ASTM Method D3328
- Alkalinity by Modified EPA Method 310.1
- pH by EPA Method 9045A
- Sulfate by Modified EPA Method 375.4
- Total Kjeldahl Nitrogen (TKN) by Modified EPA Method 351.2
- Total Organic Carbon (TOC) by California Fertilizer Association (CFA) Method 18.0
- Phosphorous (total) by Modified EPA Method 365.4
- Moisture Content by ASTM Method D2216-80
- Iron (total) by EPA Method 6010A

In order to characterize the physical conditions within the pilot test area, three soil core samples of soil were collected from the sparge well (SP-01) and were analyzed for the following:

- Atterberg Limits by ASTM Method D4318
- Air Permeability by American Petroleum Institute Method 40
- Particle Size Distribution by ASTM Method D4464

In early April 1996, GTI sampled 10 monitoring wells. Groundwater samples were collected from the four newly-installed monitoring wells (MW-01 to MW-04) and the three existing monitoring wells (MW-05, MW-07, and MW-09). Additionally, the triple-nested sparge well (SP-01) was sampled at each of the three screened intervals. The groundwater samples were analyzed for TPH as diesel by Modified ASTM Method D3328, dissolved iron by EPA Method 6010A, and sulfate by Modified EPA Method 375.4.

On April 15 through the 18th, GTI performed an AS/SVE pilot test to determine the feasibility of using air sparging in conjunction with SVE to minimize the hydrogen sulfide generation. An AS/SVE pilot test was performed for a horizontal vapor extraction trench (VET-01) and a triple-nested air sparge well (SP-01). Soil vapor samples were collected in 6-liter SUMMA canisters while venting on the vapor extraction trench and analyzed using EPA Method TO-14 (VOCs) and EPA Method TO-3 (TPH). Air samples were also collected in TEDLAR bags for analysis by ASTM Method D-5504 (sulfur gases).

2.3.4.1 Subsurface Soil Sampling Results

A complete discussion of the soil sampling analytical results is included in the *Draft Final Air Sparging and Soil Vapor Extraction Pilot Test Report for the Officers Club Site SS-57* (FWENC and GTI, 1996). TPH as diesel concentrations ranged from less than 10 mg/kg (MW-04) to 4,800 mg/kg (SMP-03) and were generally greatest at the 14 to 19-foot bgs sampling interval. Based on these results, it appeared that the TPH impact to the soil was limited to the southwest of the lawn of the Officer's Club and extended to a depth of 20 feet bgs.

Analysis of soil samples for TOC and various other nutrient and physical parameters were conducted to assess the viability of biodegradation. Comparison of the results with bioremediation guidance documents (Hinchee et al, May 1992 and Air Force Center for Environmental Excellence (AFCEE) February, 1994) indicate that the soils are not phosphorus or nitrogen limited and that the nutrient ratios fall within the acceptable range for active aerobic bioactivity to occur. Soil pH was within the ideal range of 6-8 for bioactivity. The moisture content was lower than ideal, however, as air sparging is performed, air saturated with moisture will permeate upward through the unsaturated zone and increase the moisture content in the vicinity of the air sparge well. Therefore, the lack of adequate soil moisture will likely not be a limiting factor to bioactivity in the vadose zone (FWENC and GTI, 1996). A summary of the analytical results for the 14 subsurface soil samples are included in Appendix A of this RFI report.

2.3.4.2 Groundwater Sampling Results

Groundwater samples were collected between April 10, and April 12, 1996, from seven monitoring wells (MW-01 through MW-04, and MW-05, MW-07, and MW-09) and the sparge well (SP-01) at all three screened intervals. TPH as diesel concentrations ranged from <100 to 9,700 micrograms per liter (µg/L) with the highest concentration in MW-03. Iron concentrations ranged from <100 to 3,100 µg/L with the highest concentration occurring in MW-04. Sulfate concentrations ranged from 1,500 to 2,100 mg/L with the highest concentration occurring in MW-03. Based on historical information and previous sampling in the area, the source of TPH is reportedly from a past diesel fuel release (FWENC and GTI, 1996). The analytical results for the 10 groundwater samples and one duplicate are included in Appendix A of this RFI report.

2.3.4.3 Air Sparging /Soil Vapor Extraction Pilot Test Results

A complete discussion of the AS/SVE Pilot Test results are included in the *Draft Final Air Sparging and Soil Vapor Extraction Pilot Test Report for the Officers Club Site SS-57 (FWENC and GTI, 1996)*. Six AS/SVE pilot tests were conducted from April 15 to April 18, 1996. The primary objective was to assess the feasibility of using air sparging in conjunction with vapor extraction to minimize hydrogen sulfide generation in the area southwest of the Officer's Club.

The field measure used to estimate the radius of influence (ROI) for a vapor extraction system is the vacuum measured in various monitoring points. Data from test #3 were used to calculate the ROI. Pertinent test results are summarized below.

- At an applied vacuum of 22 inches of water column (IWC), an average flow rate of 152 standard cubic feet per minute (scfm) was achieved in vapor extraction trench number 1 (VET-01).

- Well MW-01, located seven feet from the VET-01 vertical riser, had an average measured induced vacuum of 0.15 IWC during the test.

- Well MW-03, located 29 feet from the VET-01 vertical riser, had an average measured induced vacuum of 0.02 IWC during the pilot test.

The ROI is assumed to end where the induced vacuum drops below 0.1 IWC. Based on the results of the tests, the ROI for VET-01 is 11 feet at an applied vacuum of 22 IWC. This value is considered very conservative since the soil underlying the vapor extraction trench has a relatively high permeability which will minimize the generation of large negative pressures. Since well SP-01 is located seven feet from the vapor extraction trench, it is likely that VET-01 could capture the majority of fugitive vapors that would be generated by air sparging in SP-01 (FWENC and GTI, 1996).

Based on the analytical results for the AS/SVE pilot test air samples, air emission rates of approximately 0.14 pound per hour TPH (as gasoline) can be expected from the AS/SVE remediation system. The maximum hydrogen sulfide removal rate during the pilot tests was 0.0043 pounds per day (FWENC and GTI, 1996). The results of the soil vapor air samples collected during these AS/SVE pilot tests are included in Appendix A of this RFI report.

Resultant of these investigations, a total of 7 monitoring wells have been installed, 14 soil borings (excluding borings for monitoring wells) have been drilled, and an AS/SVE system was installed.

2.3.5 AS/SVE System Performance Sampling Events

The AS/SVE system performance/long term monitoring was conducted by Foster Wheeler from 1997 to 1999 at the Officer's Club (SS-57). System performance monitoring of the AS/SVE at the Officer's Club was conducted in October 1997, May 1998, April 1999, and October 1999. System performance monitoring consisted of collecting subsurface soil samples at various locations for determining the effectiveness of the AS/SVE system that was installed in April 1996. A brief description of these sampling events and the results are presented below. The complete results of these system performance sampling events are included in Appendix A.

October 1997: Three subsurface soil samples were collected from two boreholes and analyzed for TPH using EPA Method 418.1. The three soil samples were collected from 10 to 16 feet bgs. The TPH results for these soil samples ranged from not detected to 5,400 mg/kg.

May 1998: Twelve soil samples were collected from three boreholes and analyzed for TPH and benzene. The twelve soil samples were collected from 4 to 11 feet bgs. The TPH results for these soil samples ranged from 8.3 to 966 mg/kg. Benzene was not detected in any of the samples.

April 1999: Four soil samples were collected from two boreholes and analyzed for TPH, benzene, and biological activity (standard plate count). The four soil samples were collected from 4 to 10 feet bgs. TPH and benzene were not detected in these four samples. The biological activity ranged from not detected to 1.2×10^4 colony forming units/gram (CFU/g).

October 1999: Thirty seven soil samples were collected from sixteen boreholes and analyzed for TPH, benzene, and biological activity (standard plate count). The 37 soil samples were collected from 3 to 20 feet bgs. The TPH results for these soil samples ranged from not detected to 7,400 mg/kg. The biological activity ranged from $5.00E+10^1$ to $1.11E+10^7$ CFU/g. Benzene was not detected in any of the samples.

The AS/SVE system operated from April 1996 through May 2002 when it was turned off.

2.3.6 Phase I Human Health Risk Assessment

In July 2002, Foster Wheeler collected 16 soil samples from 8 soil borings (DP01 to DP08) at SS-57 to adequately characterize the nature and extent of contamination in the source area. The purpose of the human health risk assessment (HHRA) and ecological scoping assessment (ESA) was to evaluate the magnitude and probability of threats to public health and the environment posed by site-related chemicals in untreated soil and groundwater (Foster Wheeler, 2003).

The 16 subsurface soil samples were collected from 2 to 12 feet bgs and analyzed for VOCs by EPA Method 8260B, SVOCs by EPA Method 8270C, TPH-DRO and TPH-oil range organics (TPH-ORO) by Modified EPA Method 8015D, and TPH-GRO by Modified EPA Method 8015V. Groundwater samples were not collected during the 2002 event. Of the 16 soil samples collected, only one VOC, ethylbenzene, was detected in one sample (0.28 mg/kg). Only three samples contained SVOCs (diethylphthalate, 2-methylnaphthalene, or phenanthrene) (Foster Wheeler, 2003). The results of the 16 subsurface soil samples collected for this investigation are included in Appendix A. The soil boring logs for this investigation are included in Appendix B. A complete discussion of the HHRA and the ESA is presented in the *Phase I Human Health Risk Assessment and Ecological Screening-Level Assessment for SS-57- Officers Club, Holloman Air Force Base, New Mexico* (Foster Wheeler, 2003).

3 ENVIRONMENTAL SETTING

HAFB is situated in south central New Mexico, in the northwest central part of Otero County (Figure 2-1). HAFB has a population of 6,000 and occupies about 50,000 acres in the northeast quarter of Section 1, Township 17 South, Range 8 East. The White Sands Missile Range testing facilities occupy additional land extending northward from the Base. Private and public owned lands border the remainder of HAFB. The major highway servicing HAFB is Highway 70, which runs southwest from the town of Alamogordo and separates HAFB from publicly owned lands to the south. Alamogordo which has a population of approximately 35,000 is located approximately 7 miles east of the base.

3.1 Physiography and Topography

HAFB is located within the Sacramento Mountains Physiographic Province on the western edge of the Sacramento Mountains. HAFB is approximately 59,600 acres in area, and is located at a mean elevation of 4,093 feet above mean sea level (amsl). The region is characterized by high tablelands with rolling summit plains; cuesta-formed mountains dipping eastward and of west-facing escarpments with the wide bracketed basin forming the basin and range complex. The Base is located in the Tularosa Sub-basin which is part of the Central Closed Basins. The bordering mountains rise abruptly to altitudes of 7,000 12,000 feet amsl. The San Andres Mountains bound the basin to the west (about 30 miles) with the Sacramento Mountains approximately 10 miles to the east. At its widest, the basin is about 60 miles east to west and stretches approximately 150 miles north to south.

3.2 Surface Water and Hydrology

The Tularosa Basin contains all of the surface flow in its boundaries. The nearest inflow of surface waters to the Base comes from the Lost River, located in the north-central region of the Base. The upper reaches of the Three Rivers and the Sacramento River are perennial in the basin. HAFB is dissected by several southwest trending arroyos that control the surface drainage. Hay Draw arroyo is located in the far north. Malone and Rita's Draw, which drain into the Lost River, and Dillard Draw arroyos are located along the eastern perimeter of the Base. Approximately 10,000 years ago, indications are of a much wetter climate. The present day Lake Otero encompassed a much larger area, possibly upwards of several hundred square miles. Its remains are the Alkali Flat and Lake Lucero. Lake Lucero is a temporary feature of merely a few inches in depth during the rainy season.

Ancient lakes and streams deposited water bearing deposits over the older bedrock basement material. Fractures, cracks, and fissures in the Permian and Pennsylvanian bedrock yield small quantities of relatively good quality water in the deeper peripheral. Potable water is only found from a handful of wells near the edges of the basin with more saline water towards the center. Two of the principal sources of potable water are a long narrow area on the upslope sides of Tularosa and Alamogordo with the other in the far southwestern part of the basin. Alamogordo's water, as well as the Base's, is supplied from Lake Bonito (which is in the Pecos River Basin).

3.3 Regional Geology

The sedimentary rocks which make up the adjacent mountain ranges are between 500 and 250 million years old (White Sands Missile Range (WSMR), 2003). During the period when the area was submerged under the shallow intra-continental sea, the layers of limestone, shale, gypsum, and sandstone were deposited. In time, these layers were pushed upward through various tectonic forces forming a large bulge on the surface. Approximately 10 million years ago the center began to subside resulting in a vertical drop of thousands of feet leaving the edges still standing (the present day Sacramento and San Andres mountain ranges). In the millions of years following, rainfall, snowmelt, and wind eroded the mountain sediments depositing them in the valley (i.e. Tularosa Basin). Water carrying eroded limestone, dolomite, gravel, and other matter continue to flow into the basin.

As the Tularosa Basin is a bolson, which is a basin with no surface drainage outlet, sediments carried by surface water into a closed basin are bolson deposits. The overlying alluvium generally consists of unconsolidated gravels, sands, and clays. Soils in the basin are derived from the adjacent ranges as erosional deposits of limestone, dolomite, and gypsum. A fining sequence from the ranges towards the basin's center characterizes the area with the near surface soils as alluvial, eolian, and lacustrine deposits. The alluvial fan deposits are laterally discontinuous units of interbedded sand, silt, and clay while the eolian deposits consist primarily of gypsum sands. The eolian and alluvial deposits are usually indistinguishable due to the reworking of the alluvial sediment by eolian processes. The playa, or lacustrine deposits, consist of clay containing gypsum and are contiguous with the alluvial fan and eolian deposits throughout HAFB. There has been the identification of stiff caliche layers, varying in thickness, at different areas of the Base. At the site, soils are predominantly silty sands and interbedded clays.

3.4 Site Geology

Review of the boring logs and geotechnical data from the previous investigations indicates that the soils beneath the site are very heterogeneous. Field soil descriptions range from a stiff (high plasticity) clay (CH) to a poorly-graded gravel (GP). The boring logs also identify caliche layers at various depths in some borings. The laboratory-applied Unified Soil Classification System (USCS) classifications ranged from a lean (low plasticity) clay (CL) to a silty sand (SM) (Foster Wheeler, 1996). The geology of the site is based upon the 28 soil borings completed between October 1991 and March 1996 and the five completed during this investigation in February 2004. The soil boring logs for these investigations are included in Appendix B. Based on these soil boring logs the soil underlying the SS-57 site consists of the following general units:

- 0-15 feet bgs — silty fine-grained sand
- 15-25 feet bgs — varying layers of fine-grained, sandy clays and clay with discontinuous layers of caliche and gypsum crystals
- 25-40 feet bgs — silt and silty sand containing fine grained quartz and microcrystalline gypsum crystals

3.5 Regional Hydrogeology

The predominance of the groundwater occurs as an unconfined aquifer in the unconsolidated deposits of the central basin, with the primary source of recharge as rainfall percolation and minor amounts of stream run-off along the western edge of the Sacramento Mountains. Surface water/rainfall migrates downward into the alluvial sediments at the edge of the shallow aquifer near the ranges, and flows downgradient through progressively finer-grained sediments towards the central basin. Because the Tularosa Basin is a closed system, water that enters the area only leaves either through evaporation or percolation. This elevated amount of percolation results in a fairly high water table. Beneath HAFB, groundwater ranges from 5 to 50 feet. Flow for the Base is generally towards the southwest with localized influences from the variations in the topography of the Base. Near the arroyos, groundwater flows directly toward the surface drainage feature.

Groundwater quality in the Tularosa Basin is of potable quality at the recharge areas in close proximity to the Sacramento Mountains and becomes increasingly mineralized toward the central portion of the basin and discharge areas (Radian, 1993b). The majority (over 70 %) of the Sites/ Solid Waste Management Units (SWMUs) located across HAFB, have groundwater monitoring wells containing water with an average TDS concentration greater than 10,000 mg/L. This TDS data supports the hypothesis that TDS concentrations below 10,000 mg/L at Holloman AFB are caused by dilution of natural groundwater from leaking water lines and surface irrigation from the domestic water supply. TDS concentrations greater than 10,000 mg/L exceed the New Mexico Water Quality Control Commission (NMWQCC) limit as potable water and thus, the groundwater beneath HAFB has been designated as unfit for human consumption. Likewise, EPA guidelines have identified the groundwater as a Class IIIB water source, characterized by TDS concentrations exceeding 10,000 mg/L.

In addition, there are no potable water wells on HAFB. Potable water for the base and the city of Alamogordo is derived from the nearby Sacramento Mountains. The only production water well, used for livestock irrigation, is located approximately 10 miles southwest of SS-57.

3.6 Site Hydrogeology

At SS-57, there are seven wells screened between 3 and 17 feet bgs. Tables 2-1 and 2-2 present the groundwater elevation data and monitoring well construction details, respectively. Historical depth to water ranges from approximately 8.5 to 12.5 feet bgs at the site. Hydraulic gradient ranges from approximately 0.013 to 0.025 feet per foot, and water flows south to southwest. The groundwater contours using the water level data from October 19, 2004, are shown on Figure 3-1. Using a hydraulic conductivity of silty sand of 2.8 feet/day (Freeze and Cherry, 1979), the Darcy Velocity is estimated to be 0.0532 feet/day.

3.7 Climate

As a whole, New Mexico has a mild, arid to semi-arid continental climate characterized by light precipitation totals, abundant sunshine, relatively low humidity, and relatively large annual and

diurnal temperature range (Western Regional Climate Center (WRCC), 2003). The climate of the Central Closed Basins varies with elevation. The Base is found in the low areas and is characterized by warm temperatures and dry air. Daytime temperatures often exceed 100 degrees Fahrenheit (°F) in the summer months and are in the middle 50s in the winter. A preponderance of clear skies and relatively low humidity permits rapid night time cooling resulting in average diurnal temperature ranges of 25 to 35°F. Potential evapotranspiration, at 67 inches per year, significantly exceeds annual precipitation, usually less than 10 inches. The very low rainfall amounts resulting in the arid conditions, which with the topographically induced wind patterns combining with the sparse vegetation, tend to cause localized "dust devils". The annual rainfall for Alamogordo is 12 inches per year[1]. Much of the precipitation falls during the mid-summer monsoonal period (July and August) as brief, yet frequent, intense thunderstorms culminating to 30 – 40% of the annual total rainfall.

3.8 Water Use

HAFB is located in the Tularosa Sub-basin. Potable water is available from municipal wells along the margins of the basin with more saline water towards the center. The principle sources of potable water are located in a long narrow north-south trending area east of Alamogordo and Tularosa and in the far southern part of the basin. HAFB is supplied potable water from Lake Bonito, which is in the Pecos River Basin.

Within the boundaries of SS-57, storm water run-off is controlled by the minimal topographic relief as per the existing grade and landscaping. Appurtenances can be found along the perimeter for collection into the Base storm water drainage system.

[1] http://countrystudies.us/united-states/weather/new-mexico/

4 SOURCE CHARACTERIZATION

Based on the previous investigations presented in Section 2.3, soil, groundwater, and soil-vapor analytical data have been collected at the Officer's Club (Site SS-57) since 1991. Source characterization for the site has been thoroughly described in the following three historical documents:

- *Engineering Report for Study to Determine Source of Odor at the Officer's Club SVS 91-0206*, Wilson and Company, June 1992.
- *Final Sample and Quality Control Summary Report (SQCSR) Officers Club Soil Investigation, Holloman Air Force Base, New Mexico*, Radian Corporation, May 1993.
- *Draft Final Air Sparging and Soil Vapor Extraction Pilot Test Report for Officers Club Site SS-57, Holloman Air Force Base, New Mexico*, Foster Wheeler Environmental Corporation and Groundwater Technology, Inc., October, 1996.

The purpose of this RFI was to collect soil, groundwater, and soil-vapor data to characterize the current site conditions for a comprehensive site-specific risk assessment. Data from this investigation will determine whether the residual soil and groundwater concentrations of petroleum hydrocarbons result in an unacceptable risk.

Data collected before June 2002 is not considered representative of current site conditions due to the natural biodegradation of petroleum hydrocarbons. Additionally, data collected during the operation of the AS/SVE system would be biased to the low end and would not be representative of static or current conditions. Although the pre June 2002 data was not used quantitatively, it was used qualitatively to develop the data acquisition plan for risk assessment (Bhate, 2004). All of the analytical data collected before June 2002 is presented in Appendix A. For risk assessment purposes, the soil, groundwater, and soil-vapor data collected between June 2002 and August 2004 and the February 2006 data for TDS are considered representative of the current site conditions and are presented in Section 7, Nature and Extent of Contamination. Additionally, the data presented on the Section 7 tables include values at ½ the method detection limit for all non detected analytes. Subsequent discussions refer only to these data collected after June 2002. The analytical results for soil, groundwater, and soil-vapor samples collected during this investigation are presented in Section 7.

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5 FIELD ACTIVITIES

The RFI included the field investigative tasks as outlined in the USACE Scope of Services: development of a site map to meet the data quality objectives (DQO), completion of additional soil borings with soil sample collections, groundwater collections (at new soil borings as well as existing monitoring wells), soil vapor survey, geotechnical analysis, and risk assessment report. The objective of this data collection effort was to fill in the data gaps to complete a site-specific risk evaluation. The following data gaps have been identified:

- Recent soil data and groundwater data,
- Soil geotechnical parameters,
- Soil-vapor data, and
- Screened intervals and total depth of monitoring wells MW-5, MW-7, and MW-9.

Prior to sampling activities, an Air Force Form, AF FM 332, and dig permit were submitted to the proper offices. All sampling activities were completed following the *Data Acquisition Plan for Risk Assessment, Officers Club, Site SS-57, Holloman Air Force Base, New Mexico* (Bhate, 2004) and standard industry practices. A copy of the field logbook for this investigation is included in Appendix C.

5.1 Soil Borings and Sampling

5.1.1 Soil Boring Sampling

In February 2004, five shallow soil borings (SB-01 to SB-05) were advanced in the vicinity of the source area at SS-57 (Figure 2-4) in accordance with HAFB Standard Operating Procedures (SOPs) provided in the *Base-wide Quality Assurance Project Plan* (Bhate, 2003). The soil borings were advanced using a Geoprobe® direct push technology (DPT) rig, a 48-inch MacroCore® soil sampling device and associated tooling. These soil borings were sampled continuously to a depth of approximately 10 ft bgs. Two soil samples were collected from each borehole at various intervals from 2 to 10 feet bgs. In addition, two soil samples were collected from each of the three dual completion soil-vapor borings (SV01 to SV03). In August 2004, one additional borehole (SB-06) was drilled 10 feet west of SB-02 (Figure 2-4) to a depth of six feet bgs. Soil samples were collected at 2 and 3.5 feet bgs in SB-06.

Soils were visually classified in the field by a geologist according to the Unified Soil Classification System. Soils were screened with a TVA 1000 Organic Vapor Analyzer (OVA), with soil-headspace screening techniques to aid in selecting samples for laboratory analysis. Two soil samples were collected from each boring for laboratory analysis. One sample was collected from just above the capillary fringe, and a second soil sample from a location above the capillary fringe where the OVA reading was the highest. Soil samples were placed in the appropriate containers, packed on ice at 4 degrees Celsius (°C), and delivered under chain-of-custody to Elab located in Nashville, Tennessee. The two additional soil samples collected from

SB-06 were shipped to Test America Laboratory in Nashville, Tennessee. The soil boring logs for this investigation are included in Appendix B.

5.1.2 Geotechnical Soil Sampling

In February 2004 a total of seven geotechnical samples were collected. Soil boring GB-1 was drilled north of the impacted area (Figure 2-4) to provide geotechnical parameters for non-impacted soils. One undisturbed soil sample was collected from boring GB-1 above the water table (4-6 feet bgs) where the lithology is representative of the site, and analyzed for soil geotechnical properties (porosity, dry bulk density, specific gravity, moisture content, and fractional organic carbon content). To ensure that this sample was not impacted, the OVA readings for soil collected from this zone were all below background. The six remaining samples were collocated with the soil-vapor samples collected from soil-vapor borings SV-01 to SV-03. Collected from boreholes adjacent to the soil-vapor locations, a geotechnical sample was collected at the same depth intervals as the soil-vapor sampling interval (2-4 feet bgs and 7-9 feet bgs). Geotechnical samples were collected in Shelby tubes and shipped to Beaver Engineering in Nashville, Tennessee for analysis.

5.2 Groundwater Sampling

In February 2004, groundwater samples were collected from each of the five soil borings (SB01 to SB05) and monitoring wells MW01 to MW03, MW05, and MW07 (Figure 2-4). Groundwater samples collected from soil borings were collected for laboratory analysis via DPT methods using a screen point and peristaltic pump. Prior to sampling, groundwater levels were collected for each monitoring well and then it was purged. Monitoring well purging and sampling was completed with low flow techniques utilizing a peristaltic pump and disposable polyethylene tubing placed at mid-screen. Each of the wells was pumped at an average rate of less than 1 liter per minute.

Groundwater samples were placed in the appropriate containers, packed on ice at 4 °C, and delivered under chain-of-custody to Elab located in Nashville, Tennessee. In August 2004, a groundwater sample from MW04 was collected. This groundwater sample was collected using the same methods referenced above and were analyzed for VOCs (BTEX only) and TPH (Texas Method 1005) by TestAmerica Laboratory in Nashville, Tennessee. In addition, groundwater samples were collected from four monitoring wells (MW01 to MW04) in February 2006. These samples were analyzed for TDS by Accutest Laboratories in Orlando, Florida.

5.3 Soil-Vapor Sampling

In April 2004, six soil-vapor samples were collected from three dual completion soil-vapor borings (SV01 to SV03) that were advanced adjacent to the basement area at the Officer's Club (Figure 2-4). Soil-vapor samples were collected in 6-Liter Summa® canisters and NIOSH tubes utilizing Geoprobe® direct-push boring methodologies and the post-run tubing (PRT) system. The soil-vapor samples were collected in accordance with a SOP developed by the RAM Group,

Inc. (Bhate, February 2004). Soil-vapor sample depths were approximately 1-foot below the top of the basement (3 feet bgs) and approximately 1-foot above the bottom of the basement floor (8 feet bgs) constituting a paired sampling for each location. The soil-vapor data was used to evaluate the concentration and spatial distribution of VOCs in the vadose zone and to assess the potential for exposure to VOCs via indoor air. The 6-Liter Summa® canisters containing the soil vapor samples were delivered under chain-of-custody to Air Toxics, Laboratory located in Folsom, California.

5.4 Surveying

Sample locations were surveyed in accordance with methods described in the QAPP (Bhate, 2003). The locations, referenced with horizontal coordinates, and top of casing elevations were obtained for each temporary monitoring well. All elevations are referenced to the North American Datum (NAD) 1983. All horizontal coordinates are referenced to the State Plane Coordinate System, New Mexico Central. Elevations and coordinates are surveyed to the closest 0.001 foot. Appendix C includes the survey data.

5.5 Equipment Decontamination

All reusable equipment associated with soil sampling was decontaminated in accordance with the HAFB SOPs provided in the *Base Wide QAPP* (Bhate, 2003).

5.6 Waste Handling

All investigation derived waste (IDW) produced during the investigation process was handled in accordance with the HAFB SOPs provided in the *Base Wide QAPP* (Bhate, 2003).

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6 LABORATORY ANALYSIS AND DATA VALIDATION SUMMARY

The analysis of soil, groundwater, and soil-vapor samples collected during this RFI followed the proposed methodologies presented in the *Data Acquisition Plan for Risk Assessment, Officers Club, Site SS-57, Holloman Air Force Base, New Mexico* (Bhate, 2004). All analytical procedures followed the EPA SW-846, ASTM, or NIOSH protocols with the soil samples being analyzed as follows:

- VOCs by EPA Method 8260B
- SVOCs by EPA Method 8270C
- TPH by Texas Method 1005
- Carbon Fractions by Texas Method 1006
- Moisture Content by ASTM Method 2216
- Dry Bulk Density by ASTM Method D2937
- Specific Gravity by ASTM Method D854
- Fractional Organic Carbon Content by ASTM Method D2974

The groundwater samples were analyzed for:

- VOCs by EPA Method 8260B
- TPH by Texas Method 1005
- TDS by EPA Method 160.1

The soil-vapor samples were analyzed for:

- VOC and BTEX compounds by EPA Method TO-15
- TPH-GRO by Method TO-03
- TPH-DRO by NIOSH Method 1550

All of the laboratory data generated as part of this project was validated by the project chemist. Field Quality Assurance/Quality Control (QA/QC) samples, including blind QA samples, equipment rinsates, trip blanks, matrix spikes and matrix spike duplicates, and QC splits, were collected to document field and laboratory QA/QC. The analytical data (Sample Delivery Groups) and Quality Control Summary Reports (QCSRs) for this investigation are provided in Appendix D and E, respectively. Data validation was not performed on the geotechnical analyses performed by Beaver Engineering, Inc., Nashville, Tennessee. Elab, LLC located in Nashville, Tennessee performed the analysis of all soil and groundwater samples collected in February 2004. Air Toxics Ltd. in Folsom, California analyzed all of the soil-vapor samples collected in April 2004. Test America located in Nashville, Tennessee performed the analysis of the groundwater and two soil samples collected in August 2004. Accutest Laboratories in Orlando, Florida performed the TDS analysis of the groundwater samples collected in February 2006.

Overall, only minor QC issues were identified during the data validation of the laboratory results and the laboratory took all necessary corrective actions. All of the data were determined to be usable with only minor qualifications. Information regarding the precision, accuracy,

representativeness, and completeness is provided in the QCSRs (Appendix E) with the following sections providing a synopsis of each analyte group.

6.1 Volatile Organic Compounds

Due to a laboratory error hexane was not included in the calibration mix for four groundwater samples (SS57-SB01-GW, SS57-SB02-GW, SS57-SB04-GW, SS57-SB05-GW), however all other laboratory QC criteria were met.

6.2 Semi-volatile Organic Compounds

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits for SVOCs however; the surrogate recoveries for 4-chloroanaline and hexachlorocyclopentadine were low for soil analyses. This may indicate a low bias to the data and a matrix effect.

6.3 Total Petroleum Hydrocarbons

The recovery of the TPH surrogates in SS57-SB03-01 and SS57-SB01-01 exceeded the associated QC limits. This may indicate a high bias to the data.

6.4 Carbon Fractions

There were no QA deficiencies reported for the hydrocarbon group of analytes in any of the samples analyzed.

6.5 Total Dissolved Solids

There were no QA deficiencies reported for TDS in any of the groundwater samples analyzed.

7 NATURE AND EXTENT OF CONTAMINATION

This section presents the soil, geotechnical, groundwater, and soil-vapor analytical results from the RFI field activities completed at Site SS-57 by Bhate from February to August 2004, including the TDS groundwater sampling event conducted in February 2006. This section also presents the current nature and extent of contamination found in the soil, groundwater, and soil-vapor during this investigation. Soil, soil-vapor, and groundwater sampling locations are shown on Figures 7-1 and 7-2.

The objectives of the RFI at Site SS-57 are to: 1) determine if any soil, groundwater and/or soil vapor contamination exist at the site, 2) delineate the current horizontal and vertical extent of the contamination, and 3) collect the proper data meeting the data quality objectives to support closure of the site. The primary objective of this data collection effort was to fill in the data gaps to complete a site-specific risk evaluation and to collect the proper data meeting the DQOs ultimately in support for the closure of the site based on guidance from the NMED. The ultimate objective is to achieve approval for site closure from NMED.

Soil, geotechnical, groundwater, and soil-vapor analytical results are summarized in Tables 7-1, 7-2, 7-3, and 7-4, respectively. The chemicals that were detected at least once in soil, groundwater, or soil-vapor samples are considered to be chemicals of potential concern (COPCs) and are presented in Table 7-5. The data for this RFI was collected for the purpose of conducting a comprehensive site-specific risk evaluation, therefore the soil, groundwater, and soil-vapor data summarized in Tables 7-1, 7-3, and 7-4 include values at ½ the method detection limit for all non detected analytes. Duplicate samples were collected in borings SB02 at 6 feet bgs, SB06 at 3.5 feet bgs, and SV03 at 7 feet bgs for soil, in MW07 for groundwater and in SV03 at 8 feet bgs for soil vapor. During the risk evaluation, the duplicate samples were considered as follows:

- If both samples contained detectable concentrations, the average of the two were taken and considered as detected.
- If one of the samples contained detectable concentrations and the other was non-detect, the non-detect was replaced with ½ the detection limit and average of the two were taken and considered as detected.
- If both samples were non-detect, the non-detects were replaced with ½ the detection limit and the average of the two were taken and considered as non-detect.
- If a chemical was analyzed in only one sample, the analyzed value is considered.

7.1 Soil Analytical Results

The soil samples collected during this RFI were analyzed for VOCs, SVOCs, TPH, and carbon fractions to identify COPCs. For risk assessment purposes, the vadose zone soil is divided into surficial soil and subsurface soil zones. The surficial soil zone is the zone of soil that a receptor can get exposed to by direct ingestion, dermal contact, and inhalation of vapors. The specific thickness of surficial soil is a policy choice. This is not defined in the *Technical Background*

Document for Development of Soil Screening Levels (Revision 2) (NMED, 2004). However, based on *Guidelines for Corrective Action* (New Mexico Underground Storage Tank Bureau, 2000), the surficial soil zone was assigned a thickness of 1 foot.

Based on the review of soil data collected in July 2002, February 2004, and August 2004 the following was observed:

- Twenty-seven subsurface soil samples were collected from borings DP-01 to DP-07, SB01 to SB06, and SV01 to SV03. The borehole locations are shown on Figure 7-1.
- Acetone, carbon disulfide, chrysene, ethylbenzene, diethylphthalate, fluoranthene, 2-methylnaphthalene, phenanthrene, TPH, hexane, indeno (1,2,3-c,d) pyrene, isopropylbenzene, xylenes, benzo (a) anthracene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (g,h,i) perylene, benzo (a) pyrene, and pyrene were detected in the subsurface soil.
- The maximum depth of soil analysis was at 12 feet bgs for boring DP-04. TPH-DRO and TPH-ORO were detected.
- The maximum TPH-DRO concentration observed was 9,350,000 µg/kg at 6-8 feet bgs in SB02.
- Except for TPH-DRO, none of the maximum soil concentrations exceeded the NMED SSLs.

Soil analytical results for this investigation are summarized in Table 7-1. The chemicals that were detected at least once in soil samples are presented in Table 7-5.

7.1.1 Geotechnical Analytical Results

The site-specific soil geotechnical analytical results from boring SV01 to SV03 and GB-01 are tabulated in Table 7-2. The soil-vapor borehole locations are shown on Figure 7-1. Because all the data were collected in the unsaturated silty sand zone above the water table, the results for each geotechnical parameter were averaged for their use in the site-specific estimation of risk. Lab results from geotechnical analysis are included in Appendix F. Historical laboratory derived permeability results ranged from 8.5×10^{-7} to 3.4×10^{1} centimeters/second (cm/sec) (FWEC and GTI, 1997).

7.2 Groundwater Analytical Results

The groundwater samples collected during this investigation were analyzed for TPH, VOCs, and TDS. The analytical results are presented in Table 7-3 and the monitoring well locations are shown on Figure 7-2. Based on the review of groundwater data collected in February and August 2004 and February 2006, the following was observed:

- The 11 groundwater samples collected from borings SB01 to SB05, and monitoring wells MW01 through MW05, and MW07 were analyzed for VOCs and TPH.
- TPH-DRO, acetone, benzene, 2-butanone, carbon disulfide, chloroform, cyclohexane, 1,3-dichlorobenzene, 1,4-dichlorobenzene, dichlorodifluoromethane, ethylbenzene,

isopropylbenzene, methylcyclohexane, trichloroethene, trichlorofluoromethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylenes were detected in the groundwater samples referenced above.

- The maximum TPH-DRO concentration of 3,600 µg/L was observed in the sample from SB03.
- Except for TPH-DRO, none of the maximum groundwater concentrations exceeded the groundwater standards.
- The four groundwater samples collected from monitoring wells MW01 to MW04 in February 2006 were analyzed for TDS. TDS concentrations ranged from 2,040 mg/L (MW01) to 4,590 mg/L (MW04).

Groundwater analytical results for this investigation are summarized in Table 7-3. The chemicals that were detected at least once in groundwater samples are presented in Table 7-5.

7.3 Soil-Vapor Analytical Results

Three dual completion soil-vapor borings (SV01 to SV03) were drilled and analyzed for TPH and VOCs. Locations for the soil-vapor borings are depicted on Figure 7-1. Soil-Vapor analytical results are summarized in Table 7-4. The chemicals that were detected at least once in soil-vapor samples are presented in Table 7-5.

- Six soil-vapor samples were collected from the soil-vapor borings (two each from locations SV01 to SV03).
- TPH-GRO, 2-Propanol, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, acetone, chloroform, toluene, m/p-xylene, o-xylene, and naphthalene were detected in soil-vapor samples.
- The maximum TPH-GRO concentration of 530 micrograms per cubic meter ($\mu g/m^3$) was observed in the sample from SV02.
- A toluene concentration of 5.2 $\mu g/m^3$ was detected at 3 feet bgs at soil-vapor boring location SV03.

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8 RISK BASED EVALUATION

8.1 Exposure Model

This section presents the exposure model (EM) for the Officer's Club, Site SS-57. The EM identifies the potential receptors and the routes of exposure under current and anticipated future conditions.

8.1.1 Receptors

As per Sections 2.2 and 2.3 of the *Technical Background Document for Development of Soil Screening Levels* (Revision 2) (NMED, 2004), the following are definitions of the various receptors that should be considered:

- A residential receptor is assumed to be a long-term receptor occupying a dwelling within the site boundaries and thus is exposed to contaminants 24 hours per day, and is assumed to live at the site for 30 years, remaining on-site for 350 days per year.
- A commercial/industrial worker is assumed to be a long-term receptor exposed during the course of a work day as either: (1) a full time employee of a company operating on-site who spends most of the workday conducting maintenance or manual labor activities outdoors, or (2) a worker who is assumed to regularly perform grounds-keeping activities as a part of his/her daily responsibilities.
- A construction worker is assumed to be a receptor that is exposed to contaminated soil during the work day for the duration of a single on-site construction project.

Based on the above definitions and the current land use in the vicinity of impacts, the commercial/industrial worker is considered as the current receptor for risk assessment purposes. Assuming the future land use to be residential, the resident is considered as the future receptor for risk assessment purposes. This is a very conservative assumption since it is highly unlikely that the site would become residential in the future. The construction worker is considered a receptor for both current and the future conditions. From the soil and groundwater analytical data, it appears that the impacts of the release were minimal and localized.

8.1.2 Conceptual Site Model

The conceptual site model (CSM) evaluates the various routes of exposure for each receptor. Table 8-1 presents the CSM for current conditions for the commercial/industrial worker. Table 8-2 presents the CSM for the future conditions for the residential receptor. Table 8-3 presents the CSM for both current and future conditions for the construction worker. Note that outdoor inhalation from surficial soil, subsurface soil, and groundwater for commercial/industrial worker and resident will not be quantified since indoor inhalation is being considered and is the more critical pathway.

8.1.3 Summary of Complete Exposure Pathways

The complete routes of exposure (refer to Tables 8-1, 8-2, and 8-3) that will be quantitatively evaluated are summarized below:

8.1.3.1 Current Commercial/Industrial Worker

- Dermal contact with surficial soil
- Ingestion of surficial soil
- Outdoor inhalation from surficial soil
- Indoor inhalation from subsurface soil
- Indoor inhalation from groundwater

8.1.3.2 Future Resident

- Dermal contact with surficial soil
- Ingestion of surficial soil
- Outdoor inhalation from surficial soil
- Indoor inhalation from subsurface soil
- Indoor inhalation from groundwater

8.1.3.3 Current/Future Construction Worker

- Dermal contact with soil to depth of construction
- Ingestion of soil to depth of construction
- Outdoor inhalation from soil to depth of construction
- Outdoor inhalation from groundwater
- Dermal contact with groundwater

8.2 Comparison of Concentrations

This section presents the comparison of soil, groundwater, and soil-vapor data with generic standards. The standards selected and the results of the comparison are explained in detail below. However, the standards used do not consider the indoor inhalation pathway from soil or groundwater. A quantitative evaluation of this pathway is presented in Section 8.3.

8.2.1 Comparison of Soil Concentrations

The maximum detected concentration from the July 2002, February 2004, and August 2004 soil data was compared with the NMED soil screening levels (SSLs) for residential and industrial/occupational land use (NMED, 2004). For TPH-DRO and TPH-ORO, the SSLs are as

per the NMED TPH Screening Guidelines (NMED, 2003). SSLs for TPH-GRO are not required since the primary chemicals of TPH-GRO (i.e., BTEX) have been evaluated separately. The comparisons presented in Table 8-4 indicate that none of the COPCs, except TPH-DRO, exceed the NMED SSLs.

Two chemicals (2-methylnaphthalene and benzo (g,h,i) perylene) did not have NMED SSLs. For these chemicals, the SSLs and the soil saturation limits were calculated using the methodology included in the NMED soil screening guidance (NMED, 2004). The calculated SSLs exceeded the calculated soil saturation limits except for the residential SSL for 2-methylnaphthalene. Therefore, calculated soil saturation limits were used for benzo (g,h,i) perylene (i.e., for both residential and industrial/occupational SSLs) and for 2-methylnaphthalene (i.e, for industrial/occupational SSL only).

8.2.2 Comparison of Groundwater Concentrations

The maximum detected concentration from the February 2004 and August 2004 groundwater data was compared with groundwater standards. Conservatively, the groundwater standard used is the lowest of the following groundwater standards:

- New Mexico's Water Quality Control Commission (NMWQCC)
- EPA-promulgated maximum contaminant levels (MCLs)
- EPA-promulgated health advisory (HA)

For chemicals without groundwater standards in the above mentioned resources, groundwater standards were calculated based on risk levels for domestic consumption of water. TPH groundwater standards were taken from the NMED TPH screening guidelines (NMED, 2003).

Five chemicals (1,2,4-trimethylbenzene, acetone, carbon disulfide, cyclohexane, methylcyclohexane) did not have the first three above mentioned groundwater standards. For these chemicals, the groundwater standards were calculated using the risk-based approach as presented in the *Guidelines for Corrective Action* Document (New Mexico UST Bureau, 2000) and assuming direct ingestion of water by an adult.

The TPH-DRO groundwater standard was not calculated using the risk-based approach. Instead this standard is taken from the *TPH Screening Guidelines* (NMED, 2003).

The groundwater comparison tabulated in Table 8-5 indicates that the maximum concentrations for none of the chemicals, except TPH-DRO, exceeded the groundwater standards.

8.2.3 Comparison of Soil-Vapor Concentrations

The maximum detected concentration from the April 2004 soil-vapor data are compared with the allowable indoor inhalation levels for both the resident and the commercial worker included in the New Mexico Underground Storage Tank Bureau *Guidelines for Corrective Action*. Note that the allowable indoor inhalation levels are the allowable concentrations in the breathing zone. The comparison is very conservative since the soil-vapor concentrations will reduce as vapors

migrate into the enclosed space, and mix with the air in the enclosed space resulting in significantly lower indoor air concentrations.

Four chemicals (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, acetone, and chloroform) did not have allowable indoor inhalation standards. For these chemicals, the indoor inhalation standards were calculated using the risk-based approach.

The soil-vapor comparison is tabulated in Table 8-6 and indicates that none of the chemicals, except 1,2,4-trimethylbenzene for resident and 1,3,5-trimethylbenzene and chloroform for both resident and commercial worker, exceeded the indoor inhalation vapor levels. Calculation of risk based standards used the exposure factors in Table 8-7, the physical and chemical parameters in Table 8-8, and the toxicity parameters Table 8-9.

8.2.4 Summary of Comparison with Target Levels

The above comparisons are summarized as follows:

1. The maximum detected TPH-DRO concentration in soil exceeded the NMED TPH target level. Therefore, site-specific levels for TPH-DRO were developed using the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG) approach for the complete pathways as per the CSM (Section 8.1.2). This is further discussed in Section 8.4.
2. The maximum detected TPH-DRO concentration in groundwater exceeded the NMED TPH target level. Therefore, site-specific levels for TPH-DRO were developed using the TPHCWG approach for the complete pathways as per the CSM (Section 8.1.2). This is further discussed in Section 8.4.
3. The maximum detected soil-vapor concentrations for 1,2,4-trimethylbenzene for resident and 1,3,5-trimethylbenzene and chloroform for both resident and commercial worker exceeded the inhalation vapor target levels. As discussed in Section 8.2.3, this is a very conservative comparison.
4. Since the NMED target levels do not account for soil and groundwater concentrations protective of indoor inhalation, this pathway is evaluated separately in Section 8.3.

8.3 Indoor Inhalation

This section describes the procedure used to calculate the site-specific risk-based target levels for the indoor inhalation pathway. Note this indoor inhalation pathway is not accounted for by NMED SSLs and groundwater standards. The Johnson and Ettinger (J&E) model (EPA, 2003) is used for estimating screening levels for vapor intrusion pathways. The EPA used the J&E model as the basis to develop a spreadsheet to estimate the incremental risk level, hazard index (HI), or target soil and groundwater cleanup concentrations for prescribed risk and HI.

Specifically the calculation of risk-based target levels requires the following:

- Toxicity parameters

- Physical and chemical parameters
- Exposure factors
- Fate and transport parameters
- Soil and building characteristics

Each of these is discussed below.

8.3.1 Inputs Used to Calculate Target Levels

8.3.1.1 Toxicity Parameters

The toxicity of chemicals with carcinogenic adverse health effects associated with inhalation exposure is quantified using unit risk. For chemicals that cause non-carcinogenic adverse health effects, toxicity associated with inhalation exposure is typically quantified by reference concentration. The chemical-specific toxicity parameters for the COPCs used are the default values from the EPA spreadsheet implementation of the J&E model and are presented in Table 8-10(a).

8.3.1.2 Physical and Chemical Parameters

The development of risk-based soil screening levels requires selected physical and chemical properties of the COPCs. The chemical-specific physical and chemical parameters for the COPCs used are the default values from the EPA spreadsheet implementation of the J&E model and are presented in Table 8-10(a).

8.3.1.3 Exposure Factors

Exposure factors describe the physiological and behavioral characteristics of the receptors. The receptor-specific exposure factors and their values used to evaluate the risk-based soil and groundwater screening levels are presented in Table 8-7. The exposure factors were obtained from the *Technical Background Document for Development of Soil Screening Levels* (Revision 2) (NMED, 2004). For the Officer's Club, the site-specific receptor considered for the indoor inhalation pathway is a commercial/industrial worker.

8.3.1.4 Fate and Transport Parameters

Fate and transport parameters are necessary to estimate the target levels for the indirect routes of exposure. These factors characterize the physical properties of vadose zone, saturated zone, building, and ambient air. Table 8-10(b) provides these values that were obtained from a combination of *Technical Background Document for Development of Soil Screening Levels* (Revision 2) (NMED, 2004) and site-specific values.

8.3.1.5 Soil and Building Characteristics

The site-specific soil and building parameters considered are as follows:

1. Depth below grade to bottom of enclosed space floor - For the Officer's club, due the presence of a basement, the default value of 200 centimeters (cm) is considered (EPA, 2003). For residential land use, the default value of 15 cm (slab-on-grade construction) is considered (EPA, 2003).
2. Average soil temperature - For New Mexico, the range of groundwater temperature is 52 to 62 °F (EPA, 2003). The groundwater temperature of 62 °F (17 °C) has been considered as the approximate average soil temperature.
3. Vadose zone Soil Conservation Service (SCS) soil type – For the Officer's Club, the vadose zone soil type is silty sand (see Section 3.4 of this RFI report). However, the most similar soil type to silty sand from the default SCS soil type listed in the EPA spreadsheet is loamy sand.

8.3.2 Risk Assessment

The above input parameters are used in the EPA spreadsheet implementation of the J&E model to evaluate the target levels. The risk value of 1E-05 and hazard quotient (HQ) value of 1 (NMED, 2004) are used to evaluate the target soil and groundwater cleanup concentrations.

However, the EPA spreadsheet does not include several of the Polycyclic Aromatic Hydrocarbons (PAHs) because PAHs have low Henry's law constant and vapor pressure and hence are not considered volatile. Additionally, the EPA spreadsheet does not include TPH-DRO. To evaluate TPH-DRO, an alternative version of the J&E model, similar to the program incorporated into the New Mexico Risk-Based Corrective Action (NMRBCA) program, was used. TPH-DRO was broken down into six individual carbon fraction ranges and the target levels for each fraction was calculated.

The target levels were compared with the maximum and average concentrations. To calculate the average concentrations, the non-detect values were replaced with ½ of the detection limits. The average concentrations were considered because the mass flux of volatile chemicals that enters the enclosed space is proportional to the average and not the maximum concentration. For calculating average soil concentrations, data from borings SB02, SB04, SB05, and SB06 were conservatively considered even though these borings are outside the Officer's Club property boundary since they have detected concentrations and it is more conservative to include them.

For calculating the groundwater average concentration, data from SB05 was not considered since all the chemicals were non-detect. Groundwater data from MW07 was conservatively included in calculating the average concentration because, even though it is a periphery well, it had the highest chloroform concentration and detectable concentrations of 1,3-dichlorobenzene and xylenes. Tables 8-11 through 8-14 present the comparison of the soil and groundwater concentrations with the indoor inhalation target levels. The comparison indicates that neither the maximum nor average concentrations for any of the volatile chemicals exceeded the target levels.

8.4 Evaluating Chemicals of Potential Concern for Complete Routes of Exposure

As mentioned in Section 8.2.4, the maximum detected TPH-DRO concentration exceeded the generic screening levels in both soil and groundwater (Tables 8-4 and 8-5). This section presents the calculation of site-specific target levels (SSTLs) for TPH-DRO.

8.4.1 Methodology

The SSTLs for all the complete routes of exposure presented in Section 8.1.3 for resident, commercial worker, and construction worker were developed using the methodology discussed in *Guidelines for Corrective Action* (New Mexico Underground Storage Tank Bureau, 2000) and *Risk Assessment Guidance for Superfund - Volume I, Human Health Evaluation Manual* (EPA, 1989).

TPH-DRO was composed of three aliphatic (i.e., C10-C12, C12-16, C16-C21) and three aromatic (i.e., C10-C12, C12-16, C16-C21) carbon fractions. Target levels for each of these fractions were calculated. The sum of the target levels for each fraction was used to yield a target level for TPH-DRO. For additional details of this approach refer to the TPHCWG Series (Volumes 1 through 5).

The physical, chemical, and toxicological parameters for TPH-DRO and the carbon fractions are taken from the TPHCWG. The exposure factors, physical and chemical parameters, and toxicological parameters for calculating the standards are presented in Tables 8-7 through 8-9.

8.4.2 Comparison with Site-Specific Target Levels

The comparison of the maximum detected TPH-DRO and the carbon fractions in soil are presented in Tables 8-15 to 8-18. Note, for surficial, the maximum detected concentrations of COPCs among all soil samples were used as representative concentrations for complete pathways associated with surficial soil. This approach is conservative because the source for the COPCs was from a UST, and therefore, the highest COPC concentrations would be in subsurface soil.

None of the concentrations exceeded the SSTLs for any of the complete routes of exposures (ROEs).

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9 CONCLUSIONS AND RECOMMENDATIONS

The review of site history identified current and future commercial/industrial workers, future residents, and current and future construction workers as the site-specific receptors. The primary ROEs which have been quantitatively evaluated include:

- Commercial Worker
  - Dermal contact with surficial soil
  - Ingestion of surficial soil
  - Outdoor inhalation from surficial soil
  - Indoor inhalation from subsurface soil
  - Indoor inhalation from groundwater
- Resident
  - Dermal contact with surficial soil
  - Ingestion of surficial soil
  - Outdoor inhalation from surficial soil
  - Indoor inhalation from subsurface soil
  - Indoor inhalation from groundwater
- Construction Worker
  - Dermal contact with surficial soil
  - Ingestion of surficial soil
  - Outdoor inhalation from surficial soil
  - Outdoor inhalation from groundwater
  - Dermal contact with groundwater

The maximum soil, groundwater, and soil-vapor concentrations were compared with NMED SSLs, NMWQCC standards, and air inhalation target levels (New Mexico Underground Storage Tank Bureau, 2000), respectively. None of the concentrations exceeded the standards. However, NMED target levels do not account for indoor inhalation of vapors from soil or groundwater. Therefore, the J&E model was used to estimate soil and groundwater target levels protective of indoor inhalation. None of the site soil and groundwater maximum concentrations exceed these target levels.

Speciation of TPH-DRO data into aromatic and aliphatic fractions was based on the TPHCWG approach. SSTLs were calculated for each fraction for each complete ROE. Neither TPH-DRO nor the carbon fractions exceeded the SSTLs for the ROEs.

Based on the above evaluation, the residual soil, groundwater, and soil-vapor concentrations are protective of current and reasonable future receptors at the site. These concentrations are anticipated to reduce in time due to natural attenuation processes further reducing the risk. Based on the results of the soil, groundwater, and soil-vapor samples collected since 2002 and the conclusions of the risk evaluation presented above, no further action is recommended for the Officer's Club (SS-57) site.

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Volume No. 3, Selection of Representative TPH Fractions Based on Fate and Transport Considerations

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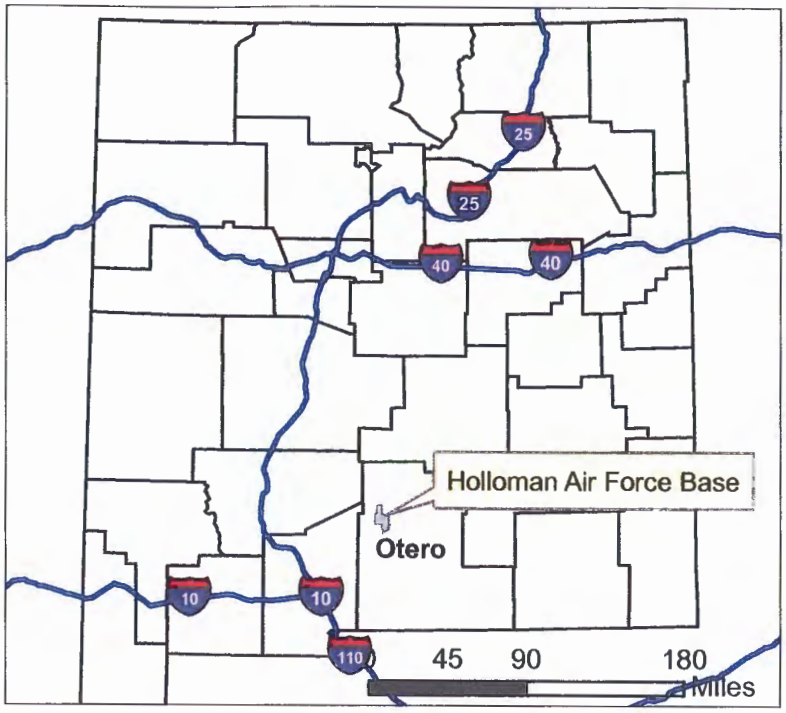
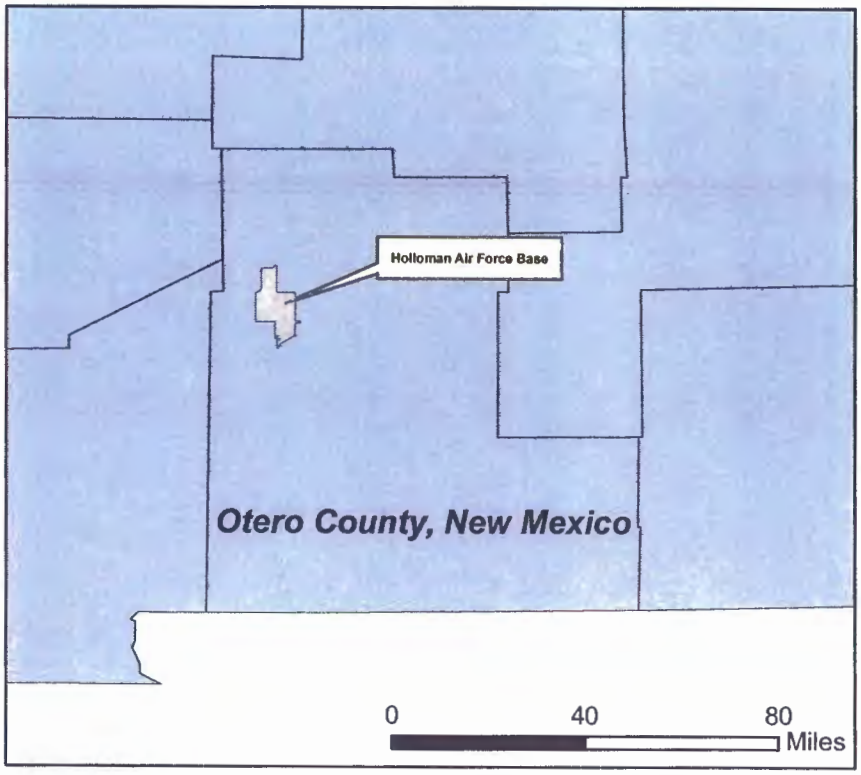
FIGURES

Site Vicinity



Site Location



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Site Vicinity and Location Map

PROJECT NO.	SCALE	DATE	DRAWN BY: cm
9050043	Shown	3/23/06	DRAWING NO. fig2-1

Site SS-57
Holloman AFB, New Mexico

Figure 2-1

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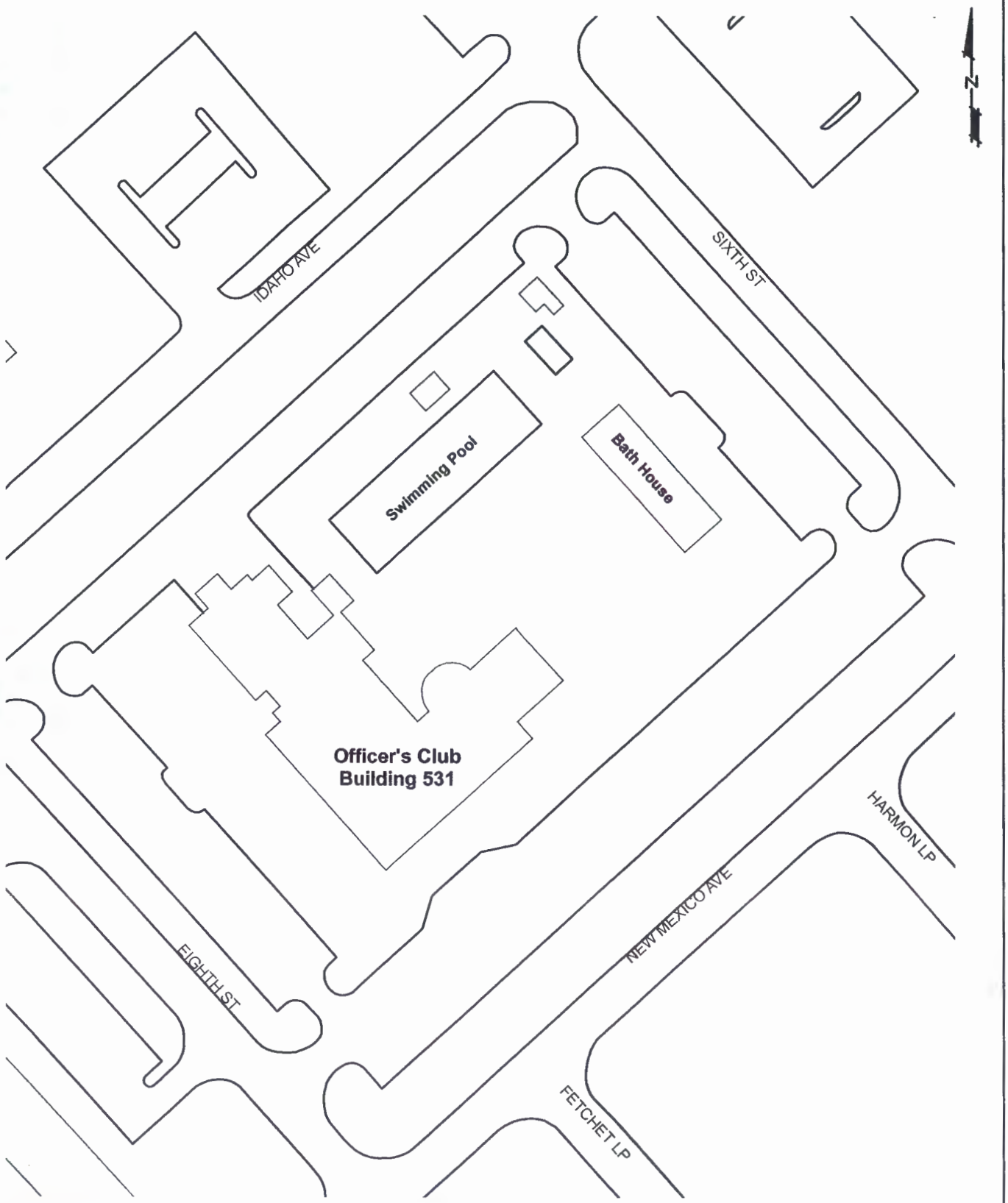
Facility Location Map

PROJECT NO.	SCALE	DATE	DRAWN BY
9050043	1"=2000'	11/30/05	cm
			DRAWING NO. fig2-2

SS-57
Holloman AFB, New Mexico

Figure 2-2



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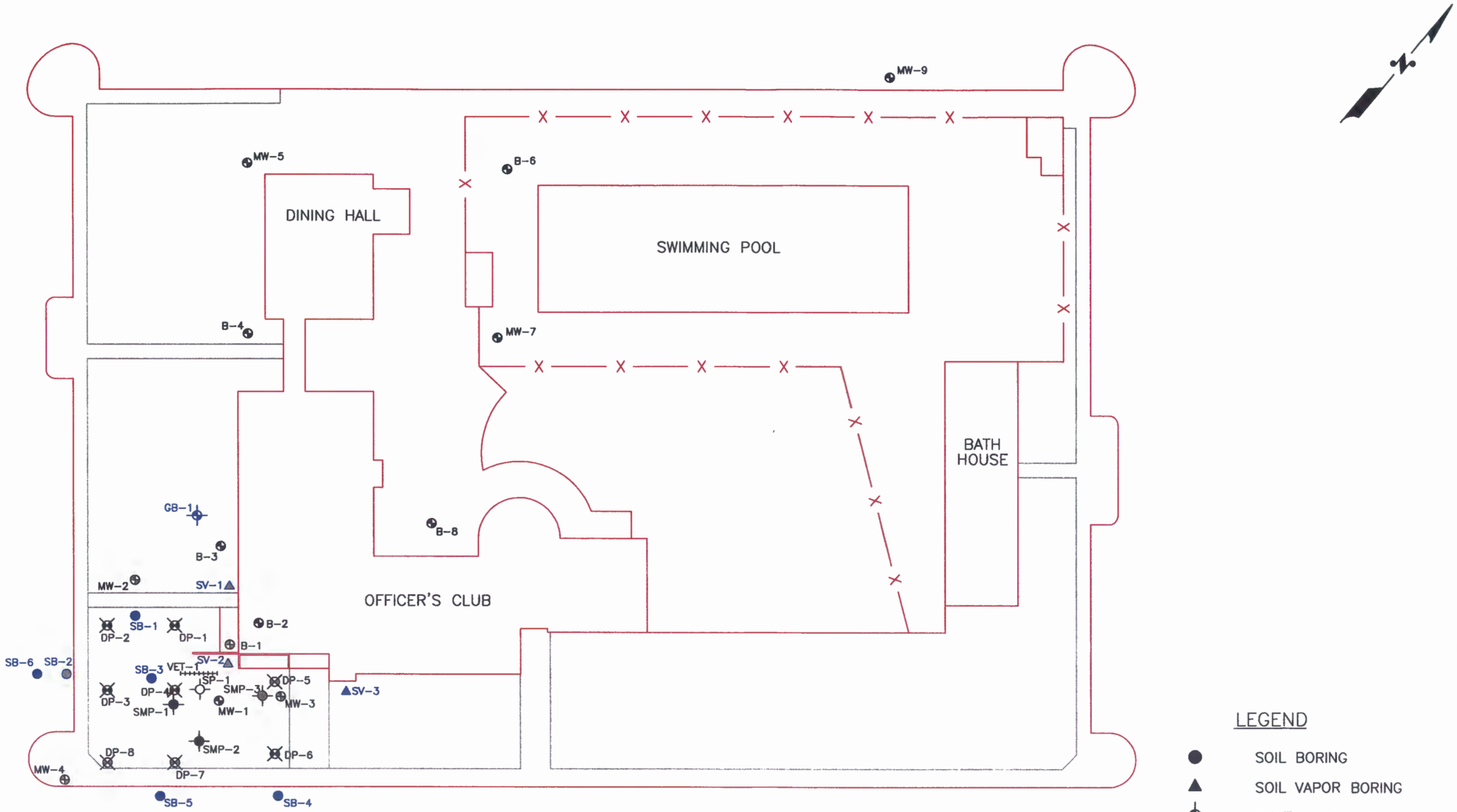
Site SS-57 Location Map

PROJECT NO	SCALE	DATE	DRAWN BY
9050043	1"=100'	3/23/06	cm
			DRAWING NO. fig2-3

SS-57
Holloman AFB, New Mexico

Figure 2-3



LEGEND

- SOIL BORING
- SOIL VAPOR BORING
- GEOTECHNICAL BORING
- MW-2 MONITORING WELL
- B-2 BORING
- SPARGE POINT
- SPARGE MONITORING POINT
- DIRECT PUSH WELL
- VAPOR EXTRACTION TRENCH

NOTES:

Blue symbols indicate 2004 RFI

Drawing source: RAM GROUP INC.

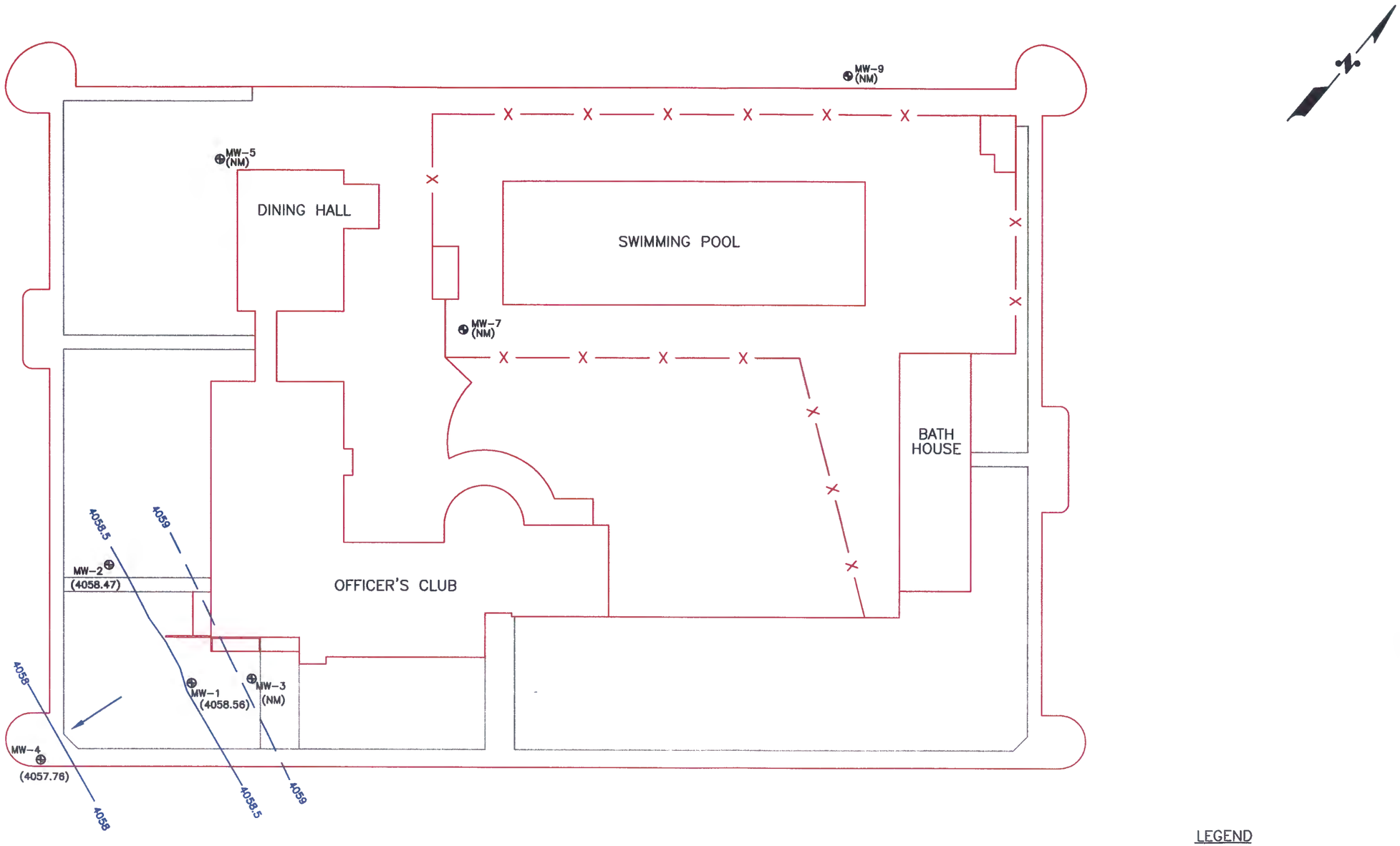
SITE SS-57
HOLLOMAN AFB
NEW MEXICO

Figure 2-4

SAMPLE LOCATION MAP
(CURRENT AND PREVIOUS INVESTIGATIONS)

PROJECT NO.	SCALE	DATE	DRAWN BY:	DRAWING NO:
9050043	NTS	04/10/06	TES	Figure 2-4

shate



Drawing source: RAM GROUP INC.

LEGEND

MW-2	MONITORING WELL
———	GROUNDWATER CONTOUR LINES (DASHED WHERE INFERRED)
4057.80	GROUNDWATER ELEVATION (OCTOBER 19, 2004)
←	GROUNDWATER FLOW DIRECTION
NM	NOT MEASURED

SITE SS-57
HOLLOMAN AFB
NEW MEXICO

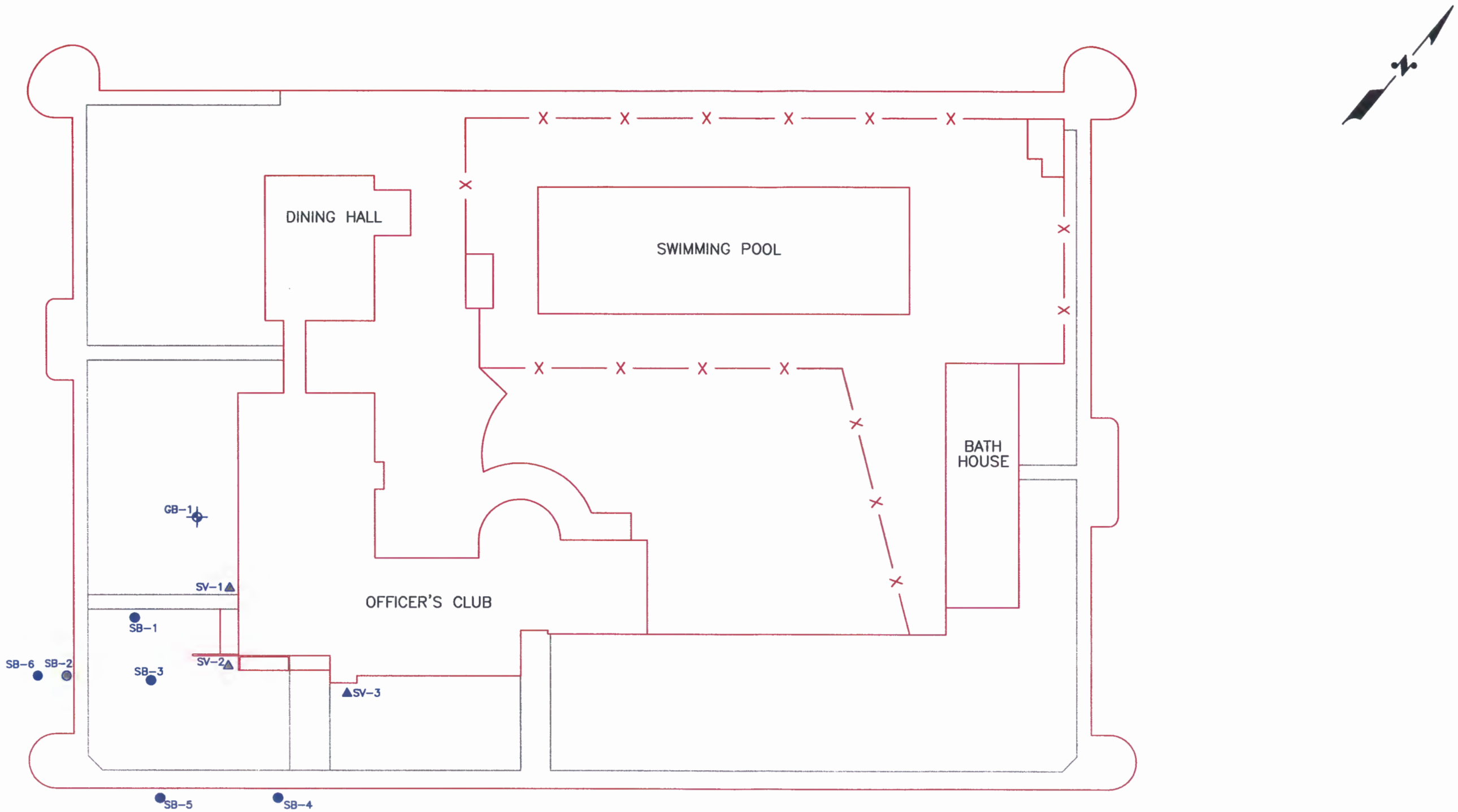
Figure 3-1

GROUNDWATER CONTOUR MAP

PROJECT NO.	SCALE	DATE	DRAWN BY:
9050043	NTS	04/10/06	TES

DRAWING NO: Figure 3-1

bhate



LEGEND

- SOIL BORING
- SOIL VAPOR BORING
- GEOTECHNICAL BORING

NOTES:

Blue symbols indicate 2004 RFI

Drawing source: RAM GROUP INC.

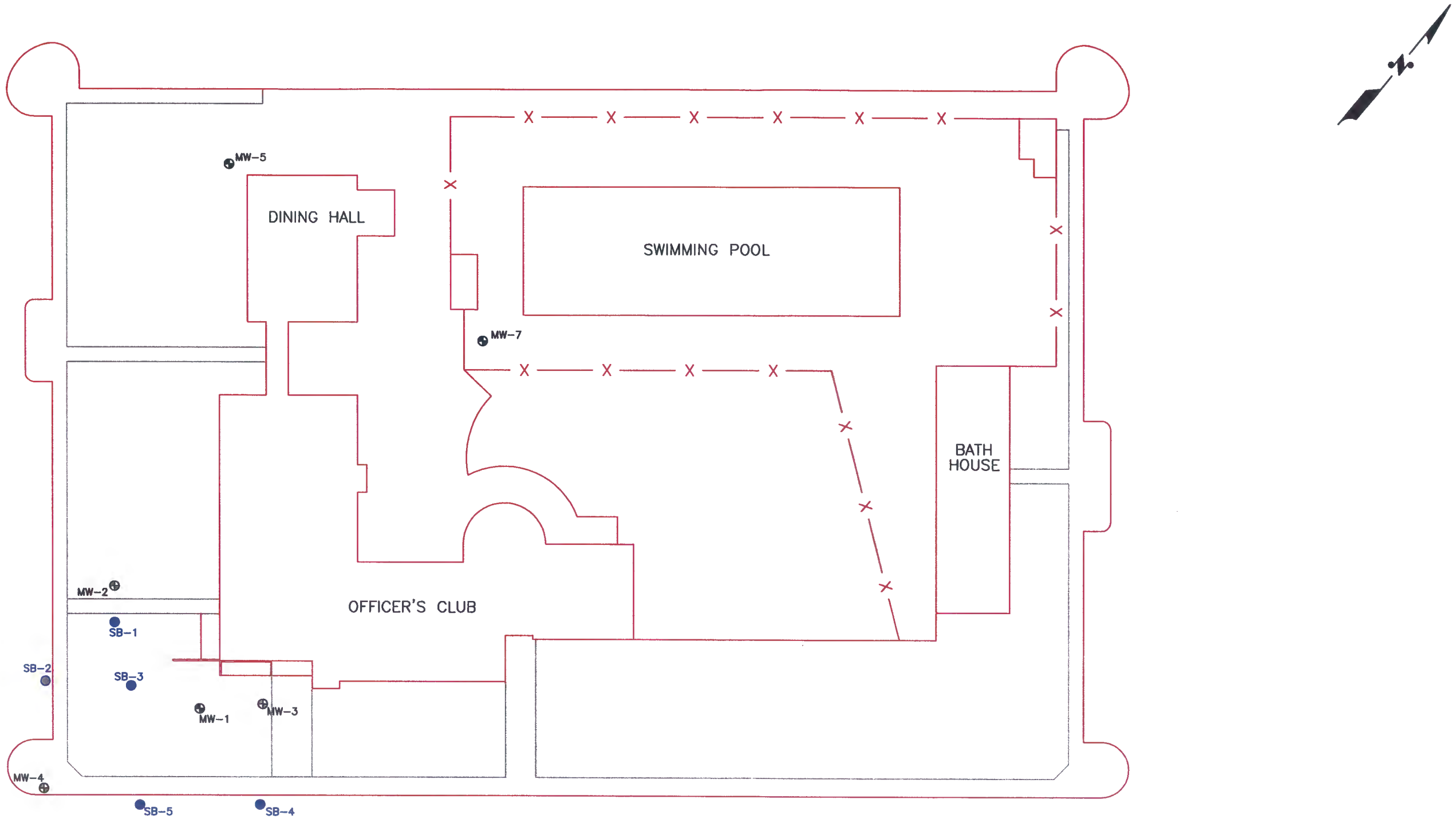
SITE SS-57
HOLLOMAN AFB
NEW MEXICO

Figure 7-1

RFI SOIL AND SOIL-VAPOR SAMPLING LOCATIONS

PROJECT NO.	SCALE	DATE	DRAWN BY:	DRAWING NO:
9050043	NTS	04/10/06	TES	Figure 7-1

bhate



SITE SS-57
HOLLOMAN AFB
NEW MEXICO

Figure 7-2

RFI GROUNDWATER
SAMPLING LOCATIONS

PROJECT NO.	SCALE	DATE	DRAWN BY:	DRAWING NO:
9050043	NTS	04/10/06	TES	Figure 7-2

bhate

LEGEND

- SOIL BORING
- MW-2 MONITORING WELL

NOTES:

Blue symbols indicate 2004 RFI

Drawing source: RAM GROUP INC.

TABLES

Table 2-1
Groundwater Elevation Summary
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Well No.	Elevation	Groundwater Elevation (feet AMSL)			
		3/31/96	4/1/96	4/9/96	10/19/04
MW-01	4071.323	4057.56	4057.55	4057.79	4058.56
MW-02	4069.912	4057.56	4057.87	4057.51	4058.47
MW-03	N/A	NM	4057.70	4057.96	NM
MW-04	4067.26	4056.66	4056.66	5056.72	4057.76
SP-01S	N/A	4057.24	4057.29	4057.48	NM
SP-01M	N/A	4057.15	4057.24	4057.37	NM
SP-01D	N/A	4057.05	4057.20	4057.29	NM
SMP-01S	N/A	4057.18	4057.22	4057.45	NM
SMP-01M	N/A	4057.12	4057.15	4057.27	NM
SMP-01D	N/A	4057.14	4057.17	4057.28	NM
SMP-02S	N/A	4057.21	4057.27	4057.46	NM
SMP-02M	N/A	4056.98	4057.14	4057.27	NM
SMP-02D	N/A	4056.98	4057.14	4057.27	NM
SMP-03S	N/A	4057.39	4057.41	4057.63	NM
SMP-03M	N/A	4057.50	4057.52	4057.75	NM
SMP-03D	N/A	4057.42	4057.44	4057.61	NM

Notes:

1. AMSL - Above mean sea level
2. NM - Not measured
3. S - Shallow zone (18 - 20 feet)
4. M - Medium zone (28 - 30 feet)
5. D - Deep zone (37.5 - 39.5 feet)
6. N/A - Not applicable

Table 2-2
Monitoring Well Construction Details
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Well ID	Installation Date	# Sampled	Diameter (inches)	Screen Interval (ft bgs)	Depth to Water (ft bcl)	Total depth (feet)	Status
MW-01	3/27/1996	1	2	5-15	13.76	17	Active
MW-02	3/30/1996	1	2	4-14	12.35	15	Active
MW-03	3/25/1996	1	2	7-17	NA	17.5	Active
MW-04	3/30/1996	1	2	3-13	10.60	14	Active
MW-05	10/24/1991	2	2	NA*	NA	NA	Active
MW-07	10/23/1991	2	2	NA*	NA	NA	Active
MW-09	10/22/1991	2	2	NA*	NA	NA	Active

Notes:

1. NA - Not Available

2. * Although the screen interval and total depth are not known, the construction summaries suggest that the wells are screened approximately 5 feet above and below the water table (10-foot screen).

3. ft bgs: Feet below ground surface

4. ft bcl: Feet below casing level (based on 10/19/04 groundwater elevation)

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	SB01-01	SB01-02	SB02-01	SB02-02	SB03-01	SB03-02
Depth (ft-ft bgs)			8-9	2-4	8-10	6-8	8-9	4-6
Date Sampled			2/11/2004	2/11/2004	2/10/2004	2/10/2004	2/11/2004	2/11/2004
Carbon Chain TX1005 (TPH)								
C6 - C12 (GRO)	NA	NA	47,000	65,000	55,000	**485,000**	50,000	60,000
>C12 - C28 (DRO)	880,000	2,200,000	47,000	65,000	**630,000**	**9,350,000**	50,000	60,000
>C28 - C36 (ORO)	2,500,000	5,000,000	47,000	65,000	55,000	**79,500**	50,000	60,000
Total TPH (C12 - C36)	NA	NA	94,000	130,000	685,000	9,429,500	100,000	120,000
Carbon Fractions TX1006								
Aliphatics								
C6-C8	NA	NA	NA	NA	**28,600**	**161,000**	NA	NA
>C8-C10	NA	NA	NA	NA	4,500	21,200	NA	NA
C10-C12	NA	NA	NA	NA	**14,300**	**525,000**	NA	NA
C12-C16	NA	NA	NA	NA	**33,900**	**1,360,000**	NA	NA
C16-C21	NA	NA	NA	NA	**16,100**	**856,000**	NA	NA
C21-C35	NA	NA	NA	NA	6,650	**144,000**	NA	NA
Aromatics								
>C6-C8	NA	NA	NA	NA	4,500	**37,300**	NA	NA
>C8-C10	NA	NA	NA	NA	4,500	8,450	NA	NA
C10-C12	NA	NA	NA	NA	**12,500**	**71,200**	NA	NA
C12-C16	NA	NA	NA	NA	**17,800**	**597,000**	NA	NA
C16-C21	NA	NA	NA	NA	**69,600**	**702,000**	NA	NA
C21-C35	NA	NA	NA	NA	6,650	**285,000**	NA	NA
Hydrocarbons								
C6-C35	NA	NA	NA	NA	**290,000**	**9,430,000**	NA	NA
>C6-C12	NA	NA	NA	NA	**51,800**	**1,080,000**	NA	NA
>C12-C28	NA	NA	NA	NA	**223,000**	**8,290,000**	NA	NA
>C28-C35	NA	NA	NA	NA	22,350	42,350	NA	NA
VOCs								
Date Analyzed			**2/18/2004**	**2/18/2004**	**2/12/2004**	**2/12/2004**	**2/18/2004**	**2/18/2004**
Acetone	70,400,000	100,000,000*	25.5	35	**22**	1,200	27.5	32.5
Benzene	27,000	73,600	2.6	3.5	2.8	120	2.75	3.25
2-Butanone (MEK)	573,000	2,100,000	25.5	35	28	1,200	27.5	32.5
Carbon disulfide	3,760,000	21,400,000	2.6	3.5	3	120	2.75	3.25
Cyclohexane	NA	NA	5.0	7	5.5	245	5.5	6.5
1,3-Dichlorobenzene	70,400	73,900	2.6	3.5	2.8	120	2.75	3.25
1,4-Dichlorobenzene	36,000	81,400	2.6	3.5	2.8	120	2.75	3.25
Ethylbenzene	10,600,000	25,400,000	2.6	3.5	2.8	120	2.75	3.25
Hexane	38,000*	38,000*	2.6	**2.3**	**0.61**	**79**	2.75	**1.2**
Isopropylbenzene (cumene)	700,000	2,730,000	2.6	3.5	2.8	**87**	2.75	3.25
Methylcyclohexane	2,100,000	7,630,000	2.6	3.5	2.8	120	2.75	3.25
Toluene	248,000	248,000	2.6	3.5	2.8	120	2.75	3.25
1,2,4-Trimethylbenzene	52,200	191,000	2.6	3.5	2.8	120	2.75	3.25
1,3,5-Trimethylbenzene	22,300	68,900	2.6	3.5	2.8	120	2.75	3.25
Xylenes, total	132,000*	132,000*	**2.3**	**4.4**	**1.2**	120	**3.3**	**2.9**

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	SB01-01	SB01-02	SB02-01	SB02-02	SB03-01	SB03-02
Depth (ft-ft bgs)			8-9	2-4	8-10	6-8	8-9	4-6
Date Sampled			2/11/2004	2/11/2004	2/10/2004	2/10/2004	2/11/2004	2/11/2004
SVOCs								
Date Analyzed			2/16/2004	2/16/2004	2/17/2004	2/17/2004	2/13/2004	2/16/2004
Acetophenone	1,310,000	1,310,000	185	235	4,100	3,800	205	210
Benzo (a) anthracene	6,210	23,000	185	**530**	4,100	3,800	205	210
Benzo (b) fluoranthene	6,210	23,400	185	**460**	4,100	3,800	205	210
Benzo (k) fluoranthene	62,100	234,000	185	**370**	4,100	3,800	205	210
Benzo (g,h,i) perylene	618*	618*	185	**260**	4,100	3,800	205	210
Benzo (a) pyrene	621	2,340	185	**530**	4,100	3,800	205	210
1,1'-Biphenyl	89,000	89,000	185	235	4,100	3,800	205	210
Chrysene	621,000	2,340,000	185	**660**	4,100	3,800	205	210
Dibenzofuran	313,000	3,170,000	185	235	4,100	3,800	205	210
Diethylphthalate	48,000,000	100,000,000	NA	NA	NA	NA	NA	NA
Fluoranthene	2,250,000	24,400,000	185	**830**	4,100	3,800	NA	210
Fluorene	3,130,000	29,400,000	185	235	4,100	3,800	NA	210
Indeno (1,2,3-c,d) pyrene	6,210	23,400	185	**220**	4,100	3,800	NA	210
2-Methylnaphthalene	165,000	175,000*	185	235	4,100	3,800	NA	210
Naphthalene	71,900	98,300	185	235	4,100	3,800	NA	210
Phenanthrene	1,800,000	20,500,000	185	**170**	4,100	3,800	NA	210
Pyrene	2,300,000	31,300,000	185	**790**	4,100	3,800	NA	210

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. Values in bold are detected values or J values, all other values are non-detect.
3. Values in regular font are 1/2 the detection limit of the non-detect values.
4. To calculate total TPH (C12 - C36) non-detect values were replaced with 1/2 detection limit.
5. * New Mexico Environment Department (NMED) soil screening level (SSL) exceeds the soil saturation limit. The soil saturation limit is shown.
6. TPH-DRO and TPH-ORO SSLs are taken from NMED TPH Screening Guidelines.
7. ** Combined value for duplicate samples.
8. Half the detection limits for Benzo (g,h,i) perylene and Benzo (a) pyrene exceed the NMED SSLs.
9. NA: Not Analyzed/Not Available
10. ND: Not detected at method detection limit
11. ft bgs: Feet below ground surface
12. GRO: Gasoline range organics
13. DRO: Diesel range organics
14. ORO: Oil range organics
15. TPH: Total Petroleum Hydrocarbons
16. VOCs: Volatile organic compounds
17. SVOCs: Semivolatile organic compounds

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	SB04-01	SB04-02	SB05-01	SB05-02	SB06	
Depth (ft-ft bgs)			8-10	2-4	8-10	4-6	2	3.5**
Date Sampled			2/10/2004	2/10/2004	2/10/2004	2/10/2004	8/4/2004	8/4/2004
Carbon Chain TX1005 (TPH)								
C6 - C12 (GRO)	NA	NA	60,000	65,000	47,000	55,000	NA	NA
>C12 - C28 (DRO)	880,000	2,200,000	60,000	65,000	47,000	55,000	NA	NA
>C28 - C36 (ORO)	2,500,000	5,000,000	60,000	65,000	47,000	55,000	NA	NA
Total TPH (C12 - C36)	NA	NA	120,000	130,000	94,000	110,000	NA	NA
Carbon Fractions TX1006								
Aliphatics								
C6-C8	NA	NA	NA	NA	NA	NA	3000	3100
>C8-C10	NA	NA	NA	NA	NA	NA	3000	3100
C10-C12	NA	NA	NA	NA	NA	NA	3000	3100
C12-C16	NA	NA	NA	NA	NA	NA	3000	3100
C16-C21	NA	NA	NA	NA	NA	NA	3000	3100
C21-C35	NA	NA	NA	NA	NA	NA	4450	4650
Aromatics								
>C6-C8	NA	NA	NA	NA	NA	NA	**6,000**	**6800**
>C8-C10	NA	NA	NA	NA	NA	NA	**15,500**	**16100**
C10-C12	NA	NA	NA	NA	NA	NA	3,000	3100
C12-C16	NA	NA	NA	NA	NA	NA	3,000	3100
C16-C21	NA	NA	NA	NA	NA	NA	4,450	4650
C21-C35	NA	NA	NA	NA	NA	NA	**20,200**	**51950**
Hydrocarbons								
C6-C35	NA	NA	NA	NA	NA	NA	**80,800**	**85950**
>C6-C12	NA	NA	NA	NA	NA	NA	14,900	15450
>C12-C28	NA	NA	NA	NA	NA	NA	14,900	15450
>C28-C35	NA	NA	NA	NA	NA	NA	**54,600**	**56300**
VOCs								
Date Analyzed			**2/12/2004**	**2/12/2004**	**2/12/2004**	**2/12/2004**	**8/5/2004**	**8/5/2004**
Acetone	70,400,000	100,000,000*	30.5	36	32.5	30	NA	NA
Benzene	27,000	73,600	3.05	3.6	3.25	3	63	30.6
2-Butanone (MEK)	573,000	2,100,000	30.5	36	32.5	30	NA	NA
Carbon disulfide	3,760,000	21,400,000	3.05	3.6	3.25	3	NA	NA
Cyclohexane	NA	NA	6	7	6.5	6	NA	NA
1,3-Dichlorobenzene	70,400	73,900	3.05	3.6	3.25	3	NA	NA
1,4-Dichlorobenzene	36,000	81,400	3.05	3.6	3.25	3	NA	NA
Ethylbenzene	10,600,000	25,400,000	3.05	3.6	3.25	3	63	30.6
Hexane	38,000*	38,000*	3.05	3.6	**0.82**	3	NA	NA
Isopropylbenzene (cumene)	700,000	2,730,000	3.05	3.6	3.25	3	NA	NA
Methylcyclohexane	2,100,000	7,630,000	3.05	3.6	3.25	3	NA	NA
Toluene	248,000	248,000	3.05	3.6	3.25	3	63	30.6
1,2,4-Trimethylbenzene	52,200	191,000	3.05	3.6	3.25	3	NA	NA
1,3,5-Trimethylbenzene	22,300	68,900	3.05	3.6	3.25	3	NA	NA
Xylenes, total	132,000*	132,000*	**2.7**	**1.7**	**2.8**	**1.2**	63	30.6

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	**NMED Residential SSLs**	**NMED Industrial/ Occupational SSLs**	**SB04-01**	**SB04-02**	**SB05-01**	**SB05-02**	**SB06**	
Depth (ft-ft bgs)			**8-10**	**2-4**	**8-10**	**4-6**	**2**	**3.5****
Date Sampled			**2/10/2004**	**2/10/2004**	**2/10/2004**	**2/10/2004**	**8/4/2004**	**8/4/2004**
SVOCs								
Date Analyzed			**2/16/2004**	**2/16/2004**	**2/16/2004**	**2/17/2004**	**8/5/2004**	**8/5/2004**
Acetophenone	1,310,000	1,310,000	220	225	200	205	NA	NA
Benzo (a) anthracene	6,210	23,000	220	225	200	205	39.5	41
Benzo (b) fluoranthene	6,210	23,400	220	225	200	205	39.5	41
Benzo (k) fluoranthene	62,100	234,000	220	225	200	205	39.5	41
Benzo (g,h,i) perylene	618*	618*	220	225	200	205	39.5	68.75
Benzo (a) pyrene	621	2,340	220	225	200	205	39.5	41
1,1'-Biphenyl	89,000	89,000	220	225	200	205	NA	NA
Chrysene	621,000	2,340,000	220	225	200	205	39.5	41
Dibenzofuran	313,000	3,170,000	220	225	200	205	NA	NA
Diethylphthalate	48,000,000	100,000,000	NA	NA	NA	NA	NA	NA
Fluoranthene	2,250,000	24,400,000	220	225	200	205	39.5	41
Fluorene	3,130,000	29,400,000	220	225	200	205	39.5	41
Indeno (1,2,3-c,d) pyrene	6,210	23,400	220	225	200	205	39.5	41
2-Methylnaphthalene	165,000	175,000*	220	225	200	205	NA	NA
Naphthalene	71,900	98,300	220	225	200	205	39.5	41
Phenanthrene	1,800,000	20,500,000	220	225	200	205	39.5	41
Pyrene	2,300,000	31,300,000	220	225	200	205	39.5	41

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. Values in bold are detected values or J values, all other values are non-detect.
3. Values in regular font are 1/2 the detection limit of the non-detect values.
4. To calculate total TPH (C12 - C36) non-detect values were replaced with 1/2 detection limit.
5. * New Mexico Environment Department (NMED) soil screening level (SSL) exceeds the soil saturation limit. The soil saturation limit is shown.
6. TPH-DRO and TPH-ORO SSLs are taken from NMED TPH Screening Guidelines.
7. ** Combined value for duplicate samples.
8. Half the detection limits for Benzo (g,h,i) perylene and Benzo (a) pyrene exceed the NMED SSLs.
9. NA: Not Analyzed/Not Available
10. ND: Not detected at method detection limit
11. ft bgs: Feet below ground surface
12. GRO: Gasoline range organics
13. DRO: Diesel range organics
14. ORO: Oil range organics
15. TPH: Total Petroleum Hydrocarbons
16. VOCs: Volatile organic compounds
17. SVOCs: Semivolatile organic compounds

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	**NMED Residential SSLs**	**NMED Industrial/ Occupational SSLs**	**SV01**		**SV02**		**SV03**	
Depth (ft-ft bgs)			**2-3**	**7-8**	**2-3**	**7-8**	**2-3**	**7-8****
Date Sampled			**2/16/2004**	**2/16/2004**	**2/16/2004**	**2/16/2004**	**2/16/2004**	**2/16/2004**
Carbon Chain TX1005 (TPH)								
C6 - C12 (GRO)	NA	NA	65,000	55,000	55,000	60,000	55,000	62,500
>C12 - C28 (DRO)	880,000	2,200,000	65,000	55,000	55,000	60,000	55,000	62,500
>C28 - C36 (ORO)	2,500,000	5,000,000	65,000	55,000	55,000	60,000	55,000	62,500
Total TPH (C12 - C36)	NA	NA	130,000	110,000	110,000	120,000	110,000	125,000
Carbon Fractions TX1006								
Aliphatics								
C6-C8	NA	NA	NA	NA	NA	NA	NA	NA
>C8-C10	NA	NA	NA	NA	NA	NA	NA	NA
C10-C12	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21	NA	NA	NA	NA	NA	NA	NA	NA
C21-C35	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics								
>C6-C8	NA	NA	NA	NA	NA	NA	NA	NA
>C8-C10	NA	NA	NA		NA	NA	NA	NA
C10-C12	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21	NA	NA	NA	NA	NA	NA	NA	NA
C21-C35	NA	NA	NA	NA	NA	NA	NA	NA
Hydrocarbons								
C6-C35	NA	NA	NA	NA	NA	NA	NA	NA
>C6-C12	NA	NA	NA	NA	NA	NA	NA	NA
>C12-C28	NA	NA	NA	NA	NA	NA	NA	NA
>C28-C35	NA	NA	NA	NA	NA	NA	NA	NA
VOCs								
Date Analyzed			**2/19/2004**	**2/19/2004**	**2/19/2004**	**2/20/2004**	**2/19/2004**	**2/19/2004**
Acetone	70,400,000	100,000,000*	31	30	31	35	25.5	28
Benzene	27,000	73,600	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	573,000	2,100,000	NA	NA	NA	NA	NA	NA
Carbon disulfide	3,760,000	21,400,000	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	70,400	73,900	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	36,000	81,400	NA	NA	NA	NA	NA	NA
Ethylbenzene	10,600,000	25,400,000	3.1	3	3.1	3.5	2.55	2.75
Hexane	38,000*	38,000*	3.1	3	3.1	**0.81**	**0.82**	2.75
Isopropylbenzene (cumene)	700,000	2,730,000	NA	NA	NA	NA	NA	NA
Methylcyclohexane	2,100,000	7,630,000	NA	NA	NA	NA	NA	NA
Toluene	248,000	248,000	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	52,200	191,000	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	22,300	68,900	NA	NA	NA	NA	NA	NA
Xylenes, total	132,000*	132,000*	**2.9**	**1.2**	**1.2**	**3.6**	**1.4**	1.25

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	SV01		SV02		SV03	
Depth (ft-ft bgs)			2-3	7-8	2-3	7-8	2-3	7-8**
Date Sampled			2/16/2004	2/16/2004	2/16/2004	2/16/2004	2/16/2004	2/16/2004
SVOCs								
Date Analyzed			2/24/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004
Acetophenone	1,310,000	1,310,000	NA	NA	NA	NA	NA	NA
Benzo (a) anthracene	6,210	23,000	NA	NA	NA	NA	NA	NA
Benzo (b) fluoranthene	6,210	23,400	NA	NA	NA	NA	NA	NA
Benzo (k) fluoranthene	62,100	234,000	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	618*	618*	NA	NA	NA	NA	NA	NA
Benzo (a) pyrene	621	2,340	NA	NA	NA	NA	NA	NA
1,1'-Biphenyl	89,000	89,000	NA	NA	NA	NA	NA	NA
Chrysene	621,000	2,340,000	NA	NA	NA	NA	NA	NA
Dibenzofuran	313,000	3,170,000	NA	NA	NA	NA	NA	NA
Diethylphthalate	48,000,000	100,000,000	NA	NA	NA	NA	NA	NA
Fluoranthene	2,250,000	24,400,000	NA	NA	NA	NA	NA	NA
Fluorene	3,130,000	29,400,000	NA	NA	NA	NA	NA	NA
Indeno (1,2,3-c,d) pyrene	6,210	23,400	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	165,000	175,000*	NA	NA	NA	NA	NA	NA
Naphthalene	71,900	98,300	NA	NA	NA	NA	NA	NA
Phenanthrene	1,800,000	20,500,000	NA	NA	NA	NA	NA	NA
Pyrene	2,300,000	31,300,000	NA	NA	NA	NA	NA	NA

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. Values in bold are detected values or J values, all other values are non-detect.
3. Values in regular font are 1/2 the detection limit of the non-detect values.
4. To calculate total TPH (C12 - C36) non-detect values were replaced with 1/2 detection limit.
5. * New Mexico Environment Department (NMED) soil screening level (SSL) exceeds the soil saturation limit. The soil saturation limit is shown.
6. TPH-DRO and TPH-ORO SSLs are taken from NMED TPH Screening Guidelines.
7. ** Combined value for duplicate samples.
8. Half the detection limits for Benzo (g,h,i) perylene and Benzo (a) pyrene exceed the NMED SSLs.
9. NA: Not Analyzed/Not Available
10. ND: Not detected at method detection limit
11. ft bgs: Feet below ground surface
12. GRO: Gasoline range organics
13. DRO: Diesel range organics
14. ORO: Oil range organics
15. TPH: Total Petroleum Hydrocarbons
16. VOCs: Volatile organic compounds
17. SVOCs: Semivolatile organic compounds

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	DP-01	DP-02	DP-02	DP-03	DP-03	DP-04	DP-05	DP-06	DP-07
Depth (ft-ft bgs)			10	7	10	4	10	12	2	11	9
Date Sampled			Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02
Carbon Chain TX1005 (TPH)											
C6 - C12 (GRO)	NA	NA	**2,900**	ND	**11,000**	**120**	**79,000**	ND	ND	**4,400**	ND
>C12 - C28 (DRO)	880,000	2,200,000	**1,700,000**	**26,000**	**9,100,000**	ND	**6,200,000**	**980,000**	ND	**3,600,000**	**1,700,000**
>C28 - C36 (ORO)	2,500,000	5,000,000	**420,000**	ND	**1,700,000**	ND	**1,200,000**	**250,000**	ND	**600,000**	**480,000**
Total TPH (C12 - C36)	NA	NA	2,120,000	NA	10,800,000	ND	7,400,000	1,230,000	ND	4,200,000	2,180,000
Carbon Fractions TX1006											
Aliphatics											
C6-C8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
>C8-C10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C10-C12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aromatics											
>C6-C8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
>C8-C10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C10-C12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrocarbons											
C6-C35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
>C6-C12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
>C12-C28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
>C28-C35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs											
Acetone	70,400,000	100,000,000*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	27,000	73,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	573,000	2,100,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	3,760,000	21,400,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	70,400	73,900	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	36,000	81,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	10,600,000	25,400,000	ND	ND	ND	ND	**280**	ND	ND	ND	ND
Hexane	38,000*	38,000*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (cumene)	700,000	2,730,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	2,100,000	7,630,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	248,000	248,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	52,200	191,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	22,300	68,900	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	132,000*	132,000*	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7-1
Soil Analytical Data (July 2002, February and August 2004)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	DP-01	DP-02	DP-02	DP-03	DP-03	DP-04	DP-05	DP-06	DP-07
Depth (ft-ft bgs)			10	7	10	4	10	12	2	11	9
Date Sampled			Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02	Jul-02
SVOCs											
Acetophenone	1,310,000	1,310,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (a) anthracene	6,210	23,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (b) fluoranthene	6,210	23,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (k) fluoranthene	62,100	234,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	618*	618*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (a) pyrene	621	2,340	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1'-Biphenyl	89,000	89,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	621,000	2,340,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	313,000	3,170,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	48,000,000	100,000,000	ND	**330**	ND	ND	ND	ND	**360**	ND	ND
Fluoranthene	2,250,000	24,400,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	3,130,000	29,400,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno (1,2,3-c,d) pyrene	6,210	23,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	165,000	175,000*	ND	ND	ND	ND	**1,400**	ND	ND	ND	ND
Naphthalene	71,900	98,300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1,800,000	20,500,000	ND	ND	ND	ND	**730**	ND	ND	ND	ND
Pyrene	2,300,000	31,300,000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. Values in bold are detected values or J values, all other values are non-detect.
3. Values in regular font are 1/2 the detection limit of the non-detect values.
4. To calculate total TPH (C12 - C36) non-detect values were replaced with 1/2 detection limit.
5. * New Mexico Environment Department (NMED) soil screening level (SSL) exceeds the soil saturation limit. The soil saturation limit is shown.
6. TPH-DRO and TPH-ORO SSLs are taken from NMED TPH Screening Guidelines.
7. ** Combined value for duplicate samples.
8. Half the detection limits for Benzo (g,h,i) perylene and Benzo (a) pyrene exceed the NMED SSLs.
9. NA: Not Analyzed/Not Available
10. ND: Not detected at method detection limit
11. ft bgs: Feet below ground surface
12. GRO: Gasoline range organics
13. DRO: Diesel range organics
14. ORO: Oil range organics
15. TPH: Total Petroleum Hydrocarbons
16. VOCs: Volatile organic compounds
17. SVOCs: Semivolatile organic compounds

Table 7-2
Soil Geotechnical Parameters
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameters	**Unit**	**GB-0106**	**SV01-ST**		**SV02-ST**		**SV03-ST**		**Average**
Depth (ft bgs)		**4-6**	**2-4**	**7-9**	**2-4**	**7-9**	**2-4**	**7-9**	
Date analyzed		**2/25/2004**	**2/25/2004**	**2/25/2004**	**2/25/2004**	**2/25/2004**	**2/25/2004**	**2/25/2004**	
Volumetric air	cm^3-air/cm^3-soil	0.244	0.138	0.142	0.190	0.152	0.183	0.233	0.183
Volumetric water content	cm^3-water/cm^3-soil	0.092	0.288	0.252	0.192	0.253	0.255	0.054	0.198
Total soil porosity	cm^3-void/cm^3-soil	0.336	0.426	0.394	0.382	0.405	0.438	0.287	0.381
Bulk density	g-soil/cm^3-soil	1.73	1.53	1.59	1.66	1.57	1.47	1.86	1.630
Fractional organic carbon	g-oc/g-soil	0.013	0.016	0.012	0.007	0.006	0.008	0.011	0.010

Notes:

1. ft bgs: Feet below ground surface
2. cm^3: cubic centimeter
3. g: grams

Table 7-3
Groundwater Analytical Data
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	Groundwater Standards	Source of Standard	SB01	SB02	SB03	SB04	SB05	MW01	MW02	MW03	MW05	MW07**	MW04
Date sampled			**2/11/2004**	**2/10/2004**	**2/12/2004**	**2/11/2004**	**2/11/2004**	**2/13/2004**	**2/12/2004**	**2/13/2004**	**2/14/2004**	**2/13/2004**	**8/4/2004**
Carbon Chain (TPH)													
Date analyzed			**2/27/2004**	**2/27/2004**	**2/26/2004**	**2/27/2004**	**2/27/2004**	**2/26/2004**	**2/26/2004**	**2/26/2004**	**2/26/2004**	**2/26/2004**	**8/5/2004**
C6 - C12 (GRO)	NA	NA	2,200	2,250	2,250	2,200	2,200	2,250	2,150	2,200	2,150	2,200	895
C12 - C28 (DRO)	1,800	5	2,200	**3,400**	**3,600**	**3,200**	2,200	2,250	2,150	2,200	2,150	2,200	895
C28 - C36 (ORO)	NA	NA	2,200	2,250	2,250	2,200	2,200	2,250	2,150	2,200	2,150	2,200	895
Total TPH (C12 - C36)	NA	NA	4,400	5,650	5,850	5,400	4,400	4,500	4,300	4,400	4,300	4,400	1,790
VOCs													
Date analyzed			**2/19/2004**	**2/19/2004**	**2/20/2004**	**2/19/2004**	**2/19/2004**	**2/24/2004**	**2/20/2004**	**2/24/2004**	**2/24/2004**	**2/24/2004**	**8/5/2004**
Acetone	61,320	4	**5.6**	5	5	0.5	5	5	5	5	**120**	5	NS
Benzene	5	2	0.5	0.5	**0.23**	0.5	0.5	0.5	0.5	**0.3**	**0.35**	0.5	0.5
2-Butanone (MEK)	4,000	3	**44**	**11**	5	5	5	5	5	5	5	5	NS
Carbon disulfide	6,813	4	**0.48**	**3.5**	0.5	0.5	0.5	0.5	0.5	**1.3**	0.5	0.5	NS
Chloroform	70	3	0.5	0.5	0.5	0.5	0.5	**0.36**	0.5	0.5	0.5	**3.55**	NS
Cyclohexane	388,360	4	1	**0.79**	1	1	1	1	1	**0.86**	1	1	NS
1,3-Dichlorobenzene	600	3	**0.38**	0.5	0.5	**0.58**	0.5	**0.37**	**0.43**	**0.42**	0.5	**0.585**	NS
1,4-Dichlorobenzene	75	2	**0.93**	0.5	0.5	0.5	0.5	0.5	**0.69**	0.5	0.5	0.5	NS
Dichlorodifluoromethane	1,000	3	1	1	1	1	1	0.5	1	**11**	1	1	NS
Ethylbenzene	700	2	**0.26**	**40**	0.5	0.5	0.5	0.5	**0.54**	**8.4**	0.5	0.5	**0.7**
Hexane	4,000	3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	NS
Isopropylbenzene (cumene)	4,000	3	0.5	**6**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	NS
Methylcyclohexane	58,595	4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**0.55**	0.5	0.5	NS
Toluene	1,000	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Trichloroethene	5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**3.5**	0.5	0.5	NS
Trichlorofluoromethane	2,000	3	1	1	1	1	1	**0.63**	1	0.5	1	1	NS
1,2,4-Trimethylbenzene	3,407	4	0.5	**0.56**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	NS
1,3,5-Trimethylbenzene	10,000	3	0.5	**0.53**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	NS
Xylenes, total	620	1	0.5	**2.1**	0.5	0.5	0.5	0.5	0.5	**0.28**	0.5	**0.26**	0.5

Notes:

1. All concentrations are in micrograms per liter (µg/L).
2. Values in bold are detected values or J values, all other values are non-detect.
3. Values in regular font are 1/2 the detection limit of the non-detect values.
4. To calculate total Total Petroleum Hydrocarbon (TPH) (C12 - C36), non-detect values were replaced with 1/2 the detection limit.
5. NS - Not Sampled
6. NA - Not Available
7. Groundwater Standard Sources:
   1 - Water Quality Control Commission (WQCC)
   2 - Safe Drinking Water Act Maximum Contaminant Level (MCL)
   3 - Environmental Protection Agency (EPA) Health Advisory
   4 - Calculated risk-based levels for domestic consumption of water
   5 - New Mexico Environment Department (NMED) TPH Screening Guidelines
8. ** Combined value for duplicate samples.
9. GRO: Gasoline range organics
10. DRO: Diesel range organics
11. ORO: Oil range organics
12. VOCs: Volatile organic compounds

Table 7-4
Soil-Vapor Analytical Data
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Sample ID	**SV01**	**SV01**	**SV02**	**SV02**	**SV03**	**SV03**
Depth (ft bgs)	**3**	**8**	**3**	**8**	**3**	**8****
Date Sampled	**4/19/2004**	**4/19/2004**	**4/20/2004**	**4/20/2004**	**4/20/2004**	**4/20/2004**
Carbon Chain						
Date Analyzed	**4/23/2004**	**4/23/2004**	**4/23/2004**	**4/23/2004**	**4/23/2004**	**4/23/2004**
TPH (GRO)	**310**	**300**	**340**	**530**	**200**	**210**
TPH (DRO)	35,714	35,714	35,714	35,714	35,714	35,714
VOCs						
Date Analyzed	**4/26/2004**	**4/26/2004**	**4/26/2004**	**4/26/2004**	**4/26/2004**	**4/26/2004**
Benzene	1.3	1.3	1.35	1.35	1.35	1.3
Toluene	1.5	1.5	1.6	1.6	**5.2**	**1.5**
Ethylbenzene	1.75	1.75	1.85	1.85	1.8	1.75
m,p-Xylene	1.75	**5.4**	1.85	1.85	1.8	1.75
o-Xylene	**3.9**	**10**	1.85	1.85	1.8	1.75
2-Propanol	3.95	**20**	4.2	4.2	4.1	3.95
Methyl tert-butyl ether	6	6	6	6	6	6
1,2,4-Trimethylbenzene	1.95	**5.9**	2.1	2.1	2.05	1.95
1,3,5-Trimethylbenzene	1.95	**19**	2.1	2.1	2.05	1.95
Acetone	3.95	3.8	4.05	4.05	3.95	**18**
Carbon Disulfide	1.25	1.25	1.3	1.3	1.3	1.25
Chloroform	**43**	**18**	**20**	**380**	**12**	**8**
Cumene	1.95	1.95	2.1	2.1	2.05	1.95
2-Butanone (Methyl Ethyl Ketone)	1.2	1.2	1.25	1.25	1.2	1.2
1,4-Dichlorobenzene	2.4	2.4	2.55	2.55	2.5	2.4
Cyclohexane	1.4	1.4	1.45	1.45	1.45	1.4
Hexane	1.4	1.4	1.5	1.5	1.45	1.4
1,3-Dichlorobenzene	2.4	2.4	2.55	2.55	2.5	2.4
Trichloroethene	2.15	2.15	2.3	2.3	2.25	2.15
Naphthalene	**51**	8.5	9	9	8.5	8.5

Notes:

1. All concentrations are in micrograms per cubic meter ($\mu g/m^3$).
2. Values in bold are detected values or J values, all other values are non-detect.
3. Values in regular font are 1/2 the detection limit of the non-detect values.
4. Concentration for TPH (DRO) was obtained as mass/volume. Volume was obtained by multiplying the flow rate (0.2 L/min x 7 min = 1.4 L).
5. ft bgs: Feet below ground surface
6. ** Combined value for duplicate samples.
7. GRO: Gasoline range organics
8. DRO: Diesel range organics
9. ORO: Oil range organics
10. VOCs: Volatile organic compounds
11. TPH: Total Petroleum Hydrocarbons

Table 7-5
Contaminants of Potential Concern
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameters	Soil	Groundwater	Soil-Vapor
1,2,4-Trimethylbenzene	ND	D	D
1,3,5-Trimethylbenzene	ND	D	D
1,3-Dichlorobenzene	ND	D	ND
1,4-Dichlorobenzene	ND	D	ND
2-Butanone	ND	D	ND
2-Methylnaphthalene	D	NA	NA
2-Propanol	NA	NA	D
Acetone	D	D	D
Benzene	ND	D	ND
Benzo (a) anthracene	D	NA	NA
Benzo (a) pyrene	D	NA	NA
Benzo (b) flouranthene	D	NA	NA
Benzo (g,h,i) perylene	D	NA	NA
Benzo (k) flouranthene	D	NA	NA
Carbon disulfide	D	D	ND
Chloroform	ND	D	D
Chrysene	D	NA	NA
Cyclohexane	ND	D	ND
Dichlorodifluoromethane	ND	D	NA
Diethylphthalate	D	NA	NA
Ethylbenzene	D	D	ND
Fluoranthene	D	NA	NA
Hexane	D	ND	ND
Indeno (1,2,3-c,d) pyrene	D	NA	NA
Isopropylbenzene	D	D	NA
m/p-Xylene	NA	NA	D
Methylcyclohexane	ND	D	NA
Naphthalene	ND	NA	D
o-Xylene	NA	NA	D
Phenanthrene	D	NA	NA
Pyrene	D	NA	NA
Toluene	ND	ND	D
TPH-DRO	D	D	ND
TPH-GRO	D	ND	D
TPH-ORO	D	ND	NA
Trichloroethene	ND	D	ND
Trichlorofluoromethane	ND	D	NA
Xylenes (total)	D	D	NA
Total Detected	**21**	**18**	**10**

Notes:
1. D - Detected at least once
2. NA - Not Analyzed
3. ND - Not Detected
4. Concentrations with J lab qualifiers were assumed as detected values.
5. GRO - Gasoline Range Organics
6. DRO - Diesel Range Organics
7. ORO - Oil Range Organics
8. TPH - Total Petroleum Hydrocarbons

Table 8-1
Exposure Model for Commercial/Industrial Worker
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

No.	Route of Exposure	C/NC	Justification
1	**Dermal contact with surficial soil**	**C**	**Surficial soil has been impacted. Therefore, this exposure pathway is complete.**
2	**Ingestion of surficial soil**	**C**	**Surficial soil has been impacted. Therefore, this exposure pathway is complete.**
3	Outdoor inhalation of vapors from surficial soil	C	Vapors from surficial soil may migrate upwards through the ground surface and into the ambient air. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air.
4	**Indoor inhalation of vapors from subsurface soil**	**C**	**Soil has been impacted near the vicinity of the Officer's Club. Also, a new building may be built over the area where subsurface soil is impacted. Therefore, this exposure pathway is complete.**
5	Outdoor inhalation of vapors from subsurface soil	C	Vapors from subsurface soil may migrate upwards through the vadose zone and into the ambient air through cracks in the pavement. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air.
6	**Indoor inhalation of vapors from groundwater**	**C**	**The groundwater flows in the south to south-west direction of the site. Also, a new building may be built over an area where impacted groundwater exists therefore this pathway is complete.**
7	Outdoor inhalation of vapors from groundwater	C	Vapors from groundwater may migrate upwards through the capillary fringe, the vadose zone, and into the ambient air through the ground surface. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air.
8	Ingestion of groundwater	NC	The facility receives water from Lake Bonito. Workers do not ingest impacted groundwater. Therefore, this exposure pathway is not complete.
9	Dermal contact with groundwater	NC	The facility receives water from Lake Bonito. Workers do not ingest impacted groundwater. Therefore, this exposure pathway is not complete.

Notes:

1. NC - Not Complete
2. C - Complete
3. Pathways shown in bold will be quantitatively evaluated. Those that are not in bold are either not complete or not a critical pathway.

Table 8-2
Exposure Model for Resident
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

No.	Route of Exposure	C/NC	Justification
1	**Dermal contact with surficial soil**	**C**	**Surficial soil has been impacted. Therefore, this exposure pathway is complete.**
2	**Ingestion of surficial soil**	**C**	**Surficial soil has been impacted. Therefore, this exposure pathway is complete.**
3	Outdoor inhalation of vapors from surficial soil	C	Vapors from surficial soil may migrate upwards through the ground surface and into the ambient air. Therefore, this exposure pathway is complete. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air.
4	**Indoor inhalation of vapors from subsurface soil**	**C**	**Subsurface soil has been impacted and a residential building may be built over the area where subsurface soil is impacted. Therefore, this exposure pathway is complete.**
5	Outdoor inhalation of vapors from subsurface soil	C	Vapors from subsurface soil may migrate upwards through the vadose zone and into the ambient air through cracks in the pavement. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air.
6	**Indoor inhalation of vapors from groundwater**	**C**	**The groundwater flows toward the south to south-west direction of the site. A residential building may be built over an area where impacted groundwater exists therefore this pathway is complete.**
7	Outdoor inhalation of vapors from groundwater	C	Vapors from groundwater may migrate upwards through the capillary fringe, the vadose zone, and into the ambient air through the ground surface. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air.
8	Ingestion of groundwater	NC	The facility receives water from the Lake Bonito. Future residents would not ingest impacted groundwater. Therefore, this exposure pathway is not complete.
9	Dermal contact with groundwater	NC	The facility receives water from the Lake Bonito. Future residents would not ingest impacted ground water. Therefore, this exposure pathway is not complete.

Notes:

1. NC - Not Complete
2. C - Complete
3. Pathways shown in bold will be quantitatively evaluated. Those that are not in bold are either not complete or not a critical pathway.

Table 8-3
Exposure Model for Construction Worker
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

No.	Route of Exposure	C/NC	Justification
1	**Dermal contact with soil to depth of construction**	**C**	**Soil is impacted at the site. Therefore, this pathway is complete.**
2	**Ingestion of soil to depth of construction**	**C**	**Soil is impacted at the site. Therefore, this pathway is complete.**
3	**Outdoor inhalation of vapors from soil to depth of construction**	**C**	**Soil is impacted at the site. Therefore, this pathway is complete.**
4	Indoor inhalation of vapors from soil	NC	Typically construction would not be expected to occur indoors over an extended period of time.
5	Indoor inhalation of vapors from groundwater	NC	Typically construction would not be expected to occur indoors over an extended period of time.
6	**Outdoor inhalation of vapors from groundwater**	**C**	**Depth to groundwater fluctuates between 8 to 12 feet bgs which is within the anticipated depth of construction. Therefore, this pathway is complete.**
7	**Dermal contact with groundwater**	**C**	**Depth to groundwater fluctuates between 8 to 12 feet bgs which is within the anticipated depth of construction. Therefore, this pathway is complete.**

Notes:
1. NC - Not Complete
2. C - Complete
3. Pathways shown in bold will be quantitatively evaluated. Those that are not in bold are either not complete or not a critical pathway.
4. bgs - below ground surface

Table 8-4
Comparison of Soil Concentrations with NMED SSLs
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	NMED Residential SSLs	NMED Industrial/ Occupational SSLs	Maximum Detected	Maximum Detected Boring Location (depth (ft-ft))	Maximum Exceed/Not Exceed SSLs?
Carbon Chain TX1005 (TPH)					
C6 - C12 (GRO)	NA	NA	485,000	SB02-02 (6-8)[1]	NE
>C12 - C28 (DRO)	880,000	2,200,000	9,350,000	SB02-02 (6-8) [1]	E
>C28 - C36 (ORO)	2,500,000	5,000,000	1,700,000	DP02 (10)	NE
VOCs					
Acetone [3]	70,400,000	100,000,000	22	SB02-01 (8-10)	NE
Carbon disulfide	3,760,000	21,400,000	3	SB02-01 (8-10)	NE
Ethylbenzene	10,600,000	25,400,000	280	DP03 (10)	NE
Hexane [2,3]	38,000	38,000	79	SB02-02 (6-8)	NE
Isopropylbenzene (cumene)	700,000	2,730,000	87	SB02-02 (6-8)	NE
Xylenes, total [2,3]	132,000	132,000	4.4	SB01-02 (2-4)	NE
SVOCs					
Benzo (a) anthracene	6,210	23,000	530	SB01-02 (2-4)	NE
Benzo (b) fluoranthene	6,210	23,400	460	SB01-02 (2-4)	NE
Benzo (k) fluoranthene	62,100	234,000	370	SB01-02 (2-4)	NE
Benzo (g,h,i) perylene [2,3]	618	618	260	SB01-02 (2-4)	NE
Benzo (a) pyrene	621	2,340	530	SB01-02 (2-4)	NE
Chrysene	621,000	2,340,000	660	SB01-02 (2-4)	NE
Diethylphthalate	48,000,000	100,000,000	360	DP05 (2)	NE
Fluoranthene	2,250,000	24,400,000	830	SB01-02 (2-4)	NE
Indeno (1,2,3-c,d) pyrene	6,210	23,400	220	SB01-02 (2-4)	NE
2-Methylnaphthalene [3]	165,000	175,000	1,400	DP03 (10)	NE
Phenanthrene	1,800,000	20,500,000	730	DP03 (10)	NE
Pyrene	2,300,000	31,300,000	790	SB01-02 (2-4)	NE

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. New Mexico Environment Department (NMED) Soil Screening Levels (SSLs) taken from NMED Soil Screening Guidance
3. The NMED SSLs for TPH-DRO and TPH-ORO are taken from the NMED TPH Screening Guidelines
4. [1]Average of SB02 (2) and SB02 (2-dup)
5. [2] NMED Residential SSL exceeds the soil saturation limit. The soil saturation limit is shown.
6. [3] NMED Industrial/Occupational SSL exceeds the soil saturation limit. The soil saturation limit is shown.
7. SSL or soil saturation limit is calculated using the NMED Soil Screening Guidance
8. NA - Not applicable/available
9. NE - Not Exceed
10. E - Exceed
11. GRO - Gasoline Range Organics
12. DRO - Diesel Range Organics
13. ORO - Oil Range Organics
14. TPH - Total Petroleum Hydrocarbons

Table 8-5
Comparison of Groundwater Concentrations with Groundwater Standards
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	WQCC[1]	MCL[2]	HA[3]	Calculated Risk Based Levels[4]	NMED TPH[5]	Minimum of Groundwater Standards	Maximum Detected	Maximum Detected Boring Location (depth)	Maximum Exceed/Not Exceed GW Standards?
Carbon Chain									
C12 - C28 (DRO)	NA	NA	NA	NA	1,800	**1,800**	3,600	SB03	E
VOCs									
Acetone	NA	NA	NA	61,320	NA	**61,320**	120	MW05	NE
Benzene	10	5	100	NA	NA	**5**	0.35	MW05	NE
2-Butanone (MEK)	NA	NA	4,000	NA	NA	**4,000**	44	SB01 (2)	NE
Carbon disulfide	NA	NA	NA	6,813	NA	**6,813**	3.5	SB02	NE
Chloroform	100	80	70	NA	NA	**70**	3.55	MW07*	NE
Cyclohexane	NA	NA	NA	388,360	NA	**388,360**	0.86	MW03	NE
1,3-Dichlorobenzene	NA	NA	600	NA	NA	**600**	0.585	MW07	NE
1,4-Dichlorobenzene	NA	75	75	NA	NA	**75**	0.93	SB01 (2)	NE
Dichlorodifluoromethane	NA	NA	1,000	NA	NA	**1,000**	11	MW03	NE
Ethylbenzene	750	700	700	NA	NA	**700**	40	SB02	NE
Isopropylbenzene (cumene)	NA	NA	4,000	NA	NA	**4,000**	6	SB02	NE
Methylcyclohexane	NA	NA	NA	58,595	NA	**58,595**	0.55	MW03	NE
Trichloroethene	100	5	200	NA	NA	**5**	3.5	MW03	NE
Trichlorofluoromethane	NA	NA	2,000	NA	NA	**2,000**	0.63	MW01	NE
1,2,4-Trimethylbenzene	NA	NA	NA	3,407	NA	**3,407**	0.56	SB02	NE
1,3,5-Trimethylbenzene	NA	NA	10,000	NA	NA	**10,000**	0.53	SB02	NE
Xylenes, total	620	10000	700	NA	NA	**620**	2.1	SB02	NE

Notes:

1. All concentrations are in micrograms per liter (µg/L).
2. * Average of MW07 and MW07-dup
3. Groundwater Standard Sources:
   1 - Water Quality Control Commission (WQCC)
   2 - Safe Drinking Water Act Maximum Contaminant Level (MCL)
   3 - Environmental Protection Agency (EPA) Health Advisory (HA)
   4 - Calculated risk-based levels for domestic consumption of water
   5 - New Mexico Environment Department (NMED) TPH Screening Guidelines
4. NE - Not exceed
5. E - Exceed
6. NA - Not available
7. TPH - Total Petroleum Hydrocarbons
8. VOCs - Volatile Organic Compounds

Table 8-6
Comparison of Soil-Vapor Concentrations with Allowable Concentrations in Breathing Zone
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Indoor Inhalation Residential RBSLs	Indoor Inhalation Commercial Worker RBSLs	Maximum Detected	Maximum Detected Boring Location (depth in feet)	Maximum Exceed/Not Exceed Indoor Inhalation RBSLs?
VOCs					
Toluene	172	749	5.2	SV03 (3)	NE
m,p-Xylene	134	586	5.4	SV01 (8)	NE
o-Xylene	134	586	10	SV01 (8)	NE
2-Propanol[1]	NA	NA	20	SV01 (8)	NE
1,2,4-Trimethylbenzene[2]	2.66	9.65	5.9	SV01 (8)	E
1,3,5-Trimethylbenzene[2]	2.66	9.65	19	SV01 (8)	E
Acetone[2]	156	568	18	SV03 (8)	NE
Chloroform[2]	1.32	1.97	380	SV02 (8)	E
Naphthalene	62.5	273	51	SV01 (3)	NE

Notes:

1. All concentrations are in micrograms per cubic meter ($\mu g/m^3$)
2. Indoor Inhalation Risk based screening levels (RBSLs) are taken from New Mexico Environment Department (NMED) Underground Storage Tank (UST) Bureau Guidelines for Corrective Action
3. NA - Not Available
4. NE - Not Exceed
5. E - Exceed
6. [1] Not a site related Chemical of Potential Concern (COPC)
7. [2] RBSLs are calculated using NMED risk-based approach

Table 8-7
Exposure Factors
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Symbol	Unit	Values Used	Source
Averaging time for carcinogen	ATc	days	25,550	SSG
Averaging time for non-carcinogen	ATnc	days	=ED * 365	SSG
Body weight				
Child	BW	kg	15	SSG
Adult	BW	kg	70	SSG
Exposure duration				
Child	ED	year	6	SSG
Adult	ED	year	24	SSG
Commercial worker	ED	year	25	SSG
Construction worker	ED	year	1	SSG
Exposure frequency				
Resident	EF	day/year	350	SSG
Commercial worker	EF	day/year	225	SSG
Construction worker	EF	day/year	250	SSG
Soil Ingestion Rate				
Child	IRS	mg/day	200	SSG
Adult	IRS	mg/day	100	SSG
Commercial worker	IRS	mg/day	100	SSG
Construction worker	IRS	mg/day	330	SSG
Soil to skin adherence factor				
Child	M	mg/cm^2	0.2	SSG
Adult	M	mg/cm^2	0.07	SSG
Commercial worker	M	mg/cm^2	0.2	SSG
Construction worker	M	mg/cm^3	0.3	SSG
Skin surface area for dermal contact with soil				
Child	SA	cm^2/day	2,800	SSG
Adult	SA	cm^2/day	5,700	SSG
Commercial/Construction worker	SA	cm^2/day	3,300	SSG
Skin surface area for dermal contact with groundwater				
Commercial/Construction worker	Sagw	cm^2/day	4,714	RAGS
Outdoor inhalation rate				
Resident	IRao	m^3/day	10	NMED UST
Commercial/Construction worker	IRao	m^3/day	20	NMED UST
Indoor inhalation rate				
Child	IRai	m^3/day	10	SSG
Adult	IRai	m^3/day	20	SSG
Commercial/Construction worker	IRai	m^3/day	20	SSG

Notes:

1. SSG - New Mexico Environment Department (NMED) Soil Screening Guidance
2. NMED Underground Storage Tank (UST) - NMED Guidelines for Corrective Action, UST
3. RAGS - Risk Assessment Guidance for Superfund - Volume I
4. cm^2/day: Square centimeters per day
5. mg/day: Milligrams per day
6. L/day: Liters per day
7. m^3/day: Cubic meters per day
8. kg: Kilograms

Table 8-8
Physical and Chemical Parameters
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Chemical	MW	S	H	K_{oc}	D_a	Dw
	(g/mole)	(mg/L-water)	(dimension-less)	(cm^3/g)	(cm^2/s)	(cm^2/s)
1,2,4-Trimethylbenzene	1.2E+02	5.68E+01	1.84E-01	9.33E+02	6.22E-02	7.28E-06
1,3,5-Trimethylbenzene	1.2E+02	5.15E+01	2.72E-01	1.02E+03	6.21E-02	7.23E-06
2-Methylnaphthalene	1.4E+02	2.54E+01	1.85E-02	4.37E+03	6.29E-02	7.20E-06
Acetone	5.8E+01	6.00E+05	1.61E-03	5.70E-01	1.24E-01	1.14E-05
Benzo (g,h,i) perylene	2.8E+02	2.60E-04	5.82E-06	1.58E+06	4.90E-02	5.65E-05
Carbon disulfide	7.6E+01	2.30E+03	6.13E-01	5.25E+01	1.04E-01	1.00E-05
Chloroform	1.2E+02	7.92E+03	1.53E-01	4.68E+01	1.04E-01	1.00E-05
Cyclohexane	8.4E+01	4.25E+01	6.68E+00	7.41E+02	7.84E-02	8.39E-06
Methylcyclohexane	9.8E+01	1.04E+01	1.59E+01	2.14E+03	6.97E-02	7.59E-06
>C10 - C12 (Aliphatics)	1.6E+02	3.40E-02	1.20E+02	2.51E+05	1.00E-01	1.00E-05
>C12 - C16 (Aliphatics)	2.0E+02	7.60E-04	5.20E+02	5.01E+06	1.00E-01	1.00E-05
>C16 - C21 (Aliphatics)	2.7E+02	2.50E-06	4.90E+03	6.31E+08	1.00E-01	1.00E-05
>C10 - C12 (Aromatics)	1.3E+02	2.50E+01	1.40E-01	2.51E+03	1.00E-01	1.00E-05
>C12 - C16 (Aromatics)	1.5E+02	5.80E+00	5.30E-02	5.01E+03	1.00E-01	1.00E-05
>C16 - C21 (Aromatics)	1.9E+02	6.50E-01	1.30E-02	1.58E+04	1.00E-01	1.00E-05

Notes:

1. Above parameters are taken from Table for Texas Risk Reduction Program, March 2004
2. Carbon fraction properties are taken from Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG)
3. NA - Not Available
4. g/mole: Grams per mole
5. cm^3/g: Cubic centimeters per gram
6. cm^2/s: Centimeters squared per second

Table 8-9
Toxicity Parameters
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Chemical	SF_o	SF_i	RfD_o	RfD_i	ABS
	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$	(mg/kg-day)	(mg/kg-day)	
1,2,4-Trimethylbenzene	NA	NA	5.00E-02	1.70E-03	NA
1,3,5-Trimethylbenzene	NA	NA	5.00E-02	1.70E-03	NA
2-Methylnaphthalene	NA	NA	**4.00E-03**	**4.00E-03**	**0.13**
Acetone	NA	NA	9.00E-01	***1.00E-01***	NA
Benzo (g,h,i) perylene	NA	NA	**3.00E-02**	**3.00E-02**	**0.13**
Carbon disulfide	NA	NA	1.00E-01	2.45E+00	NA
Chloroform	NA	8.05E-02	1.00E-02	8.60E-04	NA
Cyclohexane	NA	NA	***5.70E+00***	***5.70E+00***	NA
Methylcyclohexane	NA	NA	***8.60E-01***	8.60E-01	NA
>C10 - C12 (Aliphatics)	NA	NA	0.1	0.286	0.1
>C12 - C16 (Aliphatics)	NA	NA	0.1	0.286	0.1
>C16 - C21 (Aliphatics)	NA	NA	2	NA	0.1
>C10 - C12 (Aromatics)	NA	NA	0.04	0.0571	0.1
>C12 - C16 (Aromatics)	NA	NA	0.04	0.0571	0.1
>C16 - C21 (Aromatics)	NA	NA	0.03	NA	0.13

Notes:

1. Above parameters are taken from New Mexico Environment Department (NMED) Soil Screening Levels (SSL) guidance document
2. Parameters in bold and italics are from United States Environmental Protection Agency (US EPA) Region IX
3. Parameters in bold are from Table for Texas Risk Reduction Program, March 2004
4. Carbon fraction properties are taken from Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG)
5. NA - Not Available
6. mg/kg-day: Milligrams per kilogram per day
7. SF_o: Oral Slope Factor
8. SF_i: Inhalation Slope Factor
9. RfD_o: Oral Reference Dose
10. RfD_i: Inhalation Reference Dose
11. ABS: Dermal Absorption Factor

Table 8-10(a)
Chemical Specific Parameters Used for Calculating Indoor Inhalation Target Levels (for J&E Model)
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

CAS No.	Chemical	Organic carbon partition coeffient	Diffusivity		Pure component water solubility	Henry's law constant	Henry's law constant at reference temperature	Henry's law constant reference temperature	Normal boiling point	Critical temperature	Enthalpy of vaporization at the normal boiling point	Unit risk factor	Reference concentration	Physical state at soil temperature
			in air	in water										
		K_{oc}	D_a	D_w	S	H'	H	T_R	T_B	T_C	$DH_{v,b}$	URF	RfC	
		(cm^3/g)	(cm^2/s)	(cm^2/s)	(mg/L)	(unitless)	(atm-m^3/mol)	(°C)	(°K)	(°K)	(cal/mol)	$(mg/m^3)^{-1}$	(mg/m^3)	(S, L, G)
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.87E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01	L
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00	L
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.79E+03	2.27E-01	5.54E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00	L
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01	L
75694	Trichlorofluoromethane	4.97E+02	8.70E-02	9.70E-06	1.10E+03	3.97E+00	9.68E-02	25	296.70	471.00	5,999	0.0E+00	7.0E-01	L
75718	Dichlorodifluoromethane	4.57E+02	6.65E-02	9.92E-06	2.80E+02	1.40E+01	3.42E-01	25	243.20	384.95	9,421	0.0E+00	2.0E-01	L
78933	Methylethylketone (2-butanone)	2.30E+00	8.08E-02	9.80E-06	2.23E+05	2.29E-03	5.58E-05	25	352.50	536.78	7,481	0.0E+00	1.0E+00	L
91576	2-Methylnaphthalene	2.81E+03	5.22E-02	7.75E-06	2.46E+01	2.12E-02	5.17E-04	25	514.26	761.00	12,600	0.0E+00	7.0E-02	S
95636	1,2,4-Trimethylbenzene	1.35E+03	6.06E-02	7.92E-06	5.70E+01	2.52E-01	6.14E-03	25	442.30	649.17	9,369	0.0E+00	6.0E-03	L
98828	Cumene	4.89E+02	6.50E-02	7.10E-06	6.13E+01	4.74E+01	1.16E+00	25	425.56	631.10	10,335	0.0E+00	4.0E-01	L
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.22E-01	7.86E-03	25	409.34	617.20	8,501	1.1E-06	1.0E+00	L
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.90E+01	9.82E-02	2.39E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01	S
108678	1,3,5-Trimethylbenzene	1.35E+03	6.02E-02	8.67E-06	2.00E+00	2.41E-01	5.87E-03	25	437.89	637.25	9,321	0.0E+00	6.0E-03	L
108872	Methylcyclohexane	7.85E+01	7.35E-02	8.52E-06	1.40E+01	4.22E+00	1.03E-01	25	373.90	572.20	7,474	0.0E+00	3.0E+00	L
110543	Hexane	4.34E+01	2.00E-01	7.77E-06	1.24E+01	6.82E+01	1.66E+00	25	341.70	508.00	6,895	0.0E+00	2.0E-01	L
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E+00	4.50E-04	1.10E-05	25	667.95	936	14,370	0.0E+00	1.1E-01	S
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.54E-03	1.11E-04	25	715.9	969.27	17,000	2.1E-04	0.0E+00	S
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	6.30E-03	3.87E-03	9.44E-05	25	714.15	979	16,455	2.1E-06	0.0E+00	S
541731	1,3-Dichlorobenzene	1.98E+03	6.92E-02	7.86E-06	1.34E+02	1.27E-01	3.09E-03	25	446	684	9,230.18	0.0E+00	1.1E-01	L

Notes:

1. cm^3/g: Cubic centimeters per gram
2. cm^2/s: Centimeters squared per second
3. mg/L: Milligrams per liter
4. atm-m^3/mol: Atmosphere cubic meter per mole
5. °C: Degrees Celsius
6. °K: Degrees Kelvin
7. cal/mol: Calories per mole
8. mg/m^3: Miligrams per cubic meter
9. S: Solid
10. L: Liquid
11. G: Gas

Table 8-10(b)
Fate and Transport Parameters
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Symbol	Unit	Value Used
Vadose Zone:			
Total Soil Porosity	?$_T$	cm^3/cm^3-soil	0.381
Volumetric Water Content	?$_{ws}$	cm^3/cm^3	0.198
Volumetric Air Content	?$_{as}$	cm^3/cm^3	0.183
Thickness	h_v	cm	362.2
Dry Soil Bulk Density	?$_s$	g/cm^3	1.63
Fractional Organic Carbon Content	f_{ocv}	g-C/g-soil	0.01
Soil in Cracks:			
Total Soil Porosity	?$_{Tcrack}$	cm^3/cm^3-soil	0.381
Volumetric Water Content	?$_{wcrack}$	cm^3/cm^3	0.198
Volumetric Air Content	?$_{acrack}$	cm^3/cm^3	0.183
Capillary Fringe:			
Total Soil Porosity	?$_{Tcap}$	cm^3/cm^3-soil	0.381
Volumetric Water Content	?$_{wcap}$	cm^3/cm^3	0.34
Volumetric Air Content	?$_{acap}$	cm^3/cm^3	0.0381
Thickness	h_c	cm	18.8
Groundwater Parameters:			
Depth to Groundwater	L_{gw}	cm	381
Enclosed Space Parameters:			
Enclosed Space Air Exchange Rate			
Residential	ER	1/day	6
Non Residential	ER	1/day	6
Enclosed Space Volume/Infiltration Area Ratio			
Residential	L_B	cm	244
Non Residential	L_B	cm	366
Enclosed Space Foundation or Wall Thickness			
Residential	L_{crack}	cm	10
Non Residential	L_{crack}	cm	10
Area Fraction of Cracks in Foundation/Walls			
Residential	η	cm^2/cm^2	0.000377
Non Residential	η	cm^2/cm^2	0.00022

Notes:

1. cm^3/cm^3: Cubic centimeter per cubic centimeter
2. cm: Centimeters
3. cm^2/cm^2: Centimeters squared per centimeters squared
4. g-C/g-soil: Grams of carbon per gram of soil
5. g/cm^3: Grams per cubic centimeter

Table 8-11
Comparison of Soil Concentrations with Target Concentrations Protective of Indoor Inhalation
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Residential Target Level (Calculated)	Commercial Worker Target Level (Calculated)	Maximum Detected	Maximum Exceed/Not Exceed Target Level?	Average	Average Exceed/Not Exceed Target Level?
Carbon Chain TX1005 (TPH)						
C6 - C12 (GRO)	NA	NA	485,000	NE	68,520	NE
>C12 - C28 (DRO)	NA	NA	9,350,000	NE	1,482,065	NE
>C28 - C36 (ORO)	NA	NA	1,700,000	NE	253,909	NE
VOCs						
Acetone	5,200,000	12,100,000	22	NE	103	NE
Carbon disulfide	90,400	211,000	3	NE	15	NE
Ethylbenzene	638,000	638,000	280	NE	28	NE
Hexane	2,270	5,290	79	NE	7	NE
Isopropylbenzene (cumene)	33,500	78,200	87	NE	11	NE
Xylenes, total	NA	NA	4	NE	14	NE
SVOCs						
Benzo (a) anthracene	NA	NA	530	NE	830	NE
Benzo (b) fluoranthene	NOC	NOC	460	NE	824	NE
Benzo (k) fluoranthene	NA	NA	370	NE	817	NE
Benzo (g,h,i) perylene	NA	NA	260	NE	810	NE
Benzo (a) pyrene	NA	NA	530	NE	830	NE
Chrysene	NOC	NOC	660	NE	841	NE
Diethylphthalate*	NA	NA	360	NE	345	NE
Fluoranthene	NA	NA	830	NE	914	NE
Indeno (1,2,3-c,d) pyrene	NA	NA	220	NE	859	NE
2-Methylnaphthalene	NOC	NOC	1,400	NE	1,078	NE
Phenanthrene	NA	NA	730	NE	844	NE
Pyrene	NOC	NOC	790	NE	911	NE

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. NOC - Not of Concern. The contaminant is a solid at the soil temperature (17 degrees Celcius) and not of concern for this pathway.
3. For average concentration, the non-detects are replaced with one half the detection limit.
4. NA - Not Available
5. NE - Not Exceed
6. E - Exceed
7. * Not a site related chemical of potential concern (COPC)
8. TPH - Total Petroleum Hydrocarbons
9. GRO - Gasoline Range Organics
10. DRO - Diesel Range Organics
11. ORO - Oil Range Organics

Table 8-12
TPH-DRO Soil SSTLs Protective of Indoor Inhalation
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Residential Target Level (Calculated)	Commercial Worker Target Level (Calculated)	Maximum Detected	Maximum Exceed/Not Exceed Target Level?	Average	Average Exceed/Not Exceed Target Level?
TPH-DRO	2.86E+07	2.67E+08	9,350,000	NE	1,482,065	NE
Aliphatics						
C10-C12	1.76E+06	1.64E+07	525,000	NE	136,350	NE
C12-C16	8.06E+06	7.51E+07	1,360,000	NE	350,000	NE
C16-C21	NA	NA	856,000	NE	219,550	NE
Aromatics						
C10-C12	3.01E+06	2.80E+07	71,200	NE	22,450	NE
C12-C16	1.58E+07	1.47E+08	597,000	NE	155,225	NE
C16-C21	NA	NA	702,000	NE	195,175	NE

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. For average concentration, the non-detects are replaced with one half the detection limit.
3. SSTLs - Site specific target levels based on Johnson and Ettinger (J&E) model
4. NA - Not Available
5. NE - Not Exceed
6. E - Exceed
7. TPH-DRO - Total Petroleum Hydrocarbons - Diesel Range Organics

Table 8-13
Comparison of Groundwater Concentrations with Target Concentrations Protective of Indoor Inhalation
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Residential Target Level (Calculated)	Commercial Worker Target Level (Calculated)	Maximum Detected	Maximum Exceed/Not Exceed Target Level?	Average	Average Exceed/Not Exceed Target Level?
Carbon Chain (TPH)						
C12 - C28 (DRO)	NA	NA	3,600	NE	2,425	NE
VOCs						
Acetone	41,400,000	95,700,000	120	NE	17	NE
Benzene	4,990	11,000	0.35	NE	0.44	NE
2-Butanone (MEK)	132,000,000	NOC	44	NE	10	NE
Carbon disulfide	136,000	312,000	3.5	NE	0.92	NE
Chloroform	2,110	4,650	3.55	NE	0.82	NE
Cyclohexane	NA	NA	0.86	NE	0.96	NE
1,3-Dichlorobenzene	NOC	NOC	0.585	NE	0.47	NE
1,4-Dichlorobenzene	NOC	NOC	0.93	NE	0.57	NE
Dichlorodifluoromethane	575,000	13,200	11	NE	2.06	NE
Ethylbenzene	NOC	NOC	40	NE	5.24	NE
Isopropylbenzene (cumene)	4,260	9,810	6	NE	1.1	NE
Methylcyclohexane	NOC	NOC	0.55	NE	0.51	NE
Trichloroethene	NA	NA	3.5	NE	0.83	NE
Trichlorofluoromethane	49,300	114,000	0.63	NE	0.90	NE
1,2,4-Trimethylbenzene	12,200	28,200	0.56	NE	0.51	NE
1,3,5-Trimethylbenzene	NOC	NOC	0.53	NE	0.50	NE
Xylenes, total	NA	NA	2.1	NE	0.61	NE

Notes:

1. All concentrations are in micrograms per liter (µg/L).
2. NOC - Not of Concern. The groundwater concentration at or above solubility limit is not of concern for this pathway.
3. For average concentration, the non-detects are replaced with one half the detection limit.
4. NA - Not Available
5. NE - Not Exceed
6. E - Exceed
7. Total Petroleum Hydrocarbons
8. DRO - Diesel Range Organics
9. MEK - Methyl Ethyl Ketone

Table 8-14
TPH-DRO Groundwater SSTLs Protective of Indoor Inhalation
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Residential Target Level (Calculated)	Commercial Worker Target Level (Calculated)	Maximum Detected	Maximum Exceed/Not Exceed Target Level?	Average	Average Exceed/Not Exceed Target Level?
TPH-DRO	4.58E+05	4.17E+06	3,600	NE	2,425	NE
Aliphatics						
C10-C12	7.96E+02	7.04E+03	NA	NA	NA	NA
C12-C16	1.84E+02	1.62E+03	NA	NA	NA	NA
C16-C21	NA	NA	NA	NA	NA	NA
Aromatics						
C10-C12	1.28E+05	1.16E+06	NA	NA	NA	NA
C12-C16	3.29E+05	3.01E+06	NA	NA	NA	NA
C16-C21	NA	NA	NA	NA	NA	NA

Notes:

1. All concentrations are in micrograms per liter (µg/L).
2. For average concentration, the non-detects are replaced with one half the detection limit.
3. SSTLs - Site specific target levels
4. NE - Not Exceed
5. E - Exceed
6. NA - Not Available
7. TPH - Total Petroleum Hydrocarbons
8. DRO - Diesel Range Organics

Table 8-15
TPH-DRO SSTLs for Surficial Soil for Resident
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameter	Dermal Contact SSTL	Maximum Detected Concentration*	E/NE	Ingestion SSTL	Maximum Detected Concentration*	E/NE	Outdoor Inhalation SSTL	Maximum Detected Concentration*	E/NE
TPH-DRO	4.21E+08	9,350,000	NE	1.81E+08	9,350,000	NE	1.65E+07	9,350,000	NE
Aliphatics									
C10-C12	1.83E+07	525,000	NE	7.82E+06	525,000	NE	3.27E+06	525,000	NE
C12-C16	1.83E+07	1,360,000	NE	7.82E+06	1,360,000	NE	6.99E+06	1,360,000	NE
C16-C21	3.66E+08	856,000	NE	1.56E+08	856,000	NE	NA	856,000	NA
Aromatics									
C10-C12	7.32E+06	71,200	NE	3.13E+06	71,200	NE	1.91E+06	71,200	NE
C12-C16	4.22E+06	597,000	NE	3.13E+06	597,000	NE	4.37E+06	597,000	NE
C16-C21	4.22E+06	702,000	NE	2.35E+06	702,000	NE	NA	702,000	NA

Notes:

1. * The maximum detectected concentrations are the overall maximum concentration detected in soil.
2. All concentrations are in micrograms per kilogram (µg/kg).
3. SSTL - Site specific target level
4. NA - Not available
5. NE - Not exceed
6. E - Exceed

Table 8-16
TPH-DRO SSTLs for Surficial Soil for Commercial Worker
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameters	Dermal Contact SSTL	Maximum Detected Concentration*	E/NE	Ingestion SSTL	Maximum Detected Concentration*	E/NE	Outdoor Inhalation SSTL	Maximum Detected Concentration*	E/NE
TPH-DRO	3.96E+09	9,350,000	NE	2.62E+09	9,350,000	NE	1.23E+08	9,350,000	NE
Aliphatics									
C10-C12	1.72E+08	525,000	NE	1.14E+08	525,000	NE	2.42E+07	525,000	NE
C12-C16	1.72E+08	1,360,000	NE	1.14E+08	1,360,000	NE	5.18E+07	1,360,000	NE
C16-C21	3.44E+09	856,000	NE	2.27E+09	856,000	NE	NA	856,000	NA
Aromatics									
C10-C12	6.88E+07	71,200	NE	4.54E+07	71,200	NE	1.41E+07	71,200	NE
C12-C16	6.88E+07	597,000	NE	4.54E+07	597,000	NE	3.24E+07	597,000	NE
C16-C21	3.97E+07	702,000	NE	3.41E+07	702,000	NE	NA	702,000	NA

Notes:

1. * The maximum detectected concentrations are the overall maximum concentration detected in soil.
2. All concentrations are in micrograms per kilogram (µg/kg).
3. SSTL - Site specific target level
4. NA - Not available
5. NE - Not exceed
6. E - Exceed
7. TPH - Total Petroleum Hydrocarbons
8. DRO - Diesel Range Organics

Table 8-17
TPH-DRO SSTLs for Soil to Depth of Construction for Construction Worker
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameters	Dermal Contact SSTL	Maximum Detected Concentration	E/NE	Ingestion SSTL	Maximum Detected Concentration	E/NE	Outdoor Inhalation SSTL	Maximum Detected Concentration	E/NE
TPH-DRO	2.38E+09	9,350,000	NE	7.15E+08	9,350,000	NE	2.21E+07	9,350,000	NE
Aliphatics									
C10-C12	1.03E+08	525,000	NE	3.10E+07	525,000	NE	4.36E+06	525,000	NE
C12-C16	1.03E+08	1,360,000	NE	3.10E+07	1,360,000	NE	9.33E+06	1,360,000	NE
C16-C21	2.06E+09	856,000	NE	6.19E+08	856,000	NE	NA	856,000	NA
Aromatics									
C10-C12	4.13E+07	71,200	NE	1.24E+07	71,200	NE	2.55E+06	71,200	NE
C12-C16	4.13E+07	597,000	NE	1.24E+07	597,000	NE	5.83E+06	597,000	NE
C16-C21	2.38E+07	702,000	NE	9.29E+06	702,000	NE	NA	702,000	NA

Notes:

1. All concentrations are in micrograms per kilogram (µg/kg).
2. SSTLs - Site specific target levels
3. NA - Not Available
4. NE - Not Exceed
5. E - Exceed
6. TPH - Total Petroleum Hydrocarbons
7. DRO - Diesel Range Organics

Table 8-18
TPH-DRO SSTLs for Groundwater for Construction Worker
Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico

Parameters	Outdoor Inhalation SSTL	Maximum Detected Concentration	E/NE	Dermal Contact SSTL	Maximum Detected Concentration	E/NE
TPH-DRO	2.94E+08	3,600	NE	3.20E+04	3,600	NE
Aliphatics						
C10-C12	1.22E+06	NA	NA	2.17E+03	NA	NA
C12-C16	2.81E+05	NA	NA	5.03E+02	NA	NA
C16-C21	NA	NA	NA	1.02E+03	NA	NA
Aromatics						
C10-C12	1.11E+08	NA	NA	1.23E+04	NA	NA
C12-C16	1.82E+08	NA	NA	1.01E+04	NA	NA
C16-C21	NA	NA	NA	5.93E+03	NA	NA

Notes:

1. All concentrations are in micrograms per liter (µg/L).
2. SSTLs - Site specific target levels
3. NA - Not Available
4. NE - Not Exceed
5. E - Exceed
6. TPH - Total Petroleum Hydrocarbons
7. DRO - Diesel Range Organics

APPENDIX A

HISTORIC DATA FROM PREVIOUS INVESTIGATIONS

A-1 Sergent, Hauskins & Beckwith, December 1991

A-2 Wilson & Company, June 1992

A-3 Radian Corporation, May 1993

A-4 Foster Wheeler Environmental Corporation and Groundwater Technology, Inc., October 1996a

A-5 Foster Wheeler Environmental Corporation and Groundwater Technology, Inc., October 1996b

A-6 Foster Wheeler Environmental Corporation and Groundwater Technology, Inc., February 1997

A-7 Foster Wheeler Environmental Corporation, October 1997 through October 1999

A-8 Foster Wheeler Environmental Corporation, April 2003

Appendix A-1

Sergent, Hauskins & Beckwith. December 1991. *Geotechnical Investigation, Officer's Club, Holloman Air Force Base, Alamogordo, New Mexico.*

SERGENT, HAUSKINS & BECKWITH CONSULTING GEOTECHNICAL ENGINEERS
SOIL & FOUNDATION ENGINEERING • ENGINEERING GEOLOGY • HYDROGEOLOGY
MATERIALS ENGINEERING • MATERIALS TESTING • ENVIRONMENTAL SERVICES

December 5, 1991

Wilson & Company
Engineers and Architects
631 East Crawford Avenue
Salina, Kansas 67401

SHB Job No. E91-1191

Attention: Mr. Herb Bassett

Re: Geotechnical Investigation
Officers Club
Holloman Air Force Base
Alamogordo, New Mexico

Gentlemen:

Our Geotechnical Investigation Report for the Holloman Air Force Base Officers Club is herewith submitted. The report includes the results of test drilling, laboratory analyses, and geotechnical engineering findings and conclusions.

Should any questions arise concerning this report, we would be pleased to discuss them with you.

Respectfully submitted,

Sergent, Hauskins & Beckwith Engineers

By John C. Lommler
John C. Lommler, P.E.

JOHN C. LOMMLER 11549 NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

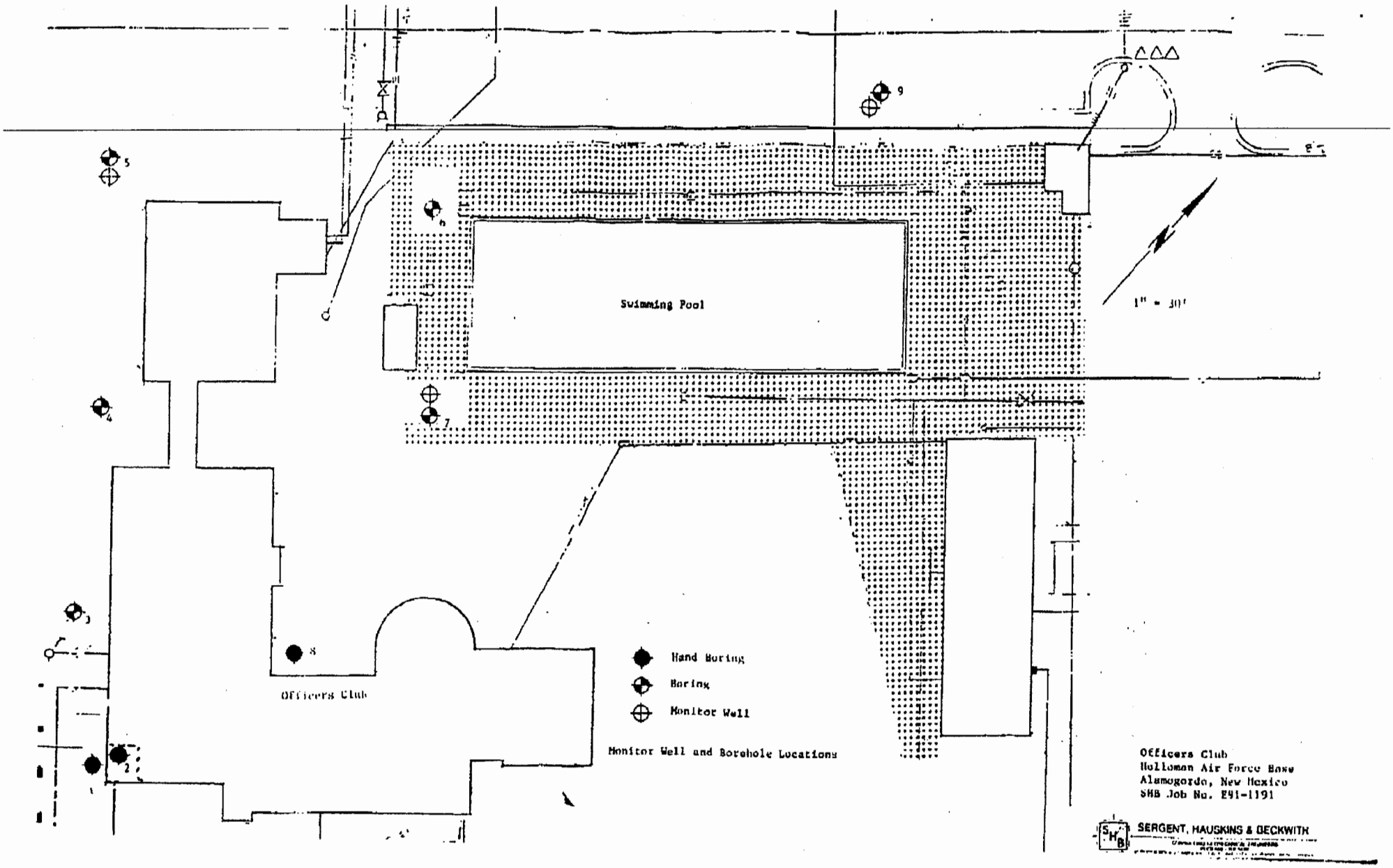
Reviewed by Nicholas T. Korecki
Nicholas T. Korecki, P.E.

JCL:ymg

Copies: Addressee (1)
Howard Kaplan (1)
LGCK - Richard Furrow (5)

REPLY TO: 4700 LINCOLN ROAD, N.E., ALBUQUERQUE, NEW MEXICO 87109

PHOENIX	TUCSON	ALBUQUERQUE	SALT LAKE CITY	EL PASO	RENO/SPARKS	DENVER/LAKEWOOD
(602) 272-6848	(602) 792-2779	(505) 884-0950	(801) 268-0720	(915) 542-0046	(702) 331-2375	(303) 763-8432
FAX 272-7239	FAX 888-0014	FAX 884-1694	FAX 268-0727	FAX 542-0078	FAX 331-4153	FAX 763-8043


Swimming Pool
Officers Club
1" = 30'
Hand Boring
Boring
Monitor Well
Monitor Well and Borehole Locations
Officers Club
Holloman Air Force Base
Alamogordo, New Mexico
SHB Job No. E91-1191
SERGENT, HAUSKINS & BECKWITH

TABULATION OF TEST RESULTS

Job No. E91-1191

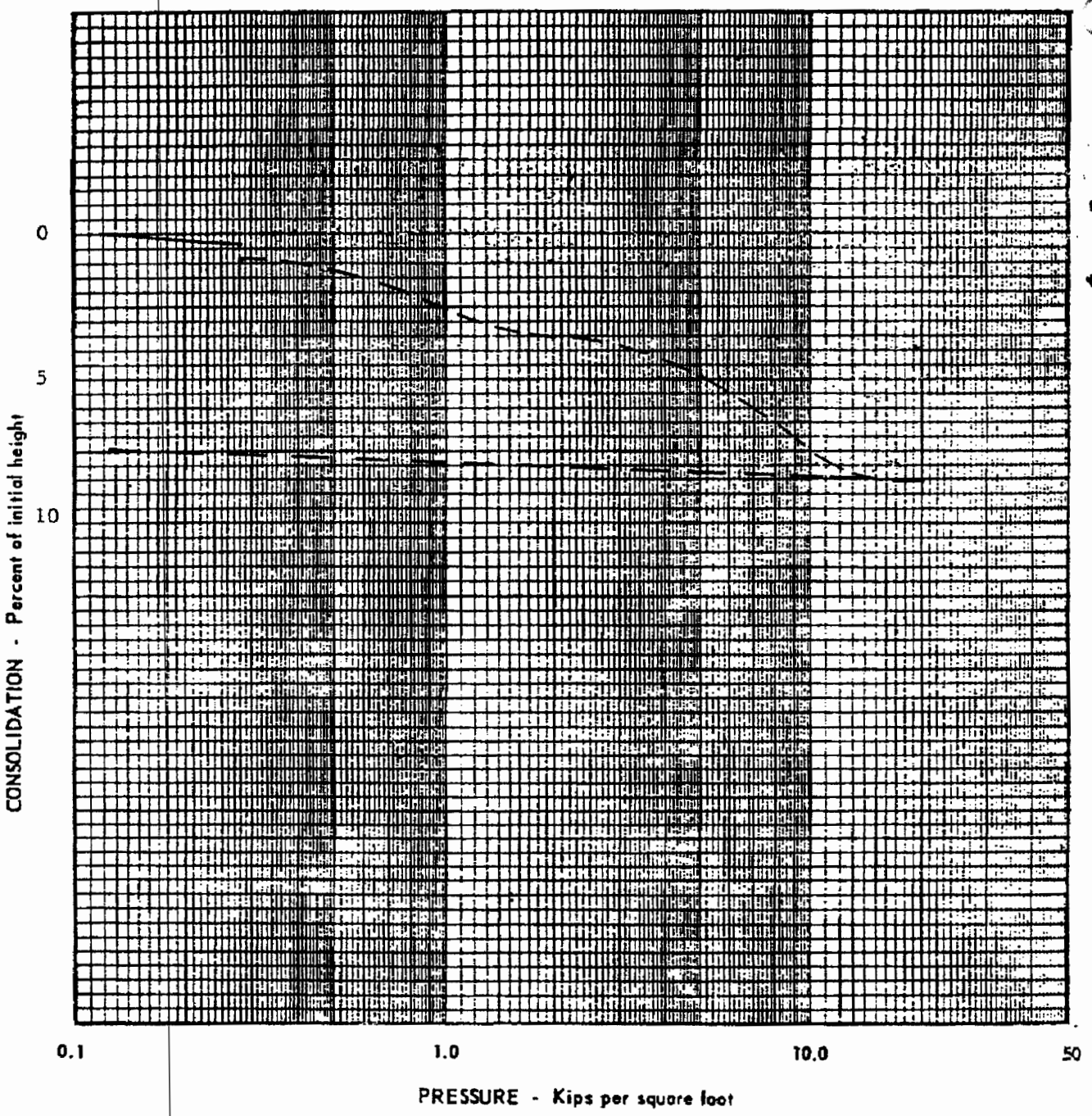
Project: Officers Club - Holloman Air Force Base
Alamogordo, New Mexico

Material Source:

HOLE NO.	LOCATION	DEPTH	UNIFIED CLASS.	LL	PI	SIEVE ANALYSIS - ACCUM. % PASSING 200	100	40	10	4	3/8	1/2	3/4	1	1-1/2	3	MOIST.	LAB NO.
3	See Site Plan	4.5'	CL	39	18	86	94	99	100								38%	91-1
4	"	6.0'	ML	NV	NP	61	77	98	100								26%	91-2
4	"	14.5'	CH	53	28	96	98	99	100								30%	91-3
4	"	19.5'	ML	NV	NP	81	90	91	100								37%	91-4
5	"	2.0'	SM	NV	NP	32	44	81	100								23%	91-5
5	"	14.5'	CL	32	10	91	94	97	99	100							29%	91-6
6	"	6.0'	SM	NV	NP	29	39	73	89	93	96	96	100				14%	91-7
7	"	19.5'	CL	38	18	53	64	78	99	100							37%	91-9
8	"	2.0'	ML	NV	NP	59	67	79	86	90	92	92	92	100			38%	91-10
8	"	3.5'	SM	NV	NP	37	49	76	99	100							22%	91-11

SUMMARY OF CONSOLIDATION TESTS

PROJECT Officers Club - Holloman Air Force Base **JOB NO.** E91-1191



CURVE	SAMPLE	INITIAL DRY DENSITY LBS./CU. FT.	MOISTURE CONTENT % DRY WEIGHT		UNIFIED SOIL CLASSIFICATION
			INITIAL	FINAL	
	Boring No. 4 @ 6'	86.1	27.1	31.7	ML
				--	

SOIL MOISTURE CONDITION

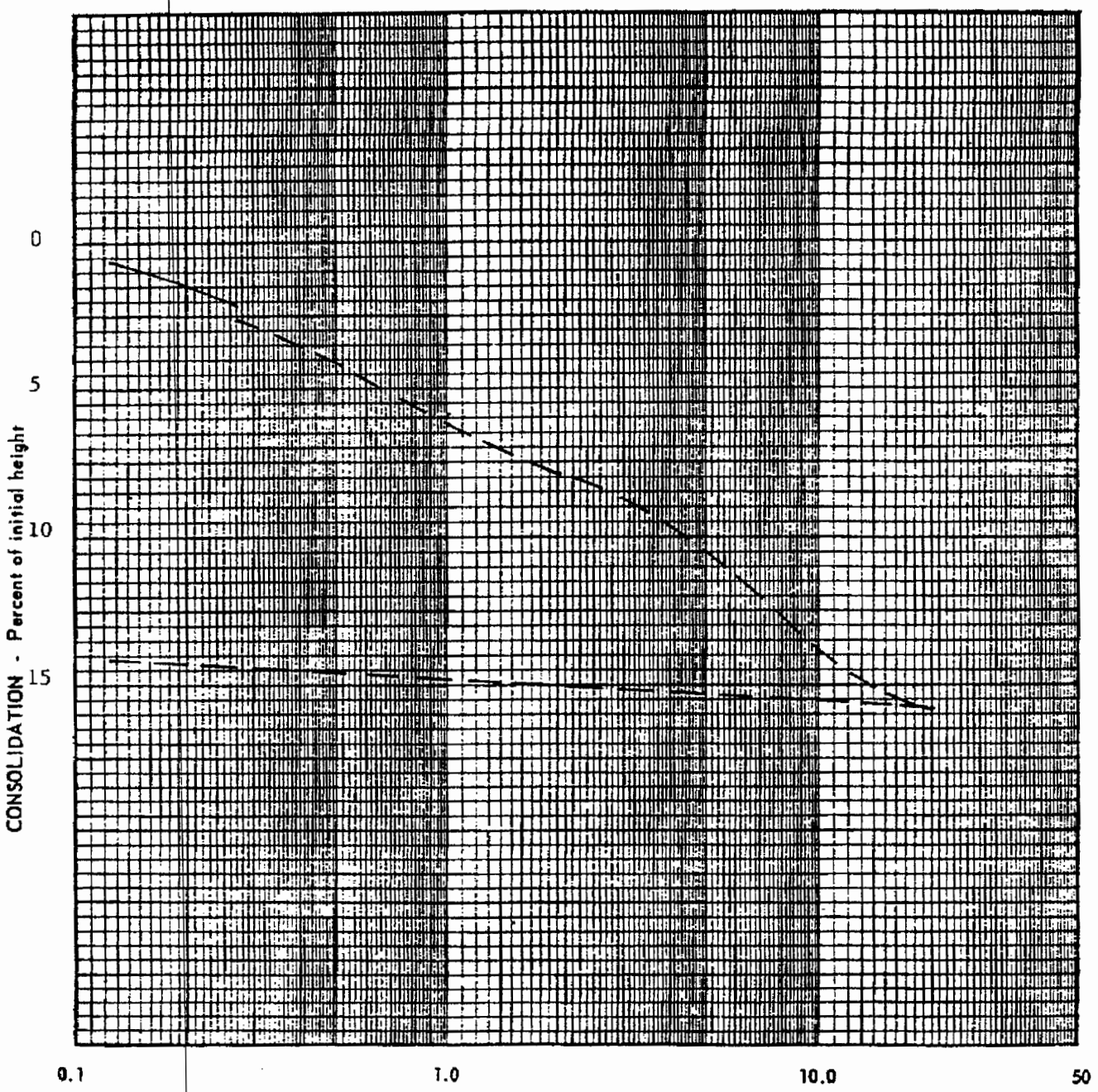
——— INSITU
– – – – SUBMERGED

SERGENT, HAUSKINS & BECKWITH

CONSULTING GEOTECHNICAL ENGINEERS
PHOENIX • TUCSON • ALBUQUERQUE • SANTA FE • SALT LAKE CITY • EL PASO • RENO/SPARKS

SUMMARY OF CONSOLIDATION TESTS

PROJECT Officers Club - Holloman Air Force Base **JOB NO.** E91-1191



CURVE	SAMPLE	INITIAL DRY DENSITY LBS./CU. FT.	MOISTURE CONTENT % DRY WEIGHT		UNIFIED SOIL CLASSIFICATION
			INITIAL	FINAL	
	Boring No. 3 @ 4.5'	89.0	37.7	30.2	CL

SOIL MOISTURE CONDITION

——— INSITU
— — — SUBMERGED

SERGENT, HAUSKINS & BECKWITH

CONSULTING GEOTECHNICAL ENGINEERS
PHOENIX • TUCSON • ALBUQUERQUE • SANTA FE • SALT LAKE CITY • EL PASO • RENO/SPARKS

Appendix A-2

Wilson & Company. June 1992. *Engineering Report for Study to Determine Source of Odor at the Officer's Club SVS 91-0206.*

File:
R.L.

476

.111

ENGINEERING REPORT

FOR

STUDY TO DETERMINE SOURCE OF ODOR

AT THE

OFFICERS CLUB

SVS 91-0206

49 CIVIL ENGINEERING SQUADRON
BUILDING 55
PHONE (505) 479-5491
HOLLOMAN AIR FORCE BASE
NEW MEXICO 88330

WILSON
&COMPANY

PHASE II — FINAL SUBMITTAL

ENGINEERING REPORT

for

Study to Determine Source of Odor

at the

Officers Club
SVS 91-0206

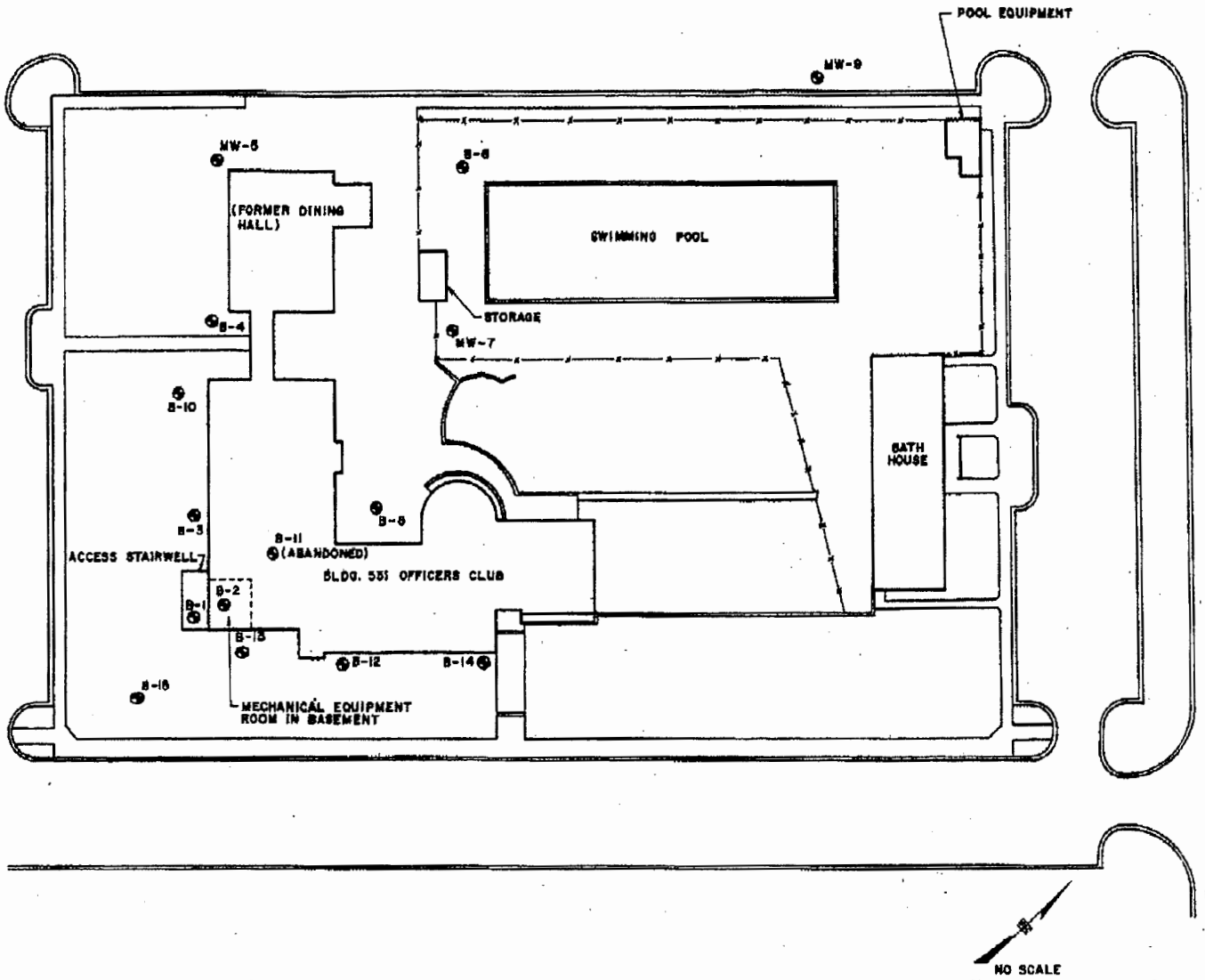
Address all communication regarding this work to:

Wilson & Company
P.O. Box 1640
Salina, Kansas 67402-1640
(913) 827-0433

June 1992
(91-533)

REGISTERED PROFESSIONAL ENGINEER
Herbert H. Bassett
4826
STATE OF NEW MEXICO

WILSON
&COMPANY



NOTES:

1. THE DIFFERENCE BETWEEN B-SERIES BORINGS AND THE MW-SERIES IS THAT THE MW-SERIES WERE COMPLETED AS MONITORING WELLS FOR POSSIBLE FUTURE USE.
2. B-1, B-2 AND B-5 WERE HAND AUGERED.
3. PHASE I BORINGS INCLUDE B-1, B-2, B-3, B-4, MW-5, B-6, MW-7, B-8, MW-9.
4. PHASE II BORINGS INCLUDE B-10, B-12, B-13, B-14, B-15.

WARRIOR & COMPANY

HOLLOMAN AFB, NEW MEXICO
PARTIAL SITE PLAN
TESTHOLE LOCATIONS

DRWN.	CK.	APR.
BLJ	DFP	HHB
FILE 91-533	DATE JUNE 92	PLATE II-1

TABLE IV-1 RESULTS OF STANDARD WATER ANALYSES

	LOCATION													
Parameter, Units	B1	B2	B3	B4	MW5	B6	MW7	B8	MW9	B-10	B-12	B-13	B-14	B-15
Alkalinity, mg/l	262	292	472	248	352	220	220	240	216	208	240	239	208	253
Chloride, mg/l	56	62	68	39	350	65	43	50	90	87	91	74	87	85
Fluoride, mg/l	1.1	2.0	2.9	1.6	2.2	1.1	1.1	1.3	2.2	0.8	1.8	2.9	1.9	1.3
Nitrate/Nitrite, mg/l	ND	ND	0.4	0.5	0.3	0.5	0.2	0.3	1.1	0.3	0.2	0.5	1.7	0.3
Orthophosphate, mg/l	0.1	0.1	ND	ND	0.1	ND	0.2	0.3	ND	ND(0.1)	ND(0.1)	ND(0.1)	0.2	ND(0.1)
pH	6.9	6.9	6.9	7.0	6.9	7.0	7.0	7.0	7.3	7.3	7.2	7.3	7.3	7.1
Spec. Conductance	2,840	2,550	2,580	2,320	2,320	2,750	2,070	2,150	2,320	2,960	2,350	2,920	2,980	3,050
Sulfate, mg/l	1,300	1,200	2,450	1,600	1,600	1,950	1,400	1,620	1,550	1,060	1,420	1,370	1,680	1,510
Sulfide, mg/l	ND	0.2	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
Calcium, mg/l	2,800	890	790	730	1,400	790	930	3,300	1,020	3,500	5,300	2,200	1,200	900
Iron, mg/l	117	102	5	2.77	23.6	5.18	6.7	127	5.76	120	200	90	50	14
Magnesium, mg/l	104	69.7	151	93.9	139	62.7	63.6	210	74.5	200	150	60	100	70
Manganese, mg/l	1.5	0.01	0.44	0.11	0.59	0.12	0.2	2.7	0.15	2.78	1.89	0.78	0.66	0.26
Potassium, mg/l	21.1	7.3	9.6	9.7	24.6	14.2	19.4	41	8.1	30	42	17	13	7
Silicon, mg/l	150	41.9	46.9	37.9	128	36.1	33.3	152	43.2	20	80	120	30	50
Sodium, mg/l	76.9	84.5	113	68.9	75	84.3	76.7	79.3	116	70	100	70	54	60

ND = None detected with the detection limit in parentheses
NA = Not analyzed

TABLE IV-2 RESULTS OF VOLATILE ORGANICS ANALYSES

Parameter, Units	Location B-1	B-2	B-3	B-13	B-15
Chloroform, µg/l	11	ND	9.1	1	ND
Methylene Chloride, µg/l	ND	8.6	ND	ND	ND
Trichloroethene, µg/l	ND	34	ND	ND	ND
Ethylbenzene, µg/l	ND	ND	ND	ND	2

ND = None detected at the particular method detection limit

TABLE IV-3 RESULTS OF ORGANIC HALOGEN ANALYSES

Location	TOX Concentration, µg/l
B-1	37
B-2	456
B-3	58
B-4	31
MW-5	33
B-6	68
MW-7	<10
B-8	*
MW-9	<10

*No result due to sample breakage during shipment

TABLE IV-4 RESULTS OF SULFUR COMPOUNDS IN AIR ANALYSES

	Location			
AtmAA Lab No.:	93021-3	93021-4	93021-2	Equipment Room
Sample I.D.:	B-1	B-2	B-3	Stairway Sump
Components:	(Concentration in ppb, v/v)			
Hydrogen sulfide	<200	<200	<200	70,000
Carbonyl sulfide	<0.05	<0.05	<0.05	<500
Methyl mercaptan	<0.05	<0.05	<0.05	<100
Ethyl mercaptan	<0.05	<0.05	<0.05	<100
Dimethyl sulfide	<0.05	<0.05	<0.05	<100
Carbon disulfide	0.02	<0.02	<0.02	<500
Dimethyl disulfide	<0.02	<0.02	<0.02	<100

* Phase II analyses by West Coast Analytical Services

TABLE IV-5 RESULTS OF VOLATILE ORGANICS IN AIR ANALYSES

Parameter, Units	Location B-1	B-2	B-3
Chloroform, MG/M3	0.05	ND	ND
Trichloroethene, MG/M3	ND	0.09	ND
Acetone, MG/M3	ND	ND	2
Ethylbenzene, MG/M3	ND	ND	0.08
A-Methyl-2-Pentanone, MG/M3	ND	ND	0.1

ND = None detected at the particular method detection limit.

TABLE IV-6 PROBABLE OTHER ORGANICS IN AIR

Parameter, Units	Location B-1	B-2	B-3
3.6-Dimethyl Octane, MG/M3	0.5	n/a	n/a
1-ethyl-2,3-Dimethylcyclohexane, MG/M3	0.4	n/a	n/a
6-methyl Dodecane, MG/M3	12	2	n/a
2-butyl-1,1,3-Trimethylcyclohexane,MG/M3	4	0.6	n/a
Trichlorofluoromethane, MG/M3	n/a	0.7	n/a
3,6-Dimethyl Octane, MG/M3	n/a	n/a	0.1
Propylcyclohexane, MG/M3	n/a	n/a	0.3

Note: Results are approximate concentration, hence they are considered probable.

TABLE IV-7 RESULTS OF DIESEL RANGE ORGANICS ANALYSES (MODIFIED EPA METHOD 8015)

	B-10	B-12	B-13	B-14	B-15	13 (SOIL)
Fuel Hydrocarbons, mg/l	32	25	2	<1	130	MG/KG
Hydrocarbon Range	C10-C28	C10-C28	C12-C22	-	C10-C28	C10-C32
Hydrocarbons Quantitated	DIESEL	DIESEL	DIESEL	-	DIESEL	DIESEL
Sulfide, mg/kg	NA	NA	NA	NA	NA	2.4

Appendix A-3

Radian Corporation. May 1993. *Final Sample and Quality Control Summary Report (SQCSR) Officers Club Soil Investigation, Holloman Air Force Base, New Mexico.*

DCN 93-269-069-33-03
RCN 269-069-33-05

SAMPLING AND QUALITY CONTROL SUMMARY REPORT (SQCSR)

OFFICERS CLUB SOIL INVESTIGATION HOLLOMAN AIR FORCE BASE, NM

Final

Prepared for:

49 SG/CEV
Holloman Air Force Base, NM

Prepared by:

Radian Corporation
8501 North MoPac Blvd.
P.O. Blx 201088
Austin, Texas 78720-1088

Under Contract No. DACW45-91-D-0018 with:

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

May 1993

Table 2-1

Summary of Soil Samples Collected

Boring ID	Analytical Parameters					
	TPH-H	TPH-L	Bacteria	Sulfide	Physical	Perm
VB-1	4	2	2	1	1	1
VB-2	4	0	3	1	2	2
VB-3	4	0	2	0	0	0
VB-4	4	1	2	0	1	1
AB-1	3	1	2	1	0	1
AB-2	3	1	2	1	0	1
TOTAL	22	5	13	4	4	6

Table 2-2

Number and Type of Soil QA/QC Samples for TPH Analyses

Parameter	QC (RAS) Samples		QA (MRD) Samples
	Field Duplicates	MS/MSD Samples	QA Duplicate Samples
TPH-Heavy and moisture content	20	2	2
TPH-Light and moisture content	1	1	1

Table 3-1

Results of TPH-H Analysis

Sample ID	Result	Qualifier	Units	Det Limit	Analyte	Depth BGL (ft)
OC-A1-05	2,700	B	µg/g	65	Diesel	18
	ND		µg/g	130	Jet fuel	
	ND		µg/g	130	Kerosene	
OC-A1-07	2,900	B	µg/g	62	Diesel	22
	ND		µg/g	120	Jet fuel	
	ND		µg/g	120	Kerosene	
OC-A1-08	1,300	B	µg/g	29	Diesel	25
	ND		µg/g	57	Jet fuel	
	ND		µg/g	57	Kerosene	
OC-A2-02	12,000	B	µg/g	290	Diesel	18
	ND		µg/g	590	Jet fuel	
	ND		µg/g	590	Kerosene	
OC-A2-06	6,500	B	µg/g	150	Diesel	22
	ND		µg/g	290	Jet fuel	
	ND		µg/g	290	Kerosene	
OC-A2-08	8,100	B	µg/g	160	Diesel	25
	ND		µg/g	320	Jet fuel	
	ND		µg/g	320	Kerosene	
OC-SUMP-01	3,200	B	µg/L	100	Diesel	10
	ND		µg/L	200	Jet fuel	
	ND		µg/L	200	Kerosene	
OC-V1-02	6,000	B	µg/g	140	Diesel	11
	ND		µg/g	280	Jet fuel	
	ND		µg/g	280	Kerosene	
OC-V1-04	2,900	B	µg/g	130	Diesel	16
	ND		µg/g	250	Jet fuel	
	ND		µg/g	250	Kerosene	
OC-V1-06	1,000	B	µg/g	32	Diesel	21
	ND		µg/g	64	Jet fuel	

Table 3-1

(Continued)

Sample ID	Result	Qualifier	Units	Det Limit	Analyte	Depth BGL (ft)
	ND		µg/g	64	Kerosene	
OC-V1-09	720	B	µg/g	32	Diesel	26
	ND		µg/g	64	Jet fuel	
	ND		µg/g	64	Kerosene	
OC-V2-03	ND (13)	BG@	µg/g	6.4	Diesel	10
	ND		µg/g	13	Jet fuel	
	ND		µg/g	13	Kerosene	
OC-V2-05	300	B	µg/g	6.3	Diesel	16
	ND		µg/g	13	Jet fuel	
	ND		µg/g	13	Kerosene	
OC-V2-08	ND (15)	BG@	µg/g	5.8	Diesel	22
	ND		µg/g	12	Jet fuel	
	ND		µg/g	12	Kerosene	
OC-V2-09	ND (12)	BG@	µg/g	5.9	Diesel	26
	ND		µg/g	12	Jet fuel	
	ND		µg/g	12	Kerosene	
OC-V3-02	1,500	B	µg/g	72	Diesel	17
	ND		µg/g	140	Jet fuel	
	ND		µg/g	140	Kerosene	
OC-V3-04	2,700	B	µg/g	130	Diesel	22
	ND		µg/g	260	Jet fuel	
	ND		µg/g	260	Kerosene	
OC-V3-05	2,100	B	µg/g	64	Diesel	
	ND		µg/g	130	Jet fuel	
	ND		µg/g	130	Kerosene	
OC-V3-07	130	B	µg/g	6	Diesel	27
	ND		µg/g	12	Jet fuel	
	ND		µg/g	12	Kerosene	
OC-V3-08	1,200	B	µg/g	63	Diesel	30

Table 3-1

(Continued)

Sample ID	Result	Qualifier	Units	Det Limit	Analyte	Depth BGL (ft)
	ND		µg/g	130	Jet fuel	
	ND		µg/g	130	Kerosene	
OC-V4-02	ND (11)	BG@	µg/g	6.6	Diesel	10
	ND		µg/g	13	Jet fuel	
	ND		µg/g	13	Kerosene	
OC-V4-05	ND (12)	BG@	µg/g	6.2	Diesel	17
	ND		µg/g	12	Jet fuel	
	ND		µg/g	12	Kerosene	
OC-V4-08	ND (16)	BG@	µg/g	6.1	Diesel	22
	ND		µg/g	12	Jet fuel	
	ND		µg/g	12	Kerosene	
OC-V4-09	ND (14)	BG@	µg/g	6.3	Diesel	
	ND		µg/g	13	Jet fuel	
	ND		µg/g	13	Kerosene	
OC-V4-10	ND (16)	BG@	µg/g	5.8	Diesel	26
	ND		µg/g	12	Jet fuel	
	ND		µg/g	12	Kerosene	

B = Analyte detected in method blank.
G = Indicates an estimated value since the pattern does not exactly match the standard profile.
@ = Estimated result. Less than 5 times detection limit.

( ) = Reported detection that was adjusted due to method blank contamination.

Table 3-2

Results of TPH-L Analysis

Sample ID	Result	Qualifier	Units	Detect Limit	Analyte	Depth BGL (ft)
OC-A1-02	ND		µg/kg	410	Benzene	12
	ND		µg/kg	410	Ethylbenzene	
	ND		µg/kg	410	Toluene	
	ND		µg/kg	680	Xylenes (total)	
	ND		µg/kg	68000	Gasoline	
OC-A2-04	ND		µg/kg	360	Benzene	20
	ND		µg/kg	360	Ethylbenzene	
	ND		µg/kg	360	Toluene	
	ND		µg/kg	600	Xylenes (total)	
	ND		µg/kg	60000	Gasoline	
OC-A2-05	ND		µg/kg	180	Benzene	20
	ND		µg/kg	180	Ethylbenzene	
	ND		µg/kg	180	Toluene	
	ND		µg/kg	300	Xylenes (total)	
	ND		µg/kg	30000	Gasoline	
OC-SUMP-02	ND		µg/L	0.3	Benzene	10
	ND		µg/L	0.3	Ethylbenzene	
	ND		µg/L	0.3	Toluene	
	ND		µg/L	0.5	Xylenes (total)	
	ND		µg/L	50	Gasoline	
OC-V1-03	ND		µg/kg	41	Benzene	11
	ND		µg/kg	41	Ethylbenzene	
	ND		µg/kg	41	Toluene	
	ND		µg/kg	69	Xylenes (total)	
	ND		µg/kg	6900	Gasoline	
OC-V3-06	2100	C@	µg/kg	1600	Ethylbenzene	27
	ND		µg/kg	1600	Benzene	
	ND		µg/kg	1600	Toluene	

Table 3-2

(Continued)

Sample ID	Result	Qualifier	Units	Detect. Limit	Analyte	Depth Bgl. (ft)
	ND		µg/kg	2600	Xylenes (total)	
	ND		µg/kg	260000	Gasoline	
OC-V4-04	ND		µg/kg	41	Benzene	17
	ND		µg/kg	41	Ethylbenzene	
	ND		µg/kg	41	Toluene	
	ND		µg/kg	68	Xylenes (total)	
	ND		µg/kg	6800	Gasoline	

C = Confirmed on second column.
@ = Estimated result. Less than 5 times detection limit.

Table 3-3

Results of Total Sulfide Analysis

Sample ID	Result	Qualifier	Units	Det Lim	Analyte	Depth
OC-A1-06	48	@	mg/kg	30	Sulfide	18
OC-A2-03	48	@	mg/kg	30	Sulfide	18
OC-V1-07	69	@	mg/kg	29	Sulfide	21
OC-V2-06	190		mg/kg	34	Sulfide	16

@ = Estimated result. Less than 5 times detection limit.

Table 3-5

Results of Bacterial Enumeration

Sample ID	Heterotrophic Bacteria (CFU/gm)*	Hydrocarbon Utilizing Bacteria (CFU/gm)	Sulfate Reducing Bacteria (MPN/gm)**
OC-V1-01	$7.0x10^4$	$4.1x10^3$	$9x10^3$
OC-V1-05	NG	NG	$<3x10^3$
OC-V2-01	$4.9x10^6$	$1.2x10^5$	$1.50x10^5$
OC-V2-04	$8.8x10^3$	NG	$2.3x10^4$
OC-V2-07	NG	NG	$<3x10^3$
OC-V3-01	$5.9x10^4$	$5.4x10^3$	$<3x10^3$
OC-V3-09	NG***	NG	$<3x10^3$
OC-V4-01	$1.1x10^4$	NG	$<3x10^3$
OC-V4-06	NG	NG	$<3x10^3$
OC-A1-01	$1.4x10^5$	NG	$<3x10^3$
OC-A1-05	$3.1x10^5$	NG	$4.60x10^5$
OC-A2-01	$2.2x10^5$	$8.5x10^3$	$2.3x10^4$
OC-A2-07	NG	$9.0x10^3$	$<3x10^3$

* Colony Forming Units per gram of soil (CFU/gm) It is assumed that one microorganism multiplies and gives rise to one colony.
** Most probable number of organisms per gram of soil.
*** No Growth (NG)

Table 3-6

Summary of Geotechnical Results

Sample ID	U.S. Classification (USCS)	In-Situ Moisture (%)	Dry Density (pcf)	Permeability (cm/sec)	Depth Interval (ft)
OC-V2-02	ML (sandy silt)	20	78.5	$1.8x10^{-2}$	4 - 5
OC-V2-10	CL (lean clay)	28.1	95.8	$1.0x10^{-1}$	10 - 12
OC-A1-04	NT	27.6	117.5	3.4x10	14 - 15
OC-V4-07	SM (silty sand)	34.9	NT	$8.5x10^{-7}$	17 - 18
OC-V1-08	ML (sandy silt)	27.7	100.5	$1.5x10^{-4}$	22 - 23
OC-A2-02	ND	21	96.3	$1.5x10^{-4}$	26 - 27

NT - Not Tested.

Table 5-1

Officer's Club Water Quality Data

Parameter, Units	Location													
	B1	B2	B3	B4	MW5	B6	MW7	B8	MW9	B-10	B-12	B-13	B-14	B-15
Alkalinity, mg/l	262	292	472	248	352	220	220	240	216	208	240	239	208	253
Chloride, mg/l	56	62	68	39	350	65	43	50	90	87	91	74	87	85
Fluoride, mg/l	1.1	2.0	2.9	1.6	2.2	1.1	1.1	1.3	2.2	0.8	1.8	2.9	1.9	1.3
Nitrate/Nitrite, mg/l	ND	ND	0.4	0.5	0.3	0.5	0.2	0.3	1.1	0.3	0.2	0.5	1.7	0.3
Orthophosphate, mg/l	0.1	0.1	ND	ND	0.1	ND	0.2	0.3	ND	ND(0.1)	ND(0.1)	ND(0.1)	0.2	ND(0.1)
pH	6.9	6.9	6.9	7.0	6.9	7.0	7.0	7.0	7.3	7.3	7.2	7.3	7.3	7.1
Spec. Conductance	2,840	2,550	2,580	2,320	2,320	2,750	2,070	2,150	2,320	2,960	2,350	2,920	2,980	3,050
Sulfate, mg/l	1,300	1,200	2,450	1,600	1,600	1,950	1,400	1,620	1,550	1,060	1,420	1,370	1,680	1,510
Sulfide, mg/l	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
Calcium, mg/l	2,800	890	790	730	1,400	790	930	3,300	1,020	3,500	5,300	2,200	1,200	900
Iron, mg/l	117	102	5	2.77	23.6	5.18	6.7	127	5.76	120	200	90	50	14
Magnesium, mg/l	104	69.7	151	93.9	139	62.7	63.6	210	74.5	200	150	60	100	70
Manganese, mg/l	1.5	0.01	0.44	0.11	0.59	0.12	0.2	2.7	0.15	2.78	1.89	0.78	0.66	0.26
Potassium, mg/l	21.1	7.3	9.6	9.7	24.6	14.2	19.4	41	8.1	30	42	17	13	7
Silicon, mg/l	150	41.9	46.9	37.9	128	36.1	33.3	152	43.2	20	80	120	30	50
Sodium, mg/l	76.9	84.5	113	68.9	75	84.3	76.7	79.3	116	70	100	70	54	60

Source: Wilson and Company, 1991

ND = None detected with the detection limit in parentheses.
NA = Not analyzed.

Table 5-2

Composited Results of Biological Screening

Sample ID	NH_4-N (mg/kg)	PO_4-P (mg/kg)	NO_3-N (mg/kg)	Heterotrophic Bacteria (CFU/gm)	Hydrocarbon Bacteria (CFU/gm)	Sulfate Reducing Bacteria (MPN/gm)	Diesel[4] (mg/kg)	Depth (ft)
A2-07	<23[1]	0.07	<0.75	NG[2]	9.0×10^3	$<3 \times 10^3$	8100	22
V3-09	<23	<0.05	<0.75	NG	NG	$<3 \times 10^3$	1200	30
V1-05	<23	0.14	<0.75	NG	NG	$<3 \times 10^3$	2900	16
A1-05	34	<0.05	<0.75	3.1×10^5	NG	4.6×10^5	2700	18

1 <- Less than detection limit.

2 No Growth (NG).

3 Colony Forming Units per gram of soil (CFU/gm) It is assumed that one microorganism multiplies and gives rise to one colony.

4 Values from samples taken within the same borehole and general depth as the listed sample.

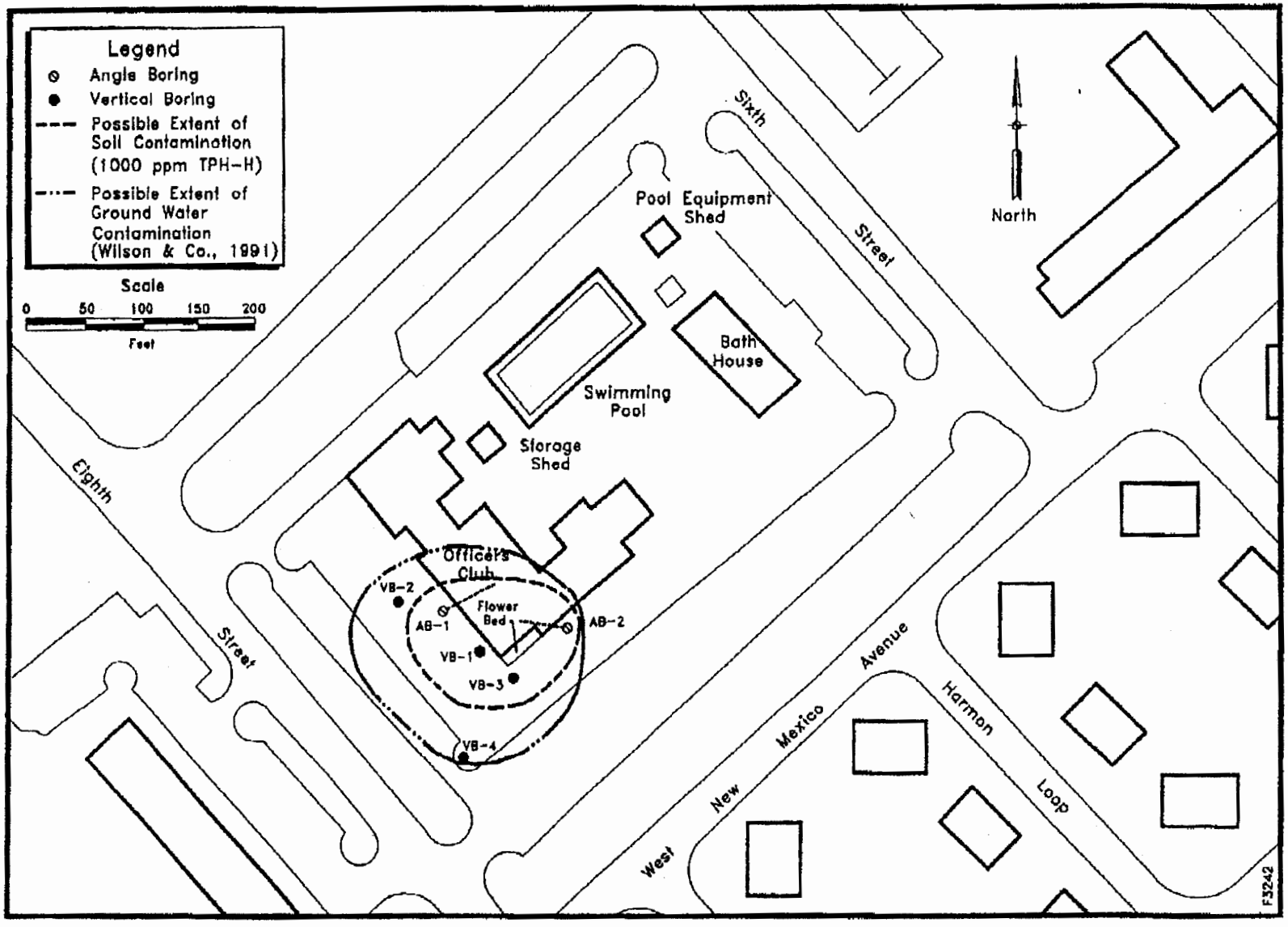


Figure 5-1. Estimated Extent of Soil and Groundwater Contamination

Appendix A-4

Foster Wheeler Environmental Corporation and Groundwater Technology, Inc. October 1996. *Draft Final Air Sparging and Soil Vapor Extraction Pilot Test Report for Officers Club Site SS-57, Holloman Air Force Base, New Mexico.*

DRAFT FINAL
AIR SPARGING AND SOIL VAPOR EXTRACTION PILOT TEST REPORT FOR OFFICERS CLUB SITE SS-57 HOLLOMAN AIR FORCE BASE, NEW MEXICO

Prepared for:

49 CES/CEV
Holloman Air Force Base, NM

and

HQ ACC/ESVR
Langley Air Force Base, VA

Prepared by:

Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228-1824

and

Groundwater Technology
Government Services, Inc.
2501 Yale Blvd., S.E., #204
Albuquerque, NM 87106

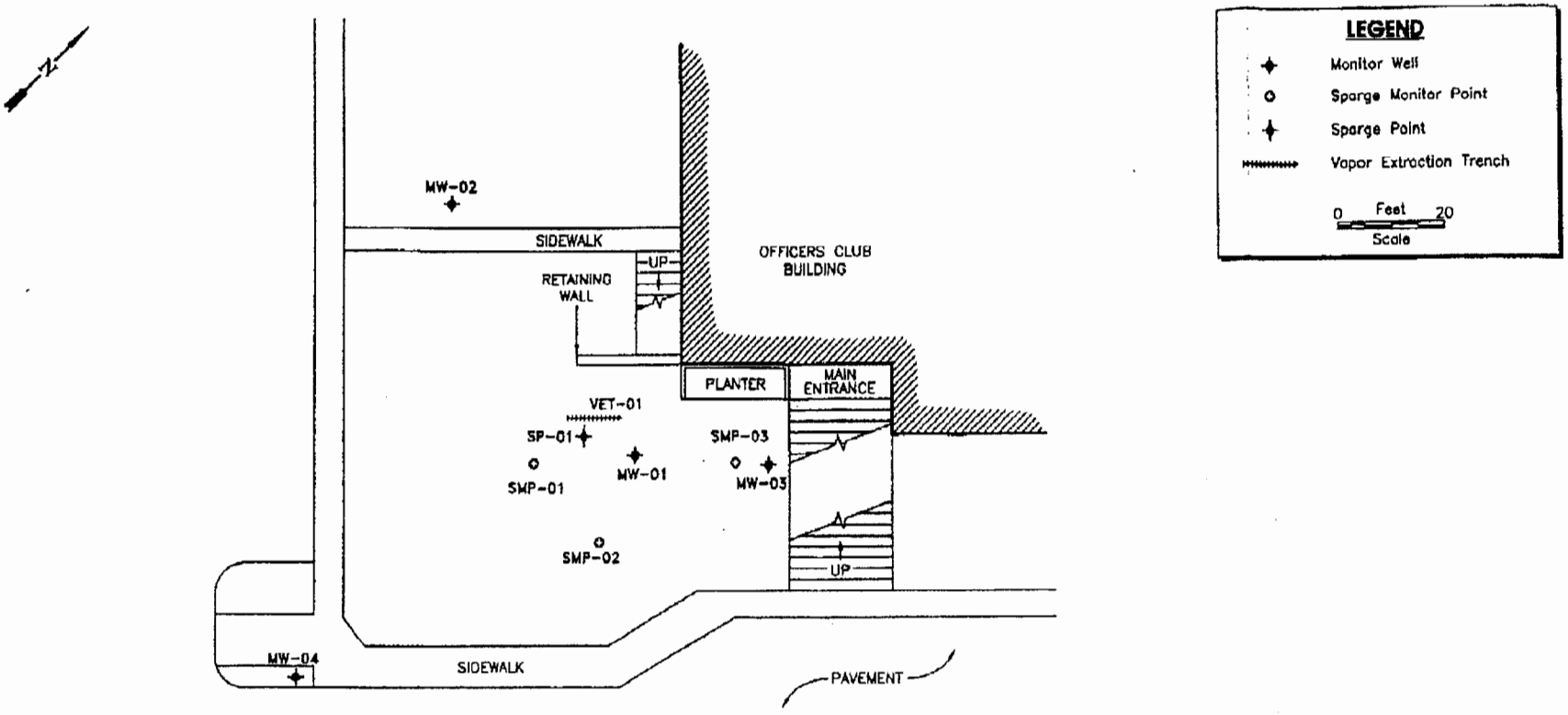
Under Contract No. DACW45-94-D-0003
Delivery Order No. 8, Work Authorization Directive 35:

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

October 1996

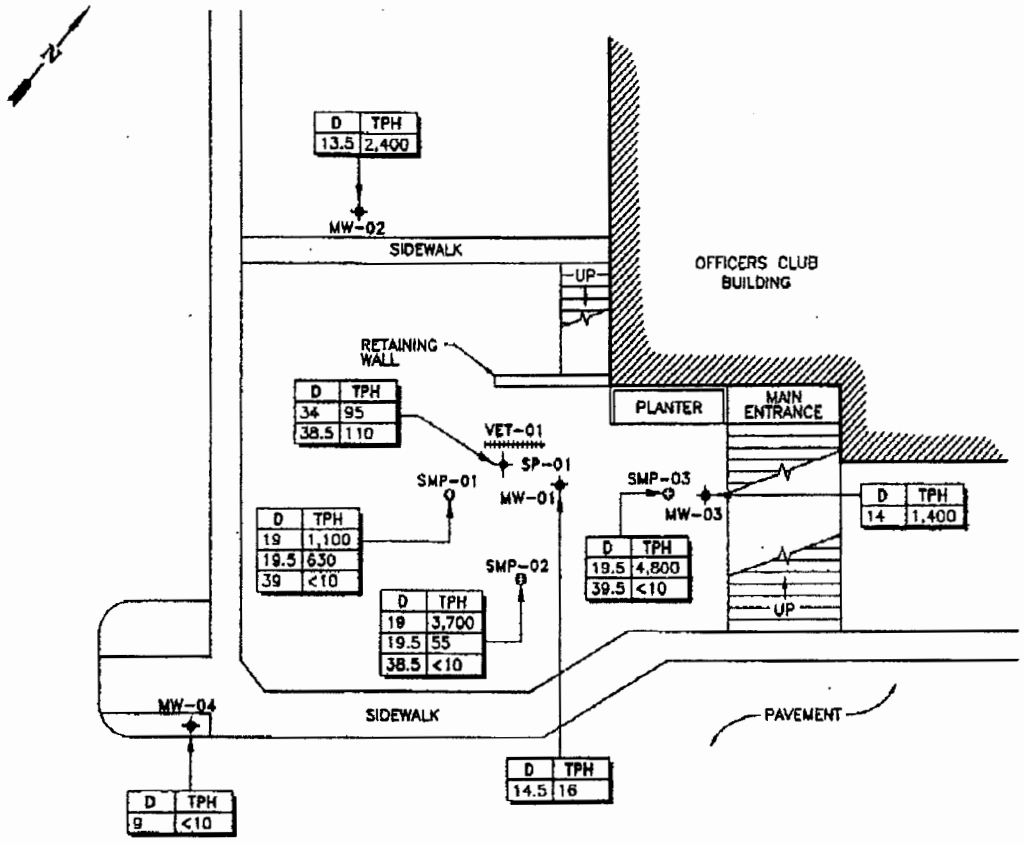
HAFB-24/DO8W29wp.doc

FIGURES



2208-SM, 9/26/96 (1:20)

Figure 3: Site SS-57, Officers Club Site Map



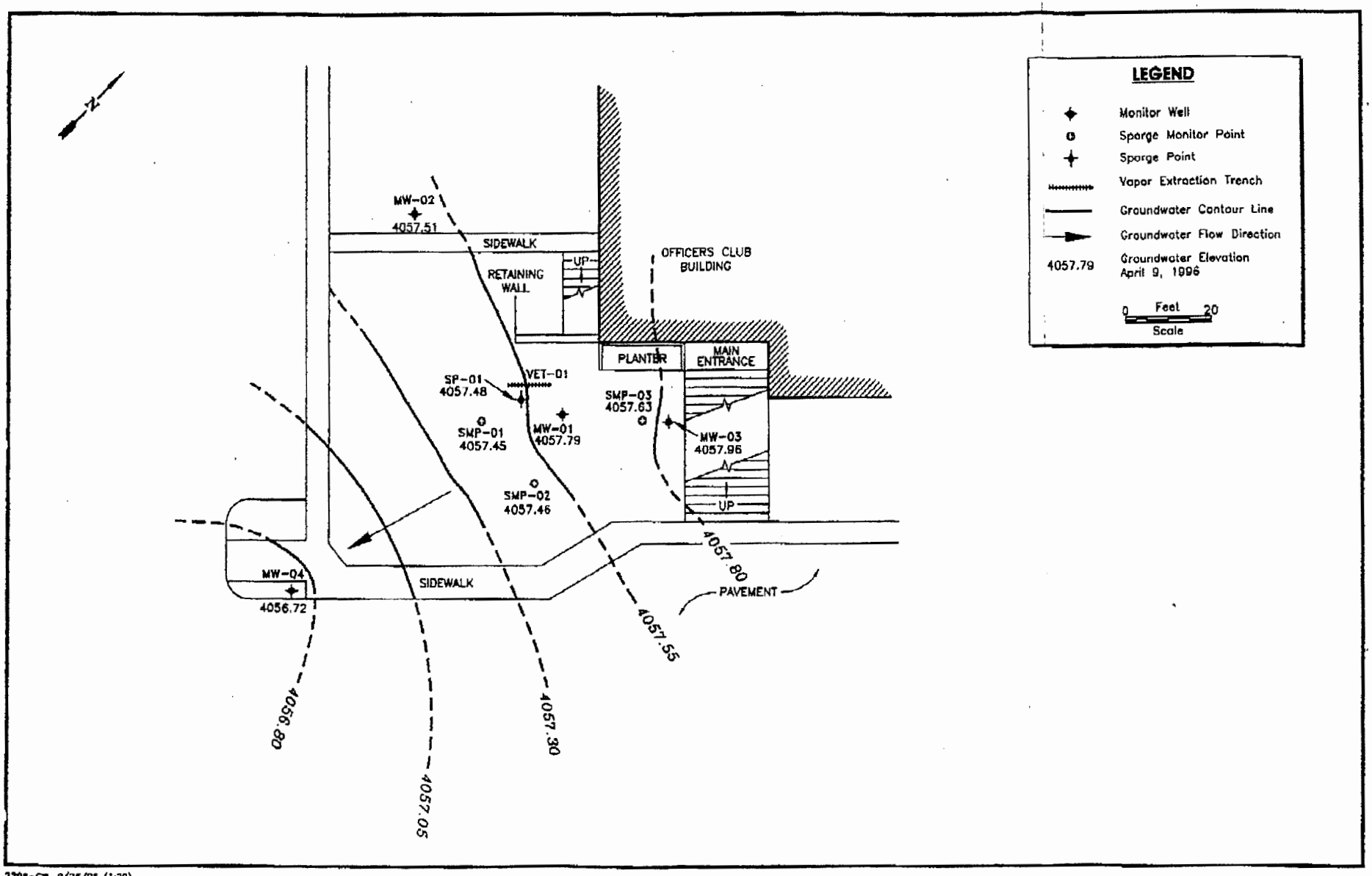
LEGEND

- Monitor Well
- Sparge Monitor Point
- Sparge Point
- Vapor Extraction Trench
- D — Depth Of Soil Sample Below Ground Surface (Feet)
- TPH — Concentration Of Total Petroleum Hydrocarbons as Diesel Fuel in Soil (mg/kg)
- < — Analyte Not Indicated Above Stated Reporting Limit

0 Feet 20
Scale

2208B45X, 9/27/96 (1:20)

Figure 4: Site SS-57, TPH Distribution in Soil
March 1996



2208-GW, 9/26/96 (1:20)

Figure 5- Site SS-57, Groundwater Gradient Map, Based on Data From April 9, 1996 Gauging

Figure 6: Induced Vacuum Versus Distance During Test Number Three (140 min.) on VET-01 at an Applied Vacuum of 22 Inches Water Column

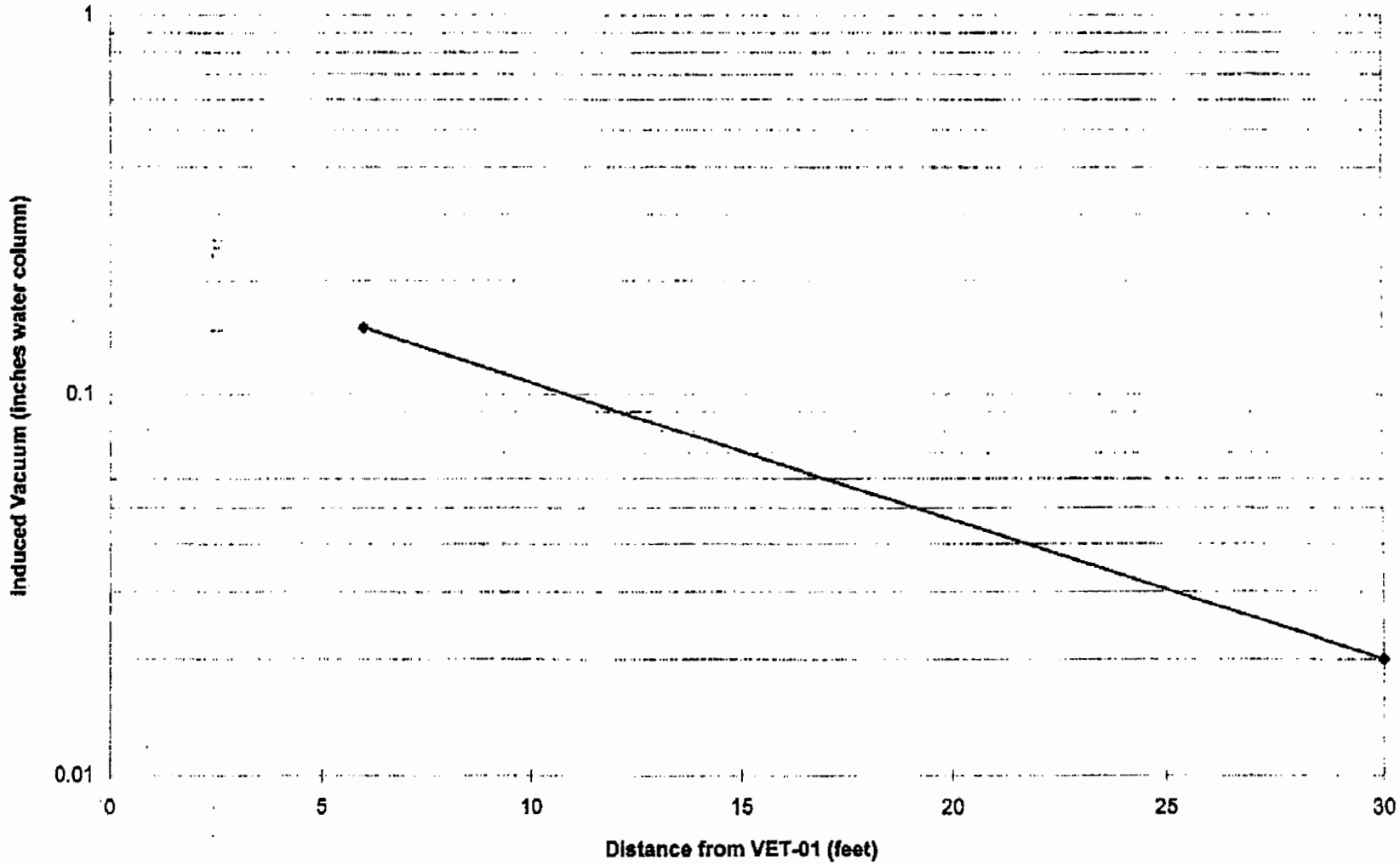


Figure 7: Wellhead Vacuum Versus Flowrate During Test Number Three on VET-01

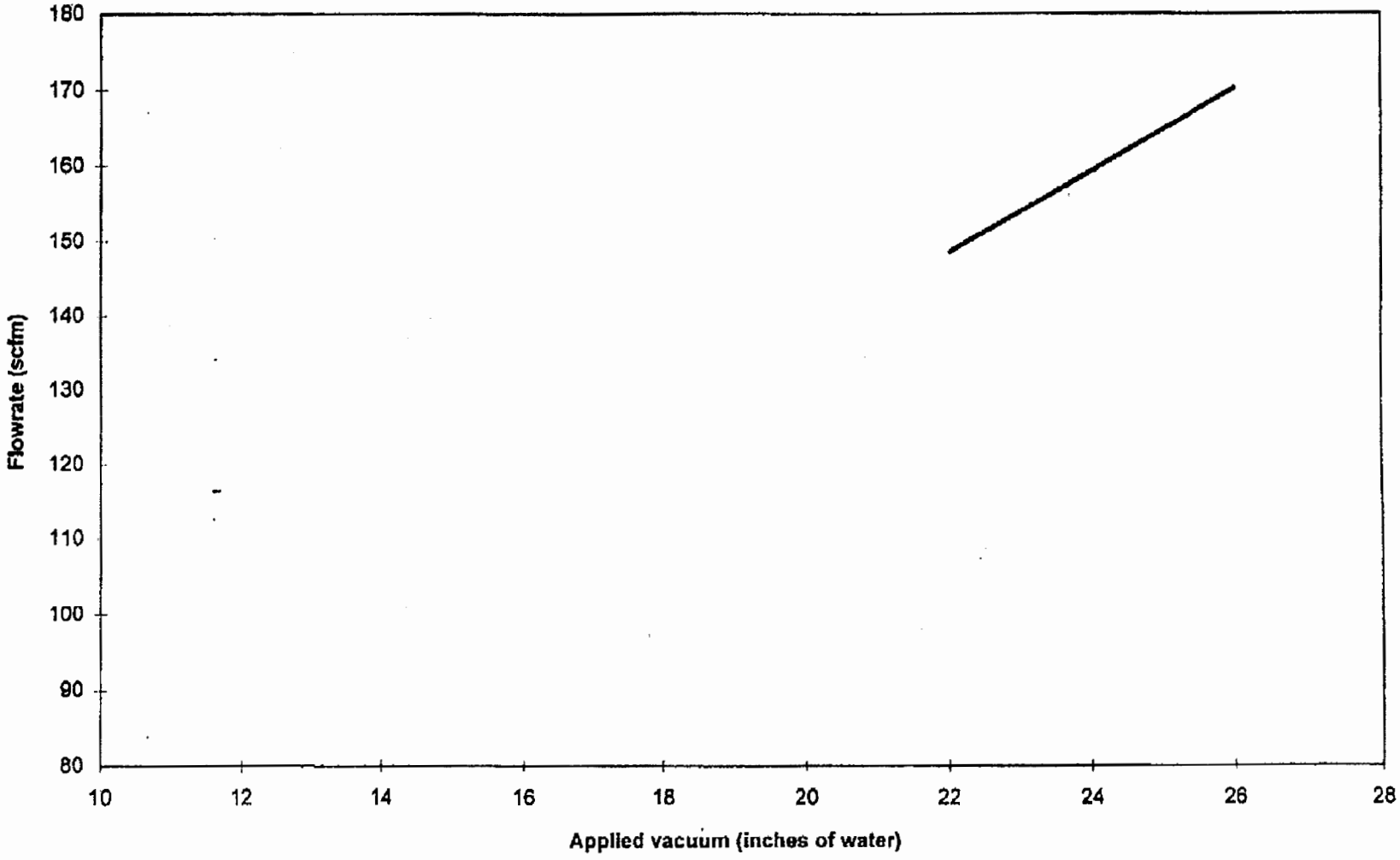


Figure 8: Extracted Hydrocarbon Concentrations vs Time for Test Number Three on VET-01

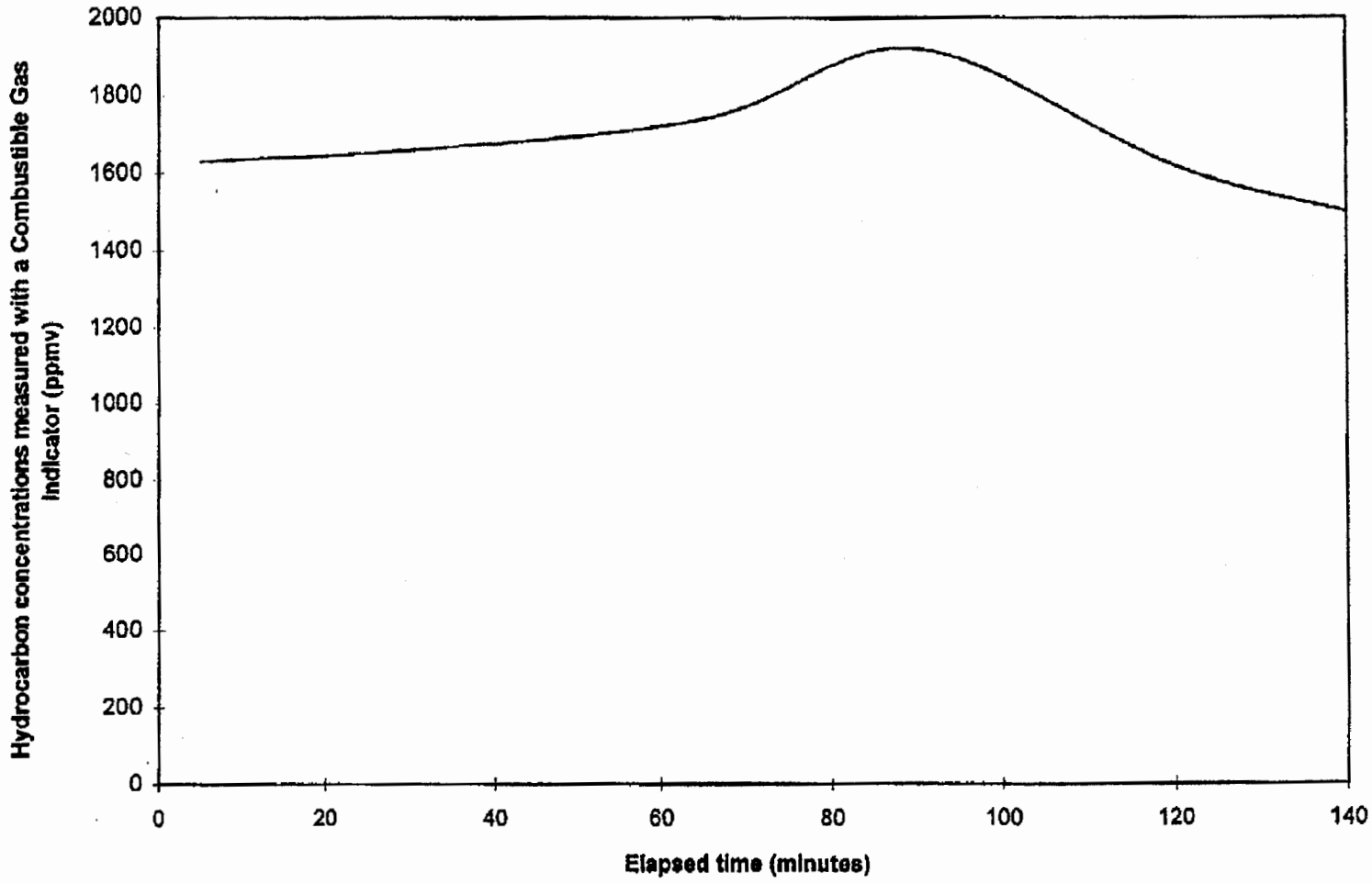


Figure 9: Groundwater Elevation Versus Distance During Test Number 5 After 190 Minutes

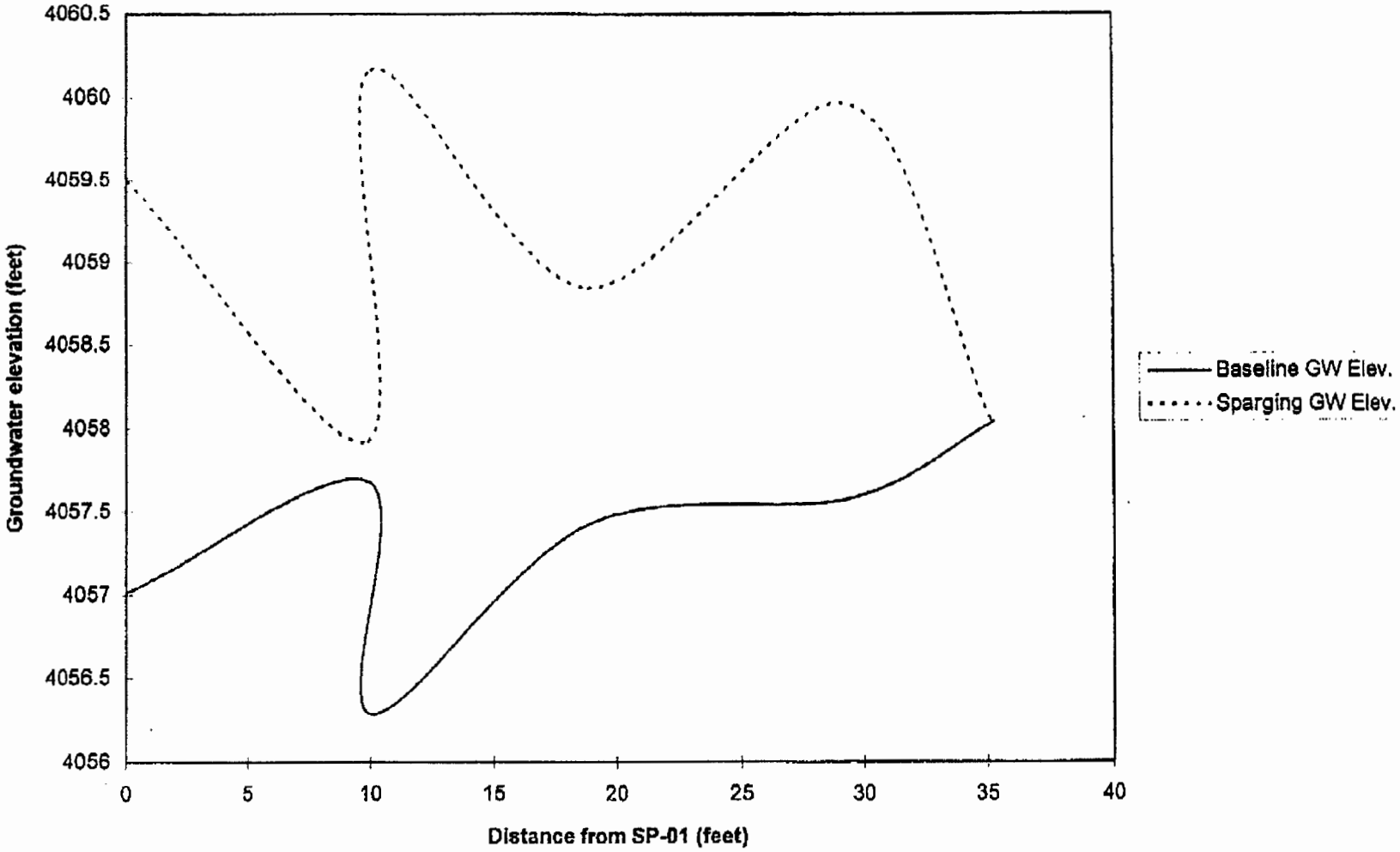
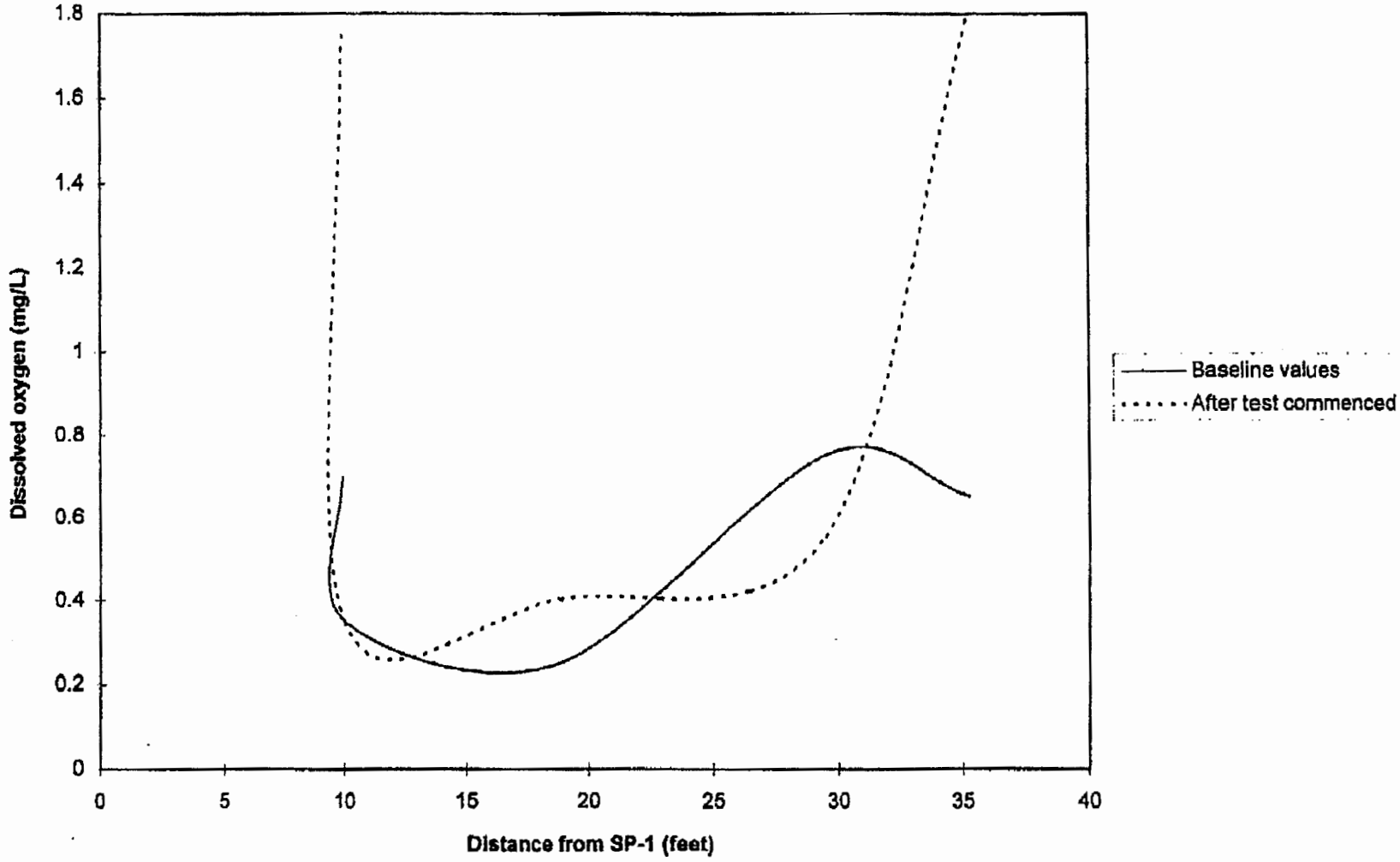
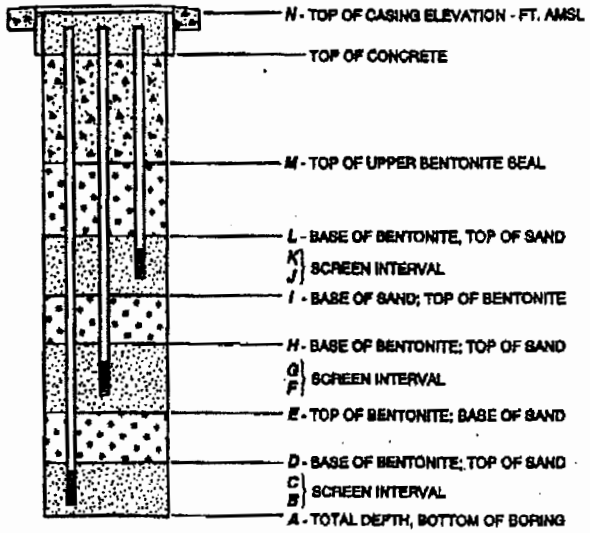


Figure 10: Dissolved Oxygen Versus Distance for Test No. 4 (180 min.)
Based on Data from MW-01, MW-03 and the 18-20 feet intervals of the SMP wells

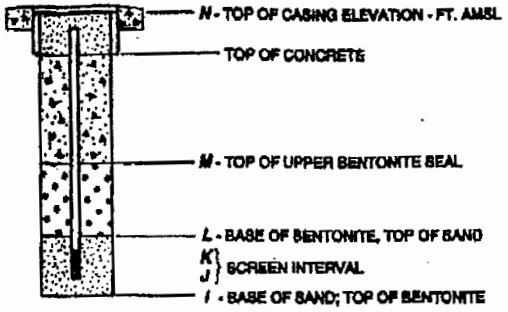


TABLES

TRIPLE-NESTED WELL CONSTRUCTION DIAGRAM



GROUNDWATER MONITOR WELL CONSTRUCTION DIAGRAM



LEGEND

- CONCRETE
- BENTONITE
- SAND

DATA SUMMARY TABLE

WELL ELEMENT	CODE	A	B	C	D	E	F	G	H	I	J	K	L	M	N_s	N_I	N_D
WELL TYPE	WELL NAME	DEPTH TO WELL ELEMENT (FT. BGS)													TOP-OF-CASING ELEVATION (FT. AMSL)		
TRIPLE-NESTED AIR SPARGE	SP-01	41	39.5	37.5	36	31	30	28	27	21	20	18	16.5	6	4068.78	4068.75	4068.85
TRIPLE-NESTED AIR SPARGE MONITOR	SMP-01	41	40	38	38	31	30	26	27	21	20	18	17	6	4068.13	4068.12	4068.12
	SMP-02	40.5	39	37	36	31	30	28	27	21	20	18	17	6	4068.13	4068.13	4068.13
	SMP-03	42	40	38	36.5	29	28	26	25.5	21	20	18	17	6	4069.85	4069.90	4069.83
GROUNDWATER MONITOR (SINGLE CASING)	MW-01	NA								17	15	5	4.5	2	4069.41	NA	
	MW-02	NA								15	14	4	3.5	2	4067.88	NA	
	MW-03	NA								17.5	17	7	6.5	2	4069.91	NA	
	MW-04	NA								14	13	3	2.5	2	4065.19	NA	

NOTES:

AMSL – ABOVE MEAN SEA LEVEL
BGS – BELOW GROUND SURFACE
NA – NOT APPLICABLE

OFFICERS CLUB, BS-57

PROJECT NO.: 61220[illegible] | LOCATION: HOLLOMAN AFB, N.M.

TABLE 2-1

SUMMARY OF WELL CONSTRUCTION DATA

WellOver 7/96

TABLE 3-1
SUMMARY OF SOIL ANALYTICAL RESULTS
OFFICERS CLUB, SS-57
HOLLOMAN AFB, NEW MEXICO
MARCH 1996

Sample No. SS57-	MW01-14.5-15	MW02-13.5-14	MW03-14-14.5	MW04-9-9.5	SP01-34-34.5	SP01-38.5-39	SMP01-19-19.5
Sample Location	MW01@14.5'	MW02@13.5'	MW03@14'	MW04@9'	SP01@34'	SP01@38'	SMP01@19'
Date Sampled	3/27/96	3/30/96	3/25/96	3/30/96	3/27/96	3/27/96	3/28/96
TPH as Diesel by Modified ASTM Method D3328 (mg/kg)	16	2,400	1,400	<10	95	110	1,100
Alkalinity by Modified EPA Method 310.1 (mg/kg)	18,000	32,000	8,300	51,000	6,500	NA	69,000
pH by EPA Method 9045A	7.4	7.2	6.9	7.2	7.5	NA	7.4
SO_4 by Modified EPA Method 375.4 (mg/kg)	64,000	55,000	83,000	61,000	12,000	22,000	23,000
Kjeldahl Nitrogen by Modified EPA Method 351.2 (mg/kg)	54	71	56	44	25	NA	66
TOC by Method CFA 18.0 (mg/kg)	1,600	3,800	4,200	850	660	NA	4,300
Phosphorous (total) by Modified EPA Method 365.4 (mg/kg)	78	96	66	66	140	NA	98
Moisture Content (%) by ASTM Method D2216-80	33.3	18.7	28.6	24.8	15.3	NA	19.5
Percent Solids (%)	66.7	81.3	71.4	75.2	84.7	83.7	80.5
Iron by EPA Method 6010A (mg/kg)	2,800	3,600	3,000	2,300	1,500	NA	6,200

TABLE 3-1 (Concluded)
SUMMARY OF SOIL ANALYTICAL RESULTS
OFFICERS CLUB, SS-57
HOLLOMAN AFB, NEW MEXICO
MARCH 1996

Sample No. SS57-	SMP01-19.5-20	SMP01-39-39.5	SMP02-19-19.5	SMP02-19.5-20	SMP02-38.5-39	SMP03-19.5-20	SMP03-39.5-40
Sample Location	SMP01@19.5'	SMP01@39'	SMP02@19'	SMP02@19.5'	SMP02@38.5'	SMP03@19.5'	SMP03@39.5'
Date Sampled	3/28/96	3/28/96	3/29/96	3/29/96	3/29/96	3/25-26/96	3/26/96
TPH as Diesel by Modified ASTM Method D3328 (mg/kg)	630	<10	3,700	55	<10	4,800	<10
Alkalinity by Modified EPA Method 310.1 (mg/kg)	NA	NA	40,000	20,000	NA	84,000	NA
pH by EPA Method 9045A	NA	NA	7.6	7.5	NA	7.0	NA
SO_4 by Modified EPA Method 375.4 (mg/kg)	NA	13,000	24,000	39,000	20,000	110,000	NA
Kjeldahl Nitrogen by Modified EPA Method 351.2 (mg/kg)	NA	NA	52	50	NA	58	NA
TOC by Method CFA 18.0 (mg/kg)	NA	NA	4,500	690	NA	7,300	NA
Phosphorous (total) by Modified EPA Method 365.4 (mg/kg)	NA	NA	82	68	NA	85	NA
Moisture Content (%) by ASTM Method D2216-80	NA	NA	26.7	NA	NA	21.2	NA
Percent Solids (%)	NA	77.1	73.3	76.0	81.0	78.8	NA
Iron by EPA Method 6010A (mg/kg)	NA	NA	2,400	3,000	NA	4,200	NA

NOTES:
< - Analyte not detected above stated reporting limit
% - Percent
ASTM - American Society for Testing and Materials
EPA - Environmental Protection Agency
CFA - California Fertilizer Association
mg/kg - Milligrams per kilogram
NA - Not analyzed
SO_4 - Sulfate
TOC - Total Organic Carbon
TPH - Total Petroleum Hydrocarbons

TABLE 3-2
SUMMARY OF GROUNDWATER ELEVATIONS
OFFICERS CLUB, SS-57
HOLLOMAN AFB, NEW MEXICO
MARCH 31 - APRIL 9, 1996

Gauging Date	March 31	April 1	April 9
Well Gauged	Groundwater Elevations in feet AMSL		
MW-01	4057.56	4057.55	4057.79
MW-02	4057.76	4057.87	4057.51
MW-03	NM	4057.70	4057.96
MW-04	4056.66	4056.66	4056.72
SP01S	4057.24	4057.29	4057.48
SP01M	4057.15	4057.24	4057.37
SP01D	4057.05	4057.20	4057.29
SMP01S	4057.18	4057.22	4057.45
SMP01M	4057.12	4057.15	4057.27
SMP01D	4057.14	4057.17	4057.28
SMP02S	4057.21	4057.27	4057.46
SMP02M	4056.98	4057.14	4057.27
SMP02D	4056.58	4057.14	4057.27
SMP03S	4057.39	4057.41	4057.63
SMP03M	4057.50	4057.52	4057.75
SMP03D	4057.42	4057.44	4057.61

NOTES:
April 9, 1996 groundwater elevations most representative of steady state conditions. Groundwater elevations on 3/31/96 and 4/1/96 measured within 24 hours of well development activities.

AMSL - Above mean sea level
NM - Not measured
S - Shallow Zone (18-20 feet)
M - Medium Zone (28-30 feet)
D - Deep Zone (38-40 feet, except 37.5-39.5 for SP01)

TABLE 3-3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
OFFICERS CLUB, SS-57
HOLLOMAN AFB, NEW MEXICO
APRIL 1996

Sample No. SS57-	MW-01	MW-02	MW-03	MW-04	MW-05	MW-07	MW-09	SP-01S	SP-01S(DUP)	SP-01M	SP-01D
Date Sampled	4/9/96	4/9/96	4/10/96	4/9/96	4/12/96	4/12/96	4/12/96	4/10/96	4/10/96	4/10/96	4/11/96
TPH as Diesel by Modified ASTM Method D3328 (μg/L)	2,500	4,100	9,700	250	<100	<100	<100	3,300	3,400	790	1,200
Dissolved Iron by EPA Method 6010A (μg/L)	110	<100	<100	3,100	NA	NA	NA	190	230	<100	140
Sulfate by Modified EPA Method 375.4 (mg/L)	1,700	1,700	2,100	1,700	1,700	1,500	1,800	1,800	2,000	NA	NA

NOTES:
< - Analyte not detected above stated reporting limit
ASTM - American Society for Testing and Materials
DUP - Duplicate sample
EPA - Environmental Protection Agency
mg/L - Milligrams per liter
NA - Not analyzed
S - Shallow Zone (18-20 feet)
M - Medium Zone (28-30 feet)
D - Deep Zone (37.5-39.5 feet)
TPH - Total Petroleum Hydrocarbons
ug/L - Micrograms per liter

TABLE 4-1
SUMMARY OF AIR SAMPLE ANALYTICAL RESULTS
OFFICERS CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO
APRIL 1996

Pilot Test Number	1 [1]	1 [2]	2	3	4	5	6
Sample No. SP01-	VET-01-1	VET-01-2	18-20-AS	28-30-AS	28-30-DS	28-30-EFF	38-40-AS
Date Sampled	4/16/96	4/16/96	4/16/96	4/17/96	4/17/96	4/17/96	4/18/96
Analysis by Modified EPA Method TO-3							
TPH (μg/L)	140	130	200	170	280	130	220
TPH (ppmv)	33	32	48	42	67	31	53
Analysis by ASTM Method D-5504 (ppbv)							
Hydrogen Sulfide	<4.0	NA	NA	250	NA	NA	4.1
Carbonyl Sulfide	5.0	NA	NA	<4.0	NA	NA	7.3
Dimethyl Sulfide	15	NA	NA	<4.0	NA	NA	<4.0
Carbon Disulfide	<4.0	NA	NA	<4.0	NA	NA	4.4
Analysis by EPA Method TO-14 (ppbv)							
TNMOC	2200	3000	9400	3900	5300	230	6300
Freon 12	<2.9	<1.6	1.2	17	18	<0.95	30
Freon 11	<2.9	<1.6	0.83	3.3	3.6	<0.95	43
Freon 113	<2.9	<1.6	<0.73	<1.2	<1.5	<0.95	2.0
Methylene Chloride	<2.9	<1.6	<0.73	<1.2	<1.5	2.5	<0.78
1,1,1-Trichloroethane	<2.9	<1.6	<0.73	<1.2	<1.5	0.98	<0.78
Benzene	9.7	11	14	15	22	<0.95	14
Trichloroethene	35	29	18	20	18	2.8	17
Toluene	4.8	5.7	9.5	9.9	16	6.2	13
Ethyl Benzene	<2.9	<1.6	1.2	<1.2	<1.5	<0.95	<0.78
m,p -Xylene	3.1	3.2	2.7	2.9	3.3	3.1	2.7
o-Xylene	<2.9	<1.6	1.2	<1.2	<1.5	1.1	1.5
1,3,5-Trimethylbenzene	<2.9	<1.6	0.83	<1.2	<1.5	<0.95	1.2
1,2,4-Trimethylbenzene	6.3	4.3	3.1	3.2	3.4	1.7	4.3
Acetone	14	22	26	40	18	4.4	73
Carbon Disulfide	<11	<6.5	7.0	<5.0	<6.0	<3.8	<3.1
2-Propanol	<11	<6.5	<2.9	<5.0	<6.0	5.4	<3.1
2-Butanone (MEK)	<11	<6.5	4.5	5.3	<6.0	<3.8	14
Hexane	120	160	180	150	230	<3.8	210
Tetrahydrofuran	140	89	39	22	23	5.1	<3.1
Cyclohexane	79	110	300	120	160	<3.8	140
Ethanol	<11	<6.5	4.4	6.1	<6.0	8.5	<3.1
Heptane	33	40	58	60	92	<3.8	78

NOTES:

Air samples were collected while venting on vapor extraction trench VET-01.

Only detected compounds for ASTM Method D-5504 and EPA Method TO-14 are reported in table.

[1] Sample collected after 40 minutes

[2] Sample collected after 140 minutes

< - Analyte not detected above stated reporting limit

ASTM - American Society for Testing and Materials

EPA - Environmental Protection Agency

NA - Not analyzed

ppbv - Part per billion by volume

ppmv - Parts per million by volume

TPH - Total Petroleum Hydrocarbons referenced to gasoline

TNMOC - Total Non-Methane Organic Compounds referenced to heptane

ug/L - Micrograms per liter

Appendix A-5

Foster Wheeler Environmental Corporation and Groundwater Technology, Inc. October 1996. *Air Sparging/Soil Vapor Extraction System, Site SS-57 Officer's Club, Holloman Air Force Base, New Mexico.*

AIR SPARGING/SOIL VAPOR EXTRACTION SYSTEM

HOLLOMAN AIR FORCE BASE

SITE SS-57 OFFICERS CLUB
ALAMOGORDO, NEW MEXICO

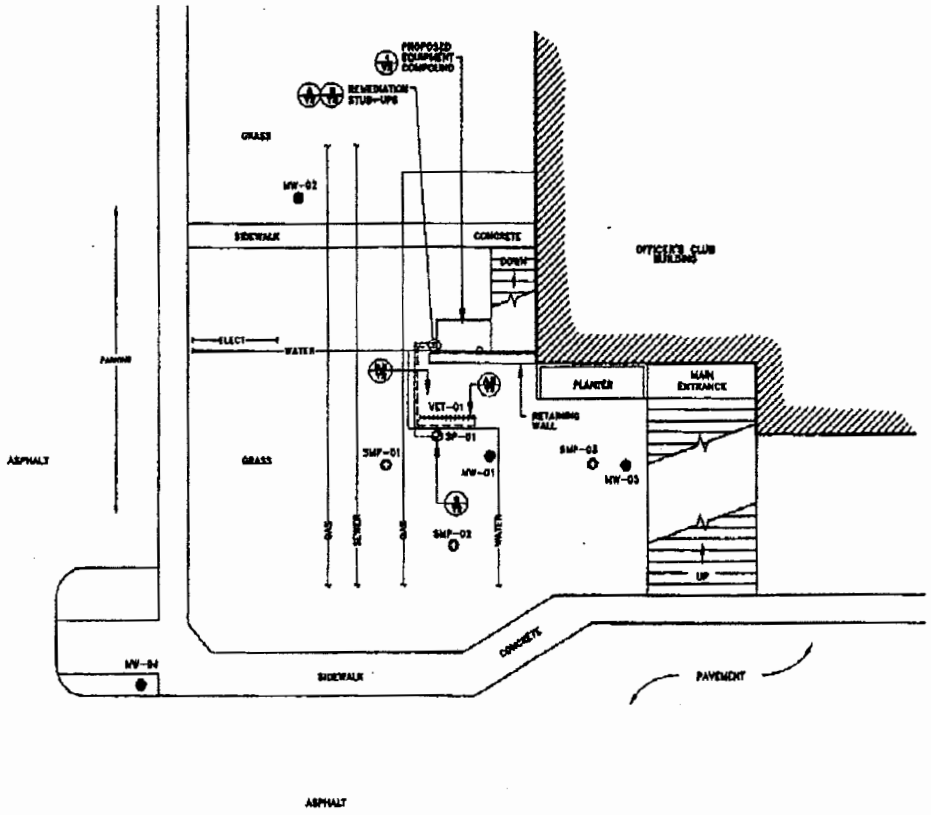
DELIVERY ORDER 8, WORK AUTHORIZATION DIRECTIVE 35
PROJECT No. 8722000835

OCTOBER, 1996

PREPARED FOR:
49 CES/CEV
HOLLOMAN AFB
PREPARED BY:
GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES, INC.
2501 YALE BLVD. S.E.
ALBUQUERQUE, NM 87106
AND
FOSTER WHEELER ENVIRONMENTAL CORPORATION
143 UNION BLVD., SUITE 1010
LAKEWOOD, CO 80228-1824

SHEET INDEX

DWG. NO.	TITLE
Y1	SITE PLAN
Y2	PIPING AND TRENCH DETAILS
Y3	TREATMENT COMPOUND DETAILS
P1	PIPING AND INSTRUMENTATION DIAGRAM LEGEND
P2	PIPING AND INSTRUMENTATION DIAGRAM



NO.	DATE	BY	REVISION

N

0 10 20

APPROX. SCALE IN FEET

LEGEND

- MONITOR WELL
- SPARGE MONITOR POINT
- SPARGE POINT
- VAPOR EXTRACTION TRENCH
- SOIL VAPOR EXTRACTION PIPING
- AIR SPARGE PIPING

NOTES:
1. CONTRACTOR SHALL FIELD VERIFY UNDERGROUND UTILITIES BEFORE TRENCHING.

	SIGNATURE	DATE
REVIEW CHIEF		
PROJECT ENGR.		
PROJECT MGR.		
SUPERV.		

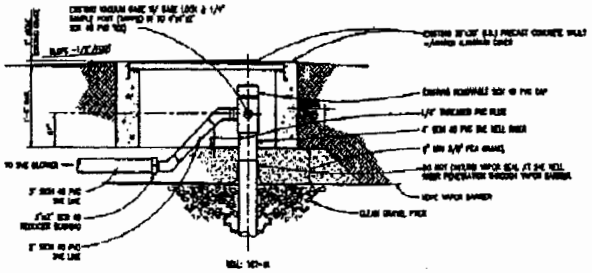
HOLLOMAN AIR FORCE BASE

SITE-57 OFFICERS CLUB

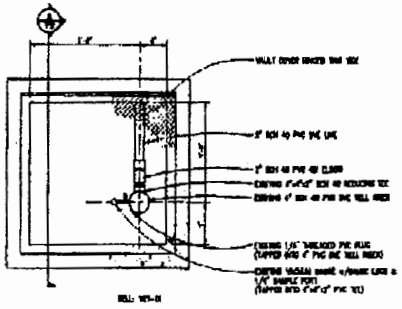
NEW MEXICO

SITE PLAN

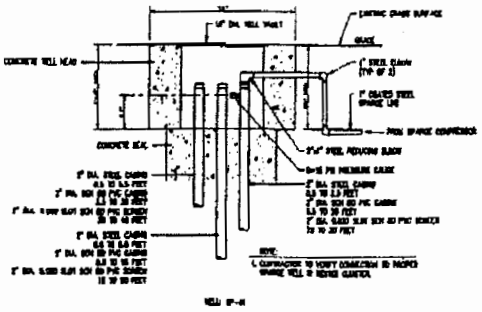
DESIGNED BY: LDT	DETAILED BY: GGG/DH	CHECKED BY: TB
DRAWING DATE: 10/09/96		ACAD FILE: 2208-Y1
PROJECT NO.: 8722000635		CONTRACT: DACW-45-94-D-009
DRAWING: Y1		REVISION:



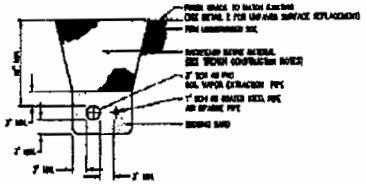
A Y2 SVE TRENCH WELL-HEAD SECTION
SCALE: 1"=1'-0"



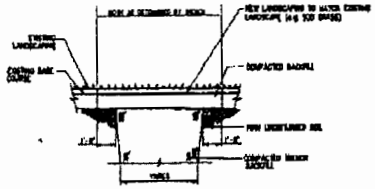
B Y2 SVE TRENCH WELL-HEAD DETAIL
SCALE: 1"=1'-0"



C Y2 SPARGE WELL-HEAD
SCALE: NOT TO SCALE



D Y2 PIPING TRENCH SECTION
SCALE: 1/2"=1'-0"



E Y2 UNPAVED SURFACE REPLACEMENT
SCALE: 1/2"=1'-0"

TRENCH COMPACTION NOTES

1. PRIOR TO EXCAVATION CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES. CONTRACTOR SHALL DAMAGE ANY UTILITY 2 FEET OF EXISTING UNDERGROUND UTILITIES.
2. TRENCH BACKFILL MAY BE NATIVE SOIL, COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY.
3. BACKFILL MAY BE SUBJECT TO SETTING AND IF THE REQUIRED LEVEL OF COMPACTION IS NOT OBTAINED, CONTRACTOR MAY BE REQUIRED TO WAIT AND RECOMPACT AT THE CONTRACTORS EXPENSE.
4. NATIVE BACKFILL SHALL BE FREE FROM ORGANIC MATTER, ROCKS IN EXCESS OF 4" DIAMETER OR OTHER OBJECTIONABLE MATERIALS.
5. CONTAMINATED SOIL SHALL NOT BE USED AS BACKFILL.
6. FILL SHALL BE ALLOWED A MINIMUM OF 96 HOURS WELL VALVES PROVIDED BY SUPERVISOR SITE ENGINEER.
7. TRENCH WIDTH IS TO BE MINIMIZED TO LIMIT DISTURBANCE OF EXISTING SOIL.

NO.	DATE	BY	REVISION

SIGNATURE	DATE
REVIEW CHIEF	
PROJECT ENGR.	
PROJECT MGR.	
CLIENT	

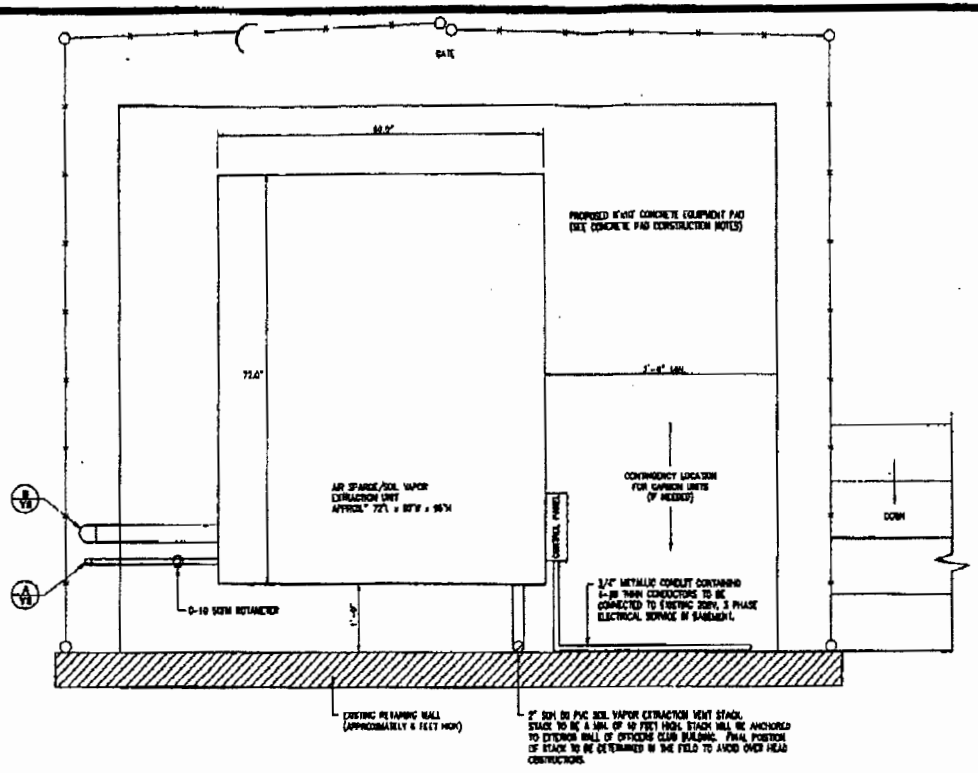
HOLLOMAN AIR FORCE BASE
9115-07 OFFICERS CLUB
NEW MEXICO

PIPING AND TRENCH DETAILS

DESIGNED BY:	DETAILED BY:	CHECKED BY:
LDT	CCG/DH	TB

DRAWING DATE:	ACAD FILE:
10/06/98	2209-Y2
PROJECT NO.: 9721000835	CONTRACT: DACW-45-94-0003

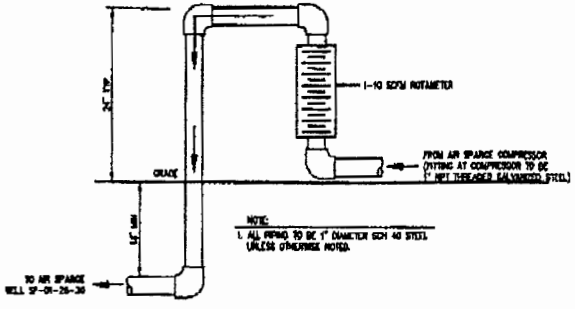
DRAWING: Y2 REVISION:



1 / Y3 EQUIPMENT LAYOUT DETAIL

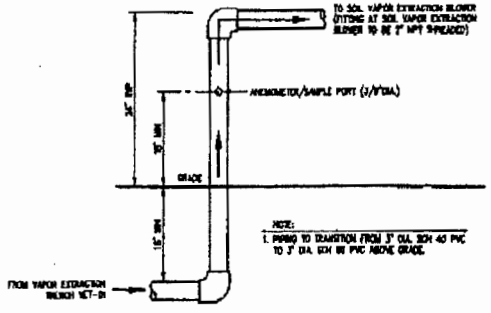
CONCRETE PAD CONSTRUCTION NOTES:

1. CONCRETE PAD TO BE APPROXIMATELY 8' x 10' x 4" WITH NO SLOPED SURFACE.
2. CONCRETE SHALL BE A MINIMUM OF 3,000 PSI 28 DAY COMPRESSIVE STRENGTH.
3. 4" WIRE MESH MUST BE FREE OF DIRT, RUST AND OTHER FOREIGN DEBRIS.
4. ALL CONCRETE SHALL HAVE A SMOOTH FINISH.
5. ALL CONCRETE SHALL BE MOIST CURED FOR 7 DAYS.
6. THE CONCRETE PAD SHALL BE INSTALLED 1" ABOVE GRADE UNLESS A TRIP HAZARD OR SURROUNDING SURFACE FEATURES SUGGEST OTHERWISE.
7. EXPANSION JOINT MATERIAL IS TO BE USED BETWEEN THE EXISTING RETAINING WALL AND STAIRWELL AND THE PROPOSED CONCRETE PAD.



A / Y3 AIR SPARGE STUB-UP DETAIL

SCALE: NOT TO SCALE



B / Y3 SVE STUB-UP DETAIL

SCALE: NOT TO SCALE

NO.	DATE	BY	REVISION

N

APPROX. SCALE OF FEET

SIGNATURE	DATE
REVIEW DATE:	
PROJECT ENGR.:	
PROJECT MGR.:	
CLIENT:	

HOLLOMAN AIR FORCE BASE

8TH-67 OFFICERS CLUB

NEW MEXICO

TREATMENT COMPOUND DETAILS

DESIGNED BY: LDT	DETAILED BY: CCG/DH	CHECKED BY: JB
DRAWING DATE: 10/08/96		ACAD FILE: 2208-Y3
PROJECT NO.: 8722000835		CONTRACT: DACW-45-94-D-0002
DRAWING: Y3		REVISION:

VALVE AND PIPING SYMBOLS

- GLOBE VALVE
- GATE VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- PLUG VALVE
- 3-WAY VALVE
- ANGLE VALVE
- RELIEF OR SAFETY VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- GLOBE VALVE
- SELF-CONTAINED PRESSURE REGULATING VALVE W/RELIEF
- KNIFE GATE VALVE
- BACKFLOW PREVENTER
- NORMALLY OPEN
- NORMALLY CLOSED
- SAMPLE PORT
- FLEXIBLE HOSE
- BASKET TYPE STRAINER
- Y-TYPE STRAINER
- DUPLEX STRAINER
- SLEEVE COUPLING (SC)
- FLOOR DRAIN
- EQUIPMENT DRAIN
- CLEANOUT (CO)
- REMOVABLE PLUG
- REMOVABLE CAP
- BLIND FLANGE
- EXHAUST TO ATMOSPHERE (INSIDE)
- EXHAUST TO ATMOSPHERE (OUTSIDE)
- REDUCER
- UNION
- QUICK DISCONNECT COUPLING
- GAUGE SEAL
- DAMPER

VALVE OPERATOR SYMBOLS

- SOLENOID
- MOTOR, ELECTRIC
- DIAPHRAGM
- DIAPHRAGM WITH POSITIONER
- HANDWHEEL OR LEVER
- CHAINWHEEL

PRIMARY ELEMENT SYMBOLS - FLOW

- ORIFICE PLATE
- PITOT TUBE
- AVERAGING PITOT TUBE
- VENTURI OR FLOW TUBE
- TOTALIZING FLOWMETER
- FLUME
- WEIR
- TURBINE OR PROPELLOR TYPE METER
- MAGNETIC FLOW METER
- ROTAMETER

EQUIPMENT SYMBOLS

- SUBMERSIBLE PUMP
- PUMP
- PNEUMATIC DIAPHRAGM PUMP
- BLOWER
- AIR COMPRESSOR

GENERAL INSTRUMENT SYMBOLS

ONE VARIABLE — TWO VARIABLES

- LOCALLY MOUNTED
- PANEL MOUNTED
- REAR-OF-PANEL MOUNTED
- INTERLOCK
- PURGE

LINE SYMBOLS

- PROCESS PIPES OR CHANNELS
- CONNECTION TO PROCESS, MECHANICAL LINK OR INSTRUMENT SUPPLY
- PNEUMATIC SIGNAL
- ELECTRIC SIGNAL
- CAPILLARY TUBING (FILLED SYSTEM)
- HYDRAULIC SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL NO WIRING OR TUBING

INSTRUMENT IDENTIFICATION TABLE

FIRST LETTER			SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME				
C	CONDUCTIVITY			CONTROL	
D	DENSITY (SP. GR.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE
N					
O			ORIFICE		
P	PRESSURE OR VACUUM		POINT (TEST)		
Q	QUANT. OR EVENT	INTEGRATE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQ.	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION		
V	VISCOSITY			VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED		
Y				RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE	

PROCESS LINE ABBREVIATIONS

AIR	AIR, ATMOSPHERIC PRESSURE
BW	BACKWASH
CA	COMPRESSED AIR
CGW	CONTAMINATED GROUNDWATER
D	DRAIN
EFF	EFFLUENT
EXH	EXHAUST
GW	GROUNDWATER
NPW	NON-POTABLE WATER
P	PRODUCT
PW	POTABLE WATER
S	SANITARY
SL	SLUDGE
SP	SAMPLE PORT
SS	STORM SEWER
TF	TOTAL FLUIDS
V	VENT
VAP	VAPOR

PIPING MATERIAL IDENTIFICATION

CPVC	CHLORINATED POLYVINYL CHLORIDE
CSP	CARBON STEEL PIPE
COP	COPPER
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
GAL	GALVANIZED STEEL PIPE
PE	POLYETHYLENE PIPE
PP	POLYPROPYLENE PIPE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RUB	RUBBER HOSE
SS	STAINLESS STEEL PIPE
VCP	VITRIFIED CLAY PIPE

PROCESS PIPING IDENTIFICATION

- PROCESS PIPE
- PIPE DIAMETER (INCHES)
- XXX-YY-Z
  - INSULATION CLASS
  - PIPING DESIGN TABLE NUMBER
  - PROCESS LINE ABBREVIATION

INSTRUMENT IDENTIFICATION

FIT-100A

- SUFFIX (NOT NORMALLY USED)
- LOOP NUMBER
- SUCCEEDING LETTERS
- FIRST LETTER

FUNCTION ABBREVIATIONS

DO	DISSOLVED OXYGEN	OC	OPEN-CLOSE
FC	FAIL CLOSED	OO	ON-OFF (MAINTAINED)
FI	FAIL INDETERMINATE	ORP	OXIDATION REDUCTION POTENTIAL
FL	FAIL LOCKED	OSC	OPEN-STOP-CLOSE (MOMENTARY)
FO	FAIL OPEN	SS	START-STOP (MOMENTARY)
HOA	HAND-OFF-AUTOMATIC	>	HIGH SELECT
I/I	CURRENT-TO-CURRENT	<	LOW SELECT
I/P	CURRENT-TO-PNEUMATIC	√	SQUARE ROOT
LEL	LOWER EXPLOSIVE LIMIT	Σ	ADD OR TOTALIZE
L/R	LOCAL-REMOTE		

NO.	DATE	BY	REVISION

	SIGNATURE	DATE
REVIEW BASE		
PROJECT ENGR.		
PROJECT MGR.		
CONT.		

HOLLOMAN AIR FORCE BASE
375-67 OFFICERS CLUB
NEW MEXICO

PIPING AND INSTRUMENTATION DIAGRAM LEGEND

DESIGNED BY:	DETAILED BY:	CHECKED BY:
LDT	CCG/DH	TP

DRAWING DATE:	ACAD FILE:
10/08/96	2506-P1

PROJECT NO.:	CONTRACT:
8722000833	BAOF-05-24-0-0085

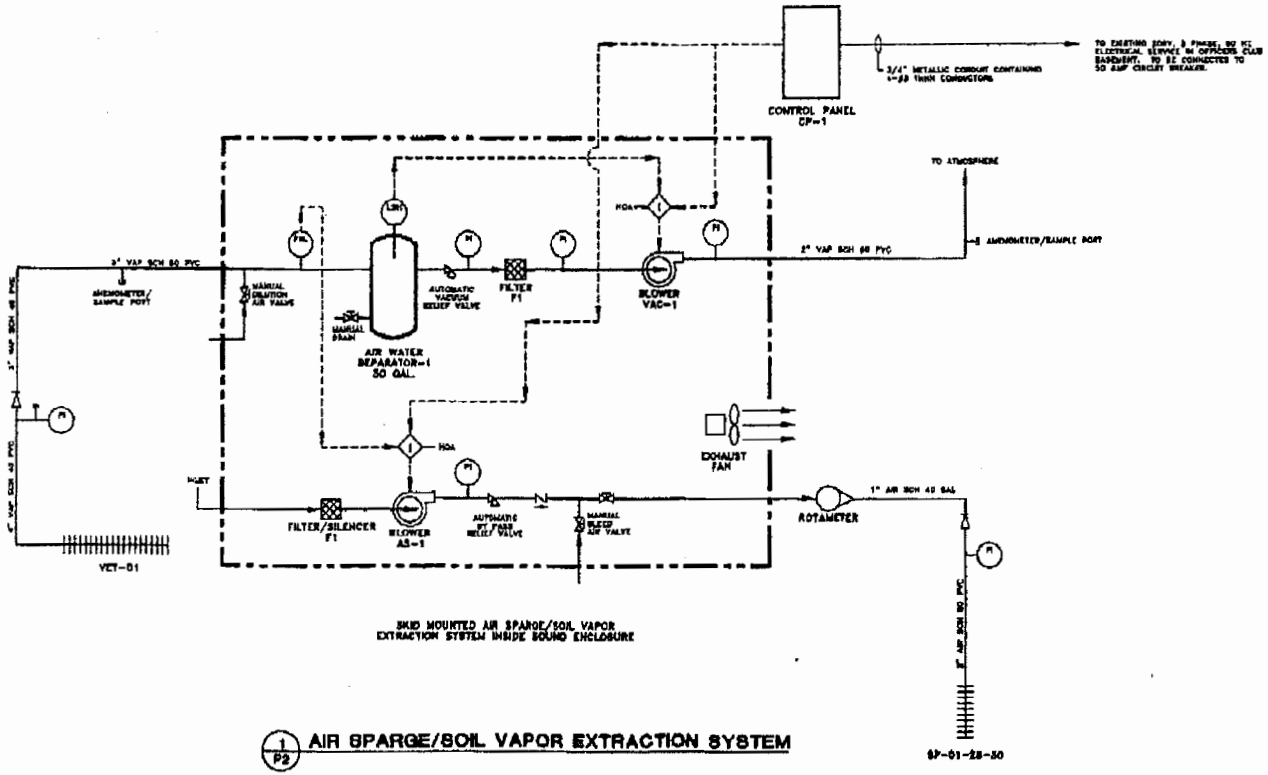
DRAWING: P1 REVISION:

NOTE: THE FOLLOWING EQUIPMENT TO BE SUPPLIED TO CONTRACTOR.

VAC-1
SUTORBILT MODEL 3L
VACUUM PUMP
3HP, 208V, 3 PHASE, 50 HZ
200 SCFM @ 28" H_2O VACUUM

AS-1
GAST MODEL 2060
OILESS ROTARY VANE COMPRESSOR
2HP, 208V, 3 PHASE
15 SCFM @ 10 PSIG

CP-1
CONTROL PANEL.
INTEGRATED CONTROL PANEL TO INCLUDE MOTOR STARTERS AND SEPARATE TIMERS FOR AS-1 AND VAC-1



SKID MOUNTED AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM INSIDE SOUND ENCLOSURE

1/P2 AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

NO.	DATE	BY	REVISION

	SIGNATURE	DATE
DESIGN ENG.		
PROJECT ENGR.		
PROJECT MGR.		
CLIENT:		

HOLLOMAN AIR FORCE BASE
STE-67 OFFICERS CLUB
NEW MEXICO

PIPING AND INSTRUMENTATION DIAGRAM

DESIGNED BY:	DETAILED BY:	CHECKED BY:
LDT	CCO/DN	TB

DRAWING DATE: 10/09/99	CAD FILE: 2306-P2
PROJECT NO.: 872200038	CONTRACT: [illegible]
DRAWING: P2	REVISION:

Appendix A-6

Foster Wheeler Environmental Corporation and Groundwater Technology, Inc. February 1997. *Final Remedial Action Plan, Officer's Club, Site SS-57, Holloman Air Force Base, New Mexico.*

FINAL
REMEDIAL ACTION PLAN
OFFICERS CLUB, SITE SS-57
HOLLOMAN AIR FORCE BASE, NEW MEXICO

Prepared for:

49 CES/CEV
Holloman Air Force Base, NM

and

HQ ACC/ESVR
Langley Air Force Base, VA

Prepared by:

Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228-1824

and

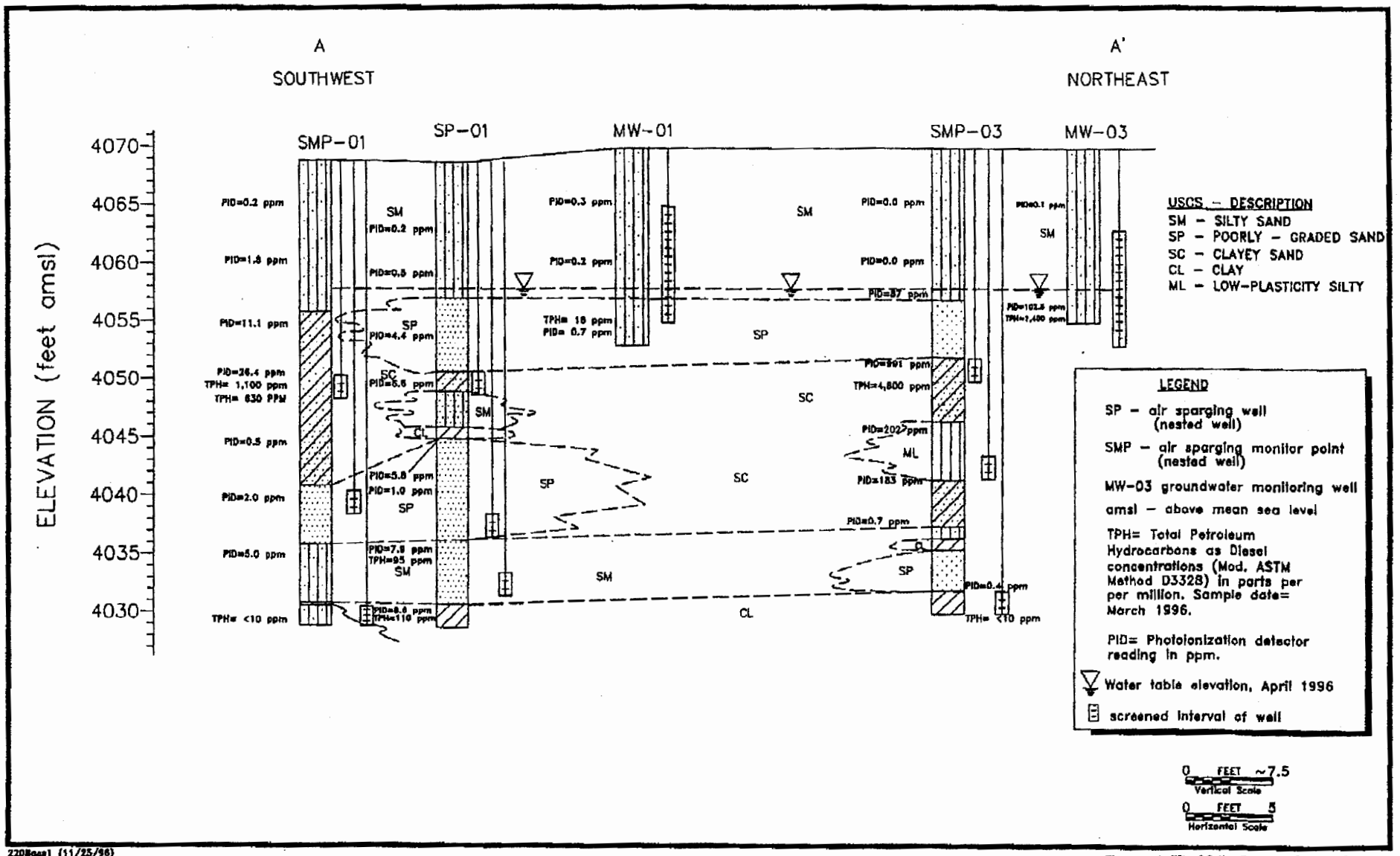
Groundwater Technology
Government Services, Inc.
2501 Yale Blvd., S.E., #204
Albuquerque, NM 87106

Under Contract No. DACW45-94-D-0003
Delivery Order No. 8, Work Authorization Directive 35:

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

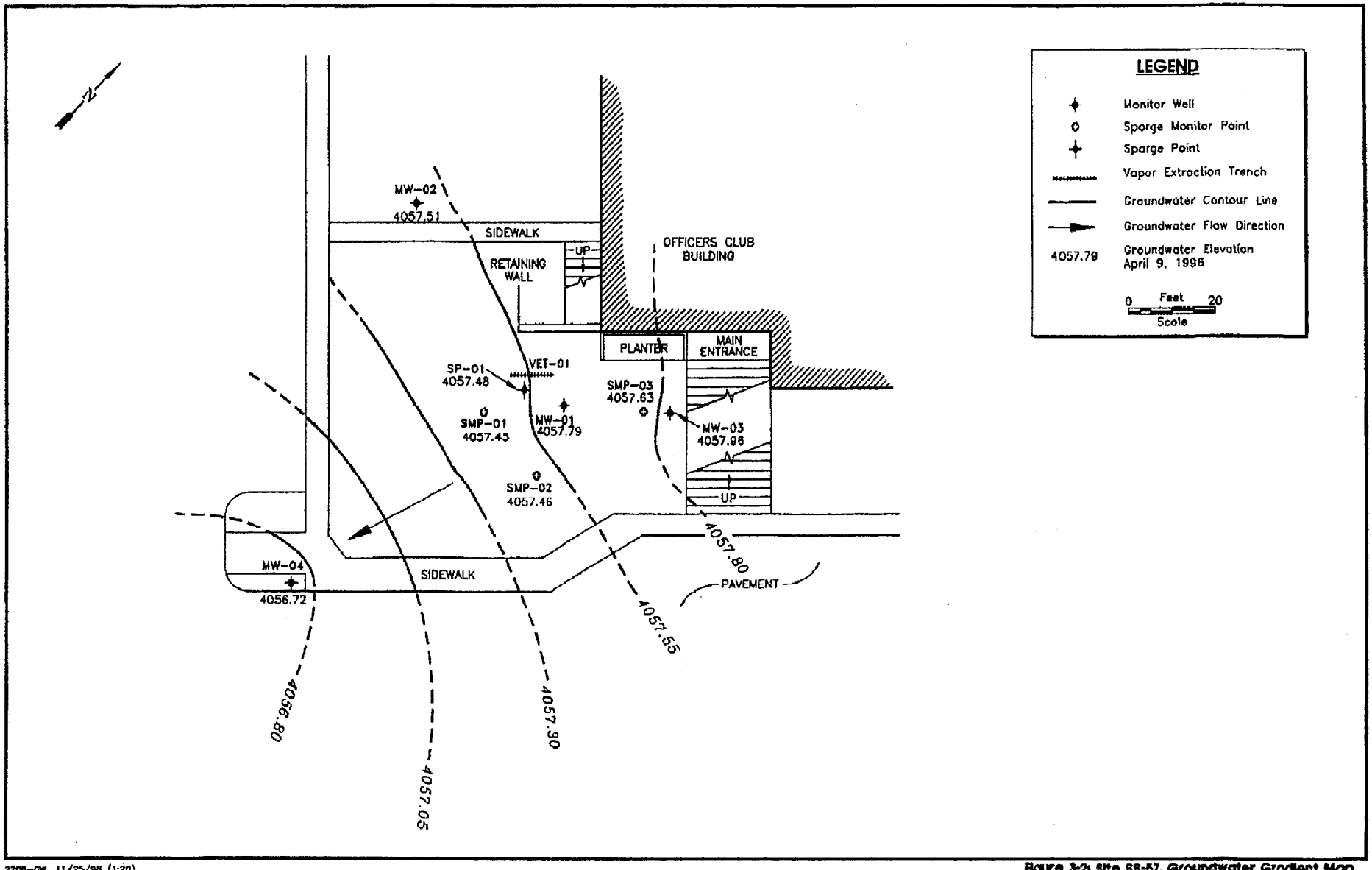
February 1997

HAFB-28/DO8wad35.rap



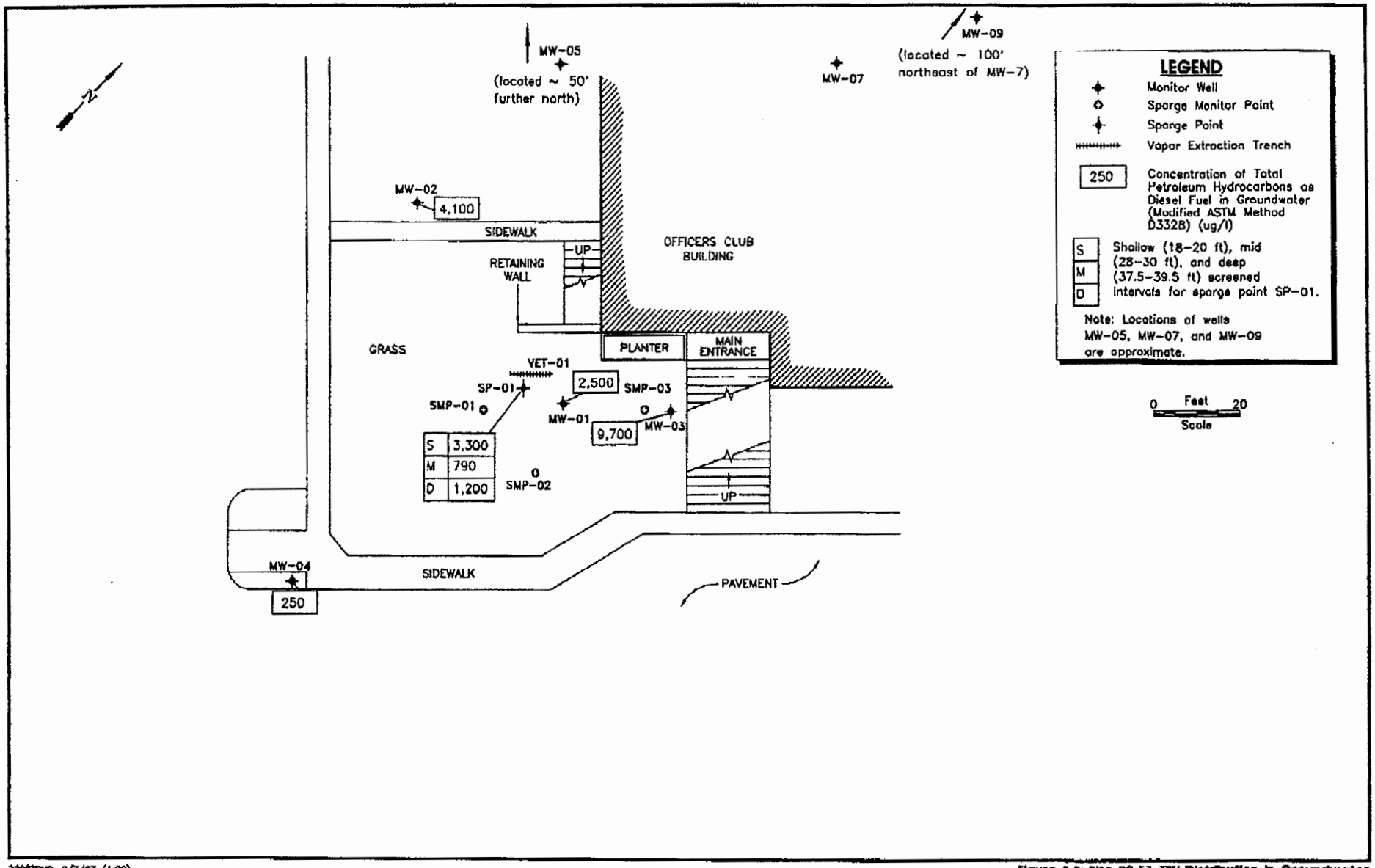
2208gcs1 (11/25/96)

Figure 3-4 Site 39-07, Geological Cross-Section A-A'



2208-GW, 11/25/98 (1:20)

Figure 3-2: Site SS-57, Groundwater Gradient Map, Based on Data from April 9, 1996 Gauging



22081PHO, 2/7/97 (1:20)

Figure 3-3 Site SS-57, TPH Distribution in Groundwater
APRIL 1996

TABLE 3-1
SUMMARY OF GROUNDWATER ELEVATIONS
OFFICERS CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO
MARCH 31 - APRIL 9, 1996

Gauging Date	March 31	April 1	April 9
Well Gauged	Groundwater Elevations in feet AMSL		
MW-01	4057.56	4057.55	4057.79
MW-02	4057.76	4057.87	4057.51
MW-03	NM	4057.70	4057.96
MW-04	4056.66	4056.66	4056.72
SP01S	4057.24	4057.29	4057.48
SP01M	4057.15	4057.24	4057.37
SP01D	4057.05	4057.20	4057.29
SMP01S	4057.18	4057.22	4057.45
SMP01M	4057.12	4057.15	4057.27
SMP01D	4057.14	4057.17	4057.28
SMP02S	4057.21	4057.27	4057.46
SMP02M	4056.98	4057.14	4057.27
SMP02D	4056.58	4057.14	4057.27
SMP03S	4057.39	4057.41	4057.63
SMP03M	4057.50	4057.52	4057.75
SMP03D	4057.42	4057.44	4057.61

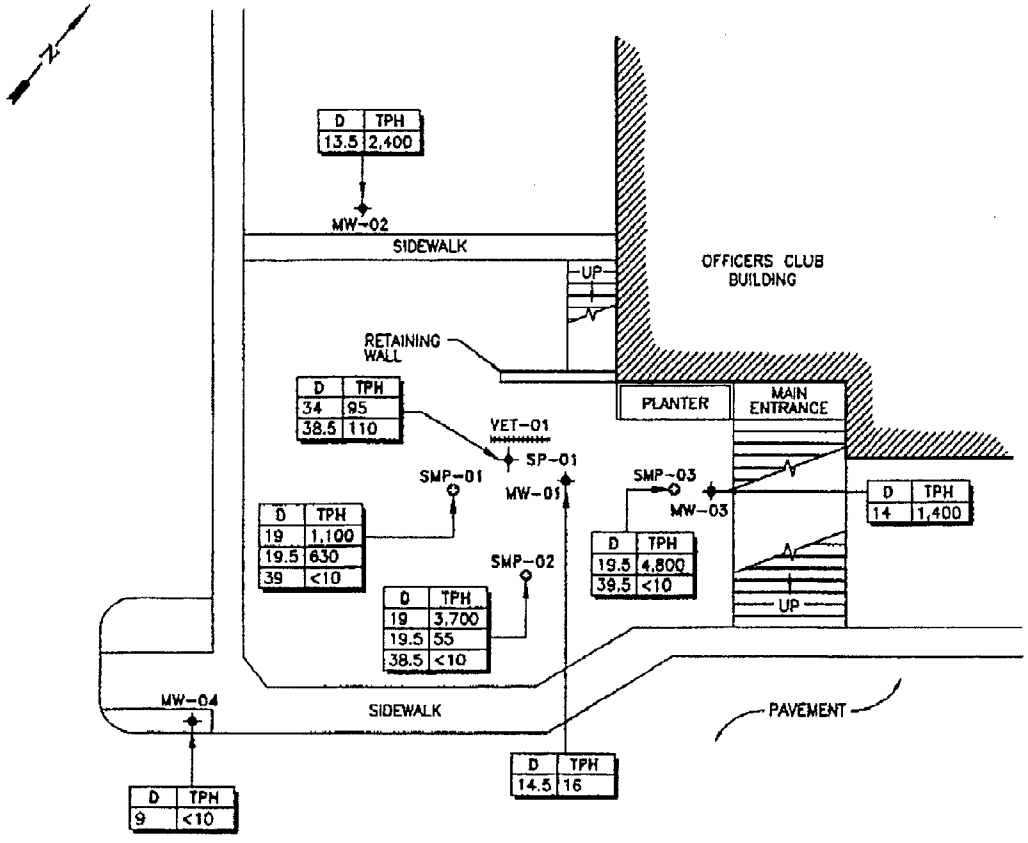
NOTES:
April 9, 1996 groundwater elevations most representative of steady state conditions. Groundwater elevations on 3/31/96 and 4/1/96 measured within 24 hours of well development activities.

AMSL - Above mean sea level
NM - Not measured
S - Shallow Zone (18-20 feet)
M - Medium Zone (28-30 feet)
D - Deep Zone (38-40 feet, except 37.5-39.5 for SP01)

TABLE 3-2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
OFFICERS CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO
APRIL 1996

Sample No. SS57-	MW-01	MW-02	MW-03	MW-04	MW-05	MW-07	MW-09	SP-01S	SP-01S(DUP)	SP-01M	SP-01D
Date Sampled	4/9/96	4/9/96	4/10/96	4/9/96	4/12/96	4/12/96	4/12/96	4/10/96	4/10/96	4/10/96	4/11/96
TPH as Diesel by Modified ASTM Method D3328 (μg/L)	2,500	4,100	9,700	250	<100	<100	<100	3,300	3,400	790	1,200
Dissolved Iron by EPA Method 6010A (μg/L)	110	<100	<100	3,100	NA	NA	NA	190	230	<100	140
Sulfate by Modified EPA Method 375.4 (mg/L)	1,700	1,700	2,100	1,700	1,700	1,500	1,800	1,800	2,000	NA	NA

NOTES:
< - Analyte not detected above stated reporting limit
ASTM - American Society for Testing and Materials
DUP - Duplicate sample
EPA - Environmental Protection Agency
mg/L - Milligrams per liter
NA - Not analyzed
S - Shallow Zone (18-20 feet)
M - Medium Zone (28-30 feet)
D - Deep Zone (37.5-39.5 feet)
TPH - Total Petroleum Hydrocarbons
ug/L - Micrograms per liter



LEGEND

- Monitor Well
- Sparge Monitor Point
- Sparge Point
- Vapor Extraction Trench
- D — Depth Of Soil Sample Below Ground Surface (Feet)
- TPH — Concentration Of Total Petroleum Hydrocarbons as Diesel Fuel in Soil (mg/kg)
- < — Analyte Not Indicated Above Stated Reporting Limit

0 Feet 20
Scale

2208BASX, 11/25/96 (1:20)

Figure 3-4: Site SS-57, TPH Distribution in Soil
March 1996

TABLE 3-3
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
OFFICERS CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO
MARCH 1996

Sample No. SS57-	MW01-14.5-15	MW02-13.5-14	MW03-14-14.5	MW04-9-9.5	SP01-34-34.5	SP01-38.5-39	SMP01-19-19.5
Sample Location	MW01@14.5'	MW02@13.5'	MW03@14'	MW04@9'	SP01@34'	SP01@38.5'	SMP01@19'
Date Sampled	3/27/96	3/30/96	3/25/96	3/30/96	3/27/96	3/27/96	3/28/96
TPH as Diesel by Modified ASTM Method D3328 (mg/kg)	16	2,400	1,400	<10	95	110	1,100
Alkalinity by Modified EPA Method 310.1 (mg/kg)	18,000	32,000	8,300	51,000	6,500	NA	69,000
pH by EPA Method 9045A	7.4	7.2	6.9	7.2	7.5	NA	7.4
Sulfate by Modified EPA Method 375.4 (mg/kg)	64,000	55,000	83,000	61,000	12,000	22,000	23,000
Total Kjeldahl Nitrogen by Modified EPA Method 351.2 (mg/kg)	54	71	56	44	25	NA	66
TOC by Method CFA 18.0 (mg/kg)	1,600	3,800	4,200	850	660	NA	4,300
Phosphorous (total) by Modified EPA Method 365.4 (mg/kg)	78	96	66	66	140	NA	98
Moisture Content (%) by ASTM Method D2216-80	33.3	18.7	28.6	24.8	15.3	NA	19.5
Percent Solids (%)	66.7	81.3	71.4	75.2	84.7	83.7	80.5
Iron by EPA Method 6010A (mg/kg)	2,800	3,600	3,000	2,300	1,500	NA	6,200

TABLE 3-3 (Concluded)
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
OFFICERS CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO
MARCH 1996

Sample No. SS57-	SMP01-19.5-20	SMP01-39-39.5	SMP02-19-19.5	SMP02-19.5-20	SMP02-38.5-39	SMP03-19.5-20	SMP03-39.5-40
Sample Location	SMP01@19.5'	SMP01@39'	SMP02@19'	SMP02@19.5'	SMP02@38.5'	SMP03@19.5'	SMP03@39.5'
Date Sampled	3/28/96	3/28/96	3/29/96	3/29/96	3/29/96	3/25-26/96	3/26/96
TPH as Diesel by Modified ASTM Method D3328 (mg/kg)	630	<10	3,700	55	<10	4,800	<10
Alkalinity by Modified EPA Method 310.1 (mg/kg)	NA	NA	40,000	20,000	NA	84,000	NA
pH by EPA Method 9045A	NA	NA	7.6	7.5	NA	7.0	NA
Sulfate by Modified EPA Method 375.4 (mg/kg)	NA	13,000	24,000	39,000	20,000	110,000	NA
Total Kjeldahl Nitrogen by Modified EPA Method 351.2 (mg/kg)	NA	NA	52	50	NA	58	NA
TOC by Method CFA 18.0 (mg/kg)	NA	NA	4,500	690	NA	7,300	NA
Phosphorous (total) by Modified EPA Method 365.4 (mg/kg)	NA	NA	82	68	NA	85	NA
Moisture Content (%) by ASTM Method D2216-80	NA	NA	26.7	NA	NA	21.2	NA
Percent Solids (%)	NA	77.1	73.3	76.0	81.0	78.8	NA
Iron by EPA Method 6010A (mg/kg)	NA	NA	2,400	3,000	NA	4,200	NA

NOTES:
< - Analyte not detected above stated reporting limit
% - Percent
ASTM - American Society for Testing and Materials
EPA - Environmental Protection Agency
CFA - California Fertilizer Association
mg/kg - Milligrams per kilogram
NA - Not analyzed
TOC - Total Organic Carbon
TPH - Total Petroleum Hydrocarbons

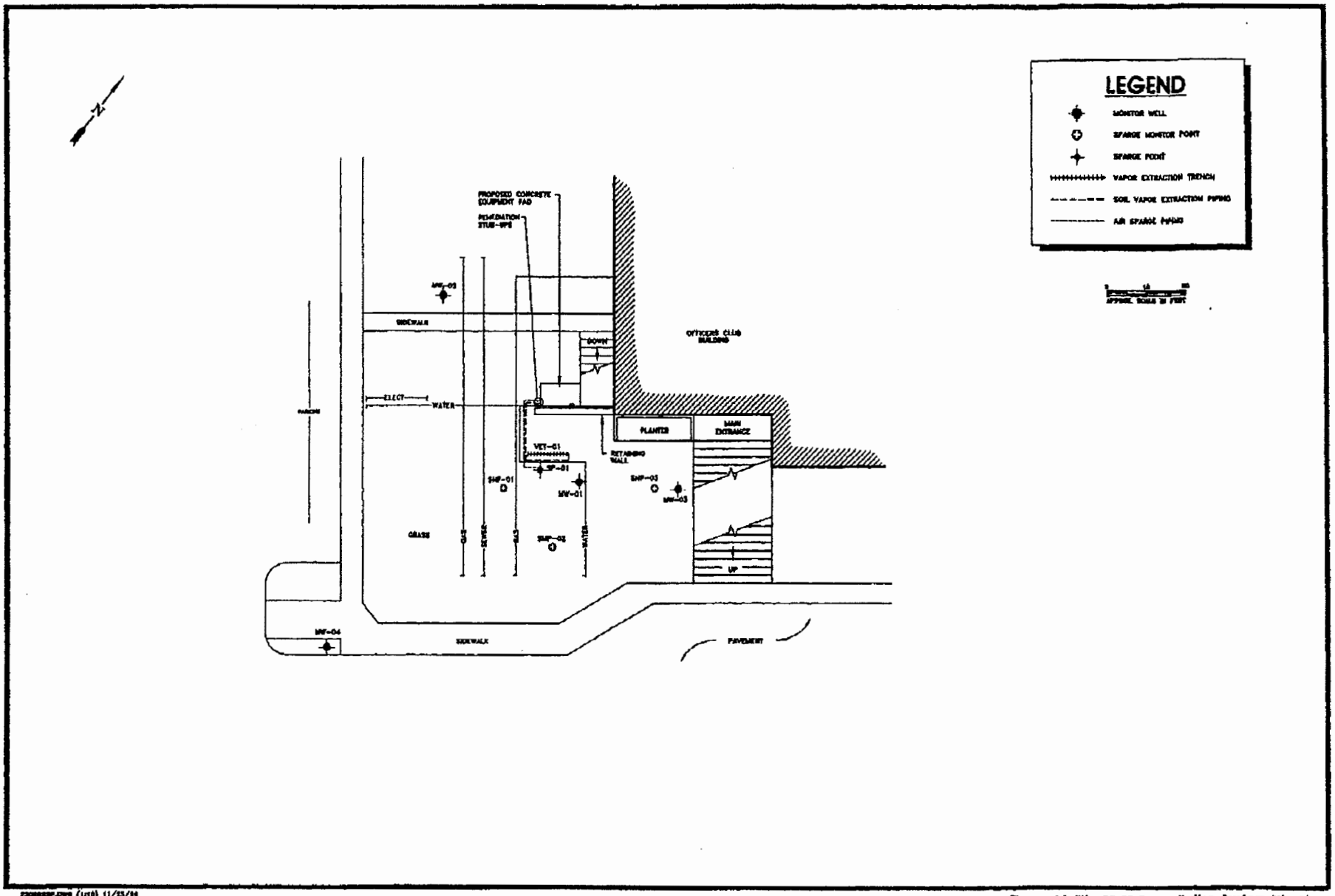
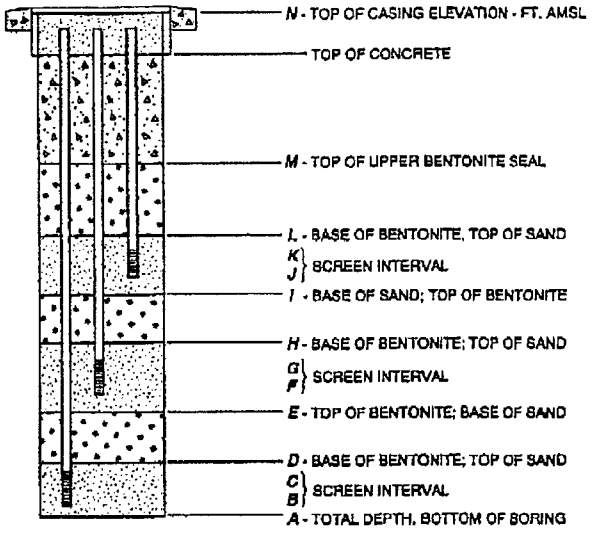
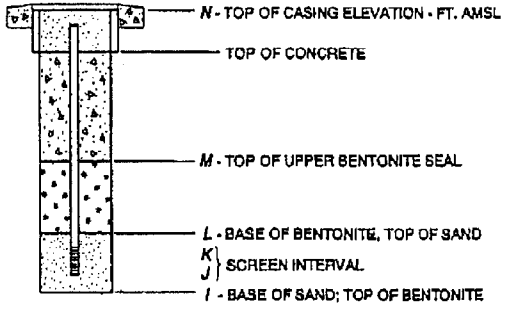


Figure 4-1 Site 55-57 Remediation System Site Plan

TRIPLE-NESTED WELL CONSTRUCTION DIAGRAM



GROUNDWATER MONITOR WELL CONSTRUCTION DIAGRAM



LEGEND

CONCRETE

BENTONITE

SAND

DATA SUMMARY TABLE

WELL ELEMENT	CODE	A	B	C	D	E	F	G	H	I	J	K	L	M	N_s	N_i	N_p
WELL TYPE	WELL NAME	DEPTH TO WELL ELEMENT (FT. BGS)													TOP-OF-CASING ELEVATION (FT. AMSL)		
TRIPLE-NESTED AIR SPARGE	SP-01	41	39.5	37.5	36	31	30	28	27	21	20	18	16.5	6	4068.78	4068.75	4068.85
TRIPLE-NESTED AIR SPARGE MONITOR	SMP-01	41	40	38	36	31	30	28	27	21	20	18	17	6	4068.13	4068.12	4068.12
	SMP-02	40.5	39	37	36	31	30	28	27	21	20	18	17	6	4068.13	4068.13	4068.13
	SMP-03	42	40	38	36.5	29	28	26	25.5	21	20	18	17	6	4069.85	4069.90	4069.83
GROUNDWATER MONITOR (SINGLE CASING)	MW-01	NA								17	15	5	4.5	2	4069.41	NA	
	MW-02	NA								15	14	4	3.5	2	4067.88	NA	
	MW-03	NA								17.5	17	7	6.5	2	4069.91	NA	
	MW-04	NA								14	13	3	2.5	2	4065.19	NA	

NOTES:

AMSL – ABOVE MEAN SEA LEVEL

BGS – BELOW GROUND SURFACE

NA – NOT APPLICABLE

OFFICERS CLUB, SS-57

PROJECT NO.: 812200063507 | LOCATION: HOLLOMAN AFB, N.M.

TABLE 4-1

SUMMARY OF WELL CONSTRUCTION DATA

WellConstr 7/98

TABLE 4-2
SUMMARY OF AIR SAMPLE ANALYTICAL RESULTS
OFFICERS CLUB, SITE SS-57
HOLLOMAN AFB, NEW MEXICO
APRIL 1996

Pilot Test Number	3 [1]	3 [2]	4	5	5	5 [3]	6
Sample No. SP01-	VET-01-1	VET-01-2	18-20-AS	28-30-AS	28-30-DS	28-30-EFF	38-40-AS
Date Sampled	4/16/96	4/16/96	4/16/96	4/17/96	4/17/96	4/17/96	4/18/96
Analysis by Modified EPA Method TO-3							
TPH (μg/L)	140	130	200	170	280	130	220
TPH (ppmv)	33	32	48	42	67	31	53
Analysis by ASTM Method D-5504 (ppbv)							
Hydrogen Sulfide	<4.0	NA	NA	250	NA	NA	4.1
Carbonyl Sulfide	5.0	NA	NA	<4.0	NA	NA	7.3
Dimethyl Sulfide	15	NA	NA	<4.0	NA	NA	<4.0
Carbon Disulfide	<4.0	NA	NA	<4.0	NA	NA	4.4
Analysis by EPA Method TO-14 (ppbv)							
TNMOC	2200	3000	9400	3900	5300	230	6300
Freon 12	<2.9	<1.6	1.2	17	18	<0.95	30
Freon 11	<2.9	<1.6	0.83	3.3	3.6	<0.95	43
Freon 113	<2.9	<1.6	<0.73	<1.2	<1.5	<0.95	2.0
Methylene Chloride	<2.9	<1.6	<0.73	<1.2	<1.5	2.5	<0.78
1,1,1-Trichloroethane	<2.9	<1.6	<0.73	<1.2	<1.5	0.98	<0.78
Benzene	9.7	11	14	15	22	<0.95	14
Trichloroethene	35	29	18	20	18	2.8	17
Toluene	4.8	5.7	9.5	9.9	16	6.2	13
Ethyl Benzene	<2.9	<1.6	1.2	<1.2	<1.5	<0.95	<0.78
m,p -Xylene	3.1	3.2	2.7	2.9	3.3	3.1	2.7
o-Xylene	<2.9	<1.6	1.2	<1.2	<1.5	1.1	1.5
1,3,5-Trimethylbenzene	<2.9	<1.6	0.83	<1.2	<1.5	<0.95	1.2
1,2,4-Trimethylbenzene	6.3	4.3	3.1	3.2	3.4	1.7	4.3
Acetone	14	22	26	40	18	4.4	73
Carbon Disulfide	<11	<6.5	7.0	<5.0	<6.0	<3.8	<3.1
2-Propanol	<11	<6.5	<2.9	<5.0	<6.0	5.4	<3.1
2-Butanone (MEK)	<11	<6.5	4.5	5.3	<6.0	<3.8	14
Hexane	120	160	180	150	230	<3.8	210
Tetrahydrofuran	140	89	39	22	23	5.1	<3.1
Cyclohexane	79	110	300	120	160	<3.8	140
Ethanol	<11	<6.5	4.4	6.1	<6.0	8.5	<3.1
Heptane	33	40	58	60	92	<3.8	78

NOTES:
Air samples were collected while venting on vapor extraction trench VET-01.
Only detected compounds for ASTM Method D-5504 and EPA Method TO-14 are reported in table.

[1] Sample collected after 40 minutes
[2] Sample collected after 140 minutes
[3] Sample collected after carbon treatment
< - Analyte not detected above stated reporting limit
ASTM - American Society for Testing and Materials
DS - Duplicate sample
EPA - Environmental Protection Agency
MEK - Methyl ethyl ketone
NA - Not analyzed
ppbv - Part per billion by volume
ppmv - Parts per million by volume
TPH - Total Petroleum Hydrocarbons referenced to gasoline
TNMOC - Total Non-Methane Organic Compounds referenced to heptane
ug/L - Micrograms per liter

Appendix A-7

Foster Wheeler Environmental Corporation, October 1997 through October 1999. *System Performance Sampling Events, Officers Club (SS-57), Holloman Air Force Base, New Mexico.*

Air Sparging/Soil Vapor Extraction System Performance Sampling Events, Officer's Club (SS-57)

Subsurface Soil Data: Oct 1997, May 1998, April 1999, Oct 1999

LTO DPT Soil Sampling
30 Sept - 04 Oct

Summary of Analytical Results

#	Site / Sample ID	Sample Interval (ft)	Collection Date	Concentration TPH (ppm)	Concentration BENZENE (ppm)	Comment
	SS-2/5 (POL)					
1	2/5-SB01-093097-10	10-11	9/30/97	390	ND (1.6)	
	2/5-SB01-093097-17	17-18	9/30/97	300	ND (0.68)	
2	2/5-SB02-093097-13	13-14	9/30/97	170	ND (0.72)	
	2/5-SB02-093097-16	16-17	9/30/97	ND (47)	ND (0.15)	
3	2/5-SB03-100197-12	12-13	10/1/97	220	1.1	
	2/5-SB03-100197-17	17-18	10/1/97	67	ND (0.14)	
4	2/5-SB04-100197-11	11-12	10/1/97	80	ND (0.49)	
	2/5-SB04-100197-16	16-17	10/1/97	130	9.1	
5	2/5-SB05-100197-11	11-12	10/1/97	ND (46)	ND (0.15)	
6	2/5-SB06-100197-12.5	12.5-13.5	10/1/97	150	ND (0.15)	
	SS-17 (BX)					
7	BX-SB01-100197-4	4-5	10/1/97	130	ND	
8	BX-SB02-100197-3.5	3.5-4.5	10/1/97	390	ND (0.16)	
9	BX-SB03-100197-2	2-3	10/1/97	57	ND	
	BX-SB04-100197			NOT SAMPLED		
10	BX-SB05-100197-4	4-5	10/01/97	63	ND (0.15)	
11	BX-SB06-100197-1.5	1.5-2.5	10/01/97	72	ND (0.14)	
	FT-31					Plate Counts
12	FT-31-SB01-100397-13	13-14	10/03/97	***1600***	ND (1.6)	1.10×10^5 CFU/ml
13	FT-31-SB02-100397-18	18-19	10/03/97	120	ND (0.79)	2.41×10^6 CFU/ml
14	FT-31-SB03-100497-1	1-2	10/04/97	***56000***		
	FT-31-SB03-100497-4	4-5	10/04/97	65		
	FT-31-SB03-100497-7	7-8	10/04/97	***3700***	ND (0.76)	
	FT-31-SB03-100497-12	12-13	10/04/97	***2500***		
15	FT-31-SB04-100497-20	20-21	10/04/97	ND (52)	ND (0.16)	
	SD-47 (POL)					
16	SD47-SB01-093097-7	7-8	09/30/97	ND (48)	ND	
	SD47-SB01-093097-8	8-9	09/30/97	ND (45)	ND (0.14)	
	SS-57 (O'Club)					Plate Counts
17	OCLUB-SB01-100297-11	11-12	10/02/97	ND (52)		
18	OCLUB-SB02-100397-10	10-11	10/03/97	78		2.00×10^2 CFU/ml
	OCLUB-SB02-100397-15	15-16	10/03/97	***5400***		Below GW Table
	SS-59 (T38)			NOT SAMPLED		
	SS-60 (828)					
19	828-SB01-100297-8	8-9	10/02/97	160	ND (0.15)	
20	828-SB02-100297-8.5	8.5-9.5	10/02/97	130	ND (0.17)	
21	828-SB03-100297-8	8-9	10/02/97	60	ND	
22	828-SB04-100297-8	8-9	10/02/97	790	ND (0.16)	
23	828-SB05-100297-8	8-9	10/02/97	60	ND	
	SWMU-136					Plate Counts
24	SWMU136-SB01-100397-9	9-10	10/03/97	***9300***		
25	SWMU136-SB01-100397-12	12-13	10/03/97	***11000***		1.50×10^5 CFU/ml
26	SWMU136-SB01-100397-16	16-17	10/03/97	***12000***		1.62×10^8 CFU/ml

LEGEND

ND (0.16) : Non-Detect at a concentration of 0.16 ppm.

NOTES

Need BENZENE results for SWMU-136 and O'Club.

LTO DPT Soil Sampling
May 1998

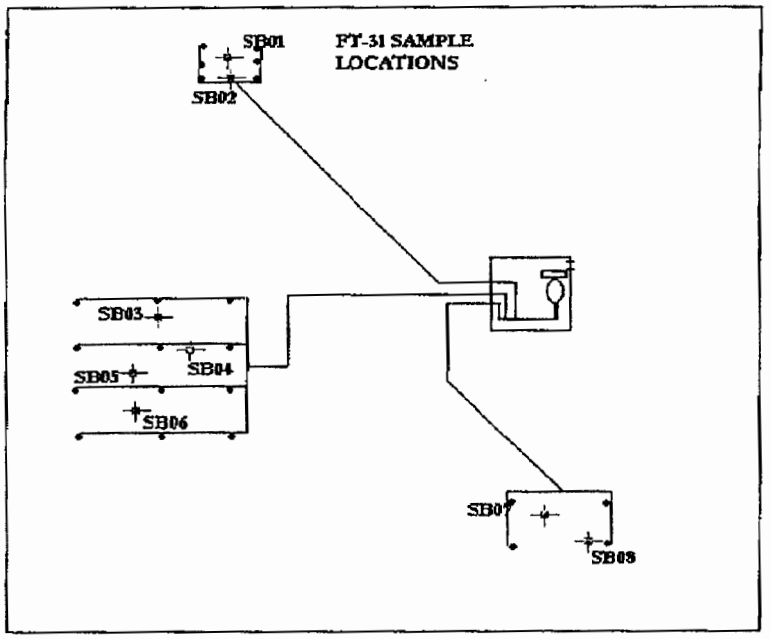
Summary of Analytical Results

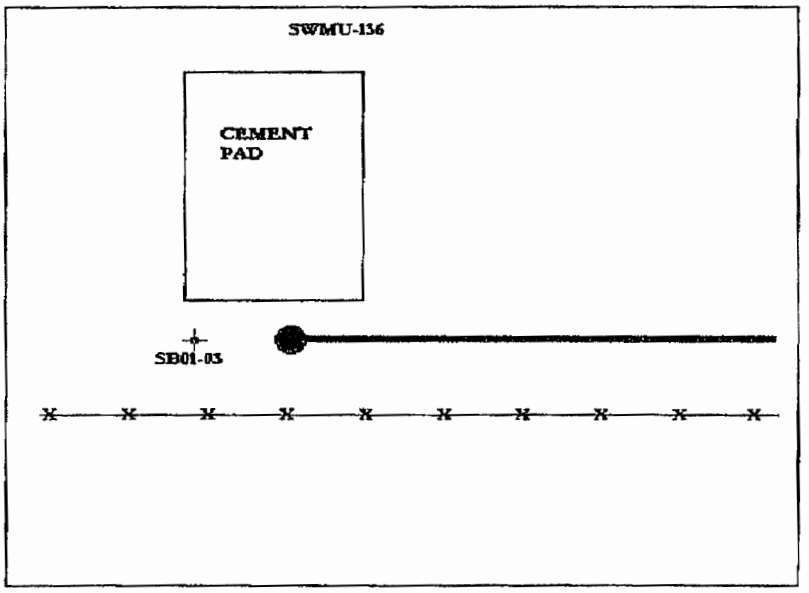
#	Site / Sample ID	Sample Interval (ft)	Collection Date	Concentration TPH (ppm)	Concentration BENZENE (ppm)	Comment
1	SWMU136SB01-10	10-12	5/19/98	**15,700**	N/D	2.49 X 10^5 CFU
2	SWMU136SB02-13	13-15	5/19/98	**9,950**	N/D	
3	SWMU136SB03-17	17-19	5/19/98	551	N/D	
4	FT31SB01-1.5	1.5-3.5	5/19/98	44	N/D	
5	FT31SB01-6.5	6.5-8.5	5/19/98	775	N/D	7.6 X 10^4CFU
6	FT31SB01-13.5	13.5-15.5	5/20/98	971	N/D	
7	FT31SB02-14	14-16	5/20/98	2,570	N/D	2.0 X 10^2CFU
8	FT31SB02-17	17-19	5/20/98	182	N/D	
9	FT31SB03-14	14-16	5/20/98	N/D	N/D	
10	FT31SB03-20	20-22	5/20/98	N/D	N/D	
11	FT31SB04-8	8-10	5/20/98	N/D	N/D	
12	FT31SB04-20	20-22	5/20/98	73.2	N/D	
13	FT31SB05-2	2-4	5/20/98	**8,370**	N/D	5.5 X 10^4CFU
14	FT31SB05-8	8-10	5/20/98	**2,900**	N/D	
15	FT31SB05-16.5	8-10	5/20/98	**2,170**	N/D	
16	FT31SB06-8	8-10	5/20/98	590	N/D	6.8 X 10^3CFU
17	FT31SB06-18	18-20	5/20/98	7.6	N/D	
18	FT31SB06-20	20-22	5/20/98	3,880	5.5	
19	FT31SB07-9	9-11	5/22/98	**1,100**	N/D	3.0 X 10^7CFU
20	FT31SB07-19	19-21	5/22/98	**1,100**	N/D	
21	FT31SB08-3	3-5	5/22/98	**1,860**	N/D	5.69 X 10^5CFU
22	FT31SB08-19	19-21	5/22/98	**1,880**	N/D	
23	OCSB01-4	4-6	5/23/98	8.7	N/D	
24	OCSB01-4.5	4-6	5/23/98	8.3	N/D	
25	OCSB01-9	9-11	5/23/98	10.2	N/D	
26	OCSB01-9.5	9-11	5/23/98	26.1	N/D	
27	OCSB02-4	4-6	5/23/98	9.9	N/D	
28	OCSB02-4.5	4-6	5/23/98	14.9	N/D	
29	OCSB02-9	9-11	5/23/98	**966**	N/D	
30	OCSB02-9.5	9-11	5/23/98	629	N/D	
31	OCSB03-6	6-8	5/23/98	17.7	N/D	
32	OCSB03-6.5	6-8	5/23/98	17.5	N/D	
33	OCSB03-7	7-9	5/23/98	9.1	N/D	
34	OCSB03-7.5	7-9	5/23/98	10.4	N/D	
35	BXSB01-2	2-4	5/23/98	1.4	N/D	
36	BXSB02-2	2-4	5/23/98	1.3	N/D	
37	BXSB03-4	4-6	5/23/98	N/D	N/D	
38	BXSB03-5	5-7	5/23/98	N/D	N/D	
39	BXSB04-3	3-5	5/23/98	2.1	N/D	
40	BXSB04-4	4-6	5/23/98	N/D	N/D	
41	BXSB05-3	3-5	5/23/98	N/D	N/D	
42	BXSB05-4	4-6	5/23/98	N/D	N/D	
43	BXSB06-4	4-6	5/23/98	**4,100**	15	

Soil probe locations:

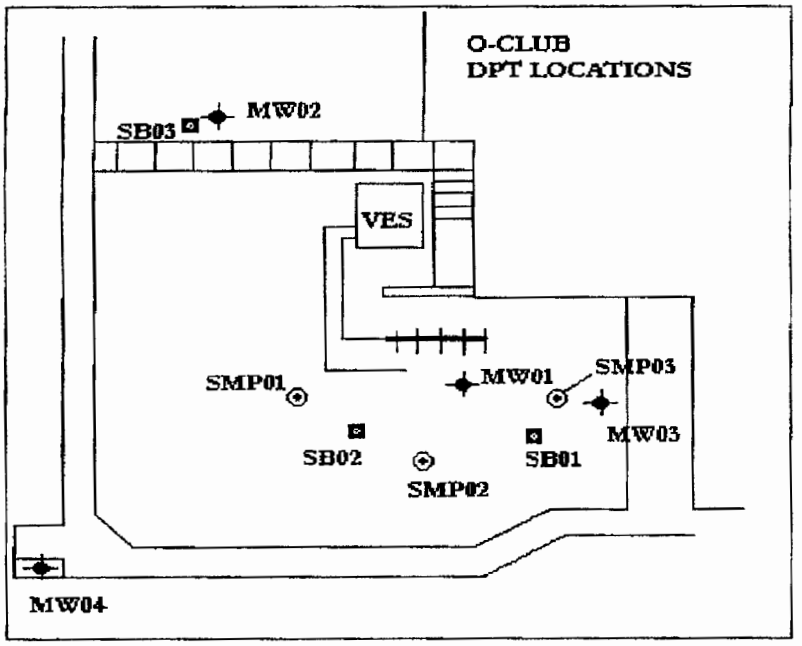
LOCATION	DEPTH
FT31SB01	6'
FT31SB02	16'
FT31SB05	9'
FT31SB06	10' & 14'
FT31SB07	18'

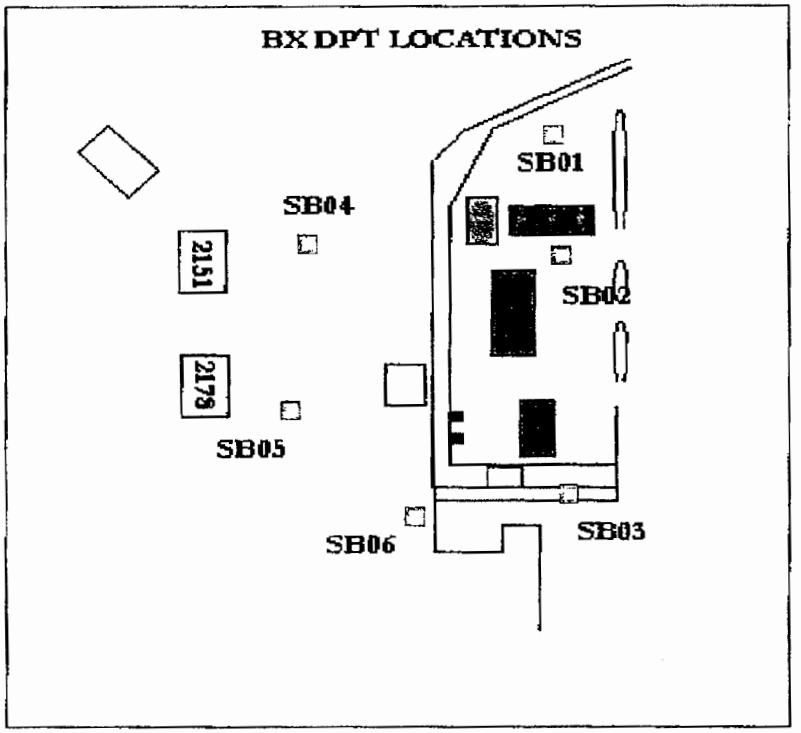
LTO DPT Soil Sampling
May 1998





LTO DPT Soil Sampling
May 1998





LTO DPT Soil Sampling
April 99

Site-Sample ID	Sample Interval (ft)	Collection Date	Concentration TPH (ppm)	Concentration BENZENE (ppm)	Biological Activity Std Plate Count (CFU/g)	Comments
SWMU136SB01-10-12	10-12	4/8/99	**10,560**	N/D	$1.2X10^8$	
SWMU136SB01-16-18	16-18	4/8/99	**2,200**	N/D	2,360	
FT31SB01-2-4	2-4	4/14/99	**32,400**	2.4	80	
FT31SB01-14-16	14-16	4/14/99	**27,000**	4.4	$1.58X10^5$	
FT31SB02-10-12	10-12	4/14/99	N/D	N/D	$1X10^4$	
FT31SB02-18-20	18-20	4/14/99	N/D	N/D	160	
FT31SB03-10-12	10-12	4/14/99	N/D	N/D	220	
FT31SB03-18-20	18-20	4/14/99	N/D	N/D	N/D	
FT31SB04-10-12	10-12	4/14/99	**1,600**	N/D	$2.46X10^5$	
FT31SB04-20-22	20-22	4/14/99	302	3.8	50	
FT31SB05-10-12	10-12	4/14/99	N/D	N/D	1,420	
FT31SB05-16-18	16-18	4/14/99	N/D	N/D	960	
FT31SB06-6-8	6-8	4/14/99	**1,360**	N/D	$8.6X10^4$	
FT31SB06-18-20	18-20	4/14/99	810	N/D	150	
FT31SB07-14-16	14-16	4/14/99	N/D	N/D	$5X10^3$	
FT31SB07-20-22	20-22	4/14/99	N/D	N/D	$3X10^3$	
FT31SB08-2-4	2-4	4/14/99	**2,280**	N/D	$5.5X10^6$	
FT31SB08-2.5	2-4	4/14/99	**2,220**	N/D	$3.5X10^6$	
FT31SB08-14-16	14-16	4/14/99	**2,500**	N/D	$1X10^6$	
FT31SB08-14.5	14-16	4/14/99	**2,300**	N/D	$1X10^6$	
FT31SB09-4-6	4-6	4/14/99	N/D	N/D	10	
FT31SB09-14-16	14-16	4/14/99	N/D	N/D	N/D	
FT31SB10-8-10	8-10	4/14/99	N/D	N/D	30	
FT31SB10-14-16	14-16	4/14/99	N/D	N/D	N/D	
OCLUBSB01-4-6	4-6	4/8/99	N/D	N/D	N/D	
OCLUBSB01-6-8	6-8	4/8/99	N/D	N/D	180	
OCLUBSB02-4-6	4-6	4/8/99	N/D	N/D	$1.2X10^4$	
OCLUBSB02-8-10	8-10	4/8/99	N/D	N/D	1,050	
BXSB01-0-2	0-2	4/13/99	N/D	N/D	N/A	
BXSB02-0-2	0-2	4/13/99	N/D	0.3	N/A	
BXSB02-0-4	0-4	4/13/99	N/D	0.05	N/A	
BXSB03-0-2	0-2	4/13/99	N/D	0.05	N/A	
BXSB03-4-6	4-6	4/13/99	N/D	0.3	N/A	
BXSB04-4-6	4-6	4/13/99	240	N/D	N/A	
BXSB04-6-8	6-8	4/13/99	170	N/D	N/A	
BXSB05-4-6	4-6	4/13/99	N/D	N/D	N/A	
BXSB05-6-8	6-8	4/13/99	350	N/D	N/A	
BXSB06-0-2	0-2	4/13/99	N/D	N/D	N/A	
BXSB06-4-5	4-5	4/13/99	370	5.2	N/A	
BXSB07-2-4	2-4	4/13/99	N/D	N/D	N/A	
BXSB07-4-6	4-6	4/13/99	25	N/D	N/A	
BXSB08-0-2	0-2	4/13/99	N/D	N/D	N/A	
BXSB08-2-4	2-4	4/13/99	13	0.01	N/A	
BXSB09-0-2	0-2	4/13/99	N/D	N/D	N/A	
BXSB09-2-4	2-4	4/13/99	N/D	N/D	N/A	
BXSB10-0-2	0-2	4/13/99	N/D	N/D	N/A	
BXSB10-2-4	2-4	4/13/99	N/D	N/D	N/A	
T38SB01-6-8	6-8	4/7/99	320	N/A	N/A	
T38SB01-8-10	8-10	4/7/99	630	N/A	N/A	
T38SB02-6-8	6-8	4/7/99	**2,700**	N/A	N/A	
T38SB02-8-10	8-10	4/7/99	**4,800**	N/A	N/A	

Site-Sample ID	Sample Interval	Collection Date	Concentration TPH	Concentration BENZENE	Biological Activity Std Plate Count

LTO DPT Soil Sampling
April 99

	(ft)		(ppm)	(ppm)	(CFU/g)	
2/5SB01-4-6	4-6	8-Apr	N/D	N/D	N/A	
2/5SB01-14-16	14-16	8-Apr	540	N/D	N/A	
2/5SB02-6-8	6-8	8-Apr	2,700	N/D	N/A	
2/5SB02-14-16	14-16	8-Apr	638	N/D	N/A	
SD47SB01-2-4	2-4	8-Apr	N/D	N/D	N/A	
SD47SB01-10-12	10-12	8-Apr	N/D	N/D	N/A	
SD47SB02-2-4	2-4	8-Apr	N/D	N/D	N/A	
SD47SB02-8-10	8-10	8-Apr	N/D	N/D	N/A	
828SB01-1-2	1-2	13-Apr	N/D	N/D	N/A	
828SB02-1-2	1-2	13-Apr	N/D	N/D	N/A	

LTO DPT Soil Sampling
October 99

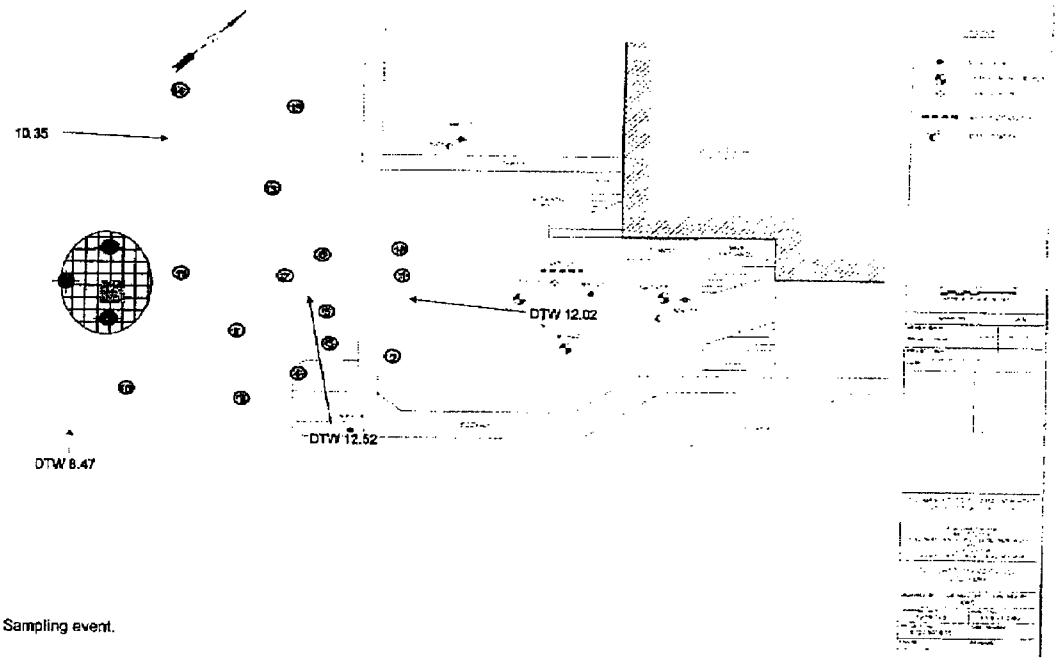
Site-Sample ID	Sample Interval (ft)	Collection Date	Concentration TPH (ppm)	Concentration BENZENE (ppm)	Biological Activity Std Plate Count (CFU/g)	Comments
OCLUBSB01-11-12		10/06/99	N/D	N/D	2.31E+03	
OCLUBSB01-16		10/06/99	240	N/D	2.40E+02	
OCLUBSB01-18-20		10/06/99	**5,800**	N/D	2.50E+04	Below ground water
OCLUBSB02-11-12		10/06/99	80	N/D	2.50E+04	
OCLUBSB02-14-15		10/06/99	**7,400**	N/D	1.07E+03	Below ground water
OCLUBSB03-7-8		10/06/99	N/D	N/D	2.02E+05	
OCLUBSB03-16-17		10/06/99	640	N/D	6.60E+02	
OCLUBSB04-8.5-9.5		10/06/99	100	N/D	1.17E+05	
OCLUBSB04-11-12		10/06/99	**3,800**	N/D	5.00E+01	Below ground water
OCLUBSB04-13-14		10/06/99	96	N/D	8.00E+05	
OCLUBSB05-10-11		10/06/99	N/D	N/D	2.20E+02	
OCLUBSB05-13-14		10/06/99	248	N/D	5.50E+04	
OCLUBSB06-9-10		10/06/99	N/D	N/D	7.76E+05	
OCLUBSB06-13-14		10/06/99	**2,700**	N/D	1.20E+04	Below ground water
OCLUBSB07-9-10		10/06/99	N/D	N/D	3.96E+03	
OCLUBSB07-13-14		10/06/99	40	N/D	1.20E+05	
OCLUBSB08-6-7		10/06/99	N/D	N/D	1.40E+06	
OCLUBSB08-13-14		10/06/99	800	N/D	4.40E+03	Below ground water
OCLUBSB09-4-5		10/07/99	N/D	N/D	5.84E+05	
OCLUBSB09-8-9		10/07/99	N/D	N/D	1.11E+07	
OCLUBSB09-13-14		10/07/99	N/D	N/D	7.00E+01	
OCLUBSB10-8-9		10/07/99	N/D	N/D	5.76E+05	
OCLUBSB10-11-12		10/07/99	N/D	N/D	3.20E+03	
OCLUBSB11-8-9		10/07/99	N/D	N/D	6.00E+05	
OCLUBSB11-13-14		10/07/99	**3,400**	N/D	8.70E+04	Below ground water
OCLUBSB12-7-8		10/07/99	**1,580**	N/D	4.56E+03	
OCLUBSB12-13-14		10/07/99	N/D	N/D	2.00E+03	
OCLUBSB13-7-8		10/07/99	N/D	N/D	4.70E+02	
OCLUBSB13-13-14		10/07/99	**5,800**	N/D	2.48E+03	Below ground water
OCLUBSB14-3-4		10/07/99	N/D	N/D	2.90E+02	
OCLUBSB14-6-7		10/07/99	N/D	N/D	5.00E+06	
OCLUBSB14-13-14		10/07/99	N/D	N/D	2.70E+04	
OCLUBSB15-7-8		10/07/99	N/D	N/D	5.39E+03	
OCLUBSB15-13-14		10/07/99	**5,200**	N/D	1.00E+03	Below ground water
OCLUBSB16-12-13		10/08/99	N/D	N/D	3.60E+02	
OCLUBSB16-13-14		10/08/99	32	N/D	5.50E+02	
OCLUBSB16-14-15		10/08/99	48	N/D	1.28E+05	
BXSB01						
BXSB02						
BXSB02						
BXSB03-6-7		11/03/99	N/D	N/D		
BXSB04-3.5-4		11/03/99	131	N/D		
BXSB04-4-5		11/03/99	**2,490**	0.48		
BXSB05-3-4		11/03/99	15	0.04		
BXSB05-4.5-5.5		11/03/99	122	0.53		
BXSB06-1-2		11/03/99	11	0.04		
BXSB06-3-4		11/03/99	**2,420**	0.42		
BXSB07-3-3.8		11/03/99	N/D	N/D		
BXSB07-4.5-5		11/03/99	N/D	0.02		
BXSB08-3-4		11/04/99	N/D	N/D		
BXSB08-4.5-5.5		11/04/99	N/D	N/D		
BXSB09-3-4		11/04/99	N/D	N/D		
BXSB09-5-6		11/04/99	N/D	N/D		
BXSB09-6.5-7.5		11/04/99	N/D	N/D		
BXSB10-3-4		11/04/99	N/D	N/D		
BXSB10-4-5		11/04/99	N/D	0.01		
BXSB11-3-4		11/04/99	625	0.44		
BXSB11-4-5		11/04/99	520	1.4		

BXSB12-3-4		11/04/99	628	1.3		
BXSB12-4-5		11/04/99	534	1.9		
BXSB13-3-4		11/04/99	45	0.05		
BXSB13-4-5		11/04/99	15	0.006		
BXSB14-2		11/18/99	N/D	N/D		
BXSB15-2.5		11/18/99	N/D	N/D		
BXSB16-2.5		11/18/99	N/D	N/D		
BXSB17-1.5		11/18/99	N/D	N/D		
BXSB18-2.5		11/18/99	N/D	N/D		
2/5SB01-6-7		10/05/99	5,000	N/D	N/A	
2/5SB01-7-8		10/05/99	8,700	N/D	N/A	
2/5SB02-6-7		10/05/99	1,360	N/D	N/A	
2/5SB02-7-8		10/05/99	1,700	N/D	N/A	
2/5SB03-6-7		10/05/99	2,200	N/D	N/A	
2/5SB03-7-8		10/05/99	1,200	N/D	N/A	
2/5SB04-6-7		10/05/99	3,660	N/D	N/A	
2/5SB04-7-8		10/05/99	2,500	N/D	N/A	
2/5SB05-6-7		10/08/99	36	N/D	N/A	
2/5SB05-7-8		10/08/99	1,100	N/D	N/A	
2/5SB05-11-12		10/08/99	880	N/D	N/A	
2/5SB06-6-7		10/08/99	5,400	N/D	N/A	
2/5SB06-7-8		10/08/99	4,600	N/D	N/A	
2/5SB06-9-10		10/08/99	900	N/D	N/A	
2/5SB07-6-7		10/08/99	1,380	N/D	N/A	
2/5SB07-7-8		10/08/99	2,500	N/D	N/A	
2/5SB07-10-11		10/08/99	240	N/D	N/A	
2/5SB08-6-7		10/08/99	500	N/D	N/A	
2/5SB08-7-8		10/08/99	1,360	N/D	N/A	
2/5SB08-11-12		10/08/99	420	N/D	N/A	
2/5SB11-21-22		11/15/99	4,720	3.3	4.00E+03	
2/5SB12-14		11/15/99	26	N/D	3.00E+03	
2/5SB12-17		11/15/99	N/D	N/D	7.00E+01	
2/5SB13-4		11/15/99	370	N/D	6.00E+05	
2/5SB13-8		11/15/99	1,680	N/D	5.00E+03	
2/5SB13-12		11/15/99	1,320	N/D	1.20E+02	
2/5SB13-16.5-17		11/15/99	63,600	9.6	6.00E+03	
2/5SB14-8		11/15/99	552	N/D	5.00E+06	
2/5SB14-12		11/15/99	4,520	N/D	6.00E+05	
2/5SB14-15		11/15/99	1,200	N/D	2.28E+03	
2/5SB14-23		11/15/99	1,620	0.23	3.00E+03	
2/5SB15-8		11/15/99	N/D	N/D	2.00E+03	
2/5SB15-15.5		11/15/99	3,080	0.56	1.30E+04	
2/5SB16-8		11/16/99	N/D	N/D	3.42E+03	
2/5SB16-15.5		11/16/99	1,660	N/D	2.80E+04	
2/5SB17-8		11/16/99	12	N/D	2.00E+03	
2/5SB17-13		11/16/99	94	N/D	5.00E+05	
2/5SB17-16.5		11/16/99	248	0.025	3.00E+01	
2/5SB18-8		11/16/99	N/D	N/D	4.00E+01	
2/5SB18-13		11/16/99	3,760	N/D	1.70E+04	
2/5SB19-8		11/16/99	N/D	N/D	6.00E+01	
2/5SB19-14		11/16/99	96	N/D	3.20E+04	
2/5SB20-8		11/16/99	N/D	N/D	3.00E+03	
2/5SB20-14.5		11/16/99	2,880	N/D	1.00E+04	
2/5SB21-8		11/16/99	N/D	N/D	3.00E+03	
2/5SB21-19		11/16/99	100	N/D	7.00E+01	
2/5SB21-13		11/16/99	880	N/D	2.00E+02	
2/5SB22-8		11/17/99	N/D	N/D	4.56E+03	
2/5SB22-14		11/17/99	N/D	N/D	2.00E+04	
2/5SB23-11		11/17/99	N/D	N/D	1.20E+04	
2/5SB23-14		11/17/99	140	N/D	<10	
2/5SB24-7.5		11/17/99	N/D	N/D	4.00E+03	
2/5SB24-13.5		11/17/99	64	N/D	8.00E+05	
2/5SB25-7.5		11/17/99	N/D	N/D	1.00E+01	

2/5SB25-13.5		11/17/99	1,232	N/D	2.00E+05	
2/5SB26-8		11/17/99	N/D	N/D	2.00E+02	
2/5SB26-13.5		11/17/99	200	1.1	2.10E+04	
2/5SB27-8		11/17/99	N/D	N/D	8.90E+02	
2/5SB27-13.5		11/17/99	14	0.02	8.00E+03	
2/5SB28-7.5		11/17/99	N/D	N/D	3.30E+02	
2/5SB28-16		11/17/99	3,480	0.16	3.00E+03	
2/5SB29-7		11/18/99	6,560	N/D	3.00E+05	
2/5SB29-11		11/18/99	92	N/D	4.00E+01	
2/5SB29-16.5		11/18/99	N/D	N/D	4.40E+02	
2/5SB29-20		11/18/99	5,520	1.34	5.00E+01	
2/5SB30-7.5		11/18/99	1,760	N/D	6.30E+04	
2/5SB30-14		11/18/99	2,480	N/D	1.14E+03	
2/5SB30-19		11/18/99	2,560	N/D	5.00E+03	
2/5SB31-11		11/18/99	2,680	N/D	2.85E+05	
2/5SB31-17		11/18/99	1,568	N/D	1.90E+04	
2/5SB32-12		11/19/99	344	N/D	6.00E+05	
2/5SB32-17		11/19/99	900	0.03	1.20E+04	
2/5SB33-8		11/19/99	34	N/D	1.00E+01	
2/5SB33-12		11/19/99	N/D	N/D	5.00E+03	
2/5SB34-8		11/19/99	N/D	N/D	5.10E+02	
2/5SB34-13		11/19/99	12	N/D	2.20E+04	
FT31SB01-16.5-17.5		10/11/99	N/D	N/D	1.00E+02	
FT31SB01-22-23		10/11/99	N/D	N/D	1.00E+03	
FT31SB02-3.5-4.5		10/11/99	N/D	N/D	1.60E+07	
FT31SB02-22-23		10/11/99	N/D	N/D	1.00E+03	
FT31SB03-18.5-19.5		10/11/99	N/D	N/D	1.71E+05	
FT31SB03-20-21		10/11/99	1,140	N/D	4.10E+02	
FT31SB03-22-23		10/11/99	20	N/D	2.00E+01	
FT31SB04-8-9		10/11/99	2,200	N/D	4.00E+05	
FT31SB04-18.5-19.5		10/11/99	N/D	N/D	2.00E+03	
FT31SB05-19-20		10/11/99	N/D	N/D	1.00E+02	
FT31SB05-20-21		10/11/99	N/D	N/D	2.80E+04	
FT31SB06-1-2		10/12/99	3,000	N/D	9.00E+03	
FT31SB06-20.5-21		10/12/99	3,400	N/D	6.00E+03	
FT31SB07-18-19		10/27/99	N/D	N/D	<10	
FT31SB07-22-23		10/27/99	N/D	N/D	1.00E+02	
FT31SB08-18-19		10/27/99	N/D	N/D	6.30E+04	
FT31SB08-20-21		10/27/99	1,900	N/D	<10	
FT31SB09-10-11		10/27/99	1,000	N/D	1.14E+03	
FT31SB09-18-19		10/27/99	7,840	N/D	2.00E+02	
FT31SB09-19.5-20		10/27/99	8,000	N/D	1.00E+02	
FT31SB10-19.5-20		11/08/99	N/D			
FT31SB11-20-21		11/08/99	8,280			
FT31SB11-21-22		11/08/99	N/D			
FT31SB11-22.5-23.5		11/08/99	N/D			
FT31SB12-21-22		11/08/99	N/D			
FT31SB13-20.5-21.5		11/08/99	N/D			
FT31SB14-19-20		11/09/99	392			
FT31SB14-22-23		11/09/99	140			
FT31SB15-11-11.5		11/09/99	300			
FT31SB15-12-13		11/09/99	1,580			
FT31SB15-13-14		11/08/99	4,600			
FT31SB15-14-15		11/09/99	5,920			
FT31SB15-17-18		11/09/99	2,960			
FT31SB15-20-20.5		11/09/99	440			
FT31SB16-19-20		11/09/99	N/D			
FT31SB16-20-20.5		11/09/99	4,000			
FT31SB17-18-19		11/10/99	N/D			
FT31SB17-19-20		11/10/99	12			
FT31SB18-10.5-11.5		11/10/99	N/D			
FT31SB18-12-13		11/10/99	36			
FT31SB18-14-15		11/10/99	48			

LTO DPT Soil Sampling
October 99

FT31SB18-16-17		11/10/99	788			
FT31SB18-19-20		11/10/99	232			
FT31SB19-17-18		11/10/99	N/D			
FT31SB19-18.5-19.5		11/10/99	184			
FT31SB20-5-6		11/10/99	36			
FT31SB20-8-9		11/10/99	N/D			
FT31SB20-17-18		11/10/99	N/D			
FT31SB20-18.5-19.5		11/10/99	N/D			
FT31SB21-15-16		11/11/99	N/D			
FT31SB21-18-19		11/11/99	N/D			
FT31SB21-19-20		11/11/99	20			
FT31SB22-15-16		11/11/99	N/D			
FT31SB22-18.5-19.5		11/11/99	14			



-1999 Sampling event.

Site-Sample ID	Sample Interval (ft)	Collection Date	Concentration TPH (ppm)	Concentration BENZENE (ppm)	Biological Activity Std Plate Count (CFU/g)	Comments
OCLUBSB01-11-12		10/06/99	N/D	N/D	2.31E+03	
OCLUBSB01-16		10/06/99	240	N/D	2.40E+02	
OCLUBSB01-18-20		10/06/99	**5,800**	N/D	2.50E+04	**Below ground water**
OCLUBSB02-11-12		10/06/99	80	N/D	2.50E+04	
OCLUBSB02-14-15		10/06/99	**7,400**	N/D	1.07E+03	**Below ground water**
OCLUBSB03-7-8		10/06/99	N/D	N/D	2.02E+05	
OCLUBSB03-16-17		10/06/99	640	N/D	6.60E+02	
OCLUBSB04-8.5-9.5		10/06/99	100	N/D	1.17E+05	
OCLUBSB04-11-12		10/06/99	**3,800**	N/D	5.00E+01	**Below ground water**
OCLUBSB04-13-14		10/06/99	96	N/D	8.00E+05	
OCLUBSB05-10-11		10/06/99	N/D	N/D	2.20E+02	
OCLUBSB05-13-14		10/06/99	248	N/D	5.50E+04	
OCLUBSB06-9-10		10/06/99	N/D	N/D	7.76E+05	
OCLUBSB06-13-14		10/06/99	**2,700**	N/D	1.20E+04	**Below ground water**
OCLUBSB07-9-10		10/06/99	N/D	N/D	3.96E+03	
OCLUBSB07-13-14		10/06/99	40	N/D	1.20E+05	
OCLUBSB08-6-7		10/06/99	N/D	N/D	1.40E+06	
OCLUBSB08-13-14		10/06/99	**800**	N/D	4.40E+03	**Below ground water**
OCLUBSB09-4-5		10/07/99	N/D	N/D	5.84E+05	
OCLUBSB09-8-9		10/07/99	N/D	N/D	1.11E+07	
OCLUBSB09-13-14		10/07/99	N/D	N/D	7.00E+01	
OCLUBSB10-8-9		10/07/99	N/D	N/D	5.76E+05	
OCLUBSB10-11-12		10/07/99	N/D	N/D	3.20E+03	
OCLUBSB11-8-9		10/07/99	N/D	N/D	6.00E+05	
OCLUBSB11-13-14		10/07/99	**3,400**	N/D	8.70E+04	**Below ground water**
OCLUBSB12-7-8		10/07/99	**1,580**	N/D	4.56E+03	**??**
OCLUBSB12-13-14		10/07/99	N/D	N/D	2.00E+03	
OCLUBSB13-7-8		10/07/99	N/D	N/D	4.70E+02	
OCLUBSB13-13-14		10/07/99	**5,800**	N/D	2.48E+03	**Below ground water**
OCLUBSB14-3-4		10/07/99	N/D	N/D	2.90E+02	
OCLUBSB14-6-7		10/07/99	N/D	N/D	5.00E+06	
OCLUBSB14-13-14		10/07/99	N/D	N/D	2.70E+04	
OCLUBSB15-7-8		10/07/99	N/D	N/D	5.39E+03	
OCLUBSB15-13-14		10/07/99	**5,200**	N/D	1.00E+03	**Below ground water**

OCLUBSB16-12-13		10/08/99	N/D	N/D	3.60E+02	
OCLUBSB16-13-14		10/08/99	32	N/D	5.50E+02	
OCLUBSB16-14-15		10/08/99	48	N/D	1.28E+05	

Appendix A-8

Foster Wheeler Environmental Corporation, April 2003. *Phase I Human Health Risk Assessment and Ecological Screening-Level Assessment for SS-57 - Officer's Club, Holloman Air Force Base, New Mexico.*

PHASE I HUMAN HEALTH RISK ASSESSMENT AND ECOLOGICAL SCREENING-LEVEL ASSESSMENT FOR SS-57--OFFICERS CLUB HOLLOMAN AIR FORCE BASE, NEW MEXICO

Prepared for:
49 CES/CEV
Holloman Air Force Base, NM
and
HQ ACC/ESVR
Langley Air Force Base, VA

Prepared by:
Foster Wheeler Environmental Corporation
6605 Uptown Blvd. NE, Suite 220
Albuquerque, NM 87110

Under Contract No. DACW45-94-D-0003
Delivery Order 37, Work Authorization Directive 1

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

April 2003

Table 1 Summary of Analytes Detected in Soil Samples Collected at SS-57, July 2002

Sample Location	Sample Depth (ft)	VOCs (mg/kg)	SVOCs (mg/kg)			TPH Ranges (mg/kg)		
		Ethylbenzene	Diethylphthalate	2-Methylnaphthalene	Phenanthrene	Diesel	Gasoline	Oil
SS57-DP01	10	ND	ND	ND	ND	1700	2.9	420
SS57-DP02	7	ND	0.33 J	ND	ND	26	ND	ND
SS57-DP02	10	ND	ND	ND	ND	9100	11	1700
SS57-DP03	4	ND	ND	ND	ND	ND	0.12 J	ND
SS57-DP03	10	0.28 J	ND	1.4	0.73	6200	79	1200
SS57-DP04	12	ND	ND	ND	ND	980	ND	250
SS57-DP05	2	ND	0.36 J	ND	ND	ND	ND	ND
SS57-DP06	11	ND	ND	ND	ND	3600	4.4	600
SS57-DP07	9	ND	ND	ND	ND	1700	ND	480

ft - feet
J - Concentration estimated at a value below the method reporting limit
mg/kg - milligrams per kilogram

Table 2 Summary Statistics for Analytes in Soil at SS-57

Analyte	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Location of Maximum Detected Concentration	Frequency of Detection	Range of Detection Limits (mg/kg)
Diethylphthalate	0.33	0.36	SS57-DP05, 2 ft	2/16	0.41-2.2
Ethylbenzene	0.28	0.28	SS57-DP03, 10 ft	1/16	0.006-0.66
2-Methylnaphthalene	1.4	1.4	SS57-DP03, 10 ft	1/16	0.41-2.2
Phenanthrene	0.73	0.73	SS57-DP03, 10 ft	1/16	0.41-2.2

mg/kg - milligrams per kilogram

Table 3 Screening Level Comparison for Analytes at SS-57

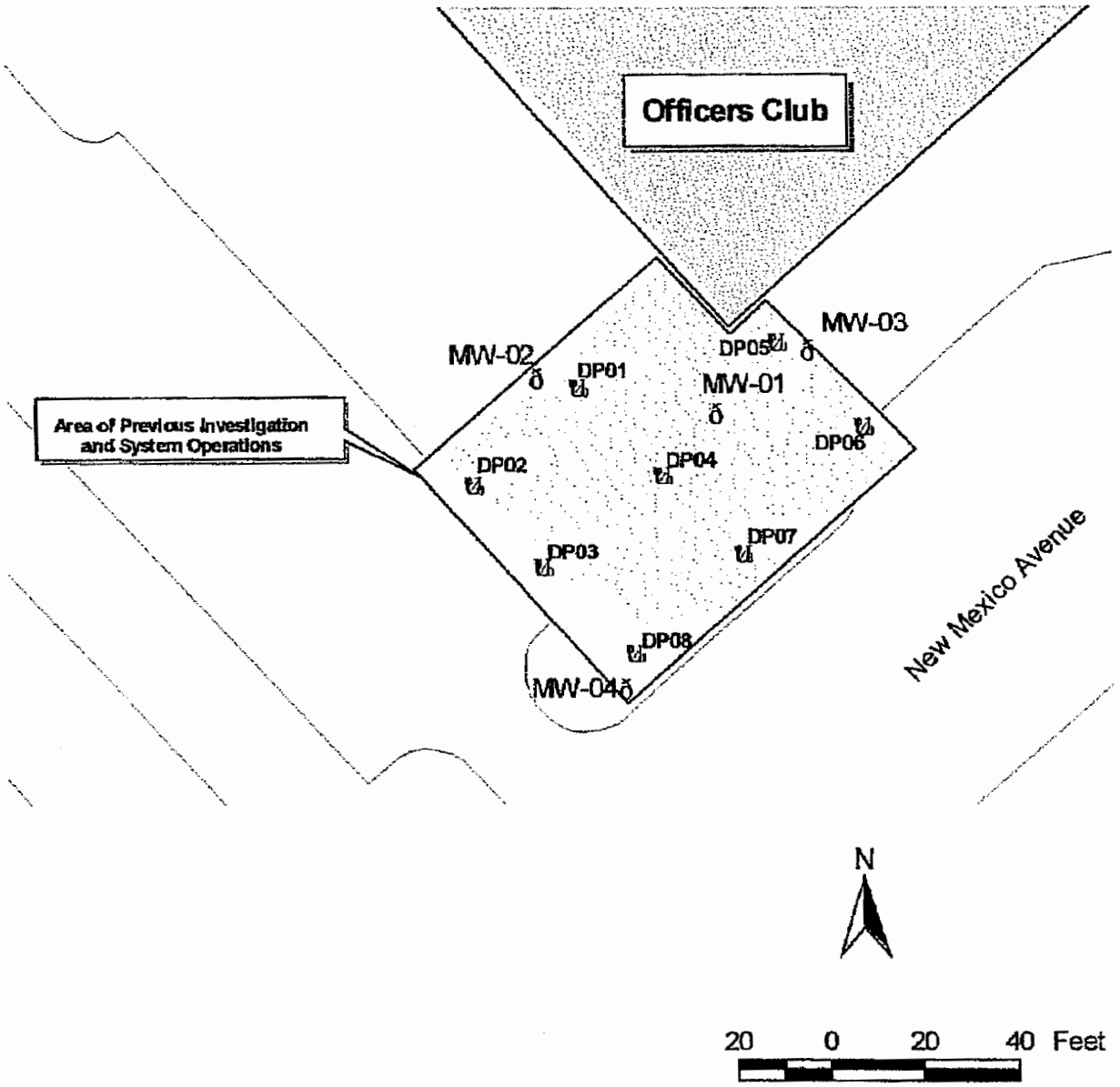
Analyte	Maximum Concentration (mg/kg)	NMED Residential SSL [1] (mg/kg)	SSL Endpoint	Is Maximum Concentration Greater than Screening Level?	HQ [2]
Diethylphthalate	0.36	49000	nc	No	0.00001
Ethylbenzene	0.28	68	sat	No	--
2-Methylnaphthalene [3]	1.4	1600	nc	No	0.0009
Phenanthrene	0.73	1800	nc	No	0.0004
					HI = 0.0013

(1) Residential soil screening levels were taken from NMED (2001).

(2) HQ is maximum concentration divided by residential soil screening level. HI is the sum of all HQs.

(3) Residential risk-based concentration taken from EPA Region 3 RBC Table (EPA 2002), based on a provisional NCEA oral reference dose.

HQ - Hazard Quotient
HI - Hazard Index
mg/kg - milligrams per kilogram
nc - noncarcinogenic effect
NMED - New Mexico Environment Department
sat - soil saturation limit basis
SSL - soil screening level
-- - not applicable. (The soil screening level is based on a soil saturation limit and not a health-based effect. If the soil saturation limit is exceeded, free product is anticipated in the soil.)



DPT Sample Location

Monitoring Well

Roads

Buildings

Remedial Action Operations DPT Sampling
Holloman Air force Base, New Mexico

Figure 1
Direct-Push Sample Locations, July 2002

APPENDIX B

SOIL BORING LOGS

B-1 Sergent, Hauskins & Beckwith, December 1991

B-2 Wilson & Company, June 1992

B-3 Radian Corporation, May 1993

B-4 Foster Wheeler Environmental Corporation and Groundwater Technology, Inc., October 1996

B-5 Foster Wheeler Environmental Corporation, April 2003

B-6 Bhate Environmental Associates, Inc., July 2005

Appendix B-1

Sergent, Hauskins & Beckwith. December 1991. *Geotechnical Investigation, Officer's Club, Holloman Air Force Base, Alamogordo, New Mexico.*

PROJECT Officers Club - Holloman Air Force Base
Alamogordo, New Mexico

JOB NO. E91-1191 DATE 10/25/91

LOG OF TEST BORING NO. 1

Bottom of stair well

RIG TYPE N/A
BORING TYPE Hand Auger
SURFACE ELEV. 87.62
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								SM		4.5" Concrete
										SILTY SAND, fine, nonplastic, tan brown
5								SM		SILTY SAND, fine, nonplastic, light gray to dark gray
10									*	note: strong hydrocarbon and sewage odor
										Auger Refused @ 7'
15										
20										
25										
30										
35										
40										
45										
50										

GROUNDWATER

DEPTH	HOUR	DATE
0.0	0935	10/25/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

SERGENT, HAUSKINS & BECKWITH

CONSULTING GEOTECHNICAL ENGINEERS
PHOENIX · ALBUQUERQUE · SANTA FE
SALT LAKE CITY · EL PASO · TUCSON
RENO/SPARKS

PROJECT Officers Club - Holloman Air Force Base
Alamogordo, New Mexico

JOB NO. E91-1191 DATE 10/25/91

LOG OF TEST BORING NO. 2

Inside of basement

RIG TYPE N/A
BORING TYPE Hand Auger
SURFACE ELEV. -
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				A				SM		4.5" Concrete
										SILTY SAND, fine, nonplastic, black Note: strong sewage and hydrocarbon odor; could not keep hole open.
5										
10										Stopped Auger @ 1'
15										
20										
25										
30										
35										
40										
45										
50										

PROJECT Officers Club - Holloman Air Force Base
Alamogordo, New Mexico

JOB NO. E91-1191 DATE 10/24/91

LOG OF TEST BORING NO. 3

SW side of center line club

RIG TYPE CME-75
BORING TYPE 6-1/2" Hollw Stem Auger
SURFACE ELEV. 96.70
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	12		20	SM	moderately firm	6" Turf
				S	21		23			
				S	5		23	CL	firm	SILTY SAND, fine, some clay, nonplastic to low plasticity, tan
5				U	22	89	18 38			
								ML	medium stiff	CLAYEY SAND, fine, trace of silt, fine, low to medium plasticity, tan
10				S	31		19			
								SM	firm	INTERBEDDED SANDY SILT, fine, clayey sand, fine, tan
15				S	61/11"				very firm	SILTY SAND, trace of clay, nonplastic, tan
									hard	SILTY CLAYEY SAND, fine, dark gray
20				S	50/5.5"			SM		note: dark sand with a strong hydrocarbon odor @ 15'
25				S	50/6"					
30				S	45		19	CL		note: very sharp transition of colors @ 30' note: 30' sand is clearly less contaminated
35									dense	SANDY CLAY, fine, 1/8" gypsum granules, low to medium plasticity, tanish brown
40										Stopped Auger @ 29' 6" Stopped Sampler @ 31'
45										
50										

GROUNDWATER

DEPTH	HOUR	DATE
6.0	1510	10/24/91
9.6	1830	10/24/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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LOG OF TEST BORING NO. 4

W. center of center line club in turf

JOB NO. E91-1191 DATE 10/24/91

RIG TYPE CME-75
BORING TYPE 6-1/2" Hollow Stem Auger
SURFACE ELEV. 98.29
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	21		17			6" Turf
				S	14		13	CL	stiff	**CLAYEY SILT**, fine, low plasticity, tan
				S	11		12			
							9			
5				S	19	86	26		moderately firm	**SANDY SILT**, fine, nonplastic, tan
				U	13			ML		
10				S	30		23		firm	
15				U	21		29	CH	very stiff	**CLAY**, fine, high plasticity, dark brown
20				S	50/5"		36	ML	hard	**SANDY SILT**, fine, some sand, low plasticity, dark brown
25				S	50/5"			CL	hard	**SILTY CLAY**, fine, considerable gypsum granules, low plasticity, gray
30				S	50/5"		17	CL	hard	**CLAYEY SILT**, gypsum, fine to medium, possible plasticity, light gray
35										Stopped Auger @ 29' 6" Stopped Sampler @ 30' 6"
40										
45										
50										

GROUNDWATER

	DEPTH	HOUR	DATE
▽	5.5	5.5	10/24/91
▼	9.5	9.5	10/24/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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LOG OF TEST BORING NO. 5

JOB NO. E91-1191 DATE 10/24/91

N.W. side of center line club in turf

RIG TYPE CME-75
BORING TYPE 6-1/2" Hollow Stem Auger
SURFACE ELEV. 98.16
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	14		16			2" Grass 4" Turf
				S	4		15	SM CL	very soft	SILTY SAND, fine, nonplastic, tan
				S	17		10			
5				S	23		10	CL	stiff	SANDY CLAY, low plasticity, tan
				U	20		23	SM	firm	SILTY CLAY, low to medium plasticity, tan
10				S	67		14		hard	SILTY SAND, fine, trace of clay, nonplastic, tan
15				U	12		29	CL	moderately firm	SANDY CLAY, interbedded with silty sands, low plasticity, tan to dark brown
20				S	42		17	CL	hard	CLAYEY SAND, fine, low plasticity, tan
25				S	70			CL	hard	CLAY WITH SILT, occasional gypsum granules, low to medium plasticity, light gray
30				S	80		16			
35										Stopped Auger @ 29' 6" Sampler Refused @ 30' 10"
40										
45										
50										

GROUNDWATER

DEPTH	HOUR	DATE
6.0		10/24/91
9.5		10/2491

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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JOB NO. E91-1191 DATE 10/23/91

LOG OF TEST BORING NO. 6

N.W. side of pool area

RIG TYPE CME-75
BORING TYPE 6-1/2" Hollow Stem Auger
SURFACE ELEV. 98.22
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	18		5	SM	firm	SILTY SAND, trace of clay and gravel, dark brown
							12			
				S	9		8	SM		
				S	30				soft to firm	SILTY SAND, fine, nonplastic, light brown
5				S	33		5			
				U	40		14			
								SM	very firm	SILTY SAND, interbedded with clayey sand, occasional small gravel
10				S	32		20		very firm	SILTY SAND, fine to medium, nonplastic, light brown
								SM		
15				S	25					
20				S	25				firm	
25				S	50/5"		16		hard	CLAY, with trace of gypsum granules, medium plasticity, tan
								CL		
30				U	100/11"		16			
										Stopped Auger @ 29' Sampler Refused @ 29' 11"
35										
40										
45										
50										

GROUNDWATER

	DEPTH	HOUR	DATE
▽	7.5		10/23/91
▼	9.5		10/23/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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LOG OF TEST BORING NO. 7

JOB NO. E91-1191 DATE 10/23/91

S.W. side of pool area

RIG TYPE CME-75
BORING TYPE 6-1/2" Hollow Stem Auger
SURFACE ELEV. 98.55
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	15		14	CL	stiff	CLAYEY SAND, fine to medium, low plasticity, dark brown
				S	12		11			
				S	22		10	SM	moderately firm	SILTY SAND, fine, occasional small gravel, brown
5				S	67		13			
				U	30				hard	SILTY SAND, very fine, nonplastic, light brown
								SM		
10				S	4		36		very soft	
15				U	23				firm	SILTY SAND, fine to medium, occasional gypsum granules Note: clay lense @ 15' 6" approximately 1-1/2" thick
								SM		
20				S	38		37		hard	CLAYEY SAND, gypsum, granules, low to medium plasticity, brown
								CL		
25				S	85/9"					
								SM	hard	SILTY SAND, fine to medium, trace of clay, nonplastic, light brown
30				S	62		17	CL		
									hard	SANDY CLAY, gypsum granules, low to medium plasticity, brown
35										Stopped Auger @ 29' 6" Stopped Sampler @ 31'
40										
45										
50										

GROUNDWATER

DEPTH	HOUR	DATE
7.2	0930	10/23/91
9.8	1015	10/23/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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JOB NO. E91-1191 DATE 10/25/91

LOG OF TEST BORING NO. 8

Courtyard area next to dining room

RIG TYPE NA
BORING TYPE Hand Auger
SURFACE ELEV. 99.00
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	6		50			3" Concrete
							38	ML		
				S	6				loose	SILT, fine, low plasticity, tan
				S	6		22	SM		
				S	6		12	CL	medium stiff	INTERBEDDED DARK CLAY WITH SILTY SAND
5				S	6					
				S	6		18			
				S	6				loose	SILTY SAND, fine, nonplastic, tan
				S	6		23			
10				S	6					
				S	6					CLAYEY SILT, fine, some sand, low plasticity, tan
				S	6				soft	
								SM		
				S	6				loose	SILTY SAND, fine, nonplastic, tan
15										
										Stopped Sampler/Auger @ 13' 6"
20										
25										
30										
35										
40										
45										
50										

GROUNDWATER

DEPTH	HOUR	DATE
9.0	1359	10/23/91
9.1	1540	10/25/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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JOB NO. E91-1191 DATE 10/27/91

LOG OF TEST BORING NO. 9

N.E. of pool area

RIG TYPE CME-75
BORING TYPE 6-1/2" Hollow Stem Auger
SURFACE ELEV. 95.41
DATUM Top of Fire Hydrant

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/foot 140 lb. 30" free-fall drop hammer	Dry Density lbs. per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	10		29	CL	stiff	4" Asphalt
				S	14		20	ML	moderately firm	CLAY, low to medium plasticity, light gray
				S	10		20			
5				S	3		33	SM	very soft	SILT, fine, low plasticity, light brown
				U	10			SM	moderately firm	SILTY SAND, fine, trace of clay
10				S	22		28			
								SM	firm	INTERBEDDED SILTY SAND & CLAY, low plasticity, light brown to dark brown
15				S	42				very firm	INTERBEDDED SILTY SAND AND CLAY, low plasticity, light brown to dark brown
								SM		
20				U	100/6"				hard	SILTY SAND, fine to medium, occasional small gypsum granules, brown
								SM	hard	SILTY SAND, fine to medium, occasional gypsum granules, trace of clay, light brown
25				S	50/5"					
30				S	34		19	CL	hard	CLAY, fine, considerable gypsum grains, low to medium plasticity, brown
35										Stopped Auger @ 29' 6" Stopped Sampler @ 31'
40										
45										
50										

GROUNDWATER

DEPTH	HOUR	DATE
5.2	1300	10/22/91
9.3	1500	10/22/91

SAMPLE TYPE

A - Auger Cuttings B - Block sample.
S - 2" O.D. 1.38" I.D. tube sample.
U - 3" O.D. 2.42" I.D. tube sample.
T - 3" O.D. thin-walled Shelby tube.

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Appendix B-2

Wilson & Company. June 1992. *Engineering Report for Study to Determine Source of Odor at the Officer's Club SVS 91-0206.*

BORING LOG

Boring No. B-10

Drilling Contractor: Testing Labs	Project No.: 91-533 — Date: 5/01/92
Drilling method: Hollow-stem auger	Client: Holloman AFB
Hole diameter: 6-7/8 inches	Location: Alamogordo, NM
Logged by: B. L. Johnson — Driller: M. Abeyta	Project Name: Officer's Club Odor Study
Well Completion Details: Boring only	Weather & Temperature: Sunny, clear, 90
	Field location of boring: 6.5' SE of Corner 14' SW of SW Edge of O-Club

Top of Casing Elevation:			Datum:	
Water Level	~8.5'	8.88		
Time				
Date	5-01-92	5-02-92		

Stratum Depth From	Stratum Depth To	Description
0"	6"	Clay, dk brown, top soil, moist
6"	8'	Clay, silty, buff, some sands, med. plasticity, moist, soft
8'	9'	Silt, v. sandy, buff, v. moist, v. soft
9'	15'	Sandy, fine, silty, light brown salmon, very wet
15'		Clay, h. plastic, gyp crystals, reddish brown
		TD 15.5'

Type of Sample	Sample Number	Sample Depth From	Sample Depth To	Remarks
SS	1	10	11.5	Blow Counts
				5-10-16
				HNU = 34 ppm vol/vol
SS	2	14	15.5	Blow counts
				7 - 9 - 8
				HNU = 29 ppm vol/vol

BORING LOG

Boring No. B-12

Drilling Contractor:	Testing Labs
Drilling method:	Hollow-stem auger
Hole diameter:	6-7/8 inches
Logged by: B. L. Johnson	Driller: M. Abeyta
Well Completion Details:	Boring only

Top of Casing Elevation:			Datum:	
Water Level	~10'	10.09		
Time				
Date	5-01-92	5-02-92		

Stratum Depth From	To	Description
0"	6"	Clay, dk brown, top soil
6"	1.5'	Clay, lt brown, high plasticity, little sands, moist
1.5'	8'	Clay, dk. brown, high plasticity, moist, trace sands
8'	9'	Silt, fine sandy, buff, wet
9'	14.5'	Sand, fine, silty, light brown, wet
14.5		Sand, fine, gray, silty, odorous, wet
		TD 15.5'

Project No.: 91-533	Date: 5/01/92
Client:	Holloman AFB
Location:	Alamogordo, NM
Project Name:	Officer's Club Odor Study
Weather & Temperature:	Sunny, clear, 90's
Field location of boring:	5' SE of O-Club 21' NE of SW sidewalk

Type of Sample	Sample Number	Sample Depth From	Sample Depth To	Remarks
SS	1	10	11.5	Blow Counts
				4-4-7
				Sample fell out
				HNU = 30 ppm vol/vol
SS	2	14	15.5	Blow counts
				7 - 10-12
				HNU = 250 ppm vol/vol

BORING LOG

Boring No. B-13

Drilling Contractor:	Testing Labs
Drilling method:	Hollow-stem auger
Hole diameter:	6-7/8 inches
Logged by:	B. L. Johnson
Driller:	M. Abeyta
Well Completion Details:	Boring only
Project No.:	91-533
Date:	5/01/92
Client:	Holloman AFB
Location:	Alamogordo, NM
Project Name:	Officer's Club Odor Study
Weather & Temperature:	Sunny, clear, 80's
Field location of boring:	10.5' SE of O-Club 5.5' SW of SW sidewalk

Top of Casing Elevation:			Datum:	
Water Level	~9'	10.67		
Time				
Date	5-01-92	5-02-92		

Stratum Depth From	Stratum Depth To	Description
0"	6"	Clay, dk brown, top soil, med. plasticity, v. moist
6"	3'	Clay, brown, low-med plasticity, caliche nodules and pea gravel, fill mat'l ?, v. moist
3'	8'	Clay, silty, beige, v. moist to wet, low plasticity
8'	14"	Silt, v. sandy, fine-grained, pinkish beige(buff), wet
14'		Sandy silt or silty sand, gray to tan, wet sewage odor
		TD 15.5'

Type of Sample	Sample Number	Sample Depth From	Sample Depth To	Remarks
SS	1	10	11.5	Blow Counts
				6-10-13
				HNU = 21 ppm vol/vol
SS	2	14	15.5	Blow counts
				10-13-20
				HNU = 600 ppm vol/vol

BORING LOG

Boring No. B-14

Drilling Contractor: Testing Labs	Project No.: 91-533 — Date: 5/01/92
Drilling method: Hollow-stem auger	Client: Holloman AFB
Hole diameter: 6-7/8 inches	Location: Alamogordo, NM
Logged by: B. L. Jc' nson — Driller: M. Abeyta	Project Name: Officer's Club Odor Study
Well Completion Details: Boring only	Weather & Temperature: Sunny, clear, S. breeze, 80's
Top of Casing Elevation: — Datum:	Field location of boring: S. of Barber Shop, 7.5' SE of bldg, 7.5' SW of NE sidewalk

Water Level	--10'	10.01		
Time	0930			
Date	5-01-92	5-02-92		

Stratum Depth From	Stratum Depth To	Description
0"	6"	Clay, dk brown, top soil
6"	2.5'	Clay, beige, low plasticity, silty, v. moist
2.5'	3.5'	Clay, gravely, beige to brown, v. moist
3.5'	5'	Clay, low plasticity, beige, v. moist
5'	5.5'	Gravel lense
5.5'	10'	Silt, sandy or silty sand, beige, v. moist
10'	15.5'	Sand, silty, lt. pinkish/salmon to reddish brown to beige, fine, wet
		TD 15.5'

Type of Sample	Sample Number	Sample Depth From	Sample Depth To	Remarks
SS	1	10	11.5	Blow Counts
				5-12-13
				HNU = 22 ppm vol/vol
SS	2	14	15.5	Blow counts
				9-14-17
				HNU = 21 ppm vol/vol

BORING LOG

Boring No. B-15

Drilling Contractor:	Testing Labs
Drilling method:	Hollow-stem auger
Hole diameter:	6-7/8 inches
Logged by:	B. L. Johnson
Driller:	M. Abeyta
Well Completion Details:	Boring only
Top of Casing Elevation:	
Datum:	

Water Level	8'	8.69		
Time				
Date	5-01-92	5-02-92		

Stratum Depth From	To	Description
0"	6"	Clay, dk brown, top soil
6"	4'	Silt, brown, some sand
4'	8'	Clay, buff, med. plasticity, some sands
8'	10'	Sand, fine, silty, light buff, wet
10'	14.5'	a.a. except gray, odorous
14.5	15'	Sand, v. fine, highly gypsiferous, gray and white, moist
15'		Clay, v. tight, silty to fine sandy red, low plasticity, slightly moist
		TD 15.5'

Project No.:	91-533
Date:	5/01/92
Client:	Holloman AFB
Location:	Alamogordo, NM
Project Name:	Officer's Club Odor Study
Weather & Temperature:	Sunny, clear, 90's
Field location of boring:	33' SE of O-Club 56' SW of SW sidewalk

Type of Sample	Sample Number	Sample Depth From	Sample Depth To	Remarks
SS	1	10	11.5	Blow Counts
				6-9-8
				HNU = 270 ppm vol/vol
SS	2	14	15.5	Blow counts
				10-13-24
				HNU = 100 ppm vol/vol

Appendix B-3

Radian Corporation. May 1993. *Final Sample and Quality Control Summary Report (SQCSR) Officers Club Soil Investigation, Holloman Air Force Base, New Mexico.*

DRILLING LOG

HOLE NO. VB-1

E10487A

1. COMPANY NAME	RADIAN CORPORATION
2. DRILLING SUBCONTRACTOR	SHB-AGRA
SHEET 1 OF 4 SHEETS	
3. PROJECT	OFFICER'S CLUB INVESTIGATION
4. LOCATION	HOLLOMAN AFB, NEW MEXICO
5. NAME OF DRILLER	Dave Tanner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4¼ -INCH ID HOLLOW STEM AUGER 1⅝ -INCH ID SPLIT SPOON SAMPLER 3 -INCH DIAMETER SHELBY TUBE
8. HOLE LOCATION	OFFICER'S CLUB
9. SURFACE ELEVATION	
10. DATE STARTED	17NOV92
11. DATE COMPLETED	17NOV92
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	6.2 FT BGL
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	27 FEET BGL
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
		1	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
			TPH-H (4)	TPH-H (1)	H_2S (1) (3) BIOLOGICAL	%

22. DEPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			MIKE HALL

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		0-2.5 Very pale orange (10 yr 8/2), very fine silty sand; moist; very soft; non-cemented; lensed with white Micro Crystalline Gypsum nodules (5% ≤ 1cm) non-plastic (SM)				3	09:53 Begin Drilling
							2.0/2.0 Recovery
						3	
	1		0.0ppm				
						3	
						8	
	2						2.0/2.0 Recovery
						11	
		2.5-6.0 Very pale orange (10yr 8/2); fine sandy silt; lensed with amber gypsum nodules (10% ≤ 1cm); moist; hard to very hard in nodules; non-cemented; non-plastic; low toughness; low dry strength (ML)				12	
	3		0.0ppm				
						15	
						10	
	4						0.2/2.0 Recovery
						3	
						8	

DRILLING LOG

HOLE NO. VB-1

PROJECT OFFICERS CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
						5	
						5	
	6	5-16.1 Grayish orange (10yr 7/4); very fine filty sand; saturated; firm; non-cemented; non-plastic (SM).			OCVB1-1	4	1.7/2.0 Recovery 6.2 Saturated
						5	
	7		12ppm			3	
						8	2.0/2.0 Recovery
	8	8-10 Weathered diesel odor.				4	
						9	
	9	9.0-9.6 Uniform gray (N6) staining.	45ppm		OCVB1-2 OCVB1-3	12	
						17	
	10						
	11						
	12						
	13						

PROJECT OFFICER'S CLUB INVESTIGATION | HOLE NO. VB-1

E10457A

DRILLING LOG

HOLE NO. VB-1

PROJECT OFFICER'S CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 3 OF 4 SHEETS

E10497A

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	15	15–16.1 Strong weathered diesel odor with mild H_2S odor.			OCVB1–4 OCVB1–5	5 23	1.7/2.0 Recovery
	16	15.8–16.1 Amber gypsum crystals in voids (20% ≤ 2cm)	55ppm			24	
		16.1–16.35 Gray (N6) very fine clayey sand; saturated; hard; non-cemented					
	17	16.35–25.2 Gray (N6 very fine filty sand; saturated; firm; non-cemented; non-plastic; strong weathered diesel odor with mild H_2S odor (SM).				26	
	18						
	19						
	20	20–22 Strong weathered diesel odor; moderate H_2S odor.				7 19	2.0/2.0 Recovery
	21		120ppm		OCVB1–6 OCVB1–7	35	
	22	21.8–22 Amber gypsum crystals in (20% ≤ 2cm).		OCVB1–8		48	22.0 Too Dense To Push Shelby Tube. Hammered Instead.

DRILLING LOG

HOLE NO. VB-1

PROJECT NELLIS AFB RI/FS

INSPECTOR MIKE HALL

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	24						
	25						
		25.2-26 Gray (N6) clayey sand; saturated; hard, 16ppm, non-cemented; low-moderate plasticity; low toughness; low dilatancy (SC).	16ppm		OCVB1-9	20 50/4"	1.4/2.0 Recovery
	26	TD @ 26.0 ft BGL					
	27						
	28						
	29						
	30						
	31						

PROJECT OFFICER'S CLUB INVESTIGATION

HOLE NO. VB-1

DRILLING LOG

HOLE NO. VB-2

1. COMPANY NAME	RADIAN CORPORATION
2. DRILLING SUBCONTRACTOR	SHB-AGRA
SHEET 1 OF 4 SHEETS	
3. PROJECT	OFFICER'S CLUB INVESTIGATION
4. LOCATION	HOLLOMAN AFB, NEW MEXICO
5. NAME OF DRILLER	Dave Tanner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4¼ -INCH ID HOLLOW STEM AUGER; 1⅝ -INCH ID SPLIT SPOON SAMPLER; 3 -INCH DIAMETER SHELBY TUBE
8. HOLE LOCATION	OFFICER'S CLUB
9. SURFACE ELEVATION	
10. DATE STARTED	18NOV92
11. DATE COMPLETED	18NOV92
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	8.0 FT BGL
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	27 FEET BGL
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
		1	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
			TPH-H (4)	TPH-H (1)	H_2S (1) (3) BIOLOGICAL	%

22. DEPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			MIKE HALL

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		0-0.5 Brown (5yr 3/3) organic-rich silty fine sand; dry; loose; non-cemented; roots. (SM).				3	09:30 Begin Drilling 2.0/2.0 Recovery
	1	0.5-1.4 Very pale orange (10yr 8/2). very fine sandy silt; dry; very soft; non-cemented; homogenous; low dry strength; slow dilatancy; non-plastic roots (ML).	0.0ppm		OCVB2-1	5 8	
	2	1.4-4.0 As above, but color changes to orange pink (5yr 7/4).				10 4	2.0/2.0 Recovery
	3		0.0ppm			6 8	
	4	4-15.8 Moderate orange-pink (5yr 8/4) very fine to fine sand; moist; soft; non-cemented; homogenous; clean; well sorted; poorly graded (SP).	82ppm	OCVB2-2		8 3 8	0/2.0 Recovery

PROJECT OFFICER'S CLUB INVESTIGATION HOLE NO. VB-2

DRILLING LOG

HOLE NO. VB-2

PROJECT OFFICERS CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
			.82ppm			10	
						20	
	6	6–8 Very fine grained, increasing moisture with depth.				7	2.0/2.0 Recovery
						10	
	7		0.0 ppm				
						17	
						20	
	8		2.0 ppm				
						8	2.0/2.0 Recovery 8.0 Saturated
	9				OCVB2-03 OCVB2-04	14	
						16	
	10					20	
	11						
	12						
	13						

DRILLING LOG

HOLE NO. VB-2

PROJECT OFFICER'S CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	15	15.0–15.8 Uniform gray (N6) staining; mild weathered diesel odor.				8 20	2.0/2.0 Recovery
	16	15.8–16.3 White very fine silty sand to sandy silt, saturated; very hard; strong cementation (SM–ML).	8.0ppm		OCVB2–5 OCVB2–6	50 4	
	17	16.3–21.0 Pale brown (5yr 5/2) very fine sandy clay; saturated; hard; lensed with white, micro crystalline gypsum nodules (10% ≤ 1cm); non to highly cemented in nodules; very high dry strength; non-dilatant, high toughness; high plasticity (CH).					
	18						
	19						
	20					12 27	2.0/2.0 Recovery
	21	Abrupt, distinct contact. 21– Gray (N6) fine sand; saturated; hard; non-cemented; clean; well sorted; poorly graded; subrounded quartz grains; strong H_2S odor (SP).	5.0ppm		OCVB2–7 OCVB2–8	38 39	
	22						

DRILLING LOG

HOLE NO. VB-2

PROJECT NELLIS AFB RI/FS

INSPECTOR MIKE HALL

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	24						
	25	25-25.7 Yellowish gray (5yr 7/2) very fine silty sand, lensed with white microcrystalline gypsum nodules (10% ≤ 1cm) and amber gypsum crystals (10% ≤ 2cm); saturated; firm to very hard in nodules and crystals; mild weathered diesel odor (SM).	5.0ppm		OCVB2-9	10	0.7/2.0 Recovery
	26					15	
						28	
	27	TD @ 27.0 ft BGL.				38	
	28						
	29						
	30						
	31						

PROJECT OFFICER'S CLUB INVESTIGATION

HOLE NO. VB-2

DRILLING LOG

HOLE NO. VB-3

E10487C

1. COMPANY NAME	RADIAN CORPORATION
2. DRILLING SUBCONTRACTOR	SHB-AGRA
SHEET 1 OF 4 SHEETS	
3. PROJECT	OFFICER'S CLUB INVESTIGATION
4. LOCATION	HOLLOMAN AFB, NEW MEXICO
5. NAME OF DRILLER	Dave Tanner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4¼ -INCH ID HOLLOW STEM AUGER; 1⅜ -INCH ID SPLIT SPOON SAMPLER; 3 -INCH DIAMETER SHELBY TUBE
8. HOLE LOCATION	OFFICER'S CLUB
9. SURFACE ELEVATION	
10. DATE STARTED	17NOV92
11. DATE COMPLETED	17NOV92
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	8.0 FT BGL
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	27 FEET BGL
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA
18. GEOTECHNICAL SAMPLES	DISTURBED: ; UNDISTURBED: 1
19. TOTAL NUMBER OF CORE BOXES	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
			TPH-H (4)	TPH-H (1)	H_2S (1) / (3) BIOLOGICAL	

22. DEPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			MIKE HALL

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		0-2.5 Mixed silty sand full with gravel and scraps of asphalt.				7	13:25 Begin Drilling 1.0/2.0 Recovery
						9	
	1					6	
						7	
	2					8	2.0/2.0 Recovery
		2.5-6.3 Use 0.5-1.4 in VB-2, but but changed very fine to fine.				8	
	3		0.0ppm			9	
						5	
	4					18	1.5/2.0 Recovery
			0.0ppm			12	

PROJECT OFFICER'S CLUB INVESTIGATION HOLE NO. VB-3

DRILLING LOG

HOLE NO. VB-3

PROJECT OFFICERS CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
						9	
						6	
	6					2	2.0/2.0 Recovery
		6.3-21.2 Grayish orange (10yr 7/4) fine silty sand; moist; firm; non-cemented; homogenous; well sorted; subrounded quartz grains (SM).	0.0 ppm			8	
	7					5	
						5	
	8					4	8.0 Saturated 2.0/2.0 Recovery
						6	
	9					8	
						10	
	10						
	11						
	12						
	13						

DRILLING LOG

HOLE NO. VB-3

PROJECT OFFICER'S CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	15	15-17 Uniform gray (N6) staining; moderate H_2S oder; mild weathered diesel odor.			OCVB3-2 OCVB3-3	5 15	2.0/2.0 Recovery OVM not functioning. No readings.
	16					16	
						23	
	17						
	18						
	19						
	20	20-21.2 Uniform gray (N6) staining; moderate weathered diesel odor.			OCVB3-3 OCVB3-4	12 28	
	21					38	
		21.2-21.5 Very pale orange (10yr 8/2) very fine sandy silt; saturated; hard; non-cemented; homogenous; low plasticity (ML).				39	
	22	21.5-26 Uniform gray (N5) fine silty sand; saturated; firm; non-cemented; homogenous; well sorted; subrounded quartz grains; moderate weathered diesel odor.					

DRILLING LOG

HOLE NO. VB-3

PROJECT NELLIS AFB RI/FS

INSPECTOR MIKE HALL

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	24						
	25	25-27 Moderate weathered diesel odor.				2	1.5/2.0 Recovery
						10	
						38	
	26	26-30.5 Gray (NG) medium sand; saturated; hard; homogenous; clean; well sorted; poorly graded; non-cemented; subrounded quartz grains; moderate H_2S odor (SP).			OCVB3-6 OCVB3-7	Refusal	
	27						
	28						
	29						
	30	30-30.5 Strongly cemented; mild weathered diesel odor.			OCVB3-8 OCVB3-9	40	
		Distinct Contact					
	31	30.5 very pale orange (10yr 8/2) fine silty sand; mottled (15%) with dark yellowish orange (10yr 6/6) lamina (<1cm thick); saturated; hard; non-cemented; faint weathered diesel odor (SN).				50/4"	
		TD @ 30.75 feet BGL					

PROJECT OFFICER'S CLUB INVESTIGATION

HOLE NO. VB-3

DRILLING LOG

HOLE NO. VB-4

1. COMPANY NAME	RADIAN CORPORATION
2. DRILLING SUBCONTRACTOR	SHB-AGRA
SHEET 1 OF 4 SHEETS	
3. PROJECT	OFFICER'S CLUB INVESTIGATION
4. LOCATION	HOLLOMAN AFB, NEW MEXICO
5. NAME OF DRILLER	Dave Tanner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4¼ -INCH ID HOLLOW STEM AUGER; 1⅜ -INCH ID SPLIT SPOON SAMPLER; 3 -INCH DIAMETER SHELBY TUBE
8. HOLE LOCATION	OFFICER'S CLUB
9. SURFACE ELEVATION	
10. DATE STARTED	18NOV92
11. DATE COMPLETED	18NOV92
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	4.0 FT BGL
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	27 FEET BGL
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
		1	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
			TPH-H (4)	TPH-H (1)	H_2S (1) / (3) BIOLOGICAL	

22. DEPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			MIKE HALL

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		0-2.0 Mixed silty sand full with gravel and scraps of asphalt.				2	07:25 Begin Drilling 1.7/2.0 Recovery
						6	
	1		0.0 ppm			5	
						8	
	2				OCVB4-1	8	1.0/2.0 Recovery
		2.5-6.3 Very pale orange (10yr 8/2); fine sandy silt; lensed with amber gypsum nodules (10% < 1cm); moist; hard to very hard in nodules; non-cemented; non-plastic low toughness; low dry strength (ML).				16	
	3		0.0ppm			10	
						9	
	4	7.0-8.0 Grayish orange (10yr 7/4) fine silty sand; moist; firm; non-cemented; homogenous; grades to clean fine sand at 6.0 feet; subrounded quartz grains; very faint weathered diesel odor (SM).				2	4.0 Saturated 1.9/2.0 Recovery
			55.0ppm			3	

PROJECT OFFICER'S CLUB INVESTIGATION HOLE NO. VB-4

DRILLING LOG

HOLE NO. VB-4

PROJECT OFFICERS CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
			55.0 ppm			6	
						7	
	6	6.0-13.0 Grayish orange (10yr 7/4) fine sand; saturated; soft; homogenous; clean; well-sorted; poorly graded; subrounded quartz grains; very faint weathered diesel odor.(SP)				2	0.3/2.0 Recovery
						2	
	7					3	
						3	
	8					10	2.0/2.0 Recovery
						10	
	9		0.0 ppm		OCVB4-2 OCVB403	12	
						18	
	10						
	11						
	12						
	13	13-14 Pale reddish brown (10yr 5/4) fine sand; saturated; homogenous; clean; well sorted; poorly graded; subrounded quartz grains. (SP)	0.5 ppm		OCVB4-4 OCVB4-5 OCVB4-6	13	2.0/2.0 Recovery
						14	

DRILLING LOG

HOLE NO. VB-4

PROJECT OFFICER'S CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		14-25 Very pale orange (10yr 8/2) Gypsum cemented fine silty sand; saturated; moderate-strong cementation; firm-hard; interlayered indurated and non-indurated zones. (SM)	0.5 ppm			17	
						19	
	15			OCVB4-7		20	0.8/0.8 Recovery
						50/4"	
	16						
	17						
	18						
	19						
	20	20-22 Color changes to yellowish gray (5yr 7/2); non-cemented with small white microcrystalline gypsum nodules (3% ≤ 1cm); faint weathered diesel odor.	2.0ppm		OCVB4-8 OCVB4-9	11	0.8/0.8 Recovery
						50/4"	
	21						
	22						

E104970

DRILLING LOG

HOLE NO. VB-4

PROJECT NELLIS AFB RI/FS

INSPECTOR MIKE HALL

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	24						
	25	25–26 Dusky yellow (5yr 6/4) fine sand to silty fine sand; saturated; lensed with white microcrystalline gypsum nodules (10% < 1cm) and fractured at 45 with amber gypsum crystals in fractures; firm to hard.				17 30	1.0/1.0 Recovery
	26	TD @ 26 feet BGL				Refusal	
	27						
	28						
	29						
	30						
	31						

PROJECT OFFICER'S CLUB INVESTIGATION

HOLE NO. VB-4

DRILLING LOG

HOLE NO. AB-1

1. COMPANY NAME	RADIAN CORPORATION
2. DRILLING SUBCONTRACTOR	SHB-AGRA
SHEET 1 OF 4 SHEETS	
3. PROJECT	OFFICER'S CLUB INVESTIGATION
4. LOCATION	HOLLOMAN AFB, NEW MEXICO
5. NAME OF DRILLER	Dave Tanner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4¼ -INCH ID HOLLOW STEM AUGER; 1⅝ -INCH ID SPLIT SPOON SAMPLER; 3 -INCH DIAMETER SHELBY TUBE
8. HOLE LOCATION	OFFICER'S CLUB
9. SURFACE ELEVATION	
10. DATE STARTED	18NOV92
11. DATE COMPLETED	18NOV92
12. OVERBURDEN THICKNESS	NA
13. DEPTH GROUNDWATER ENCOUNTERED	4.0 FT BGL
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	27 FEET BGL
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
		1	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
			TPH-H (3)	TPH-L (1)	SULFIDE (1) / BIOLOGICAL (3)	%

22. DEPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			MIKE HALL

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
							13:30 Begin Drilling At 45 depths corrected to vertical
	1						
	2						
	3						
	4	3.5-4.2 Very fine orange (10yr 8/2) fine sand; dry; loose; non-cemented; clean; well sorted; poorly graded; subrounded quartz grains.	0.0ppm	OCAB1-1		12 5	1.0/1.0 Recovery

PROJECT OFFICER'S CLUB INVESTIGATION HOLE NO. AB-1

DRILLING LOG

HOLE NO. AB-1

PROJECT OFFICERS CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	6						
	7	7.07–7.78 As above.				23	1.0/1.0 Recovery
			0.0 ppm			23	
	8						
	9						
	10						
		10.6–12.37 As above, but uniformly stained Gray (NG); saturated; mild weathered diesel odor; moderate H_2S odor.				15	0/1.0 Recovery 10.6 Saturated
	11		7.0 ppm		OCAB1-2 OCAB1-3	20	1.5/1.5 Recovery
						20	
	12					28	
						30	
	13						

DRILLING LOG

HOLE NO. AB-1

PROJECT OFFICER'S CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		14.1–14.8 As Above		OCAB1-4			
	15	14.8–15.2 As Above	28.0 ppm		OCAA1-5	50	0.5/0.5 Recovery
	16						
	17	17.7–18.0 White very fine silty sand to sandy silt, saturated; very hard; strong cementation (SM-ML).			OCAB1-6	15	1.0/1.0 Recovery
	18	18.0–18.4 Pale brown (5yr 5/2) very fine sandy clay; saturated; hard; lensed with white, micro crystalline gypsum nodules (10% ≤ 1cm) non to highly cemented in nodules; dilatant, high dry strength; non-dilatant, high toughness; high plasticity (CH).	70.0ppm			15	
	19						
	20						
	21	21.2–21.9 As Above	30.0ppm		OCAB1-8	35	1.0/1.0 Recovery
	22					40	

DRILLING LOG

HOLE NO. AB-1

PROJECT NELLIS AFB RI/FS

INSPECTOR MIKE HALL

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	24	24.7-25.1 Yellowish gray (5yr 7/2) very fine silty sand, lensed with white microcrystalline gypsum nodules (10% ≤ 1cm) and amber gypsum crystals (10% ≤ 2cm); saturated; firm to very hard in nodules and frystals; mild weathered diesel odor (SM).					
	25	TD @ 25.1 feet BGL.	1.0ppm		OCAB1-8	76	0.5/0.5 Recovery
	26						
	27						
	28						
	29						
	30						
	31						

PROJECT OFFICER'S CLUB INVESTIGATION

HOLE NO. AB-1

DRILLING LOG

HOLE NO. AB-2

1. COMPANY NAME	RADIAN CORPORATION
2. DRILLING SUBCONTRACTOR	SHB-AGRA
SHEET 1 OF 4 SHEETS	
3. PROJECT	OFFICER'S CLUB INVESTIGATION
4. LOCATION	HOLLOMAN AFB, NEW MEXICO
5. NAME OF DRILLER	Dave Tanner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4¼ -INCH ID HOLLOW STEM AUGER 1⅝ -INCH ID SPLIT SPOON SAMPLER 3 -INCH DIAMETER SHELBY TUBE
8. HOLE LOCATION	OFFICER'S CLUB
9. SURFACE ELEVATION	
10. DATE STARTED	19NOV92
11. DATE COMPLETED	19NOV92
12. OVERBURDEN THICKNESS	NA
15. DEPTH GROUNDWATER ENCOUNTERED	10.6 FT BGL
13. DEPTH DRILLED INTO ROCK	NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	NA
14. TOTAL DEPTH OF HOLE	27 FEET BGL
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	NA

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
		1	NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
			TPH-H (3)	TPH-2 (1)	SULFIDE (1) / BIOLOGICAL (3)	

22. DEPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	X			MIKE HALL

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
							09:39 Begin Drilling At 45° depths corrected to vertical
	1						
	2						
	3						
	4	2.5-6.0 Very pale orange (10yr 8/2); fine sandy silt; lensed with amber gypsum nodules (10% ≤ 1cm); moist; hard to very hard in nodules; non-cemented; non-plastic; low toughness; low dry strength (ML).	3.6ppm		OCAB2-1	5 6	0.5/1.0 Recovery

DRILLING LOG

HOLE NO. AB-2

PROJECT OFFICERS CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 2 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	6						
	7	7.07–7.78 Grayish orange (10yr 7/4) fine sand; dry; soft; non-cemented; clean; well sorted; poorly graded; subrounded quartz grains; faint weathered diesel odor in tip.	3.6 ppm			23 23	1.0/1.0 Recovery
	8						
	9						
	10	10.6–11.3 As above; saturated	1.8 ppm			5 6	10.6 Saturated 0.8/1.0 Recovery
	11						
	12						
	13						

DRILLING LOG

HOLE NO. AB-2

PROJECT OFFICER'S CLUB INVESTIGATION | INSPECTOR MIKE HALL | SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
		14.1–15.5 As above ; but uniformly stained gray (N_6) with a strong H_2S odor.	16.0 ppm			15	1.0/1.0 Recovery
						25	
	15					20	0/1.0 Recovery
						25	
	16						
	17						
		17.7–18.7 As Above		OCAB2–2			1.0/1.0 Recovery
	18						
			10.0 ppm		OCAB2–3	10	0.5/1.0 Recovery
		18.7–21.2 White very fine silty sand to sandy silt, saturated; very hard; strong cementation (SM–ML).			OCAB2–4	15	
	19					13	
					OCAB2–5		1.0/2.0 Recovery
					OCAB2–6	18	
						19	
						40	
	20						
	21						
		21.2–25.5 Gray (N6) fine sand; saturated; hard; non-cemented; clean; well sorted; poorly graded; subrounded quartz grains; strong H_2S odor (SP).	60.0 ppm		OCAB2–7	20	1.0/1.0 Recovery
					OCAB2–8	25	
	22						

DRILLING LOG

HOLE NO. AB-2

PROJECT NELLIS AFB RI/FS

INSPECTOR MIKE HALL

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS/RECOVERY h
	24						
		24.7–25.1 Yellowish gray (5yr 7/2) very fine silt sand, lensed with white microcrystalline grysum sodules (10% < 1cm) and amber gypsum crystals (10% < 2cm); saturated; frim to very hard in codules and crystals; mild weathered diesel odor (SM).			OCAB2–9	25 70	1.0/1.0 Recovery
	25						
	26						
	27	TD @ 27.0 feet BGL					
	28						
	29						
	30						
	31						

PROJECT OFFICER'S CLUB INVESTIGATION

HOLE NO. AB-2

Appendix B-4

Foster Wheeler Environmental Corporation and Groundwater Technology, Inc. October 1996. *Draft Final Air Sparging and Soil Vapor Extraction Pilot Test Report for Officers Club Site SS-57, Holloman Air Force Base, New Mexico.*

HTRW DRILLING LOG

DISTRICT	OMAHA
HOLE NUMBER	MW-01
1. COMPANY NAME	GROUNDWATER TECHNOLOGY GVT. SVC
2. DRILL SUBCONTRACTOR	LAYNE ENVIRONMENTAL
SHEET / SHEETS	1 OF 2
3. PROJECT	DO 8 WAD 35 Contract DACW-45-94-D0003 - 5557
4. LOCATION	OFFICER'S CLUB - HOLLOMAN AFB, N.M.
5. NAME OF DRILLER	DON KIRSNIS
6. MANUFACTURER'S DESIGNATION OF DRILL	FAILING F-10
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8" HSA; 24" Calif. STYLE SPLIT SPOONS
8. HOLE LOCATION	SEE MAP
9. SURFACE ELEVATION	~ 4070' AMSL
10. DATE STARTED	27 MARCH 1996
11. DATE COMPLETED	27 MARCH 1996
12. OVERBURDEN THICKNESS	
13. DEPTH DRILLED INTO ROCK	NONE
14. TOTAL DEPTH OF HOLE	17'
15. DEPTH GROUNDWATER ENCOUNTERED	~ 9.5'-10'
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	11.86' on 1 Apr 1996
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
14.5-15'						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		L.S. STEVENSON

LOCATION SKETCH/COMMENTS

SCALE:

PROJECT DACW-45-94-D0003; DO 8 WAD 35-5557-REMED. @ O'CLUB

HOLE NO. MW-01

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-01

PROJECT: DOB WAD35 - 5557-01 CLUB
CONTRACT: DACW-45-94-D0003

INSPECTOR: L.S. STEVENSON

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		SAND, SOD; Brownish					
	1	silty fine sand (SM) tan (10YR 7/2)					
	2		...				
	3						
	4	gypsum cemented sand, (SM), very hard, w/ crystals.	0.3ppm				hand auger refusal.
	5						
	6	silty sand (SM), tan (10YR 6/4), with gypsum nodules					
	7						
	8		0.2ppm			7	
	9					10 14 19	becoming wet ▽
	10	silty sand (SM), dense, moist, grey (5Y 6/1)					
	11						
	12						no odors noticable.
	13						
	14	sand w/ silt (SM), grey (5Y 6/1)	0.7ppm		5557-MW01-14.5-15	12 17 23 29	
	15	TD					
	16						
	17						

PROJECT: HOLLOMAN AFB.
DO 8 WAD35-5557-REMED. AT OFFICERS CLUB.

HOLE NO. MW-01

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: OMAHA		HOLE NUMBER: MW-02
1. COMPANY NAME: GROUNDWATER TECHNOLOGY GOV. SVC	2. DRILL SUBCONTRACTOR: LAYNE ENVIRONMENTAL	SHEET 1 OF SHEETS 2
3. PROJECT: DO 8 WAD 35 Contract DACW-45-94-D0003-5557	4. LOCATION: OFFICER'S CLUB - HOLLOMAN AFB, N.M.	
5. NAME OF DRILLER: DON KIRSNIS	6. MANUFACTURER'S DESIGNATION OF DRILL: FAILING F-10	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA w/ 24" CALIF STYLE SPLIT SPOONS.	8. HOLE LOCATION: SEE MAP.	
	9. SURFACE ELEVATION: 4068' AMSL	
	10. DATE STARTED: 30 MARCH 1996	11. DATE COMPLETED: 30 MARCH 1996.
12. OVERBURDEN THICKNESS:	15. DEPTH GROUNDWATER ENCOUNTERED: ~8.75'	
13. DEPTH DRILLED INTO ROCK: NONE	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 10.01 on 1 Apr. 1996	
14. TOTAL DEPTH OF HOLE: 15'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
13.5-14.						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		L.S. STEVENSON

LOCATION SKETCH/COMMENTS

SCALE:

PROJECT: DACW-45-94-D0003: DO 8 WAD 35-5557-REMED. @ O'CLUB

HOLE NO. MW-02

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-02

PROJECT: D08 WAD 35 - SS57 - O'CLUB
cont. DACW-45-94-D0003

INSPECTOR: L. S. STEVENSON

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	1	RUBBLE + FILL					
	2						
	3	silty sand, fine (SM), light tan (10 YR 8/4)	0.0 ppm				
	4						
	5						
	6						
	7						
	8	fine silty sand (SM), tan (7 YR 7/4), wet.	0.0 ppm			6 9 14 19	▽
	9						
	10						
	11						
	12	very fine silty sand (SM), grey (5 Y 6/1), wet					
	13	~~orange~~ fine sand and clay, orange, w/ gypsum crystals, v. hard			SS57-MW02-13.5-14		
	14	very fine sand (SP), gray (5 Y 7/1)				24 65/4"	18" recovery strong odor.
	15	TD	10.2 ppm				

PROJECT: SS 57 - REMOD. AT OFFICERS CLUB
DACW-45-94-D0003 - D08 - WAD 35

HOLE NO. MW-02

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: OMAHA		HOLE NUMBER: MW-03
1. COMPANY NAME: GROUNDWATER TECHNOLOGY GOV. SVC	2. DRILL SUBCONTRACTOR: LAYNE ENVIRONMENTAL	SHEET 1 OF SHEETS 2
3. PROJECT: DO8WAD35 Contract DACW-45-94-D0003-5557	4. LOCATION: OFFICER'S CLUB - HOLLOMAN AFB, N.M.	
5. NAME OF DRILLER: DON KIRSNIS	6. MANUFACTURER'S DESIGNATION OF DRILL: FAILING F-10	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA w/ 24" Calif. Style Split spoons.	8. HOLE LOCATION: SEE MAP.	
	9. SURFACE ELEVATION: 4070' AMSL.	
	10. DATE STARTED: 25 MAR 1996	11. DATE COMPLETED: 25 MAR 1996.
12. OVERBURDEN THICKNESS:	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NONE	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 12.21' on 1 Apr 1996	
14. TOTAL DEPTH OF HOLE: 15'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
14-14.5'						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		L. S. STEVENSON

LOCATION SKETCH/COMMENTS

SCALE:

PROJECT: DACW-45-94-D0003; DO8WAD35-5557-REMED. @ O'CLUB

HOLE NO. MW-03.

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-03

PROJECT: SS 57 - REMED. AT O'CLUB
DACW-45-94-D0003: D08 WAD 35

INSPECTOR: C.S. STEVENSON

SHEET ___ OF ___

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	1	silty sand (SM), tan (10 YR 7/2)					
	2		...				
	3						
	4		0.1 ppm				
	5						
	6						
	7						
	8	fine sand w. tr. silt (SM) tan (10 YR 8/4)				9	
	9					17	
						24	
						36	
	10						
	11						
	12						▽
	13	silty sand (SM) gray (5 Y 6/1) moist	102.5 ppm			12	strong odor reminiscent of cleaning chemicals
	14					17	
						27	
					SS57-MW03-14-14.5	35	
	15	TD					100 ppm H_2S in Headspace
	16						
	17						
	18						
	19						
	20						

PROJECT: SS57 - REMED. at officers CLUB.
DACW-45-94-D0003: D08 WAD 35

HOLE NO. MW-03

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: OMAHA		HOLE NUMBER: MW-04
1. COMPANY NAME: GROUNDWATER TECHNOLOGY GOV. SVC	2. DRILL SUBCONTRACTOR: LAYNE ENVIRONMENTAL	SHEET 1 OF 2 SHEETS
3. PROJECT: DO 8 WAD 35 Contract DACW-45-94-D0003-5557	4. LOCATION: OFFICER'S CLUB - HOLLOMAN AFB, N.M.	
5. NAME OF DRILLER: DON KIRSNIS	6. MANUFACTURER'S DESIGNATION OF DRILL: FAILING F-10	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA w/ 24" Calif. Style Split Spoons.	8. HOLE LOCATION: SEE MAP	
	9. SURFACE ELEVATION: 4066' AMSL	
	10. DATE STARTED: 30 MAR 1996	11. DATE COMPLETED: 30 MAR 1996.
12. OVERBURDEN THICKNESS:	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NONE	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 8.53 on 1 Apr 1996	
14. TOTAL DEPTH OF HOLE: 14'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
9-9.5'						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		L. S. STEVENSON

LOCATION SKETCH/COMMENTS

SCALE:

PROJECT: DACW-45-94-D0003; DO 8 WAD 35-5557-REMED. @ O'CLUB

HOLE NO. MW-04

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-04

PROJECT: SS57 - REMED at O'Club. ACW-45-94-D0003; D08WAD35

INSPECTOR: L.S. STEVENSON

SHEET 2 OF 2 SHEETS

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	1	coarse river rock + pavement base					
	2		...				
	3	silty, v. fine sand (SM) tan (10YR 7/3), slightly moist	0.0ppm				
	4						
	5						
	6						
	7	silty fine sands (SM), mottled tan + brown w/ gyp nodules					
	8	silty fine sand (SM), orange (10YR 6/6), moist to wet @ 8.5ft	0.1ppm			9 14 29 33	18" recovery.
	9						
	10						
	11						
	12	clayey fine sand (SC) orange (2.5YR 4/6) very hard, dry, w/ large (3/8") gypsum crystals	0.0ppm			9 22 56/2"	15" recovery
	13						
	14	TD					

PROJECT: DACW-45-94-D0003; D08WAD35 - SS57 - REMED at O'Club.

HOLE NO. MW-04

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: OMAHA.	HOLE NUMBER: SP-01	
1. COMPANY NAME: GROUNDWATER TECHNOLOGY GVT. SVC	2. DRILL SUBCONTRACTOR: LAYNE ENVIRONMENTAL	SHEET 1 OF SHEETS 3
3. PROJECT: DO 8 WAD 35 Contract DACW-45-94-D0003 - 5557	4. LOCATION: OFFICER'S CLUB - HOLLOMAN AFB, N.M.	
5. NAME OF DRILLER: DON KIRSNIS	6. MANUFACTURER'S DESIGNATION OF DRILL: FAILING F-10	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA w/ 24" Calif. Style split spoons — overdrilled w/ 15" HSA	8. HOLE LOCATION: See MAP.	
	9. SURFACE ELEVATION: 4069' AMSL	
	10. DATE STARTED: 27 MAR 1996	11. DATE COMPLETED: 31 MAR 1996
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK: NONE	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 11.5'	
14. TOTAL DEPTH OF HOLE: 41'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
18', 28', 38'		X	

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
34' & 39'						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
			See comments.	L.S. STEVENSON

LOCATION SKETCH/COMMENTS — SCALE:

Sparge well: cluster of 3 installed in hole;
Pilot hole w/ 8" HSA, completed 27 MAR 1996.
overdrilled w/ 15" HSA on 29 MAR 1996.
Well installation completed 31 MAR 1996.

PROJECT: DACW-45-94-D0003: DO 8 WAD 35-5557-REMED. @ O'CLUB — HOLE NO. SP-01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SP01

PROJECT: 5557-REMEDIATION AT O'CLUB
DACW-45-94-D0003 | D08 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 2 OF 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	1						
	2	silty fine sands (SM), tan (10 YR 8/2), w/ gypsum nodules	...				
	3						
	4						
	5		0.2				
	6	silty fine sands (SM), tan (10 YR ~~7/2~~ 7/4) w/ small (0.1") gypsum crystals					
	7						
	8					3	
	9		0.5			7	
	10					11 19	
	11	fine sand (SP), grey (5Y 6/1)					▽
	12						
	13					12	
	14		4.4			17	some odor
	15					25 33	
	16						
	17						
	18	clayey sand (SC), grey and tan (5Y 7/1), moist, slightly plastic	6.6			7	
	19	clayey sand (SC), tan (5Y 8/1), dry, hard, gypsum nodules		5557 SP01 19-19.5		13 26	
	20					50/4"	

PROJECT: ~~D08~~ DACW-45-94-D0003 ; D08 WAD 35 ; 5557-REMED. @ O'Club

HOLE NO.

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SP-01

PROJECT: 5557-REMEDIATION AT O CLUB
DACW-45-94-D00031D08 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 3 OF 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	21	medium to coarse silty sand (SM), grey (5Y 6/1), wet					
	22		...				
	23		5.8ppm				
	24	clay (CL), orange (10YR 7/4), soft				37	18" recovery
	25	fine sand (SP), grey (5Y 6/1)				70+ for 5"	
	26						
	27						
	28	silty clayey fine sand (SM), ~~[illegible]~~ grey (5Y 6/1), w gypsum xtals	1.0 ppm			10	
	29	fine sand (SP), wet, grey (5Y 5/1)		5557 SP01-29-29.5		19 31	
	30					50	
	31						
	32	fine sand (SP), dry to moist, grey (5Y 6/1)					
	33		7.9ppm			~~47~~ 50+/2"	
	34	fine sand (SP), dry, orange (10YR 7/6), very dense.			5557 SP01 34-34.5	42 50+/2"	12" recovery.
	35						
	36	fine sand (SP), moist, grey (5Y 5/1)					
	37						
	38		8.6ppm				
	39	clay (CL), dry, red & white (5YR 5/4) very dense, w/ gypsum crystals		5557 SP01 39-39.5	5557 SP01 38.5-39	17 36 61	overdrilled to 41' for sponge point installation
	40						

PROJECT: ~~D08~~ DACW-45-94-D00031 : D08 WAD 35 : 5557 - REMED. @ O'CLUB

HOLE NO. SP-01

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT	OMAHA.
HOLE NUMBER	SMP-01
1. COMPANY NAME	GROUNDWATER TECHNOLOGY GOV. SVC
2. DRILL SUBCONTRACTOR	LAYNE ENVIRONMENTAL
SHEET / SHEETS	1 OF 3
3. PROJECT	DO 8 WAD 35 contract DACW-45-94-D0003-5557
4. LOCATION	OFFICER'S CLUB - HOLLOMAN AFB, NM.
5. NAME OF DRILLER	DON KIRSNIS
6. MANUFACTURER'S DESIGNATION OF DRILL	FAILING F-10
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8" HSA w/ 24" Calif. Style Split Spoons - overdrilled w/ 1'5" HSA for sparge monitoring point installation.
8. HOLE LOCATION	SEE MAP
9. SURFACE ELEVATION	4069' AMSL
10. DATE STARTED	28 MAR 1996
11. DATE COMPLETED	28 MAR 1996
12. OVERBURDEN THICKNESS	
15. DEPTH GROUNDWATER ENCOUNTERED	~~11.49' on 1 Apr~~
13. DEPTH DRILLED INTO ROCK	NONE
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	11.49' on 1 Apr 1996
14. TOTAL DEPTH OF HOLE	41'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
(2) 39' 39'						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
			X	L. S. STEVENSON

LOCATION SKETCH/COMMENTS SCALE:

Sparge monitoring point - cluster installation.

PROJECT DACW-45-94-D0003: DO 8 WAD 35-5557 - REMED. @ O'CLUB

HOLE NO.

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SMP-01

PROJECT: 5557-REMEDIATION AT O CLUB
DACW-45-94-D0003 DO8 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 2 OF 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	1						
	2	Silty sands (SM), tan (10YR 8/2)	...				
	3						
	4		0.2ppm				
	5						
	6						
	7						
	8	Silty fine sands (SM), tan (10YR 8/3), w/ few gypsum nodules					
	9		1.8ppm			10 12 14	
	10					14	
	11						▽
	12						
	13	clayey fine sands (SC), moist, grey (5Y 7/1)					
	14		11.1ppm			11 15	
	15					21 27	
	16						
	17						
	18	clayey fine sand (SC), grey (5Y 6/1),	26.4ppm			7	
	19				5557 SMP01 19-20	11	
	20	fine clayey sand (SC), dry, grey (5Y 6/1), very hard				26 50	

PROJECT: ~~DO8~~ DACW-45-94-D0003 : DO8 WAD 35 : 5557-REMED. @ O'CLUB

HOLE NO.

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SMP-01

PROJECT: 5557-REMEDIATION AT O CLUB
DACW-45-94-D0003:D08 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 3 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	21						very hard drilling
	22						
	23						
	24	~~very~~ gypsum crystals, mottled, grey + white, very hard.	0.5ppm.			45	
	25					60/4"	9" recovery
	26	clayey sand (SC), orange + green (10YR 8/3)					lifting rig on auger pull-down.
	27						
	28	fine sand (SP), grey (5Y 6/1)					out of hard zone
	29		2.0			22	
	30	medium to fine sand (SW), orange (10YR 7/3)				39 50	18" recovery
	31						
	32						
	33	silty fine sand (SM), orange (7.5YR 6/6)	5.0			10	
	34	bands of grey, orange, white fine sands				17	
	35					24 32	
	36						
	37						
	38	sandy clay (CL), orange, thin band (3"), soft, plastic					
	39	fine sand (SM) w/ silt, grey 5Y 6/1			5557 SMP01 37-37.5	12 16 25 30	
	40						

PROJECT: ~~D08~~ DACW-45-94-D0003:D08 WAD 35:5557-REMED. @ O'Club

HOLE NO.

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: OMAHA		HOLE NUMBER: SMP-02
1. COMPANY NAME: GROUNDWATER TECHNOLOGY GOT. SVC	2. DRILL SUBCONTRACTOR: LAYNE ENVIRONMENTAL	SHEET 1 OF 3 SHEETS
3. PROJECT: DO 8 WAD 35 Contract DACW-45-94-D0003-5557	4. LOCATION: OFFICER'S CLUB - HOLLOMAN AFB, N.M.	
5. NAME OF DRILLER: DON KIRSNIS	6. MANUFACTURER'S DESIGNATION OF DRILL: FAILING F-10	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA w/ 24" Calif Style Split Spoons - over-drilled w/ 15" HSA for monitoring point installation	8. HOLE LOCATION: SEE MAP.	
	9. SURFACE ELEVATION: 4069' AMSL	
	10. DATE STARTED: 29 MAR 1996	11. DATE COMPLETED: 30 MAR 1996
12. OVERBURDEN THICKNESS:	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NONE	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 10.86' on 1 Apr 1996	
14. TOTAL DEPTH OF HOLE: 40.5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
(2) 19-20 & 39-40						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
			X	L. S. STEVENSON S. Stevenson

LOCATION SKETCH/COMMENTS SCALE:

Sponge monitoring point installation

PROJECT: DACW-45-94-D0003; DO 8 WAD 35-5557-REMED. @ O'CLUB HOLE NO. SMP-02

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

PROJECT	INSPECTOR	HOLE NUMBER	SHEET / SHEETS
3557-REMEDIATION AT O CLUB DACW-45-94-D0003 D08 WAD 35	L.S. STEVENSON	SMP-02	2 OF 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		SOD					
	1	gravel					
		red clay fill					
	2	silty fine sands (SM), brown + tan 10 YR 7/2					
	3						
	4		0.1ppm				
	5						
	6						
	7						
	8	fine silty sand (SM), dry, tan (10 YR 7/4)	0.0ppm			8	
	9	fine silty sand (SM), grey (5 Y 6/1)				11	
	10					14 17	∇
	11						
	12						
	13	fine silty sand (SM), moist to wet, grey (5Y 7/1)	28.5ppm			6	
	14					11	
	15					21 34	
	16						
	17						
	18	silty fine sand (SM), moist, grey (5Y 6/1)					
	19	clayey fine sand (SC) gypsum cemented	93.1ppm		3557 SMP02 19.5-20	8 16 39 50/3"	21" recovery.
	20						

PROJECT: ~~D08~~ DACW-45-94-D0003 : D08 WAD 35 : 3557-REMED. @ O'Club

HOLE NO.

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SMP-02

PROJECT: 5557-REMEDIATION AT O CLUB DACW-45-94-D0003 D08 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 3 OF 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	21						interbedded hard & soft clays, silty sands.
	22						
	23	silty fine sand w clay (SM) moist, orange (5YR 7/6)					
	24	~~clayed~~ clays & gypsum nodules (CL), dry, orange (5YR 7/6)	0.7.			17 29 50	18" recovery
	25						
	26						
	27						
	28	sandy clay (CL), orange - yellow (10YR 8/4) w/ thin sand lamina.	1.5				
	29					12 16 24 31	
	30						
	31						
	32						
	33	med sand w/ clay & gyp. nodules (SC), moist, tan & orange 10YR 7/2					
	34					10 17 27 35	
	35						
	36						
	37	fine sand (SM) w/ silt, moist, tan (10YR 7/2), soft.					
	38						
	39	clayey fine sand (SC), dry, red (5YR 6/4), very hard, w/ gypsum crystals.			5557 SMP02 38-39	14 19 34 50+/4"	18" recovery
	40						

PROJECT: ~~D08~~ DACW-45-94-D0003 : D08 WAD 35 : 5557 - REMED. @ O'Club

HOLE NO. SMP-02

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: OMAHA		HOLE NUMBER: SMP-03
1. COMPANY NAME: GROUNDWATER TECHNOLOGY GVT. SVC	2. DRILL SUBCONTRACTOR: LAYNE ENVIRONMENTAL	SHEET 1 OF 2 SHEETS
3. PROJECT: DO 8 WAD 35 contract DACW-45-94-D0003-5557	4. LOCATION: OFFICER'S CLUB - HOLLOMAN AFB, N.M.	
5. NAME OF DRILLER: DON KIRSNIS	6. MANUFACTURER'S DESIGNATION OF DRILL: FAILING F-10	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA w/ 24" split style split spoons - overdrilled w/ 15" HSA	8. HOLE LOCATION: SEE MAP	
	9. SURFACE ELEVATION: 4070' AMSL	
	10. DATE STARTED: 26 MAR 1996	11. DATE COMPLETED: 26 MAR 1996
12. OVERBURDEN THICKNESS:	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NONE	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 12.44' on 1 Apr 1996	
14. TOTAL DEPTH OF HOLE: 41'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
NONE			

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
			X	L. S. STEVENSON

LOCATION SKETCH/COMMENTS SCALE:

Sparge Monitoring Point Installation.

PROJECT: DACW-45-94-D0003: DO 8 WAD 35-5557-REMED. @ O'CLUB. HOLE NO. SMP-03

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SMP-03

PROJECT: 5557-REMEDIATION AT O CLUB
DACW-45-94-D0003 | D08 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 2 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	1	silty fine sands (SM), tan (10 YR 8/3)					
	2		...				
	3						
	4		0.0 ppm				
	5						
	6						
	7						
	8	silty fine sands (SM) tan (10 YR 7/3), mottled.				15	
	9		0.0 ppm			26	
	10					50	
	11					53	
	12						
	13	fine sand (SP), grey (2.5 Y 7/1)	87				▽
	14					? missing data (S)	very hard augering.
	15						
	16						
	17						
	18	clayey sand (SC), light grey (2.5 Y 6/1), cohesive				14	
	19				5557 SMP03 19.5-20	16	
	20		991			23	
						32	

PROJECT: ~~D08~~ DACW-45-94-D0003 | D08 WAD 35 | 5557-REMED. @ O'CLUB

HOLE NO.

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: SMP-03

PROJECT: 5557-REMEDIATION AT O CLUB
DACW-45-94-D0003 D08 WAD 35

INSPECTOR: L.S. STEVENSON

SHEET 3 OF 3

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	BLOW COUNT (G)	REMARKS (H)
	21						
	22		...				
	23						
	24	clayey silt (ML), grey (2.5 Y 5/1)	202ppm			16 29 40	
	25					50/4"	
	26						
	27						
	28						
	29	clayey fine sand (SC), grey (2.5 Y 6/1), cohesive, w/ traces of orange + black fine sand grains.	183ppm			11 19 27	moist bands of sandy materials.
	30					40	
	31						
	32						
	33	silty sand (SM), orange 10 YR 7/8, mottled w/ tan + dark orange	0.7ppm			8	
	34	clay (CL), tan				14 19	
	35	fine sand (SP), tan 10 YR 8/1				29	
	36						
	37						
	38	clay (CL), banded red + grey (10YR 6/3), w/ some 1/2" thick sand stringers.	0.4.			7	hard + stiff
	39				5557 SMP03 @ 9.5-40	12 17	
	40					24	

PROJECT: ~~D08~~ DACW-45-94-D0003 ; D08 WAD 35 ; 5557-REMED. @ O'CLUB

HOLE NO.

ENG FORM 5056A-R, AUG 94.

(Proponent: CECW-EG)

Appendix B-5

Foster Wheeler Environmental Corporation, April 2003. *Phase I Human Health Risk Assessment and Ecological Screening-Level Assessment for SS-57 - Officer's Club, Holloman Air Force Base, New Mexico.*

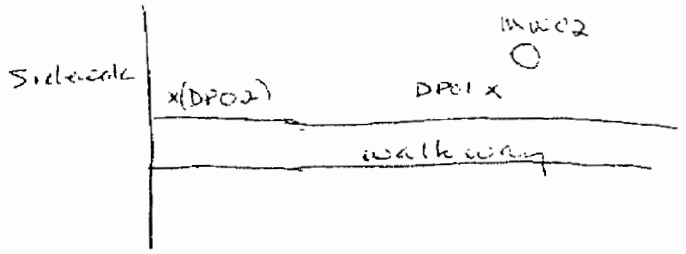
HTRW DRILLING LOG

DISTRICT	Omaha
HOLE NO.	SS57-DP01
1. COMPANY NAME	Foster Wheeler Environmental Corporation
2. DRILLING SUBCONTRACTOR	R & R Environmental, Inc.
SHEET / OF / SHEETS	1 OF 2
3. SITE	RAO Site— SS57
4. LOCATION	Holloman AFB, NM
5. NAME OF DRILLER	Rafe Jones
6. MANUFACTURERS DESIGNATION OF DRILL	Geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 66DT Track Rig
8. HOLE LOCATION	adjacent to MW02
9. SURFACE ELEVATION	
10. DATE STARTED	7/17/02
11. DATE COMPLETED	7/17/02
12. OVERBURDEN THICKNESS	
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	12.5'
15. DEPTH GROUNDWATER ENCOUNTERED	
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	DTW MW02 11.82' (TOC)
18. GEOTECHNICAL SAMPLES	none
DISTURBED	N/A
UNDISTURBED	N/A
19. TOTAL NUMBER OF CORE BOXES:	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY ____ %
SS57DP01S0701						
SS57DP01S1001	X	X			X	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
backfilled - hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG

SITE	LOCATION	HOLE NUMBER
RAO Site 5557	Holloman AFB, NM	D201

PROJECT #	DISTRICT	INSPECTOR	SHEET	OF	SHEETS
5155.0037.0001.HDPTS	OMAHA	PATRICIA WESTON	2	OF	2

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	1-3.5' lt. orange-tan sandy, clayey, silty gravel. Clays to 1". Course sand 20% weak. dry	GC	bkgd=1.07 2'=2.99 ppm	RXN to HCL 0-4' no odor no staining
	2		MH	bkgd=0.79	
	3	3.5-4' same as above moist.		3.5'=2.62 ppm FID	
	4				3'6" of core
	5	4-4.5' same as above. 4.5-5' orange sandy silt. moist. weak. No plasticity	ML	bkgd=15 5.5'=6.8 ppm	RXN to HCL 4-6.5' odor no staining
	6	5-6.5 pale orange sandy silty clay. very moist. med. tough. ~~5.5-6.5 orange sand~~	CL	FID	
	7	6.5-7.5 orange silty fine sand moist. well sorted.	SM	bkgd=1.5 7.5=10.4 ppm	sample 7-8'
	8			FID	3'6" of core
	9	7.5-10.5 Orange fine silty sand very moist. Well sorted	SM	bkgd=1.6	NO RXN to HCL 6.5-7.5' odor Gray from 10.5'
	10	10.5- gray fine silty sand very moist.		9-10'=2.2 ppm FID	sample 10.5-11.5'
	11				3' of core
	12	grey. same as above.	SM	11-11.5'=26.8 FID	odor - strong gray to 12.5'
	13				2' of core

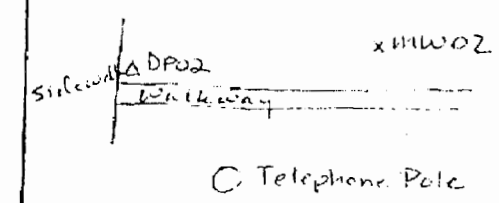
HTRW DRILLING LOG

DISTRICT	Omaha
HOLE NO.	DP02
1. COMPANY NAME	Foster Wheeler Environmental Corporation
2. DRILLING SUBCONTRACTOR	R & R Environmental, Inc.
SHEET	1 OF 2 SHEETS
3. SITE	RAO Site— SS 57
4. LOCATION	Holloman AFB, NM
5. NAME OF DRILLER	Rafe Jones
6. MANUFACTURERS DESIGNATION OF DRILL	Geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 66DT Track Rig
8. HOLE LOCATION	at corner of walkway and sidewalk
9. SURFACE ELEVATION	
10. DATE STARTED	7/17/02
11. DATE COMPLETED	7/19/02
12. OVERBURDEN THICKNESS	
15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE	12'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	DTW 11.82' MW02 (TOC)
18. GEOTECHNICAL SAMPLES	none
DISTURBED	N/A
UNDISTURBED	N/A
19. TOTAL NUMBER OF CORE BOXES:	N/A
21. TOTAL CORE RECOVERY	____ %
22. DISPOSITION OF HOLE	backfilled - hydrated bentonite
23. SIGNATURE OF INSPECTOR	

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH
SS57DP02S0701					
SS57DP02S1001	X	X			X

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)
	X		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG	SITE RAO Site— SS57	LOCATION Holloman AFB, NM	HOLE NUMBER DP02
PROJECT # 5155.0037.0001.HDPTS	DISTRICT OMAHA	INSPECTOR PATRICIA WESTON	SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	Silty sandy gravel/ asphalt layer ~1" thick.	GC/ ~~ML~~	bkgd=1.34 0'=7.21ppm FID	RxN to HCl 0-4' No odor No staining
	2	gravelly soil, red-brown			
	3				
	4				1' 6" of core.
	5	lt. orange sandy clayey silt. moist to 7.5'	ML		RxN to HCl odor Staining (gray/orange) from 7.5'
	6				
	7	7.5-8' gray sandy silt.		bkgd=1.72 7.5'=7.52ppm FID	Sample at 7-8'
	8				3' 4" of core.
	9	8-12' gray fine sand. very moist to 11.5' wet with little water production from 11.5-12'	SM	bkgd ~~=11.72~~ 1.72 10'=220ppm FID	No RxN to HCl Strong petroleum odor dark gray color
	10				
	11				sample at 10-11.5'
	12				3' 9" of core

HTRW DRILLING LOG

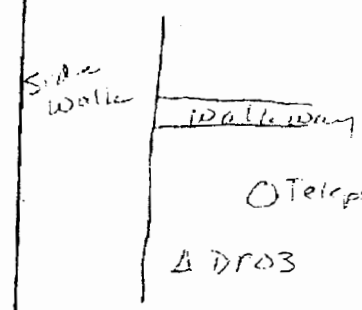
DISTRICT: Omaha		HOLE NO.: DP03
1. COMPANY NAME: Foster Wheeler Environmental Corporation	2. DRILLING SUBCONTRACTOR: R & R Environmental, Inc.	SHEET 1 OF 2 SHEETS
3. SITE: RAO Site— SS57	4. LOCATION: Holloman AFB, NM	
5. NAME OF DRILLER: Rafe Jones	6. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Geoprobe 66DT Track Rig	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 7/17/02	11. DATE COMPLETED: 7/17/02
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: 11.5'	
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE: 13.5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES:
none	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY
SS57DP03S0401						____ %
SS57DP03S1001	X	X			X	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG

SITE	LOCATION	HOLE NUMBER
RAO Site—SS57	Holloman AFB, NM	DP03

PROJECT #	DISTRICT	INSPECTOR	SHEET	OF	SHEETS
5155.0037.0001.HOPTS	OMAHA	PATRICIA WESTON	2	OF	2

ELEV. (a)	DEPTH (ft) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	Tan dry sandy; poorly sorted clayey silt. 1-3' w/lens of dark brown silty clayey gravel	ML	bkgd=1.79	RXN to HCl 0-4' No odor NO staining
	2		GL	3'=7.25ppm FID	
	3	3-4' lt. orange moist sandy silt mod strength no clasts	ML		Sample 4-6'
	4				3' of core
	5	4-5' lt orange very moist sandy, silty clay. well sorted	ML	bkgd: 1.4	No RXN to HCl 4-5' No odor
	6	5-8' lt. tan silty fine sand well sorted, weak no cementation	SM	5'=7.2ppm FID	staining: black stringers & orange ox. patches
	7				
	8	8-9' gray silty sand moist well sorted			3'10" of core
	9	9-11.5' clayey silt gray. well sorted. very moist.	ML	bkgd=1.2	odor gray - uniform staining from 8'
	10		SM	11'=2.34ppm FID	Sample 10-11'
	11				
	12				3'10" of core
	13	Same as above wet. rapid dialating No water production	ML SM		
	14				

HTRW DRILLING LOG

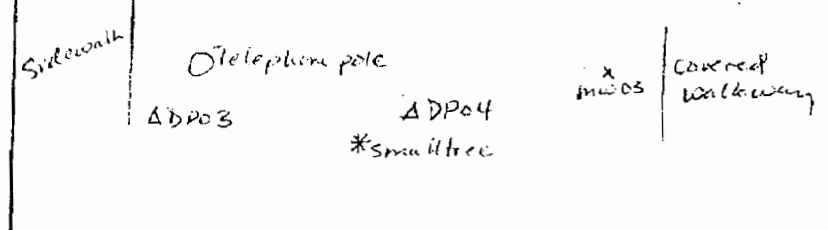
DISTRICT	Omaha
HOLE NO.	DP04
1. COMPANY NAME	Foster Wheeler Environmental Corporation
2. DRILLING SUBCONTRACTOR	R & R Environmental, Inc.
SHEET	1 OF 2 SHEETS
3. SITE	RAO Site– SS57
4. LOCATION	Holloman AFB, NM
5. NAME OF DRILLER	Rafe Jones
6. MANUFACTURERS DESIGNATION OF DRILL	Geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 66DT Track Rig
8. HOLE LOCATION	
9. SURFACE ELEVATION	
10. DATE STARTED	7/17/02
11. DATE COMPLETED	7/17/02
12. OVERBURDEN THICKNESS	
15. DEPTH GROUNDWATER ENCOUNTERED	13'
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	~~13'~~
14. TOTAL DEPTH OF HOLE	14.5'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	13.65' TOC or MW03

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES:
none	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY
SS57DP0450601						____ %
SS57DP0451201	X	X			X	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG

SITE	LOCATION	HOLE NUMBER
RAO Site— SS57	Holloman AFB, NM	DP04

PROJECT #	DISTRICT	INSPECTOR	SHEET OF SHEETS
5155.0037.0001.HDPTS	OMAHA	PATRICIA WESTON	2 OF 2

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (c)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	gravel, loose tan silty sandy soil.	GC	bkgd=1.98	RxN to HCl 0-4'
	2	Tan sandy silt. dry No strength.	ML	2'=10.4ppm FID	no odor No staining
	3				
	4				1' of core
	5	4-5' lt. tan fine sandy silt. slightly moist. weak not well sorted.	ML	bkgd=1.98	RxN to HCl 4-8'
	6	5-8' orange fine sandy silt. moist		6'=17.0ppm FID	No odor No staining
	7				Sample 6-7'
	8				2' 3" of core
	9	9-11' tan clayey sandy silt very moist.		bkgd=1.98	No RxN to HCl 8-13'
	10	11-12' silty sand. tan. very moist. well sorted.	ML	10.5'=16.8ppm	odor No staining
	11		SM	FID	
	12				3' 10" of core
	13	gravel/well-cemented tan clay to 12.5' poorly sorted. 12.5-13' gravelly tan silty clay. Poorly sorted 13-14.5 gray fine silty sand well sorted. little to mod H_2O production at 14'	GC	bkgd=1.98	RxN to HCl only 13-14.5'
	14		SM	13'=48.5ppm FID	Strong odor gray from 13'
	15				3' 10" of core

HTRW DRILLING LOG

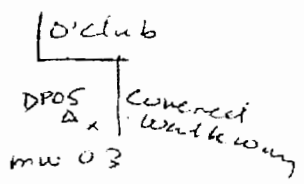
DISTRICT: Omaha		HOLE NO.: DP05
1. COMPANY NAME: Foster Wheeler Environmental Corporation	2. DRILLING SUBCONTRACTOR: R & R Environmental, Inc.	SHEET 1 OF 2 SHEETS
3. SITE: RAO Site— 5557	4. LOCATION: Holloman AFB, NM	
5. NAME OF DRILLER: Rafe Jones	6. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Geoprobe 66DT Track Rig	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 7/17/02	11. DATE COMPLETED: 7/17/02
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: wet at 7.12'	
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 14'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): 13.65' TOC at adj MW03	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES:
none	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY
5557DP0550201						____ %
5557DP0551201	X	X			X	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG

SITE	LOCATION	HOLE NUMBER
RAO Site 5557	Holloman AFB, NM	DP05

PROJECT #	DISTRICT	INSPECTOR	SHEET
5155.0037.0001.HDPTS	OMAHA	PATRICIA WESTON	2 OF 2 SHEETS

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	Red brown gravelly clayey sandy silt 10% gravel - 50% coarse sand 10% med 10% fine 30% silt/clay - dry	~~CL~~ GC ML	bkgd = 2.05	RXN to HCl 0-4' odor on opening sleeve
	2			2' = 13.9 ppm FID	Staining at 2'
	3	2-2.5' black - stained sandy silt. dry 2.5-4' tan fine			sample at 2-3'
	4	sandy silt. dry			3' of core
	5	4-5' lt. tan sandy silty clay. weak. low plasticity. dry	CL	bkgd = 1.83	RXN 4-7' to HCl No odor
	6	5-6' lt. tan clayey sandy silt. weak No plast. med cement.	ML	5' = 7.02 ppm FID	No staining
	7	to 6.5' 6.5-7 same. More moisture			3' of core
	8	moist fine sandy clayey silt. low plast to 7.5'	ML	bkgd = 1.35 8' = 6.5 ppm FID	RXN 7-7.5' to HCl No RXN 7.5-10' No odor No staining
	9	7.5-10' orange moist to dry fine silty sand.			
	10		SM		2'5" of core
	11	10-12' same as above. dry to	SM		No RXN to HCl 10-12 No odor No staining
	12	slightly moist			2' of core
	13	12-12.5' tan silty wet sand w/orange oxidation patches	SM	bkgd = 1.88 13' = 10.4 ppm FID	RXN to HCl 12-14' Sample 12.5-14' Staining: orange oxidation 12-12.5' gray staining 12.5-14'
	14	12.5-14' gray silty wet sandy silt			2'3" of core
		free water production.			

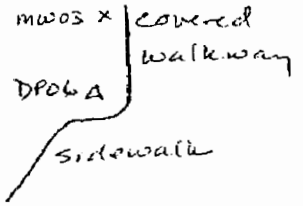
HTRW DRILLING LOG

DISTRICT	Omaha
HOLE NO.	SS57-DP06
1. COMPANY NAME	Foster Wheeler Environmental Corporation
2. DRILLING SUBCONTRACTOR	R & R Environmental, Inc.
SHEET / SHEETS	1 OF 2
3. SITE	RAO Site – SS57
4. LOCATION	Holloman AFB, NM
5. NAME OF DRILLER	Rafe Jones
6. MANUFACTURERS DESIGNATION OF DRILL	Geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 66DT Track Rig
8. HOLE LOCATION	
9. SURFACE ELEVATION	
10. DATE STARTED	7/17/02
11. DATE COMPLETED	7/17/02
12. OVERBURDEN THICKNESS	
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	13.5'
15. DEPTH GROUNDWATER ENCOUNTERED	
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	13.45' TOC at mw03
18. GEOTECHNICAL SAMPLES	none
DISTURBED	N/A
UNDISTURBED	N/A
19. TOTAL NUMBER OF CORE BOXES:	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY ____ %
SS57DP06S05 01 SS57DP06S05 02 SS57DP06S1101	X	X			X	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG	SITE RAO Site— SS57	LOCATION Holloman AFB, NM	HOLE NUMBER DPOL
PROJECT # 5155.0037.0001.HDPTS	DISTRICT OMAHA	INSPECTOR PATRICIA WESTON	SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1 2 3 4	Pale tan to dk brown sandy silt. dry (dk. brown patches to 3.5') 3.5-4' lt. tan fine sandy silt. well sorted. dry	ML	bkgd= 2.01 2'=8.5ppm FID	RXN to HCl 0-4' No staining 3' 2" of core
	5 6 7 8	4-4'8" lt. tan silty sandy clay. moist. 4'8" to 7.5' orange fine sandy silt. moist. weak. low plasticity	CL ML	bkgd=2.01 5.5'=10.5ppm FID	NO RXN to HCl 4-7.5' No staining sample 5.5-8.5' (duplicate) 3' of core
	9 10 11	7.5-10' orange fine sandy silt. moist to very moist. mod. strength. low plasticity 10-11' lt brown silty sand	ML SM	bkgd=2.01 9'=11.2ppm FID	NO RXN to HCl 7.5-10.5' No staining 2' 10" of core
	12 13 14	11-13.5' moist to wet mod. dilatancy gray silty sand. little to no H_2O production.	SM	bkgd=2.01 11.5'=246ppm	RXN to HCl 10.5-11.5' NO RXN 11.5-13.5' gray from 11-13.5' sample 11.5-12.5' 3' 2" of core

HTRW DRILLING LOG

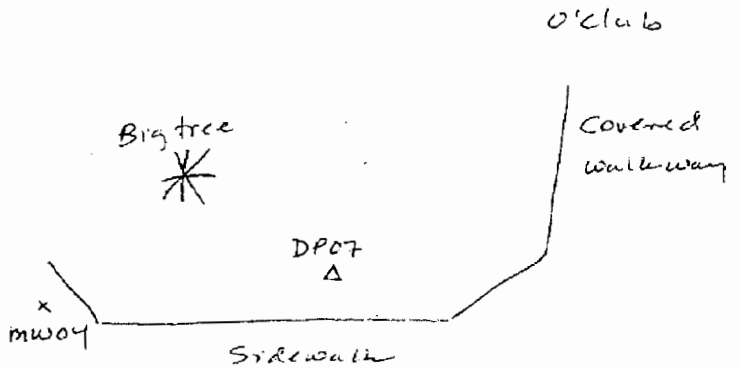
DISTRICT: Omaha		HOLE NO.: DP07
1. COMPANY NAME: Foster Wheeler Environmental Corporation	2. DRILLING SUBCONTRACTOR: R & R Environmental, Inc.	SHEET 1 OF 2 SHEETS
3. SITE: RAO Site— SS57	4. LOCATION: Holloman AFB, NM	
5. NAME OF DRILLER: Rafe Jones	6. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Geoprobe 66DT Track Rig	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 7/17/02	11. DATE COMPLETED: 7/17/02
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED: 10 - 10.5'	
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE: 13'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): moist to wet at ~~[illegible]~~ 10' 9.99' DTW (TOC) at MW04	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES:
none	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY
SS57BP0750401 SS57DP0750402 SS57DP0750901	X	X			X	_____ %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG	SITE RAO Site—	LOCATION Holloman AFB, NM	HOLE NUMBER
PROJECT # 5155.0037.0001.HDPTS	DISTRICT OMAHA	INSPECTOR PATRICIA WESTON	SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	0-1 poorly graded dry silty sandy gravel red. 1-4' lt. tan sandy clayey silt. moist. weak! no plasticity. moderately sorted	GC	bkgd=4.0	RXN to HCl 0-4'
			ML	2'=13.4ppm	No staining
	2			FID	No odor
	3				
	4				3' 3" of core.
	5	lt. tan sandy clayey silt. moist to wet. moderately sorted. 7.0-7.5' moist orange fine silty sand. well sorted.	ML	bkgd=4.0	No RXN to HCl 5-7'
				5'=13ppm	7-7.5' RXN to HCl
	6			FID	No staining
					No odor
	7				Sample 4.5-7' (duplicate)
			SM		
	8				3' 6" of core
	9	7.5-9' orange fine sandy silt well sorted. 9-10' tan silty sand w/ox staining. 10-10.5' gray fine sandy silt. wet. well sorted	ML	bkgd=3.6	RXN to HCl 7.5-10.5'
				9'=215ppm	Staining 10-13'
	10		SM		gray sample 9.5-10.5' orange oxidation staining 10-10.5'
	11		ML		3' 4" of core
	12	11.5-13' gray fine silty sand / sandy silt. well sorted. moderate H_2O production.	SM		RXN to HCl 10.5-13'
				No H.S. below water table.	Strong odor
	13		SM/ML		2' 6" of core

HTRW DRILLING LOG

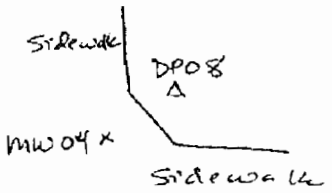
DISTRICT	Omaha
HOLE NO.	DP08
1. COMPANY NAME	Foster Wheeler Environmental Corporation
2. DRILLING SUBCONTRACTOR	R & R Environmental, Inc.
SHEET	1 OF 2 SHEETS
3. SITE	RAO Site— SS57
4. LOCATION	Holloman AFB, NM
5. NAME OF DRILLER	Rafe Jones
6. MANUFACTURERS DESIGNATION OF DRILL	Geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 66DT Track Rig
8. HOLE LOCATION	
9. SURFACE ELEVATION	
10. DATE STARTED	7/18/02
11. DATE COMPLETED	7/18/02
12. OVERBURDEN THICKNESS	
15. DEPTH GROUNDWATER ENCOUNTERED	7.5'
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE	10'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	9.99' DTW (TOC) at adj MW04

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES:
none	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOCs	SVOCs	METALS	EXPLOSIVES	OTHERS (SPECIFY) TPH	21. TOTAL CORE RECOVERY
SS57DP085020 1						____ %
SS57DP085060 1	X	X			X	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
hydrated bentonite	X			

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG

SITE	LOCATION	HOLE NUMBER
RAO Site—	Holloman AFB, NM	DP08

PROJECT #	DISTRICT	INSPECTOR	SHEET	OF	SHEETS
5155.0037.0001.HDPTS	OMAHA	PATRICIA WESTON	2		2

ELEV. (a)	DEPTH (ft.) (b)	DESCRIPTION OF MATERIALS (c)	USCS CLASS. (d)	FIELD SCREEN RESULTS (e)	REMARKS (f)
	1	0-10" brown silty sandy gravel. dry	GC	bkgd=0.00	RXN to HCl 0-4'
	2	10"-1'6" dark brown silty clay. mod. tough. No plasticity. lt. tan	CL	2'=2.20ppm FID	Staining at 2.5' (black sandy gravel)
	3	1'6"-2.5' soft low plast. moist sandy silty clay. Gravel lens at 2.5'	GC		Sample taken at 2-4'
	4	2.5'-4' lt tan sandy ~~clayey silt~~ silty clay. tough. low cem	CL ~~CL~~ ~~ML~~		3'2" of core
	5	4-5' moist. mod cem lt. tan sandy clayey silt	ML	bkgd=0.50	RXN to HCl 4-7.5'
	6	5-6.5' moist low strength sandy clayey silt.		6'=2.90ppm FID	No staining
	7	6.5-7.5' lt. tan sandy clayey silt very moist to wet.	ML		Sample taken at 6-7' 3'6" of core
	8	7.5-8' wet. poorly sorted lt brown silty clayey sand		No head space below water table	No RXN to HCl
	9	8-10.5' orange fine silty sand. well sorted. wet.	SC		No staining
	10		SM		2'6" of core.

Appendix B-6

Bhate Environmental Associates, Inc. July 2005. *Risk-Based Evaluation Officer's Club, Site SS-57.*

HTW DRILLING LOG

HOLE NO. SB-1

SHEET 1 OF 2 SHEETS

1. COMPANY NAME: Blue Environmental	2. DRILLING CONTRACTOR: Blue Environmental
3. PROJECT: Holloman Airforce Base	4. LOCATION: officers Club SS-57
5. NAME OF DRILLER: Robert Currence	6. MANUFACTURER'S DESIGNATION OF DRILL: DT-66
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT	8. HOLE LOCATION: North East
	9. SURFACE ELEVATION (ft. NGVD)
	10. DATE STARTED / 11. DATE COMPLETED
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE REC %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	0	Silty Sand SM: Soft to Med Stiff, Slightly moist to moist, dark Reddish Brn (5YR 3/2) to Light (5YR 8/1) Mostly Fine Sand w/ Some Silt Gravel @ ≈10" BGS up to 1" in Dia, massive.					3 ft Rec
	1						
	2						
	3						
	4	Silty Sand As above; from 7 to 8 ft BGS Gravely Silty Sand SM: Soft, Silty mst,					2 ft Recov
	5						

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-1

PROJECT

INSPECTOR

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	5	Reddish Brn (5YR 4/3) Some Gravel (Fine to Coarse), mostly Silty Sand (mostly fine Sand, w/Some Silt), non plastic, massive.					
	6						
	7						
	8	Silty Sand SM: Soft, slightly moist to Saturated, Brn (7.5YR 4/3) mostly fine Sand, Some Silt, little Gravel, not plas massive, @ 10.5 ft crem of Black staining ≈ 2" thick					3 ft Rec
	9						
	10						
	11						
	12						
	13						
	14						

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO.	SB-02
SHEET	1 OF SHEETS
1. COMPANY NAME	Blade Environmental
2. DRILLING CONTRACTOR	Blade Environmental
3. PROJECT	Hellman Airforce Base
4. LOCATION	Officers Club SS-57
5. NAME OF DRILLER	Robert Currence
6. MANUFACTURER'S DESIGNATION OF DRILL	DT-66
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT	
8. HOLE LOCATION	North East
9. SURFACE ELEVATION (ft. NGVD)	
10. DATE STARTED	
11. DATE COMPLETED	
12. OVERBURDEN THICKNESS	
13. DEPTH DRILLED INTO ROCK	
14. TOTAL DEPTH OF HOLE	
15. DEPTH GROUNDWATER ENCOUNTERED	
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
18. GEOTECHNICAL SAMPLES	DISTURBED / UNDISTURBED
19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC / METALS / OTHER (SPECIFY) / OTHER (SPECIFY) / OTHER (SPECIFY)
21. TOTAL CORE REC %	
22. DISPOSITION OF HOLE	BACKFILLED / MONITORING WELL / OTHER (SPECIFY)
23. SIGNATURE OF INSPECTOR	

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	0	0-1 Gravel fill					8 ft Recovery
		1-4 Silty Sand SM: Soft to med Stiff, Slightly moist, light Reddish Brn (5yr 6/4), Mostly fine sand, some silt, non plastic, mottled mostly massive, Gravel @ 2.5 ft BGS.					
	1						
	2						
	3						
	4	Silty Sand SM: Soft to med Stiff, Dry to slightly moist, white (5yr 8/1) to dark bluish gray (GLEY 4/1) mostly fine sand					4 ft Recovery odor @ 8 ft
	5						

PROJECT

HOLE NO

HTW DRILLING LOG

HOLE NO. SB-1

PROJECT O-Club SS-57

INSPECTOR

SHEET 2 OF SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	5	Some Silt, not plastic, not cohy, massive, odor @ 8 ft					
	6						
	7						
	8	Silty Sand Sm; As above @ 8.5 ft BGS Gravel layer ~4" thick, Saturated @ 9.5 ft BGS - Strong odor					4 ft Recovery.
	9						
	10						
	11						
	12						
	13						
	14						

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-3

1. COMPANY NAME: Blade Environmental	2. DRILLING CONTRACTOR: Blade Environmental
SHEET 1 OF 2 SHEETS	
3. PROJECT: Holloman Airforce Base	4. LOCATION: officers Club SS-57
5. NAME OF DRILLER: Robert Currence	6. MANUFACTURER'S DESIGNATION OF DRILL: DT-66
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT	8. HOLE LOCATION: North East
	9. SURFACE ELEVATION (ft. NGVD)
	10. DATE STARTED / 11. DATE COMPLETED
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE REC %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	0	Silty Sand SM: Sub to med Stiff slightly moist, white (5 YR 8/1), mostly fine sand w/ some silt, a few coarse sand grains throughout sample, massive, not coh.					4 ft Dr
	1						
	2						
	3						
	4	Silty Sand As above @ 7 ft DGS turns to a reddish yellow (5 YR 6/8)					4 ft Dr [illegible]
	5						

PROJECT | HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-3

PROJECT

INSPECTOR

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	5						
	6						
	7						
	8	Silty Sand Sm: As above					4 ft Rec.
		Sat @ 9 ft BGS					
	9						
	10						
	11						
	12						
	13						
	14						

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-4

SHEET 1 OF 1 SHEETS

1. COMPANY NAME: Blake Environmental	2. DRILLING CONTRACTOR: Blake Environmental
3. PROJECT: Hollaman Airforce Base	4. LOCATION: officers Club SS-57
5. NAME OF DRILLER: Robert Cussence	6. MANUFACTURER'S DESIGNATION OF DRILL: DT-66
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT: Macro Core 4'	8. HOLE LOCATION: North East
	9. SURFACE ELEVATION (ft. NGVD)
	10. DATE STARTED / 11. DATE COMPLETED
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE REC %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	0	0-1 ft Gravel					3 ft Recovery
	1	1-4 Silty Sand SM - med stiff - soft, silty moist, Pink (5YR 8/3) 60% fine sand 40% silt, non-plastic, not coh, massive					
	2						
	3						
	4	Silty Sand As above Saturated from 5-6 ft BGS Soft, Pink (5YR 8/3)					3.5 ft Recovery
	5						

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-001

PROJECT SS-57

INSPECTOR

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	5	Mostly fine sand & silt, non plastic, cohesive, massive					
	6						
	7	@7 ft BGS Silty Sand as before Soft, silty wet, reddish yellow (5YR 6/6), mostly fine sand & silt, nonplastic, not cohesive, massive					
	8	Silty sand as above; Saturated @ 9.5 ft BGS					
		Alocar Collect SS57-SB04-01-10					
	9						
	10						
	11						
	12						
	13						
	14						

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-5

SHEET 1 OF SHEETS

1. COMPANY NAME: Blue Environmental	2. DRILLING CONTRACTOR: Blue Environmental
3. PROJECT: Holloman Airforce Base	4. LOCATION: officers Club SS-57
5. NAME OF DRILLER: Robert Currence	6. MANUFACTURER'S DESIGNATION OF DRILL: DT-66
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT: 4ft Macro Core	8. HOLE LOCATION: North East
	9. SURFACE ELEVATION (ft. NGVD)
	10. DATE STARTED: 2/10/04 — 11. DATE COMPLETED: 2/10/04
12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE REC %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	0	0-1.5ft Gravel					4ft Deeply
		1.5-4					
		Silty Sand SM - Soft to hard stiff,					
	1	slightly moist to moist, white					
		(5YR 8/1) mostly fine sand w/					
		some silt, not plastic, non coh,					
		massive @ 3ft silty sand layer					
	2	4" thick dark reddish brown (5YR 2/2)					
	3						
	4	Silty Sand SM - Soft to hard stiff					4ft Deeply
		slightly moist to saturated from 2.5-					
		3ft bgs, white (5YR 8/1) to red to					
		(2YR 6/6) mostly fine sand some silt					
	5						

PROJECT | HOLE NO.

HTW DRILLING LOG

HOLE NO. SB-5

PROJECT O-Club

INSPECTOR

SHEET 2 OF SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results d	Geotech Sample or Core Box No. e	Analytical Sample No. f	Blow Counts g	REMARKS h
	5	non plastic, non cohesive, some laminations					
	6						
	7						
	8	As above Saturated @ 10ft SS57-SB05-01-10					4 ft Recovery.
	9						
	10						
	11						
	12						
	13						
	14						

PROJECT HOLE NO.

APPENDIX C

FIELD SAMPLING DOCUMENTATION

HAFB SS-57 9040002, 01.03

FIELD BOOK

#101595

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When the Outdoors is Your Office™

CONTENTS

PAGE NO.	REFERENCE	DATE
	SS-57 O'Club	2/8/84

RC
GO

Sun 02/08/04 9040000

0745 - Meet Robert Guttenic @ Bank office
in Birmingham, AL & Depart to Airport

0330 Arrive in El Paso TX, Rent car & Drive to
Alamogordo, NM.

0500 Arrive in Alamogordo NM

GD 02/08/04

GD
RC

Monday 02/07/04 Gd4002

WX: Clear 25-55°F

pers: Greg Gill, Robert, Alamogordo Staff

0700 ~~Meet~~ LTP GD + RC meet Jerry Kelly @ Building office

0800 on Base arrive @ field office, Inventory supplies

0830 Depart HAFB for lunes to pick up supplies

0900 Arrive @ Hotel

GD
RC

GD
RL

Tues 02/10/04 9040002

WX: 25-50, Sunny + clear

Pers: Greg Dill, Robert Quilleno, Alameda Staff

Sw: Begin Soil + GW Sampling @ SS-57

0700 - Meet Jerry @ Gate for escort on Base

0720 - @ Office load up, Shown Sheets RL
how to Calibrate PID

0745 - Tele Conference w/ Frank, Jerry, Dave, Robert, Greg
Date

0815 - loading + head to O Club.

0825 - Call Electrical Distribution - will send someone out

0835 - mob to O Club

0850 @ O Club - set up + Mark locations
will begin w/ SB-4 in parking area
near front entrance

0925 - pre-film SSM GD/RL

0930 - Begin probing SB04

Δ 1000 Collect SS57-SB04-01-10

1020 move to SB-5 will screen soil later

1030 Begin SB-05

Δ 1055 Collect SS57-SB05-01-12

1115 Begin SB-2

Δ 1135 SS57-SB02-01-10

Δ 1230 Collect SS57-SB04-02-09

Δ 1245 Collect SS57-SB05-02-06

Δ 1300 Collect SS57-SB02-02-08

GD
RL

Tue 2/10/04 90X0004

1310 Depart Site Headquarter to pick samples,
1320 @ office RL to pick cooler GD to fill out COC
1345 Cooler picked
Airbill # 8426 0329
1400 prep to sample GW
1410 mob back to C-club to collect GW samples
1420 @ C-Club prep to GW sample
Set Sieve from 14-16 ft BGS
Calibrate Horiba U-22
Pilot message Turbidity HS
retry several times
Call US Env Rental sending a new unit
Get turbidity meter from office
1535 - calibrate turbidity from office.
1540 - begin purging SB-2
1605 collect 55517-SB02-GW-01
1610 Begin packing up Equipment
1705 Depart C Club for field office
1720 @ office
1745 Depart office for Hotel

GD 2/10/04

GD
RC

N.J 2/11/04 9/42.0004

WX: 50's sunny

Pers: Gary Dill, Robert Gallence

Sched: Comp'd Soil boring & GW Sampling

0650 @ Front Gate Bldg office - pass expired yesterday - need escort to get a new one.

0705 Jerry here

0720 leave w/ badge

0735 @ office load up & prep for today

0750 - calibrate Tva-1000

0820 - depart for @ club

0835 @ o Club set up

0845 SSHM

0850 Begin probing @ SB-3

Δ 0910 Collect SS57-SB03-01-9

TPH, VOC, PAH, Site Chem

Δ 0940 Collect SS57-SB03 2&6

SS57-SB05-~~03~~ 02-06 MS - TPH, VOC, Sem, fc

SS57-SB03-02-06-MSD - TPH, VOC, Sem, fc

~~will collect GD 2/11/04 Chem Matrix MS/MSD~~ ~~not~~ Enough in To collect

1015 Begin SB-01

Δ 1035 Collect SS57-SB01-01-09

Δ 1100 Collect SS57-SB01-02-09

1135 RC Set up to begin GW Sampling @ SB01

GD to pull & ship Soil Samples

1150 GD @ office to pull samples

Wed 7/11/04 90°20004 GD

Dull samples w/ exhibit # 8426 0329 4600

1245 Depart office to O-Club

1300 @ Oclub

Δ 1327 Collect SS57-SB01-GW-01

~~Site~~ GD, TDH, VOC, Carbon fraction

1400 Set Screen point @ SB03 + Begin purging

1410 no water need to go deeper

we do not have enough tubing to push

Screen out - move to another location

GD to hardware store.

1515 GD Back, Re set up on SB05 ~~to~~ Purging

1525 Jerry On Site

Δ 1600 Collect SS57-SB05-GW-01

~~Site~~ GD, TDH, VOC, Carbon fraction

1640 Begin Purgin SB04 Jerry left on at 1600

Δ 1800 Collect SS57-SB04-GW-01

~~Fire~~ Carbon fraction, TDH, VOCS

Begin loading up

1820 Depart site for office

1835 arrive @ office, unload

1845 leave Office for hotel

GD 7/11/04

WL	Time	TD	WL	WV/X3
13.19	1430	14.44	1.25	0.4/0.6
11.80	1435	13.50	1.7	0.27/0.82
13.50	1432	16.89	3.39	0.54/1.62
13.52	1437	14.40	0.88	0.14/0.42
9.34	1440	15.10	5.76	0.92/2.76

Cant find will measure later

[illegible] 3/1/[illegible] [illegible]

WX: 30-50°F, windy, sunny

Pers Greg Dill, Robert Lorance

SOW finish GW sampling @ SB03

Begin Soil vapor sampling

0700 @ office load up

Calibrate TVA 1000 & landfill

Go out air sampling w/ Rife

0900 - Need different air pump w/ lower flow rate

Send RL to begin collecting GW samples

Pick previous GW samples for shipment

Air Bill # 8426-0324-4610

1040 - GD Run Horiba to RL @ O-Club

1055 - GD @ O-Club SSHM

1100 Begin Purgin SS57-SB03-GW-01

1155 - GD Back to office to ship old horiba

1205 - GD @ office - pick horiba to ship to US Ecol Rep

1230 leave office for Building office

get new vehicle pass

1305 @ O-Club

△ 1335 Collect SS57-SB03-GW-01

1350 Prep to Begin Sampling MW's

1450 Set up on MW-2 to begin purging

Soon Begin purging MW-2

△ 1515 Collect SS57-MW02-GW-01

SS57-MW02-GW-01-MS

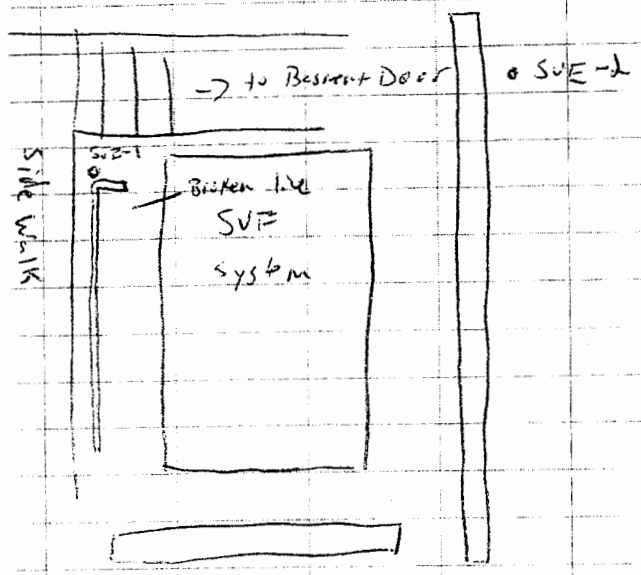
SS57-MW02-GW-01-MSD

GP
12c

2/12/04 904000r

1635 finish packing up stuff to office
1700 Depart office for hotel

GP 2/12/04



Friday 2/13/04 Groundwater

WX: 25-40°F, Overcast, Snowing

Per: Greg Dill, Robert Kirtland

Sow: Complete GW Sampling

0700 @ office. load up equipment

Dave Scull Cont ~~and~~ Dirt from Intrusive work on

weekends -

Talk w/ Frank, Jerry, Dave

will Push alkalination past utility lines that

to sample on sat/sun

0855 mobile to Club

0910 @ Club unload stop to push a rod to 3 ft BGS

@ each location, Perform SSPM

0925 Push Rod @ SV-2 to 3 ft BGS stone

0940 push Rod @ SV-1 to 3 ft Rod deflected off of

something

0950 - hit a 1 inch pvc irrigation line call

Jerry - no answer

Dig up - 1 3/4" pvc 90° elbow into nothing

1015 - Jerry called Back - call water & Deport

- line is busy will try in a few minutes

1025 push Rod @ SV-3

1038 Talk w/ water - will send someone over.

1038 water people on site - looks like abandoned

line will Bring SGT out on Tues to look @ it.

1042 call Jerry to update - wants me to call Scott Dennis

(20)
RL

Friday 2/13/04 9040002

1050 Talk w/ Scott - all work in 40 mil levels
no 1-L+125

1100 - Prepare to Begin Gw Sampling

1110 - Jerry + Dale on site
- look @ pipe
- look for MW-9 - Can't find it - Jerry will
call Frank about where we will like us
to dig about it (MW-9).

1130 Jerry + Dale leave site.

1141 Begin Purging MW-3

△1214 Collect @ SS57-MW03-GW-01 Dup, TPH, Carbon

1230 Break for lunch

1250 Back @ site RL to Set up on MW-1
(20) to office to pick samples for Thursday

1305 @ office - pick samples
Fed-x airbill # 8416 0329 4204

1319 Begin Purging MW01

△1354 Collect SS57-MW01-GW-01

1400 Set up on MW-5 Project Dry but Flow through cell
filled will allow to recharge & sample tomorrow

1518 Start Purging MW-07

△1600 Collect SS57-(MW07)-GW-01 &
SS57-MW07-GW-01-Dup

1620 Load up equipment

1630 Return to office

GD

DL

Friday 2/13/04 9040000

1645 @ office unload

1700 Depart office

CP 2/13/04

Sat 8/14/04 96400010

0705 @ office

wx: 40-50°F, sunny

Pelicing Dill Robert Corrine

Sevi Begin vapor sampling

0720 Check the wx

currently 19°C 83% humidity

pressure @ 30.17 inHg + steady

wind from the S-SE @ 5 mph

0750 Calibrate TVA 1000 + Industrial Flexible Sampler

0800 everything is calibrated hook up

0805 walk to @ Club

0820 @ site unloaded set up on SV-2

0835 start pump

0850 pull back hold 4" from 3 ft BLS

set up w/ canister # 00100 3101

initial pressure = -29.5" inHg

0905 - 10 ft of tubing used in system

V = V(tube) + V(void space) + 20mL

V = 34mL + 76mL + 20mL

V = 116 mL

PV = V(7)

PV = 116mL (7)

PV = 812 mL 812mL ÷ 3 mL/min = 270 min

0910 Call Scott Dolvin to talk over

0930 Go to office to get Geotube + pump

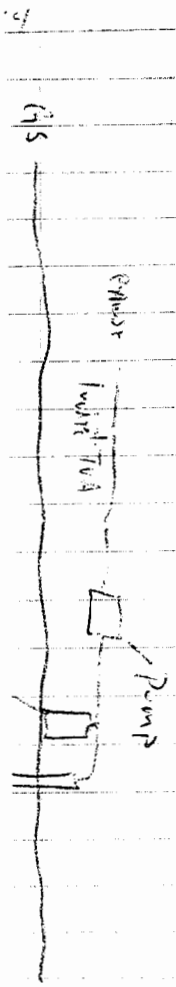


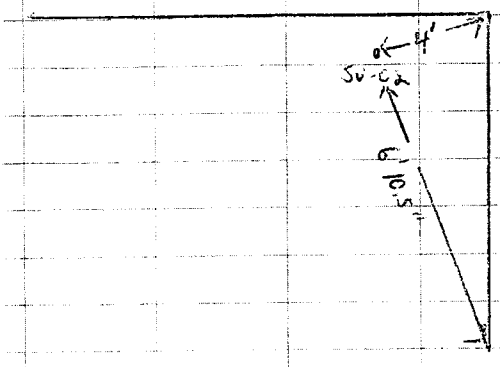
Diagram of Sub-slab Sampling System

(7)

R2

S040002

SVE System



2/14/04 S040002

1000 GD Back @ Site w/ Geotube pump

1010 Scott Dalvin called Back. OK to purge w/ Geotube pump @ 1 L+R/min

PV = 8 L/min will purge for 1 min & sample

1040 Start pump

1041 Stop pump + Close valve.

@1042 Collect SV Sample w/ Summa Canister

ending Pressure -0 in Hg

PID 3.60 PPm SSS7-SV02-3

FID 2.04 PPm

CH_4 = 0.0%

CO_2 = 00.3%

O_2 = 20.0%

@1100 collect Nash Tube SSS7-SV02-3

call Scott he said allow 3 min to sample

PID = 5.59 3 min @ 3 L/min

FID = 4.49

CH_4 = 0.0%

CO_2 = 00.3%

O_2 = 19.5%

1120 pull out And prep to Sample SV02-8

Realize that the Airchek sampler is in L/min will use on next Sample.

1125 Select Canister 02331 P = -25.5 in Hg

2/14/84 904 [illegible] RC

1145 @ 8 ft BGS Pull Back 4" (10 ft tube)

V = V(tube) + V(void) + 20 mL

V = 24 + 72 + 20

V = 116 mL

PV = 116 x 7 = 812 mL = 0.812 L+R

@ 3 L+R/min should purge 0.27 min

will purge for 1 min even

1150 Begin purging - no flow - check tubing

tubing ok - reassemble

1155 Turn pump back on very low flow 2.5 L/min

will allow to purge @ this rate for 2 min.

Δ1157 Collect Summa Sample

SS57-SVed-8

PID = 5.13 ppm

FID = 3.33 ppm

CH_4 = 0.070

CO_2 = 0.070

O_2 = 20.1 %

Δ1205 Wash Tube SS57-SVed-8

2 L/min @ 3 min

1230 Break for lunch

1315 Back @ O-club

1335 Move Rig to SV-3

Select Canister #10977

Start Pressure = -25 in Hg

2/14/04 904000A

1345 prove to 3 ft BGS & pull back 4"

Use 5 ft Tube

V = V(tube) + V(void) + 20 mL

V = 12 mL + 72 mL + 20 mL

V = 104 mL

pV = V(7)

pV = 104 mL (7)

pV = 728 mL 728 mL/1000 = 0.728 L

Will purge @ 1 L/min @ 1 min

1403 Begin purging

PID = 3.48

FID = 2.70

CH_4 = 00.0%

CO_2 = 00.3%

O_2 = 19.4%

Δ1405 Collect SS57-SV03-3

Δ1410 Collect Mobil tube @ ≈ 0.5 L/min @ 3 min

1430 There is a reception @ the O Club - stop working for party to enter the Bldg.

Set up on MW-5 to sample

Δ1436 Collect SS57-MW05-GW-01

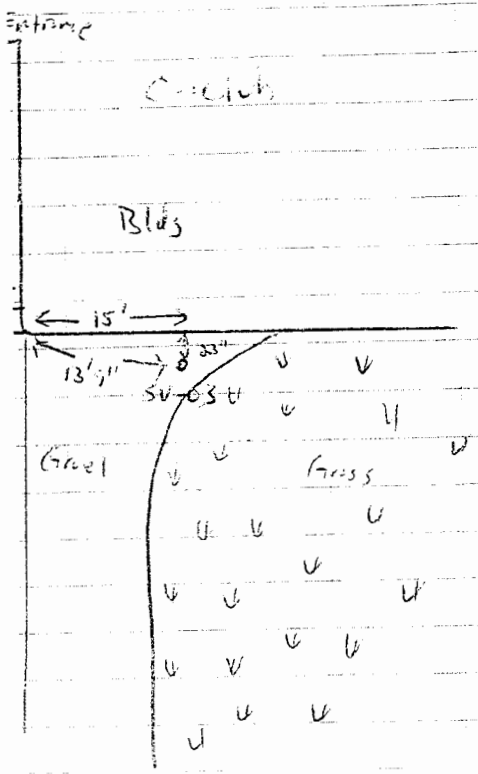
1500 Prepare to collect Equipment Blank from MW10 Core

1520 Purge 10 ft BGS & Pull Back 4"

Use 10 ft of Tubing

GD
RC

9040005



GD
RC

2/14/04 9040002

$V_T = V(\text{tube}) + V(\text{void}) + 20\,mL$

$V_T = 24 + 72 + 20$

$V_T = 116\,mL =$

$P_V = V \times 7 =$

$P_V = 116\,mL \times 7 = 812\,mL = 0.812\,L/12$

will purge @ 1 L/12/min for 1 min

1530 Set up equipt Canister # 4032 -22.5 inHg

1545 Begin Purging

PID = 5.98

FID = 2.55

CH_4 = 00.0%

CO_2 = 00.8%

O_2 = 18.5%

1547 Prep to collect Sample

@ 1548 Collect SS57-SV03-108

@ 1553 Collect MFOSH Tube

3 min @ 0.5 L/min

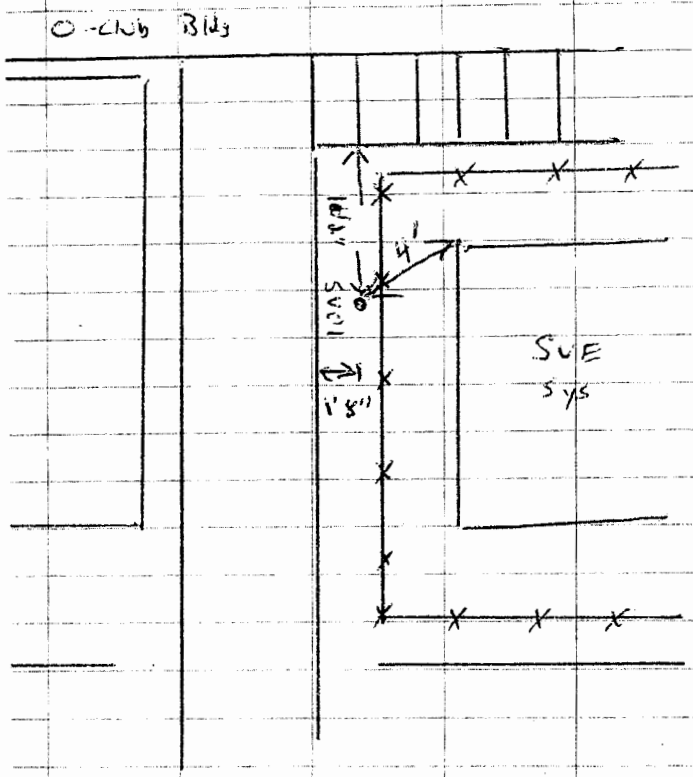
@ 1600 Collect 1402040303-513 Equipment Blank from Manifold

1605 Begin cleaning up around Site.

1630 Depart Site for office.

1645 @ office Unload

1700 Depart Base for hotel



Sun 2/15/04 [illegible]

WX: 25-63°F, 63% Humidity, 30.13 in Hg & rising
Clear & sunny, Calm wind.

Per: Greg Dill, Robert Clarence

Sub: Collect Soil Vapor Sample from SV-01
Field Dup & Ambient Blank

0700 @ office, check weather, calibrate instruments
& load up vehicles.

0810 Depart ~~site~~ office for Site.

0825 @ Site unload, perform SSHM, set up on SV-03

0835 for the shallow sample select Cylinder # 34459
Initial Pressure = -30.5 in Hg

0840 Probe to 3 ft & pull back 4 inches

$V_T = V(tub.) + V(void) + 20\ mL$

$V_T = 14 + 72 + 20 = 106\ mL$

$PV = V_T(7)$

$PV = 106\ mL\ (7) = 742\ mL = 0.742\ L$

will purge for 1 min @ 1 L/min

0915 Begin Purging

PID = 1.25 ppm

FID = -0.01 ppm

CH_4 = 0.0%

CO_2 = 0.0%

O_2 = 19.6%

0916 Collect ~~SV01~~ - SS57 SV01-03

0918 Collect Atmosph 0.5 L/min for 3 min

2/15/04 90/100%

Δ 0930 collect KSC20403-GW Rinsate Sample after of Screen point Sampler

0940 push SVOI to 8 ft BGS and Back 4 inches

Select Canister # 23922 for Sample

Initial p = -22 in Hg

Select Canister # 31439 for Duplicate Sample

Initial p = -22 in Hg

V_T = V(tubes) + V(void) + 20 mL

V_T = 34 mL + 72 mL + 20 mL

V_T = 116 mL

pV = 116 mL (7)

pV = 812 mL = 0.812 L

will purge @ 1/4 L/min for 1 min

1005 Begin Purging

PID = 5.50 ppm

FID = 0.00 ppm

CH_4 = 0.00 %

CO_2 = 1.6 %

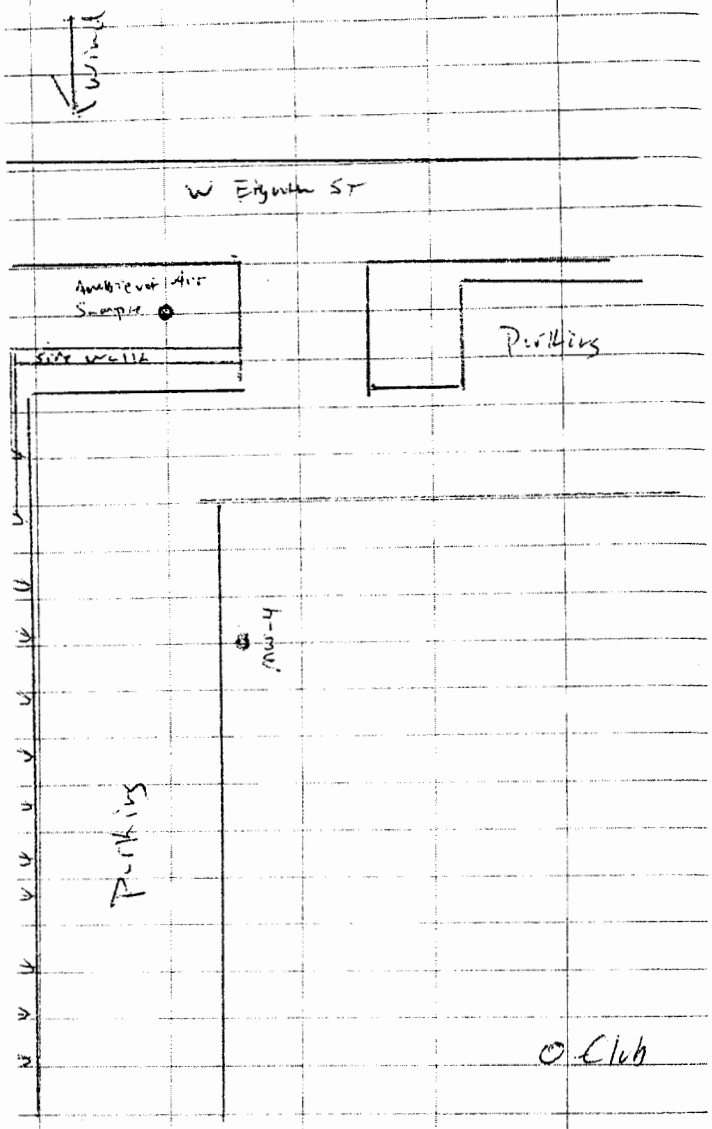
O_2 = 17.1 %

@ 1007 collect SS57-SVOI-04

SS57-SVOI-04-Dup

0 1010 collect NIOSH Tubes @ 0.5 L/min for 3 min each

1035 prepare to collect Ambient air Sample, The wind is Blowing from the South-Southwest to the North-Northeast based on field observations, will collect the Sample



GD
RC

2/15/04 9040002

In the Natural area in the center of New Mexico Avenue
W Eighth St.
Δ 1050 Collect SS57-AA
High Tube collected @ 0.5 L/min for 3 min
Summa Canister # 31427
Initial P = -23 in Hg
1110 Prepare to collect Background Shelby Tube (GB-1)
Mark the location according to fig 4 per SOW
will collect sample from 4-6 ft BGS
1135 @ 4 ft BGS Collect Grab Sample for PID
Reading
Background = 1.41 ppm PID
-0.41 ppm FID
Sample = 9.80
need to move location
1140 Move GB-1 location to MW-5
1150 Screen Sample
BG = 2.11 PID
-0.50 FID
Sample = 2.50 PID
-0.23 FID
Δ 1200 Collect ~~GB~~ SS57-GB-01-06
1215 Begin packing up.
1245 leave site for lunch
1330 @ office unload

AD
RC

Sep 2003

Club
Bldg

30 ft @ NW-5

GB-1

RC
GD

2/15/04 Sep 2003

15:30 finished unloading / Catching up on paperwork,
+ filling Air cylinders at the office

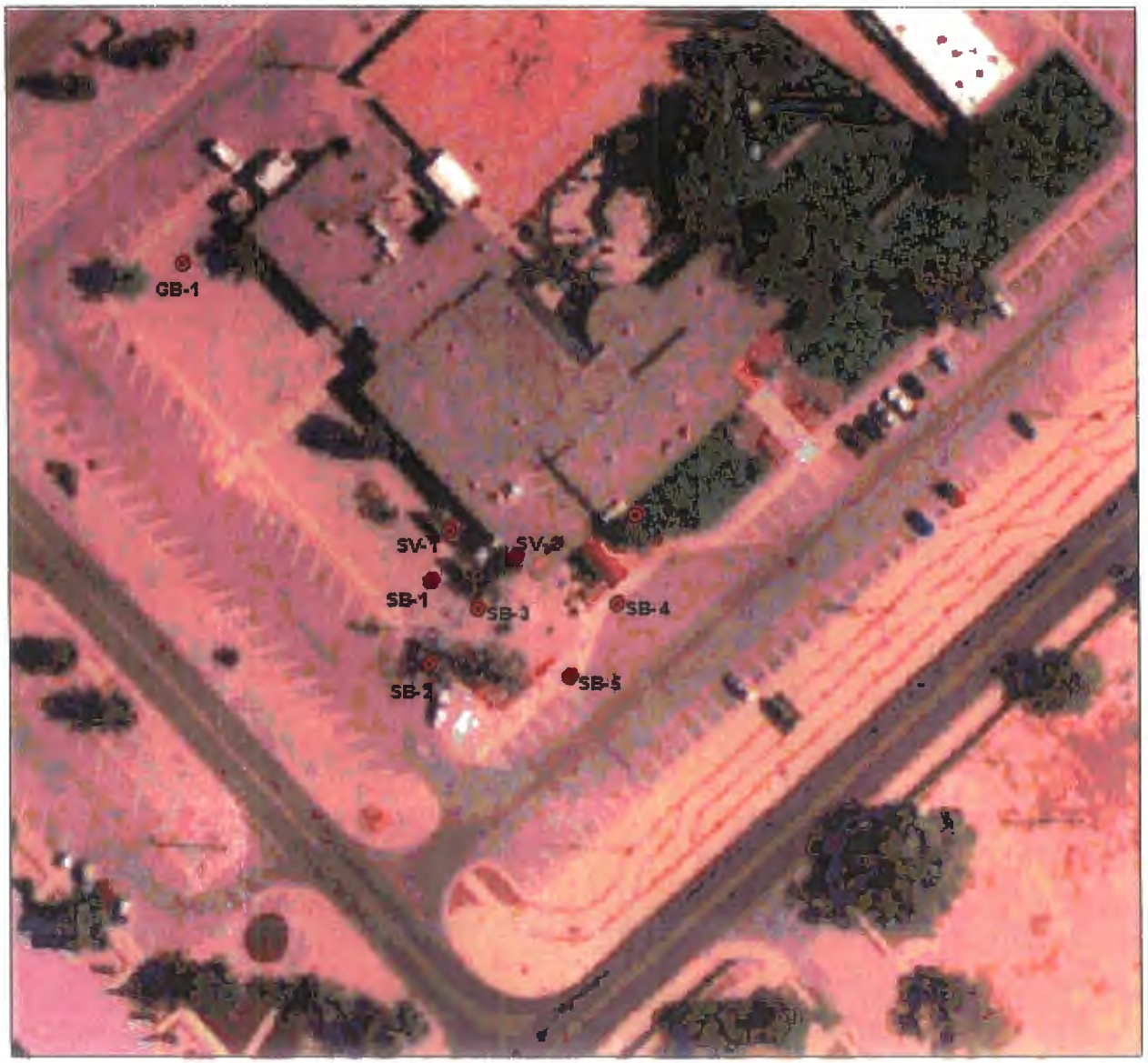
GD 2/15/04

1230 - 9-40ml HCl preserved VOA's collected and placed on ice. Analyses requested is 8260B, TX1005 and TX006. The bailer is an accepted method of collecting VOC samples from groundwater. Water parameters collected via 600 QS sonde prior to well purging and following sample collection. Water had a slight petroleum odor and grayish in color.

20 OCT 2004 K. Germann TO SS-57
TO GPS MW Elevations And TAKE Fluid
level measurements.

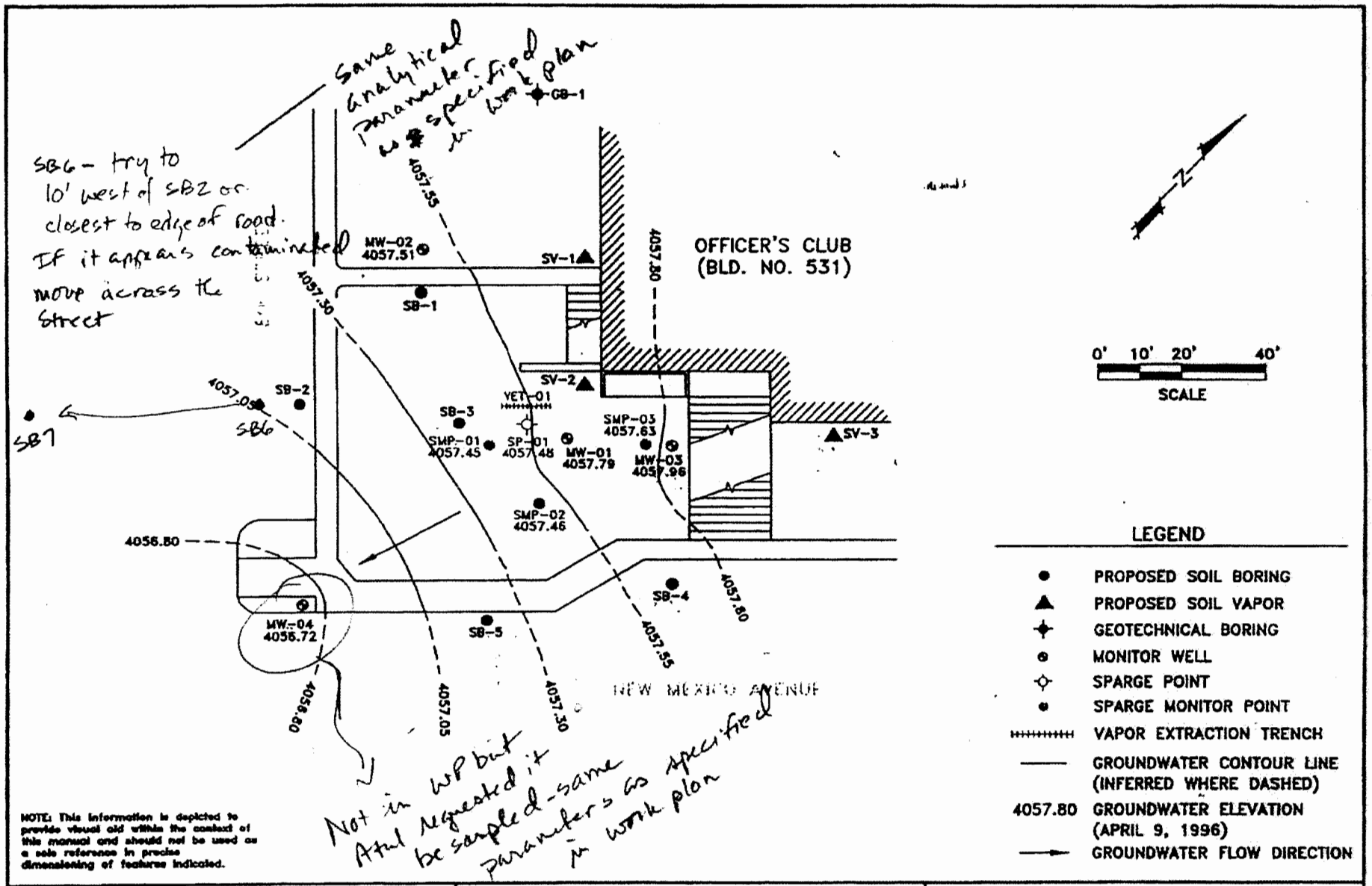
			GW elevtn
MW-01 -	DTW	12.76'	4058.573
MW-02 -	DTW	11.44'	4058.472
MW-03 -	DTW	12.86'	
MW-04 -	DTW	9.50'	4057.76

THE FLUID Levels were measured From red mark on NORTH End OF CASING.



0 80 160 240 Feet

SS-57 (O-Club) Sample Locations



NOTE: This information is depicted to provide visual aid within the context of this manual and should not be used as a sole reference in precise dimensioning of features indicated.

BHATE
Environmental Engineers and Scientists

SAMPLING LOCATIONS
OFFICER'S CLUB

PROJECT NO.	SCALE	DATE	DRAWN BY: MRM
9040002	SHOWN	01/26/04	DRAWING NO: 9040002-03-01

SITE SS-57
HOLLOMAN AFB
NEW MEXICO
Boring Location Map 4
Figure 2-7

HISTORICAL SURVEY DATA
OFFICER'S CLUB, SITE SS-57, HOLLOMAN AFB, NEW MEXICO

AFIID	LOCID	LTCCODE	LPRCODE	NCOORD	ECOORD	ESTDATE	ESCCODE	DRLCODE	EXCCODE	CMCCODE	ELEV	DEPTH	BHDIAM	LOCDESC	UPUSER	UPTIME
HOLMN	AB-1	BH	I	667847.31000000000	1690623.00000000000	11/18/1992	RAD	SAGA	NA	HS	-9999.00000000000	25.10000	7.25000	ANGLED BORING, STARTING POINT 75' NORTHWEST OF SOUTHERN CORNER OF FLOWER BED ADJACENT TO OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	AB-2	BH	I	667830.31000000000	1690721.00000000000	11/19/1992	RAD	SAGA	NA	HS	-9999.00000000000	27.00000	7.25000	75' NORTHEAST OF SOUTHERN CORNER OF FLOWER BED ADJACENT TO OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	OC-B-1	BH	I	667800.31000000000	1690650.00000000000	10/25/1991	WIL	SHB	NA	HA	4087.62000000000	7.00000		LOCATED SOUTHERCORNER OF OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	OC-B-10	BH	I	667881.31000000000	1690587.00000000000	5/5/1992	WIL	TLA	NA	HS	-9999.00000000000	15.50000	6.88000	Location: 6.5' SE of Corner. 14' SW of SW Edge of O-Club.	Hopper	1/27/1999
HOLMN	OC-B-12	BH	I	667828.31000000000	1690719.00000000000	5/2/1992	WIL	TLA	NA	HS	-9999.00000000000	15.50000	6.88000	Location: 5' SE of O-Club. 21' NE of SW sidewalk.	Hopper	1/27/1999
HOLMN	OC-B-13	BH	I	667802.31000000000	1690680.00000000000	5/2/1992	WIL	TLA	NA	HS	-9999.00000000000	15.50000	6.88000	Location: 10.5' SE of O-Club. 5.5' SW of SW sidewalk.	Hopper	1/27/1999
HOLMN	OC-B-14	BH	I	667875.31000000000	1690784.00000000000	5/2/1992	WIL	TLA	NA	HS	-9999.00000000000	15.50000	6.88000	Location: S. of Barber Shop, 7.5' SE of bldg., 7.5' SW of NE sidewalk.	Hopper	1/27/1999
HOLMN	OC-B-15	BH	I	667745.31000000000	1690691.00000000000	5/2/1992	WIL	TLA	NA	HS	-9999.00000000000	15.50000	6.88000	Location: 33; SE of O-Club. 56' SW of SW sidewalk.	Hopper	1/27/1999
HOLMN	OC-B-2	BH	I	667824.31000000000	1690664.00000000000	10/25/1991	WIL	SHB	NA	HA	-9999.00000000000	1.00000		LOCATED BY SOUTHERN CORNER OF OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	OC-B-3	BH	I	667836.31000000000	1690631.00000000000	10/24/1991	WIL	SHB	NA	HS	4096.70000000000	31.00000	6.50000	LOCATED ON SOUTHWESTERN SIDE OF OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	OC-B-4	BH	I	667904.31000000000	1690567.00000000000	10/24/1991	WIL	SHB	NA	HS	4098.29000000000	30.50000	6.50000	LOCATED ALONG SOUTHWESTERN SIDE OF OFFICERS CLUB	Hopper	1/27/1999
HOLMN	OC-B-5	BH	I	667963.31000000000	1690512.00000000000	10/24/1991	WIL	SHB	NA	HS	4098.16000000000	30.84000	6.50000	LOCATED OFF WESTERN CORNER OF OFFICERS CLUB	Hopper	1/27/1999
HOLMN	OC-B-6	BH	I	668052.31000000000	1690631.00000000000	10/23/1991	WIL	SHB	NA	HS	4098.22000000000	30.00000	6.50000	LOCATED OFF SOUTHWESTERN CORNER OF SWIMMING POOL	Hopper	1/27/1999
HOLMN	OC-B-7	BH	I	667970.31000000000	1690682.00000000000	10/23/1991	WIL	SHB	NA	HS	4098.55000000000	31.00000	6.50000	LOCATED OFF SOUTHERN CORNER OF SWIMMING POOL	Hopper	1/27/1999
HOLMN	OC-B-8	BH	I	667911.31000000000	1690696.00000000000	10/25/1991	WIL	SHB	NA	HA	4099.00000000000	13.50000		LOCATED OFF NORTHERN CORNER OF OFFICERS CLUB	Hopper	1/27/1999
HOLMN	OC-B-9	BH	I	668187.31000000000	1690724.00000000000	10/27/1991	WIL	SHB	NA	HS	4095.41000000000	31.00000	6.50000	LOCATED OFF NORTHWESTERN SIDE OF SWIMMING POOL	Hopper	1/27/1999
HOLMN	VB-1	BH	I	667815.31000000000	1690651.00000000000	11/17/1992	RAD	SAGA	NA	HS	-9999.00000000000	26.00000	7.25000	20' EAST OF FLOWER BED ADJACENT TO OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	VB-2	BH	I	667865.31000000000	1690585.00000000000	11/18/1992	RAD	SAGA	NA	HS	-9999.00000000000	27.00000	7.25000	40' SOUTHWEST OF OFFICER'S CLUB, 100' NORTHWEST OF SOUTHERN CORNER OF FLOWER BED ADJACENT OF OFFICER'S CLUB	Hopper	1/27/1999
HOLMN	VB-3	BH	I	667794.31000000000	1690675.00000000000	11/17/1992	RAD	SAGA	NA	HS	-9999.00000000000	30.75000	7.25000	10' SOUTH OF SOUTHERN CORNER OF FLOWER BED	Hopper	1/27/1999
HOLMN	VB-4	BH	I	667723.31000000000	1690668.00000000000	11/18/1992	RAD	SAGA	NA	HS	-9999.00000000000	26.00000	7.25000	100' SOUTH-SOUTHWEST OF SOUTHERN CORNER OF FLOWER BED ADJACENT TO OFFICER'S CLUB	Hopper	1/27/1999

APPENDIX D

ANALYTICAL DATA PACKAGES

Soil Analytical Results

ELAB
SDG 0402100

ANALYTICAL REPORT

MAIN DATA PACKAGE - ORGANIC

BHATE

WO #0402100

Marcia K. McGinnity
Senior Project Manager
ELAB of Tennessee, LLC.

March 15, 2004

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WO #0402100

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ORGANIC CASE NARRATIVE
Bhate – Holloman AFB
Work Orders: 0402100

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5035/8260B (5 gram EnCore field sampling followed by laboratory preservation then purge and trap followed by capillary column GC/MS) for soils or 5030B/8260B (purge and trap followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Note: Soil samples were refrigerated upon receipt at the laboratory then placed in 40ml VOA vials with 5ml water and stirbar then frozen within 48 hours of sampling.
- Methanol extraction blank PMSBLK0211 had a reported concentration of hexane. Reported concentrations in the associated samples were flagged with a "B".
- Low soil preparation blank PLSBLK0211 had a reported concentration of xylene. Reported concentrations in the associated samples were flagged with a "B".
- Trip blank sample SS57-SB04-C had a reported concentration of hexane. Reported concentrations in the associated samples should be evaluated as potentially from a source external to the sample.
- Recovery of methyl acetate in spike sample V1BLK0212LCS exceeded the limit of 130% at 142%. It was not detected in the associated samples.

Semi-Volatiles

Method: The samples were extracted/analyzed by USEPA SW-846 Methods 3541/8270C (soxtherm extraction followed by capillary column GC/MS) for soils upon receipt to the laboratory in satisfactory condition.
Comments: The semi-volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Recoveries of hexachlorocyclopentadiene in spike samples SBLK0212BS1LCS and SS57-SB04-02MS/MSD were below the limit of 30% at 23% and 16%/16%. All other spike recoveries and RPDs were within limits.
- Recoveries of the surrogate 2,4,6-tribromophenol in samples SBLK0212BS1 and SS57-SB04-02 were below the limit of 38% at 31% and 33%, respectively. All other surrogate recoveries were within limits.

Total Petroleum Hydrocarbons

Method: The samples were analyzed by TNRCC Method 1005 for total petroleum hydrocarbons revision 03 June 1, 2001 (pentane extraction followed by direct injection capillary column GC/FID) for soils upon receipt to the laboratory in satisfactory condition.

Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Note: Soils were received in tared VOA vials and frozen upon receipt at the laboratory. Sample weights at extraction were determined to be less than the method recommended weight of 10 grams as low as 5.5 grams. Quantitation limits were increased accordingly.
- Recoveries of some of the surrogates exceeded the limits on the high side in some of the samples. Recoveries of the spike analytes were within limits and no target analytes were detected above the quantitation limit in the associated samples.
- Extracts from samples SS57-SB02-01 and SS57-SB02-02 were subbed to Test America for TX1006 fractionation and analysis. Results for these analyses are submitted as a separate report.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

Bhate

Parameters Requested

Laboratory Sample ID	Client Field ID	Matrix	Date and Time Sampled	Parameters Requested
0402100-01	SS57-SB04-01	Soil	2/10/04 10:10:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/10/04 10:10:00 AM	VOA 8260B (Soil)
0402100-02	SS57-SB05-01	Soil	2/10/04 10:55:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/10/04 10:55:00 AM	VOA 8260B (Soil)
0402100-03	SS57-SB02-01	Soil	2/10/04 11:35:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/10/04 11:35:00 AM	VOA 8260B (Soil)
0402100-04	SS57-SB04-02	Soil	2/10/04 12:30:00 PM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/10/04 12:30:00 PM	VOA 8260B (Soil)
0402100-05	SS57-SB05-02	Soil	2/10/04 12:45:00 PM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/10/04 12:45:00 PM	VOA 8260B (Soil)
0402100-06	SS57-SB02-02	Soil	2/10/04 1:00:00 PM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/10/04 1:00:00 PM	VOA 8260B (Soil)
0402100-07	SS57-SB04-C	Water	2/10/04 2:00:00 PM	VOA 8260B (Soil)

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Project Number: 704002

Chain of Custody Number [1]: 02-10-04-01

LIMS Number: —

Facility/Base I.D.: Hollomon

Project Name / Site Name: SS-57 Duck acquisition / O-club

Client Name:

Collected by: Greg Dill

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TPH (1005)	VOC (8260)	SVOC (8270)	Carbon Fraction (1005)	Soil moisture				Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID	
SS57-SB04-01	NA	10 feb 04	1000	8 - 10	N	01	SO	4	X	X	X	X	X							1	2100 01
SS57-SB05-01		10 feb 04	1055	8 - 10	N	01	SO	4	X	X	X	X	X							1	02
SS57-SB03-01		10 feb 04	1135	8 - 10	N	01	SO	4	X	X	X	X	X							1	03
SS57-SB04-02		10 feb 04	1230	2 - 4	N	01	SO	4	X	X	X	X	X							1	04
SS57-SB05-02		10 feb 04	1245	4 - 6	N	01	SO	4	X	X	X	X	X							1	05
SS57-SB02-02		10 feb 04	1300	6 - 8	N	01	SO	4	X	X	X	X	X							1	06
SS57-SB04-TB		10 feb 04	1400	-	TB	01	WQ	1		X										1	07
				-																	
				-																	
				-																	
				-																	

COMMENTS: *TX1006 contingent upon hit in TX1005. m 2/11/04

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Greg Dill	2/10/04	1345	1. Anthony Lowe	2/11/04	09:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.: _____
Method of Shipment: _____ Airbill Number: _____
Analytical Lab: _____ Delivery Location: _____
Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

ELAB OF TN COOLER RECEIPT FORM

LIMS Number 0402100 COC ID(s): 02-10-04-01

Client Bhate Project SS-57

Sample Custodian Anthony Russo Today's Date 2/11/04

Date/Time Samples Received 2/11/04 09:00
Airbill Number Federal Express
Cooler Opened: Date 2/11/04

Chain of custody seal intact?	Yes	No
Chain of custody provided?	Yes	No
Sample labels present?	Yes	No
Bottle labels correspond w/COC	Yes	No

Number of Custody Seals on Cooler(s): 2 Seal Date(s): 2/10/04

Type of coolant used FCE

Coolant condition : Melted _____ Partially melted/frozen ✓
Frozen _____

# of Coolers 2 Temp. of Coolers 3.0°c

Condition of Bottles in Shipment: Broken Leaking Intact Missing

If broken or leaking list sample ID#s and bottle types affected:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-01

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 0210001A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 26 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	61	U
71-43-2	Benzene	6.1	U
75-27-4	Bromodichloromethane	6.1	U
75-25-2	Bromoform	6.1	U
74-83-9	Bromomethane	12	U
78-93-3	2-Butanone	61	U
75-15-0	Carbon disulfide	6.1	U
56-23-5	Carbon tetrachloride	6.1	U
108-90-7	Chlorobenzene	6.1	U
75-00-3	Chloroethane	12	U
67-66-3	Chloroform	6.1	U
74-87-3	Chloromethane	12	U
110-82-7	Cyclohexane	12	U
124-48-1	Dibromochloromethane	6.1	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
106-93-4	1,2-Dibromoethane	6.1	U
95-50-1	1,2-Dichlorobenzene	6.1	U
541-73-1	1,3-Dichlorobenzene	6.1	U
106-46-7	1,4-Dichlorobenzene	6.1	U
75-71-8	Dichlorodifluoromethane	12	U
75-34-3	1,1-Dichloroethane	6.1	U
107-06-2	1,2-Dichloroethane	6.1	U
75-35-4	1,1-Dichloroethene	6.1	U
156-59-2	cis 1,2-Dichloroethene	6.1	U
156-60-5	trans-1,2-Dichloroethene	6.1	U
78-87-5	1,2-Dichloropropane	6.1	U
10061-01-5	cis-1,3-Dichloropropene	6.1	U
10061-02-6	trans-1,3-Dichloropropene	6.1	U
100-41-4	Ethylbenzene	6.1	U
110-54-3	Hexane	6.1	U
591 78-6	2-Hexanone	31	U
98-82-8	Isopropylbenzene	6.1	U
79-20-9	Methyl acetate	6.1	U
75-09-2	Methylene chloride	12	U
108-87-2	Methyl cyclohexane	6.1	U
1634-04-4	MTBE	6.1	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-01

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 0210001A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 26 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	31	U
100-42-5	Styrene	6.1	U
79-34-5	1,1,2,2-Tetrachloroethane	6.1	U
127-18-4	Tetrachloroethene	6.1	U
108-88-3	Toluene	6.1	U
120-82-1	1,2,4-Trichlorobenzene	6.1	U
71-55-6	1,1,1-Trichloroethane	6.1	U
79-00-5	1,1,2-Trichloroethane	6.1	U
79-01-6	Trichloroethene	6.1	U
76-13-1	Trichlorotrifluoroethane	6.1	U
75-69-4	Trichlorofluoromethane	12	U
95-63-6	1,2,4-Trimethylbenzene	6.1	U
108-67-8	1,3,5-Trimethylbenzene	6.1	U
75-01-4	Vinyl chloride	12	U
1330-20-7	Xylene(total)	2.7	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SD05-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-02

Sample wt/vol: 4.7 (g/mL) G Lab File ID: 0210002A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 19 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	65	U
71-43-2	Benzene	6.5	U
75-27-4	Bromodichloromethane	6.5	U
75-25-2	Bromoform	6.5	U
74-83-9	Bromomethane	13	U
78-93-3	2-Butanone	65	U
75-15-0	Carbon disulfide	6.5	U
56-23-5	Carbon tetrachloride	6.5	U
108-90-7	Chlorobenzene	6.5	U
75-00-3	Chloroethane	13	U
67-66-3	Chloroform	6.5	U
74-87-3	Chloromethane	13	U
110-82-7	Cyclohexane	13	U
124-48-1	Dibromochloromethane	6.5	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
106-93-4	1,2-Dibromoethane	6.5	U
95-50-1	1,2-Dichlorobenzene	6.5	U
541-73-1	1,3-Dichlorobenzene	6.5	U
106-46-7	1,4-Dichlorobenzene	6.5	U
75-71-8	Dichlorodifluoromethane	13	U
75-34-3	1,1-Dichloroethane	6.5	U
107-06-2	1,2-Dichloroethane	6.5	U
75-35-4	1,1-Dichloroethene	6.5	U
156-59-2	cis-1,2 Dichloroethene	6.5	U
156-60-5	trans-1,2-Dichloroethene	6.5	U
78-87-5	1,2-Dichloropropane	6.5	U
10061-01-5	cis-1,3-Dichloropropene	6.5	U
10061-02-6	trans-1,3-Dichloropropene	6.5	U
100-41-4	Ethylbenzene	6.5	U
110-54-3	Hexane	0.82	J
591-78-6	2-Hexanone	33	U
98-82-8	Isopropylbenzene	6.5	U
79-20-9	Methyl acetate	6.5	U
75-09-2	Methylene chloride	13	U
108-87-2	Methyl cyclohexane	6.5	U
1634-04-4	MTBE	6.5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SD05-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-02

Sample wt/vol: 4.7 (g/mL) G Lab File ID: 0210002A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 19 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	33	U
100-42-5	Styrene	6.5	U
79-34-5	1,1,2,2-Tetrachloroethane	6.5	U
127-18-4	Tetrachloroethene	6.5	U
108-88-3	Toluene	6.5	U
120-82-1	1,2,4-Trichlorobenzene	6.5	U
71-55-6	1,1,1-Trichloroethane	6.5	U
79-00-5	1,1,2-Trichloroethane	6.5	U
79-01-6	Trichloroethene	6.5	U
76-13-1	Trichlorotrifluoroethane	6.5	U
75-69-4	Trichlorofluoromethane	13	U
95-63-6	1,2,4-Trimethylbenzene	6.5	U
108-67-8	1,3,5-Trimethylbenzene	6.5	U
75-01-4	Vinyl chloride	13	U
1330-20-7	Xylene(total)	2.8	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-03

Sample wt/vol: 5.6 (g/mL) G Lab File ID: 0210003A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 20 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	22	J
71-43-2	Benzene	5.6	U
75-27-4	Bromodichloromethane	5.6	U
75-25-2	Bromoform	5.6	U
74-83-9	Bromomethane	11	U
78-93-3	2-Butanone	56	U
75-15-0	Carbon disulfide	3.0	J
56-23-5	Carbon tetrachloride	5.6	U
108-90-7	Chlorobenzene	5.6	U
75-00-3	Chloroethane	11	U
67-66-3	Chloroform	5.6	U
74-87-3	Chloromethane	11	U
110-82-7	Cyclohexane	11	U
124-48-1	Dibromochloromethane	5.6	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
106-93-4	1,2-Dibromoethane	5.6	U
95-50-1	1,2-Dichlorobenzene	5.6	U
541-73-1	1,3-Dichlorobenzene	5.6	U
106-46-7	1,4-Dichlorobenzene	5.6	U
75-71-8	Dichlorodifluoromethane	11	U
75-34-3	1,1-Dichloroethane	5.6	U
107-06-2	1,2-Dichloroethane	5.6	U
75-35-4	1,1-Dichloroethene	5.6	U
156-59-2	cis-1,2-Dichloroethene	5.6	U
156-60-5	trans-1,2-Dichloroethene	5.6	U
78-87-5	1,2-Dichloropropane	5.6	U
10061-01-5	cis-1,3-Dichloropropene	5.6	U
10061-02-6	trans-1,3-Dichloropropene	5.6	U
100-41-4	Ethylbenzene	5.6	U
110-54-3	Hexane	0.61	J
591-78-6	2-Hexanone	28	U
98-82-8	Isopropylbenzene	5.6	U
79-20-9	Methyl acetate	5.6	U
75-09-2	Methylene chloride	11	U
108-87-2	Methyl cyclohexane	5.6	U
1634-04-4	MTBE	5.6	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-03

Sample wt/vol: 5.6 (g/mL) G Lab File ID: 0210003A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 20 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	28	U
100-42-5	Styrene	5.6	U
79-34-5	1,1,2,2-Tetrachloroethane	5.6	U
127-18-4	Tetrachloroethene	5.6	U
108-88-3	Toluene	5.6	U
120-82-1	1,2,4-Trichlorobenzene	5.6	U
71-55-6	1,1,1-Trichloroethane	5.6	U
79-00-5	1,1,2-Trichloroethane	5.6	U
79-01-6	Trichloroethene	5.6	U
76-13-1	Trichlorotrifluoroethane	5.6	U
75-69-4	Trichlorofluoromethane	11	U
95-63-6	1,2,4-Trimethylbenzene	5.6	U
108-67-8	1,3,5-Trimethylbenzene	5.6	U
75-01-4	Vinyl chloride	11	U
1330-20-7	Xylene(total)	1.2	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-04

Sample wt/vol: 4.8 (g/mL) G Lab File ID: 0210004A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 28 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	72	U
71-43-2	Benzene	7.2	U
75-27-4	Bromodichloromethane	7.2	U
75-25-2	Bromoform	7.2	U
74-83-9	Bromomethane	14	U
78-93-3	2-Butanone	72	U
75-15-0	Carbon disulfide	7.2	U
56-23-5	Carbon tetrachloride	7.2	U
108-90-7	Chlorobenzene	7.2	U
75-00-3	Chloroethane	14	U
67-66-3	Chloroform	7.2	U
74-87-3	Chloromethane	14	U
110-82-7	Cyclohexane	14	U
124-48-1	Dibromochloromethane	7.2	U
96-12-8	1,2-Dibromo-3-chloropropane	14	U
106-93-4	1,2-Dibromoethane	7.2	U
95-50-1	1,2-Dichlorobenzene	7.2	U
541-73-1	1,3-Dichlorobenzene	7.2	U
106-46-7	1,4-Dichlorobenzene	7.2	U
75-71-8	Dichlorodifluoromethane	14	U
75-34-3	1,1-Dichloroethane	7.2	U
107-06-2	1,2-Dichloroethane	7.2	U
75-35-4	1,1-Dichloroethene	7.2	U
156-59-2	cis-1,2-Dichloroethene	7.2	U
156-60-5	trans-1,2-Dichloroethene	7.2	U
78-87-5	1,2-Dichloropropane	7.2	U
10061-01-5	cis-1,3-Dichloropropene	7.2	U
10061-02-6	trans-1,3-Dichloropropene	7.2	U
100-41-4	Ethylbenzene	7.2	U
110-54-3	Hexane	7.2	U
591-78-6	2-Hexanone	36	U
98-82-8	Isopropylbenzene	7.2	U
79-20-9	Methyl acetate	7.2	U
75-09-2	Methylene chloride	14	U
108-87-2	Methyl cyclohexane	7.2	U
1634-04-4	MTBE	7.2	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-04

Sample wt/vol: 4.8 (g/mL) G Lab File ID: 0210004A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 28 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	36	U
100-42-5	Styrene	7.2	U
79-34-5	1,1,2,2-Tetrachloroethane	7.2	U
127-18-4	Tetrachloroethene	7.2	U
108-88-3	Toluene	7.2	U
120-82-1	1,2,4-Trichlorobenzene	7.2	U
71-55-6	1,1,1-Trichloroethane	7.2	U
79-00-5	1,1,2-Trichloroethane	7.2	U
79-01-6	Trichloroethene	7.2	U
76-13-1	Trichlorotrifluoroethane	7.2	U
75-69-4	Trichlorofluoromethane	14	U
95-63-6	1,2,4-Trimethylbenzene	7.2	U
108-67-8	1,3,5-Trimethylbenzene	7.2	U
75-01-4	Vinyl chloride	14	U
1330-20-7	Xylene(total)	1.7	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-05

Sample wt/vol: 5.3 (g/mL) G Lab File ID: 0210005A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 22 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	60	U
71-43-2	Benzene	6.0	U
75-27-4	Bromodichloromethane	6.0	U
75-25-2	Bromoform	6.0	U
74-83-9	Bromomethane	12	U
78-93-3	2-Butanone	60	U
75-15-0	Carbon disulfide	6.0	U
56-23-5	Carbon tetrachloride	6.0	U
108-90-7	Chlorobenzene	6.0	U
75-00-3	Chloroethane	12	U
67-66-3	Chloroform	6.0	U
74-87-3	Chloromethane	12	U
110-82-7	Cyclohexane	12	U
124-48-1	Dibromochloromethane	6.0	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
106-93-4	1,2-Dibromoethane	6.0	U
95-50-1	1,2-Dichlorobenzene	6.0	U
541-73-1	1,3-Dichlorobenzene	6.0	U
106-46-7	1,4-Dichlorobenzene	6.0	U
75-71-8	Dichlorodifluoromethane	12	U
75-34-3	1,1-Dichloroethane	6.0	U
107-06-2	1,2-Dichloroethane	6.0	U
75-35-4	1,1-Dichloroethene	6.0	U
156-59-2	cis-1,2-Dichloroethene	6.0	U
156-60-5	trans-1,2-Dichloroethene	6.0	U
78-87-5	1,2-Dichloropropane	6.0	U
10061-01-5	cis-1,3-Dichloropropene	6.0	U
10061-02-6	trans-1,3-Dichloropropene	6.0	U
100-41-4	Ethylbenzene	6.0	U
110-54-3	Hexane	6.0	U
591-78-6	2-Hexanone	30	U
98-82-8	Isopropylbenzene	6.0	U
79-20-9	Methyl acetate	6.0	U
75-09-2	Methylene chloride	12	U
108-87-2	Methyl cyclohexane	6.0	U
1634-04-4	MTBE	6.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-05

Sample wt/vol: 5.3 (g/mL) G Lab File ID: 0210005A

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. 22 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	30	U
100-42-5	Styrene	6.0	U
79-34-5	1,1,2,2-Tetrachloroethane	6.0	U
127-18-4	Tetrachloroethene	6.0	U
108-88-3	Toluene	6.0	U
120-82-1	1,2,4-Trichlorobenzene	6.0	U
71-55-6	1,1,1-Trichloroethane	6.0	U
79-00-5	1,1,2-Trichloroethane	6.0	U
79-01-6	Trichloroethene	6.0	U
76-13-1	Trichlorotrifluoroethane	6.0	U
75-69-4	Trichlorofluoromethane	12	U
95-63-6	1,2,4-Trimethylbenzene	6.0	U
108-67-8	1,3,5-Trimethylbenzene	6.0	U
75-01-4	Vinyl chloride	12	U
1330-20-7	Xylene(total)	1.2	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-06

Sample wt/vol: 6.0 (g/mL) G Lab File ID: 0210006M

Level: (low/med) MED Date Sampled: 02/10/04

% Moisture: not dec. 15 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(uL) Soil Aliquot Volume: 100(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	2400	U
71-43-2	Benzene	240	U
75-27-4	Bromodichloromethane	240	U
75-25-2	Bromoform	240	U
74-83-9	Bromomethane	490	U
78-93-3	2-Butanone	2400	U
75-15-0	Carbon disulfide	240	U
56-23-5	Carbon tetrachloride	240	U
108-90-7	Chlorobenzene	240	U
75-00-3	Chloroethane	490	U
67-66-3	Chloroform	240	U
74-87-3	Chloromethane	490	U
110-82-7	Cyclohexane	490	U
124-48-1	Dibromochloromethane	240	U
96-12-8	1,2-Dibromo-3-chloropropane	490	U
106-93-4	1,2-Dibromoethane	240	U
95-50-1	1,2-Dichlorobenzene	240	U
541-73-1	1,3-Dichlorobenzene	240	U
106-46-7	1,4-Dichlorobenzene	240	U
75-71-8	Dichlorodifluoromethane	490	U
75-34-3	1,1-Dichloroethane	240	U
107-06-2	1,2-Dichloroethane	240	U
75-35-4	1,1-Dichloroethene	240	U
156-59-2	cis-1,2-Dichloroethene	240	U
156-60-5	trans-1,2-Dichloroethene	240	U
78-87-5	1,2-Dichloropropane	240	U
10061-01-5	cis-1,3-Dichloropropene	240	U
10061-02-6	trans-1,3-Dichloropropene	240	U
100-41-4	Ethylbenzene	240	U
110-54-3	Hexane	79	J B
591-78-6	2-Hexanone	1200	U
98-82-8	Isopropylbenzene	87	J
79-20-9	Methyl acetate	240	U
75-09-2	Methylene chloride	490	U
108-87-2	Methyl cyclohexane	240	U
1634-04-4	MTBE	240	U

M 3/2/04

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-06

Sample wt/vol: 6.0 (g/mL) G Lab File ID: 0210006M

Level: (low/med) MED Date Sampled: 02/10/04

% Moisture: not dec. 15 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(uL) Soil Aliquot Volume: 100(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	1200	U
100-42-5	Styrene	240	U
79-34-5	1,1,2,2-Tetrachloroethane	240	U
127-18-4	Tetrachloroethene	240	U
108-88-3	Toluene	240	U
120-82-1	1,2,4-Trichlorobenzene	240	U
71-55-6	1,1,1-Trichloroethane	240	U
79-00-5	1,1,2-Trichloroethane	240	U
79-01-6	Trichloroethene	240	U
76-13-1	Trichlorotrifluoroethane	240	U
75-69-4	Trichlorofluoromethane	490	U
95-63-6	1,2,4-Trimethylbenzene	240	U
108-67-8	1,3,5-Trimethylbenzene	240	U
75-01-4	Vinyl chloride	490	U
1330-20-7	Xylene(total)	240	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-C

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) WATER Lab Sample ID: 0402100-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0210007

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. _____ Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	1.1	J
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-C

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) WATER Lab Sample ID: 0402100-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0210007

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. _____ Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Level: (low/med) LOW

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V1BLK0212LCS	100	95	96	96	0
02	V1BLK0212	107	118	100	108	0
03	PLSBLK0211	100	97	105	103	0
04	SS57-SB04-01	102	101	104	105	0
05	SS57-SD05-01	99	99	105	107	0
06	SS57-SB04-02	100	98	100	103	0
07	SS57-SB05-02	103	99	103	103	0
08	SS57-SB02-01	104	103	105	110	0
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		ELAB QC LIMITS	SPIKE CONC (ug/Kg)
SMC1 (DFM)	= Dibromofluoromethane	(65-142)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(72-141)	50
SMC3 (TOL)	= Toluene-d8	(78-120)	50
SMC4 (BFB)	= Bromofluorobenzene	(78-127)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Level:(low/med) MED

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	PMSBLK0211	99	91	102	103	0
02	SS57-SB02-02	93	86	114	109	0
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		ELAB QC LIMITS	SPIKE CONC (ug/Kg)
SMC1 (DFM)	= Dibromofluoromethane	(65-142)	2500
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(72-141)	2500
SMC3 (TOL)	= Toluene-d8	(78-120)	2500
SMC4 (BFB)	= Bromofluorobenzene	(78-127)	2500

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
WATER VOLATILE SYSTEM MONITORINC COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	SS57-SB04-C	103	98	104	97	0
02						
03						
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05						
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		ELAB QC LIMITS	SPIKE CONC (ug/L)
SMC1 (DFM)	= Dibromofluoromethane	(80-130)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(75-131)	50
SMC3 (TOL)	= Toluene-d8	(80-116)	50
SMC4 (BFB)	= Bromofluorobenzene	(72-129)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix Spike - Client Sample No.: V1BLK0212 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	118.2	118	50-150
Benzene	50.00	0.0000	55.77	112	71-123
Bromodichloromethane	50.00	0.0000	63.03	126	71-130
Bromoform	50.00	0.0000	50.96	102	62-141
Bromomethane	50.00	0.0000	47.38	95	57-153
2-Butanone	100.0	0.0000	110.7	111	50-150
Carbon disulfide	100.0	0.0000	118.0	118	64-123
Carbon tetrachloride	50.00	0.0000	56.53	113	69-132
Chlorobenzene	50.00	0.0000	50.84	102	69-118
Chloroethane	50.00	0.0000	49.00	98	62-140
Chloroform	50.00	0.0000	54.69	109	75-132
Chloromethane	50.00	0.0000	48.78	98	56-144
Cyclohexane	50.00	0.0000	64.08	128	70-130
Dibromochloromethane	50.00	0.0000	53.24	106	61-147
1,2-Dibromo-3-chloropro	50.00	0.0000	54.95	110	70-128
1,2-Dibromoethane	50.00	0.0000	51.91	104	62-150
1,2-Dichlorobenzene	50.00	0.0000	51.27	102	75-132
1,3-Dichlorobenzene	50.00	0.0000	51.88	104	75-122
1,4-Dichlorobenzene	50.00	0.0000	48.19	96	74 126
Dichlorodifluoromethane	50.00	0.0000	44.49	89	43-134
1,1-Dichloroethane	50.00	0.0000	56.74	113	80-126
1,2-Dichloroethane	50.00	0.0000	53.49	107	75-121
1,1-Dichloroethene	50.00	0.0000	46.21	92	57-142
cis-1,2-Dichloroethene	50.00	0.0000	53.50	107	70-129
trans-1,2-Dichloroethen	50.00	0.0000	52.58	105	75-123
1,2-Dichloropropane	50.00	0.0000	58.84	118	72-124
cis-1,3-Dichloropropene	50.00	0.0000	59.54	119	72-132
trans-1,3-Dichloroprope	50.00	0.0000	50.37	101	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix Spike - Client Sample No.: V1BLK0212 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	50.00	0.0000	50.74	101	75-120
2-Hexanone	100.0	0.0000	115.6	116	55-144
Isopropylbenzene	50.00	0.0000	48.79	98	76-126
Methyl acetate	50.00	0.0000	70.76	142*	70-130
Methylene chloride	50.00	0.0000	43.18	86	66-131
Methyl cyclohexane	50.00	0.0000	57.07	114	70-130
MTBE	50.00	0.0000	54.46	109	58-146
4-Methyl-2-pentanone	100.0	0.0000	107.9	108	50-150
Styrene	50.00	0.0000	51.21	102	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	58.68	117	68-144
Tetrachloroethene	50.00	0.0000	51.06	102	75-129
Toluene	50.00	0.0000	50.84	102	63-128
1,2,4-Trichlorobenzene	50.00	0.0000	48.93	98	69-139
1,1,1-Trichloroethane	50.00	0.0000	51.93	104	75-133
1,1,2-Trichloroethane	50.00	0.0000	55.45	111	71-129
Trichloroethene	50.00	0.0000	54.31	109	69-120
Trichlorotrifluoroethan	50.00	0.0000	49.88	100	50-145
Trichlorofluoromethane	50.00	0.0000	51.64	103	61-139
1,3,5-Trimethylbenzene	50.00	0.0000	49.99	100	75-125
Vinyl chloride	50.00	0.0000	46.44	93	75-134
Xylene(total)	150.0	0.0000	153.9	103	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 49 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V1BLK0212

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Lab File ID: V1BLK01 Lab Sample ID: V1BLK0212

Date Analyzed: 02/12/04 Time Analyzed: 1355

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1BLK0212LCS	V1BLK0212LCS	V1LCS01	1148
02	PLSBLK0211	PLSBLK0211	V1FBLK01	1437
03	PMSBLK0211	PMSBLK0211	V1FMBL01	1519
04	SS57-SB04-C	0402100-07	0210007	1601
05	SS57-SB04-01	0402100-01	0210001A	1644
06	SS57-SD05-01	0402100-02	0210002A	1725
07	SS57-SB04-02	0402100-04	0210004A	1807
08	SS57-SB05-02	0402100-05	0210005A	1850
09	SS57-SB02-01	0402100-03	0210003A	1932
10	SS57-SB02-02	0402100-06	0210006M	2015
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0212

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0212

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0212

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0212

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

PLSBLK0211

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Lab File ID: V1FBLK01 Lab Sample ID: PLSBLK0211

Date Analyzed: 02/12/04 Time Analyzed: 1437

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SS57-SB04-01	0402100-01	0210001A	1644
02	SS57-SD05-01	0402100-02	0210002A	1725
03	SS57-SB04-02	0402100-04	0210004A	1807
04	SS57-SB05-02	0402100-05	0210005A	1850
05	SS57-SB02-01	0402100-03	0210003A	1932
06				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PLSBLK0211

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: PLSBLK0211

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1FBLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PLSBLK0211

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: PLSBLK0211

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1FBLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	4.0	J

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

PMSBLK0211

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Lab File ID: V1FMBL01 Lab Sample ID: PMSBLK0211

Date Analyzed: 02/12/04 Time Analyzed: 1519

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SS57-SB02-02	0402100-06	0210006M	2015
02				
03				
04				
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06				
07				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMSBLK0211

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: PMSBLK0211

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1FMBL01

Level: (low/med) MED Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(uL) Soil Aliquot Volume: 100(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	2500	U
71-43-2	Benzene	250	U
75-27-4	Bromodichloromethane	250	U
75-25-2	Bromoform	250	U
74-83-9	Bromomethane	500	U
78-93-3	2-Butanone	2500	U
75-15-0	Carbon disulfide	250	U
56-23-5	Carbon tetrachloride	250	U
108-90-7	Chlorobenzene	250	U
75-00-3	Chloroethane	500	U
67-66-3	Chloroform	250	U
74-87-3	Chloromethane	500	U
110-82-7	Cyclohexane	500	U
124-48-1	Dibromochloromethane	250	U
96-12-8	1,2-Dibromo-3-chloropropane	500	U
106-93-4	1,2-Dibromoethane	250	U
95-50-1	1,2-Dichlorobenzene	250	U
541-73-1	1,3-Dichlorobenzene	250	U
106-46-7	1,4-Dichlorobenzene	250	U
75-71-8	Dichlorodifluoromethane	500	U
75-34-3	1,1-Dichloroethane	250	U
107-06-2	1,2-Dichloroethane	250	U
75-35-4	1,1-Dichloroethene	250	U
156-59-2	cis-1,2-Dichloroethene	250	U
156-60-5	trans-1,2-Dichloroethene	250	U
78-87-5	1,2-Dichloropropane	250	U
10061-01-5	cis-1,3-Dichloropropene	250	U
10061-02-6	trans-1,3-Dichloropropene	250	U
100-41-4	Ethylbenzene	250	U
110-54-3	Hexane	34	J
591-78-6	2-Hexanone	1200	U
98-82-8	Isopropylbenzene	250	U
79-20-9	Methyl acetate	250	U
75-09-2	Methylene chloride	500	U
108-87-2	Methyl cyclohexane	250	U
1634-04-4	MTBE	250	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMSBLK0211

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02100

Matrix: (soil/water) SOIL Lab Sample ID: PMSBLK0211

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1FMBL01

Level: (low/med) MED Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/12/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(uL) Soil Aliquot Volume: 100(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	1200	U
100-42-5	Styrene	250	U
79-34-5	1,1,2,2-Tetrachloroethane	250	U
127-18-4	Tetrachloroethene	250	U
108-88-3	Toluene	250	U
120-82-1	1,2,4-Trichlorobenzene	250	U
71-55-6	1,1,1-Trichloroethane	250	U
79-00-5	1,1,2-Trichloroethane	250	U
79-01-6	Trichloroethene	250	U
76-13-1	Trichlorotrifluoroethane	250	U
75-69-4	Trichlorofluoromethane	500	U
95-63-6	1,2,4-Trimethylbenzene	250	U
108-67-8	1,3,5-Trimethylbenzene	250	U
75-01-4	Vinyl chloride	500	U
1330-20-7	Xylene(total)	250	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0102100-01

Sample wt/vol: 15.2 (g/mL) G Lab File ID: 0210001

% Moisture: 26 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	440	U
208-96-8	Acenaphthylene	440	U
98-86-2	Acetophenone	440	U
120-12-7	Anthracene	440	U
1912-24-9	Atrazine	440	U
100-52-7	Benzaldehyde	440	U
56-55-3	Benzo(a)anthracene	440	U
205-99-2	Benzo(b)fluoranthene	440	U
207-08-9	Benzo(k)fluoranthene	440	U
191-24-2	Benzo(g,h,i)perylene	440	U
50-32-8	Benzo(a)pyrene	440	U
111-91-1	bis(2-Chloroethoxy)methane	440	U
92-52-4	1,1'-Biphenyl	440	U
111-44-4	bis(2-Chloroethyl)ether	440	U
108-60-1	bis(2-Chloroisopropyl)ether	440	U
117-81-7	Bis(2-ethylhexyl)phthalate	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
85-68-7	Butylbenzylphthalate	440	U
105-60-2	Caprolactam	440	U
86-74-8	Carbazole	440	U
106-47-8	4-Chloroaniline	440	U
59-50-7	4-Chloro-3-methylphenol	440	U
91-58-7	2-Chloronaphthalene	440	U
95-57-8	2-Chlorophenol	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
218-01-9	Chrysene	440	U
53-70-3	Dibenz(a,h)anthracene	440	U
132-64-9	Dibenzofuran	440	U
91-94-1	3,3'-Dichlorobenzidine	440	U
120-83-2	2,4-Dichlorophenol	440	U
84-66-2	Diethylphthalate	440	U
105-67-9	2,4-Dimethylphenol	1800	U
131-11-3	Dimethylphthalate	440	U
84-74-2	Di-n-butylphthalate	440	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
51-28-5	2,4-Dinitrophenol	4400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-01

Sample wt/vol: 15.2 (g/mL) G Lab File ID: 0210001

% Moisture: 26 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	440	U
606-20-2	2,6-Dinitrotoluene	440	U
117-84-0	Di-n-octylphthalate	440	U
206-44-0	Fluoranthene	440	U
86-73-7	Fluorene	440	U
118-74-1	Hexachlorobenzene	440	U
87-68-3	Hexachlorobutadiene	440	U
77-47-4	Hexachlorocyclopentadiene	440	U
67-72-1	Hexachloroethane	440	U
193-39-5	Indeno(1,2,3-cd)pyrene	440	U
78-59-1	Isophorone	440	U
91-57-6	2-Methylnaphthalene	440	U
91-20-3	Naphthalene	440	U
106-44-5	4-Methylphenol	440	U
95-48-7	2-Methylphenol	440	U
88-74-4	2-Nitroaniline	1800	U
99-09-2	3-Nitroaniline	1800	U
100-01-6	4-Nitroaniline	1800	U
98-95-3	Nitrobenzene	440	U
88-75-5	2-Nitrophenol	440	U
100-02-7	4-Nitrophenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	440	U
621-64-7	N-Nitroso-di-n-propylamine	440	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	440	U
108-95-2	Phenol	440	U
129-00-0	Pyrene	440	U
95-95-4	2,4,5-Trichlorophenol	440	U
88-06-2	2,4,6-Trichlorophenol	440	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SD05-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100 02

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0210002

% Moisture: 19 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	400	U
208-96-8	Acenaphthylene	400	U
98-86-2	Acetophenone	400	U
120-12-7	Anthracene	400	U
1912-24-9	Atrazine	400	U
100-52-7	Benzaldehyde	400	U
56-55-3	Benzo(a)anthracene	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
50-32-8	Benzo(a)pyrene	400	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
92-52-4	1,1'-Biphenyl	400	U
111-44-4	bis(2-Chloroethyl)ether	400	U
108-60-1	bis(2-Chloroisopropyl)ether	400	U
117-81-7	Bis(2-ethylhexyl)phthalate	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
85-68-7	Butylbenzylphthalate	400	U
105-60-2	Caprolactam	400	U
86-74-8	Carbazole	400	U
106-47-8	4-Chloroaniline	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-58-7	2-Chloronaphthalene	400	U
95-57-8	2-Chlorophenol	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
218-01-9	Chrysene	400	U
53-70-3	Dibenz(a,h)anthracene	400	U
132-64-9	Dibenzofuran	400	U
91-94-1	3,3' Dichlorobenzidine	400	U
120-83-2	2,4-Dichlorophenol	400	U
84-66-2	Diethylphthalate	400	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	400	U
84-74-2	Di-n-butylphthalate	400	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	4000	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SD05-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-02

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0210002

% Moisture: 19 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
117-84-0	Di-n-octylphthalate	400	U
206-44-0	Fluoranthene	400	U
86-73-7	Fluorene	400	U
118-74-1	Hexachlorobenzene	400	U
87-68-3	Hexachlorobutadiene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
67-72-1	Hexachloroethane	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
78-59-1	Isophorone	400	U
91-57-6	2-Methylnaphthalene	400	U
91-20-3	Naphthalene	400	U
106-44-5	4-Methylphenol	400	U
95-48-7	2-Methylphenol	400	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	400	U
88-75-5	2-Nitrophenol	400	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	400	U
108-95-2	Phenol	400	U
129-00-0	Pyrene	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
88-06-2	2,4,6-Trichlorophenol	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-03

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0210003D

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 02/17/04

Injection Volume: 0.5 (uL) Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	8200	UD
208-96-8	Acenaphthylene	8200	UD
98-86-2	Acetophenone	8200	UD
120-12-7	Anthracene	8200	UD
1912-24-9	Atrazine	8200	UD
100-52-7	Benzaldehyde	8200	UD
56-55-3	Benzo(a)anthracene	8200	UD
205-99-2	Benzo(b)fluoranthene	8200	UD
207-08-9	Benzo(k)fluoranthene	8200	UD
191-24-2	Benzo(g,h,i)perylene	8200	UD
50-32-8	Benzo(a)pyrene	8200	UD
111-91-1	bis(2-Chloroethoxy)methane	8200	UD
92-52-4	1,1'-Biphenyl	8200	UD
111-44-4	bis(2-Chloroethyl)ether	8200	UD
108-60-1	bis(2-Chloroisopropyl)ether	8200	UD
117-81-7	Bis(2-ethylhexyl)phthalate	8200	UD
101-55-3	4-Bromophenyl-phenylether	8200	UD
85-68-7	Butylbenzylphthalate	8200	UD
105-60-2	Caprolactam	8200	UD
86-74-8	Carbazole	8200	UD
106-47-8	4-Chloroaniline	8200	UD
59-50-7	4-Chloro-3-methylphenol	8200	UD
91-58-7	2-Chloronaphthalene	8200	UD
95-57-8	2-Chlorophenol	8200	UD
7005-72-3	4-Chlorophenyl-phenylether	8200	UD
218-01-9	Chrysene	8200	UD
53-70-3	Dibenz(a,h)anthracene	8200	UD
132-64-9	Dibenzofuran	8200	UD
91-94-1	3,3'-Dichlorobenzidine	8200	UD
120-83-2	2,4-Dichlorophenol	8200	UD
84-66-2	Diethylphthalate	8200	UD
105-67-9	2,4-Dimethylphenol	33000	UD
131-11-3	Dimethylphthalate	8200	UD
84-74-2	Di-n-butylphthalate	8200	UD
534-52-1	4,6-Dinitro-2-methylphenol	33000	UD
51-28-5	2,4-Dinitrophenol	82000	UD

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-03

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0210003D

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/17/04

Injection Volume: 0.5(uL) Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	8200	UD
606-20-2	2,6-Dinitrotoluene	8200	UD
117-84-0	Di-n-octylphthalate	8200	UD
206-44-0	Fluoranthene	8200	UD
86-73-7	Fluorene	8200	UD
118-74-1	Hexachlorobenzene	8200	UD
87-68-3	Hexachlorobutadiene	8200	UD
77-47-4	Hexachlorocyclopentadiene	8200	UD
67-72-1	Hexachloroethane	8200	UD
193-39-5	Indeno(1,2,3-cd)pyrene	8200	UD
78-59-1	Isophorone	8200	UD
91-57-6	2-Methylnaphthalene	8200	UD
91-20-3	Naphthalene	8200	UD
106-44-5	4-Methylphenol	8200	UD
95-48-7	2-Methylphenol	8200	UD
88-74-4	2-Nitroaniline	33000	UD
99-09-2	3-Nitroaniline	33000	UD
100-01-6	4-Nitroaniline	33000	UD
98-95-3	Nitrobenzene	8200	UD
88-75-5	2-Nitrophenol	8200	UD
100-02-7	4-Nitrophenol	33000	UD
86-30-6	N-Nitrosodiphenylamine (1)	8200	UD
621-64-7	N-Nitroso-di-n-propylamine	8200	UD
87-86-5	Pentachlorophenol	33000	UD
85-01-8	Phenanthrene	8200	UD
108-95-2	Phenol	8200	UD
129-00-0	Pyrene	8200	UD
95-95-4	2,4,5-Trichlorophenol	8200	UD
88-06-2	2,4,6-Trichlorophenol	8200	UD

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-04

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0210004

% Moisture: 28 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	450	U
208-96-8	Acenaphthylene	450	U
98-86-2	Acetophenone	450	U
120-12-7	Anthracene	450	U
1912-24-9	Atrazine	450	U
100-52-7	Benzaldehyde	450	U
56-55-3	Benzo(a)anthracene	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
50-32-8	Benzo(a)pyrene	450	U
111-91-1	bis(2-Chloroethoxy)methane	450	U
92-52-4	1,1'-Biphenyl	450	U
111-44-4	bis(2-Chloroethyl)ether	450	U
108-60-1	bis(2-Chloroisopropyl)ether	450	U
117-81-7	Bis(2-ethylhexyl)phthalate	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
85-68-7	Butylbenzylphthalate	450	U
105-60-2	Caprolactam	450	U
86-74-8	Carbazole	450	U
106-47-8	4-Chloroaniline	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-58-7	2-Chloronaphthalene	450	U
95-57-8	2-Chlorophenol	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
218-01-9	Chrysene	450	U
53-70-3	Dibenz(a,h)anthracene	450	U
132-64-9	Dibenzofuran	450	U
91-94-1	3,3'-Dichlorobenzidine	450	U
120-83-2	2,4-Dichlorophenol	450	U
84-66-2	Diethylphthalate	450	U
105-67-9	2,4-Dimethylphenol	1800	U
131-11-3	Dimethylphthalate	450	U
84-74-2	Di-n-butylphthalate	450	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
51-28-5	2,4-Dinitrophenol	4500	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-04

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0210004

% Moisture: 28 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	450	U
606-20-2	2,6-Dinitrotoluene	450	U
117-84-0	Di-n-octylphthalate	450	U
206-44-0	Fluoranthene	450	U
86-73-7	Fluorene	450	U
118-74-1	Hexachlorobenzene	450	U
87-68-3	Hexachlorobutadiene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
67-72-1	Hexachloroethane	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
78-59-1	Isophorone	450	U
91-57-6	2-Methylnaphthalene	450	U
91-20-3	Naphthalene	450	U
106-44-5	4-Methylphenol	450	U
95 48 7	2-Methylphenol	450	U
88-74-4	2-Nitroaniline	1800	U
99-09-2	3-Nitroaniline	1800	U
100-01-6	4-Nitroaniline	1800	U
98-95-3	Nitrobenzene	450	U
88-75-5	2-Nitrophenol	450	U
100-02-7	4-Nitrophenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
621-64-7	N-Nitroso-di-n-propylamine	450	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	450	U
108-95-2	Phenol	450	U
129-00-0	Pyrene	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
88-06-2	2,4,6-Trichlorophenol	450	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-05

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0210005

% Moisture: 22 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/17/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	410	U
208-96-8	Acenaphthylene	410	U
98-86-2	Acetophenone	410	U
120-12-7	Anthracene	410	U
1912-24-9	Atrazine	410	U
100-52-7	Benzaldehyde	410	U
56-55-3	Benzo(a)anthracene	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U
50-32-8	Benzo(a)pyrene	410	U
111-91-1	bis(2-Chloroethoxy)methane	410	U
92-52-4	1,1'-Biphenyl	410	U
111-44-4	bis(2-Chloroethyl)ether	410	U
108 60 1	bis(2-Chloroisopropyl)ether	410	U
117-81-7	Bis(2-ethylhexyl)phthalate	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
85-68-7	Butylbenzylphthalate	410	U
105-60-2	Caprolactam	410	U
86-74-8	Carbazole	410	U
106-47-8	4-Chloroaniline	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-58-7	2-Chloronaphthalene	410	U
95-57-8	2-Chlorophenol	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
218-01-9	Chrysene	410	U
53-70-3	Dibenz(a,h)anthracene	410	U
132-64-9	Dibenzofuran	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
120-83-2	2,4-Dichlorophenol	410	U
84-66-2	Diethylphthalate	410	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	410	U
84-74-2	Di-n-butylphthalate	410	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	4100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-05

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0210005

% Moisture: 22 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/17/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
117-84-0	Di-n-octylphthalate	410	U
206-44-0	Fluoranthene	410	U
86-73-7	Fluorene	410	U
118-74-1	Hexachlorobenzene	410	U
87-68-3	Hexachlorobutadiene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
67-72-1	Hexachloroethane	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
78-59-1	Isophorone	410	U
91-57-6	2-Methylnaphthalene	410	U
91-20-3	Naphthalene	410	U
106-44-5	4-Methylphenol	410	U
95-48-7	2-Methylphenol	410	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	410	U
88-75-5	2-Nitrophenol	410	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
621-64-7	N-Nitroso-di-n-propylamine	410	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	410	U
108-95-2	Phenol	410	U
129-00-0	Pyrene	410	U
95-95-4	2,4,5-Trichlorophenol	410	U
88-06-2	2,4,6-Trichlorophenol	410	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-06

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0210006D

% Moisture: 15 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/17/04

Injection Volume: 0.5(uL) Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	7600	UD
208-96-8	Acenaphthylene	7600	UD
98-86-2	Acetophenone	7600	UD
120-12-7	Anthracene	7600	UD
1912-24-9	Atrazine	7600	UD
100-52-7	Benzaldehyde	7600	UD
56-55-3	Benzo(a)anthracene	7600	UD
205-99-2	Benzo(b)fluoranthene	7600	UD
207-08-9	Benzo(k)fluoranthene	7600	UD
191-24-2	Benzo(g,h,i)perylene	7600	UD
50-32-8	Benzo(a)pyrene	7600	UD
111-91-1	bis(2-Chloroethoxy)methane	7600	UD
92-52-4	1,1'-Biphenyl	7600	UD
111-44-4	bis(2-Chloroethyl)ether	7600	UD
108-60-1	bis(2-Chloroisopropyl)ether	7600	UD
117-81-7	Bis(2-ethylhexyl)phthalate	7600	UD
101-55-3	4-Bromophenyl-phenylether	7600	UD
85-68-7	Butylbenzylphthalate	7600	UD
105-60-2	Caprolactam	7600	UD
86-74-8	Carbazole	7600	UD
106-47-8	4-Chloroaniline	7600	UD
59-50-7	4-Chloro-3-methylphenol	7600	UD
91-58-7	2-Chloronaphthalene	7600	UD
95-57-8	2-Chlorophenol	7600	UD
7005-72-3	4-Chlorophenyl-phenylether	7600	UD
218-01-9	Chrysene	7600	UD
53-70-3	Dibenz(a,h)anthracene	7600	UD
132-64-9	Dibenzofuran	7600	UD
91-94-1	3,3'-Dichlorobenzidine	7600	UD
120-83-2	2,4-Dichlorophenol	7600	UD
84-66-2	Diethylphthalate	7600	UD
105-67-9	2,4-Dimethylphenol	30000	UD
131-11-3	Dimethylphthalate	7600	UD
84-74-2	Di-n-butylphthalate	7600	UD
534-52-1	4,6-Dinitro-2-methylphenol	30000	UD
51-28-5	2,4-Dinitrophenol	76000	UD

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-06

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0210006D

% Moisture: 15 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/17/04

Injection Volume: 0.5(uL) Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	7600	UD
606-20-2	2,6-Dinitrotoluene	7600	UD
117-84-0	Di-n-octylphthalate	7600	UD
206-44-0	Fluoranthene	7600	UD
86-73-7	Fluorene	7600	UD
118-74-1	Hexachlorobenzene	7600	UD
87-68-3	Hexachlorobutadiene	7600	UD
77-47-4	Hexachlorocyclopentadiene	7600	UD
67-72-1	Hexachloroethane	7600	UD
193-39-5	Indeno(1,2,3-cd)pyrene	7600	UD
78-59-1	Isophorone	7600	UD
91-57-6	2-Methylnaphthalene	7600	UD
91-20-3	Naphthalene	7600	UD
106-44-5	4-Methylphenol	7600	UD
95-48-7	2-Methylphenol	7600	UD
88-74-4	2-Nitroaniline	30000	UD
99-09-2	3-Nitroaniline	30000	UD
100-01-6	4-Nitroaniline	30000	UD
98-95-3	Nitrobenzene	7600	UD
88-75-5	2-Nitrophenol	7600	UD
100-02-7	4-Nitrophenol	30000	UD
86-30-6	N-Nitrosodiphenylamine (1)	7600	UD
621-64-7	N-Nitroso-di-n-propylamine	7600	UD
87-86-5	Pentachlorophenol	30000	UD
85-01-8	Phenanthrene	7600	UD
108-95-2	Phenol	7600	UD
129-00-0	Pyrene	7600	UD
95-95-4	2,4,5-Trichlorophenol	7600	UD
88-06-2	2,4,6-Trichlorophenol	7600	UD

(1) - Cannot be separated from Diphenylamine

FORM 2
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	SBLK0212BS1	50	53	51	52	31*	64			1
02	SBLK0212BS1L	62	65	60	66	60	78			0
03	SS57-SB04-01	47	51	49	54	45	78			0
04	SS57-SD05-01	53	57	54	61	51	80			0
05	SS57-SB04-02	45	48	47	51	33*	70			1
06	SS57-SB04-02	59	61	57	64	57	91			0
07	SS57-SB04-02	50	53	49	54	45	75			0
08	SS57-SB05-02	47	50	48	52	38	77			0
09	SS57-SB02-01	50D	55D	0D	63D	111D	72D			0
10	SS57-SB02-02	32D	35D	0D	44D	0D	42D			0
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		ELAB QC LIMITS	SPIKE CONC (UG/KG)
S1 (2FP)	= 2 Fluorophenol	(21-100)	13000
S2 (PHL)	= Phenol-d6	(19-106)	13000
S3 (NBZ)	= Nitrobenzene-d5	(27-100)	6700
S4 (FBP)	= 2-Fluorobiphenyl	(31-100)	6700
S5 (TBP)	= 2,4,6-Tribromophenol	(38-121)	13000
S6 (TPH)	= Terphenyl-d14	(35-123)	6700

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SS57-SB04-02 Lab Sample ID: 0402100-04

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Acenaphthene	4493	0.0000	3045	68	27-116
Acenaphthylene	4493	0.0000	3170	70	33-120
Anthracene	4493	0.0000	3608	80	35-122
Benzo(a)anthracene	4493	0.0000	3697	82	33-139
Benzo(b)fluoranthene	4493	0.0000	3941	88	30-140
Benzo(k)fluoranthene	4493	0.0000	4020	89	30-150
Benzo(g,h,i)perylene	4493	0.0000	2872	64	30-146
Benzo(a)pyrene	4493	0.0000	3971	88	30-144
bis(2-Chloroethoxy)meth	4493	0.0000	2771	62	30-126
bis(2-Chloroethyl)ether	4493	0.0000	2530	56	30-121
bis(2-Chloroisopropyl)e	4493	0.0000	3107	69	30-131
Bis(2-ethylhexyl)phthal	4493	0.0000	3965	88	34-149
4-Bromophenyl-phenyleth	4493	0.0000	2841	63	34-120
Butylbenzylphthalate	4493	0.0000	4209	94	30-153
Carbazole	4493	0.0000	3914	87	30-142
4-Chloroaniline	4493	0.0000	2532	56	32-121
4-Chloro-3-methylphenol	4493	0.0000	3003	67	18-111
2-Chloronaphthalene	4493	0.0000	3021	67	32-115
2-Chlorophenol	4493	0.0000	2876	64	10-110
4-Chlorophenyl-phenylet	4493	0.0000	3170	70	33-118
Chrysene	4493	0.0000	3621	80	33-142
Dibenz(a,h)anthracene	4493	0.0000	3183	71	34-148
Dibenzofuran	4493	0.0000	3125	70	34-120
3,3'-Dichlorobenzidine	4493	0.0000	4066	90	31-137
2,4-Dichlorophenol	4493	0.0000	2831	63	32-121
Diethylphthalate	4493	0.0000	3321	74	32-126
2,4-Dimethylphenol	4493	0.0000	2891	64	33-119
Dimethylphthalate	4493	0.0000	3185	71	36-124

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SS57-SB04-02 Lab Sample ID: 0402100-04

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Di-n-butylphthalate	4493	0.0000	3386	75	36-135
4,6-Dinitro-2-methylphe	4493	0.0000	1699	38	30-160
2,4-Dinitrophenol	4493	0.0000	1994	44	34-160
2,4-Dinitrotoluene	4493	0.0000	3225	72	34-110
2,6-Dinitrotoluene	4493	0.0000	3215	72	32-133
Di-n-octylphthalate	4493	0.0000	3714	83	50-160
Fluoranthene	4493	0.0000	3326	74	32-122
Fluorene	4493	0.0000	3244	72	32-127
Hexachlorobenzene	4493	0.0000	3407	76	32-127
Hexachlorobutadiene	4493	0.0000	2418	54	30-118
Hexachlorocyclopentadie	4493	0.0000	728.4	16*	30-123
Hexachloroethane	4493	0.0000	2200	49	30-115
Indeno(1,2,3-cd)pyrene	4493	0.0000	3159	70	34-147
Isophorone	4493	0.0000	2671	59	34-115
2-Methylnaphthalene	4493	0.0000	2668	59	30-120
Naphthalene	4493	0.0000	2641	59	30-115
4-Methylphenol	4493	0.0000	3156	70	30-127
2-Methylphenol	4493	0.0000	3067	68	30-123
2-Nitroaniline	4493	0.0000	3460	77	30-148
3-Nitroaniline	4493	0.0000	3386	75	30-135
4-Nitroaniline	4493	0.0000	3622	81	30-148
Nitrobenzene	4493	0.0000	2401	53	30-115
2-Nitrophenol	4493	0.0000	2458	55	30-126
4-Nitrophenol	4493	0.0000	2806	62	24-120
N-Nitrosodiphenylamine	4493	0.0000	3394	76	50-134
N-Nitroso-di-n-prop.(1)	4493	0.0000	2590	58	24-112
Pentachlorophenol	4493	0.0000	2289	51	10-114
Phenanthrene	4493	0.0000	3468	77	35-119

(1) N Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SS57 SB04 02 Lab Sample ID: 0402100-04

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Phenol	4493	0.0000	2915	65	10-110
Pyrene	4493	0.0000	4085	91	33-150
2,4,5-Trichlorophenol	4493	0.0000	3077	68	34-128
2,4,6-Trichlorophenol	4493	0.0000	2835	63	35-120

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SS57-SB04-02 Lab Sample ID: 0402100-04

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	4522	2571	57	17	50	27-116
Acenaphthylene	4522	2697	60	16	50	33-120
Anthracene	4522	3010	66	18	50	35-122
Benzo(a)anthracene	4522	3046	67	19	50	33-139
Benzo(b)fluoranthene	4522	3161	70	22	50	30-140
Benzo(k)fluoranthene	4522	3334	74	19	50	30-150
Benzo(g,h,i)perylene	4522	2491	55	14	50	30-146
Benzo(a)pyrene	4522	3310	73	18	50	30-144
bis(2-Chloroethoxy)meth	4522	2375	52	15	50	30-126
bis(2-Chloroethyl)ether	4522	2186	48	14	50	30-121
bis(2-Chloroisopropyl)e	4522	2712	60	14	50	30-131
Bis(2-ethylhexyl)phthal	4522	3339	74	17	50	34-149
4-Bromophenyl-phenyleth	4522	2369	52	18	50	34-120
Butylbenzylphthalate	4522	3563	79	17	50	30-153
Carbazole	4522	3211	71	20	50	30-142
4-Chloroaniline	4522	2119	47	18	50	32-121
4-Chloro-3-methylphenol	4522	2517	56	18	50	18-111
2-Chloronaphthalene	4522	2570	57	16	50	32-115
2-Chlorophenol	4522	2501	55	14	50	10-110
4-Chlorophenyl-phenylet	4522	2646	58	18	50	33-118
Chrysene	4522	2998	66	19	50	33-142
Dibenz(a,h)anthracene	4522	2723	60	16	50	34-148
Dibenzofuran	4522	2627	58	17	50	34-120
3,3'-Dichlorobenzidine	4522	3357	74	19	50	31-137
2,4-Dichlorophenol	4522	2438	54	15	50	32-121
Diethylphthalate	4522	2788	62	17	50	32-126
2,4-Dimethylphenol	4522	2496	55	15	50	33-119
Dimethylphthalate	4522	2650	59	18	50	36-124

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SS57-SB04-02 Lab Sample ID: 0402100-04

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Di-n-butylphthalate	4522	2866	63	17	50	36-135
4,6-Dinitro-2-methylphe	4522	1570	35	8	50	30-160
2,4-Dinitrophenol	4522	1894	42	5	50	34-160
2,4-Dinitrotoluene	4522	2658	59	19	50	34-110
2,6-Dinitrotoluene	4522	2702	60	17	50	32-133
Di-n-octylphthalate	4522	3126	69	17	50	50-160
Fluoranthene	4522	2692	60	21	50	32-122
Fluorene	4522	2697	60	18	50	32-127
Hexachlorobenzene	4522	2803	62	19	50	32-127
Hexachlorobutadiene	4522	2070	46	16	50	30-118
Hexachlorocyclopentadie	4522	702.6	16*	4	50	30-123
Hexachloroethane	4522	1892	42	15	50	30-115
Indeno(1,2,3-cd)pyrene	4522	2696	60	16	50	34-147
Isophorone	4522	2342	52	13	50	34-115
2-Methylnaphthalene	4522	2287	50	15	50	30-120
Naphthalene	4522	2267	50	15	50	30-115
4-Methylphenol	4522	2686	59	16	50	30-127
2-Methylphenol	4522	2547	56	18	50	30-123
2-Nitroaniline	4522	2926	65	17	50	30-148
3-Nitroaniline	4522	2881	64	16	50	30-135
4-Nitroaniline	4522	2977	66	20	50	30-148
Nitrobenzene	4522	2061	46	15	50	30-115
2-Nitrophenol	4522	2116	47	15	50	30-126
4-Nitrophenol	4522	2459	54	13	50	24-120
N-Nitrosodiphenylamine	4522	2863	63	17	50	50-134
N-Nitroso-di-n-prop.(1)	4522	2222	49	15	50	24-112
Pentachlorophenol	4522	1976	44	15	50	10-114
Phenanthrene	4522	2933	65	17	50	35-119

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SS57 SB04-02 Lab Sample ID: 0402100-04

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	4522	2509	55	15	50	10-110
Pyrene	4522	3451	76	17	50	33-150
2,4,5-Trichlorophenol	4522	2414	53	24	50	34-128
2,4,6-Trichlorophenol	4522	2369	52	18	50	35-120

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 60 outside limits
Spike Recovery: 2 out of 120 outside limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SBLK0212BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	3333	0.0000	2192	66	27-116
Acenaphthylene	3333	0.0000	2273	68	33-120
Anthracene	3333	0.0000	2527	76	35-122
Benzo(a)anthracene	3333	0.0000	2544	76	33-139
Benzo(b)fluoranthene	3333	0.0000	2532	76	30-140
Benzo(k)fluoranthene	3333	0.0000	2688	81	30-150
Benzo(g,h,i)perylene	3333	0.0000	2454	74	30-146
Benzo(a)pyrene	3333	0.0000	2763	83	30-144
bis(2-Chloroethoxy)meth	3333	0.0000	2020	61	30-126
bis(2-Chloroethyl)ether	3333	0.0000	1886	56	30-121
bis(2-Chloroisopropyl)e	3333	0.0000	2313	69	30-131
Bis(2-ethylhexyl)phthal	3333	0.0000	2310	69	34-149
4-Bromophenyl-phenyleth	3333	0.0000	1885	56	34-120
Butylbenzylphthalate	3333	0.0000	2403	72	30-153
Carbazole	3333	0.0000	2740	82	30-142
4-Chloroaniline	3333	0.0000	1777	53	32-121
4-Chloro-3-methylphenol	3333	0.0000	2084	62	18-111
2-Chloronaphthalene	3333	0.0000	2171	65	32-115
2-Chlorophenol	3333	0.0000	2093	63	10-110
4-Chlorophenyl-phenylet	3333	0.0000	2235	67	33-118
Chrysene	3333	0.0000	2537	76	33-142
Dibenz(a,h)anthracene	3333	0.0000	2548	76	34-148
Dibenzofuran	3333	0.0000	2226	67	34-120
3,3'-Dichlorobenzidine	3333	0.0000	2536	76	31-137
2,4-Dichlorophenol	3333	0.0000	2033	61	32-121
Diethylphthalate	3333	0.0000	2341	70	32-126
2,4-Dimethylphenol	3333	0.0000	1973	59	33-119
Dimethylphthalate	3333	0.0000	2213	66	36-124

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SBLK0212BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Di n butylphthalate	3333	0.0000	2326	70	36-135
4,6-Dinitro-2-methylphe	3333	0.0000	1616	48	30-160
2,4-Dinitrophenol	3333	0.0000	1672	50	34-160
2,4-Dinitrotoluene	3333	0.0000	2308	69	34-110
2,6-Dinitrotoluene	3333	0.0000	2317	70	32-133
Di-n-octylphthalate	3333	0.0000	2228	67	50-160
Fluoranthene	3333	0.0000	2513	75	32-122
Fluorene	3333	0.0000	2321	70	32-127
Hexachlorobenzene	3333	0.0000	2334	70	32-127
Hexachlorobutadiene	3333	0.0000	1788	54	30-118
Hexachlorocyclopentadie	3333	0.0000	760.5	23*	30-123
Hexachloroethane	3333	0.0000	1691	51	30-115
Indeno(1,2,3-cd)pyrene	3333	0.0000	2587	78	34-147
Isophorone	3333	0.0000	1976	59	34-115
2-Methylnaphthalene	3333	0.0000	1950	58	30-120
Naphthalene	3333	0.0000	1952	58	30-115
4-Methylphenol	3333	0.0000	2282	68	30-127
2-Methylphenol	3333	0.0000	2189	66	30-123
2-Nitroaniline	3333	0.0000	2392	72	30-148
3-Nitroaniline	3333	0.0000	2224	67	30-135
4-Nitroaniline	3333	0.0000	2440	73	30-148
Nitrobenzene	3333	0.0000	1782	53	30-115
2-Nitrophenol	3333	0.0000	1868	56	30-126
4-Nitrophenol	3333	0.0000	1920	58	24-120
N-Nitrosodiphenylamine	3333	0.0000	2275	68	50-134
N-Nitroso-di-n-prop.(1)	3333	0.0000	1917	58	24-112
Pentachlorophenol	3333	0.0000	1585	48	10-114
Phenanthrene	3333	0.0000	2462	74	35-119

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix Spike - Client Sample No.: SBLK0212BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Phenol	3333	0.0000	2163	65	10-110
Pyrene	3333	0.0000	2503	75	33-150
2,4,5-Trichlorophenol	3333	0.0000	2020	61	34-128
2,4,6-Trichlorophenol	3333	0.0000	2090	63	35-120

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 60 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0212BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Lab File ID: SBLK0212 Lab Sample ID: SBLK0212BS1

Instrument ID: BNA3 Date Extracted: 02/12/04

Matrix: (soil/water) SOIL Date Analyzed: 02/16/04

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1848

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0212BS1L	SBLK0212BS1LCS	SLCS0212	02/16/04
02	SS57-SB04-01	0402100-01	0210001	02/16/04
03	SS57-SD05-01	0402100-02	0210002	02/16/04
04	SS57-SB04-02	0402100-04	0210004	02/16/04
05	SS57-SB04-02	0402100-04	0210004M	02/16/04
06	SS57-SB04-02	0402100-04	0210004S	02/16/04
07	SS57-SB05-02	0402100-05	0210005	02/17/04
08	SS57-SB02-01	0402100-03	0210003D	02/17/04
09	SS57-SB02-02	0402100-06	0210006D	02/17/04
10				
11				
12				
13				
14				
15				
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COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0212BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0212BS1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: SBLK0212

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	330	U
208-96-8	Acenaphthylene	330	U
98-86-2	Acetophenone	330	U
120-12-7	Anthracene	330	U
1912-24-9	Atrazine	330	U
100-52-7	Benzaldehyde	330	U
56-55-3	Benzo(a)anthracene	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U
50-32-8	Benzo(a)pyrene	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
92-52-4	1,1'-Biphenyl	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
117-81-7	Bis(2-ethylhexyl)phthalate	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
85-68-7	Butylbenzylphthalate	330	U
105-60-2	Caprolactam	330	U
86-74-8	Carbazole	330	U
106-47-8	4-Chloroaniline	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-58-7	2-Chloronaphthalene	330	U
95-57-8	2-Chlorophenol	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
218-01-9	Chrysene	330	U
53-70-3	Dibenz(a,h)anthracene	330	U
132-64-9	Dibenzofuran	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
120-83-2	2,4-Dichlorophenol	330	U
84-66-2	Diethylphthalate	330	U
105-67-9	2,4-Dimethylphenol	1300	U
131-11-3	Dimethylphthalate	330	U
84-74-2	Di-n-butylphthalate	330	U
534-52-1	4,6-Dinitro-2-methylphenol	1300	U
51-28-5	2,4-Dinitrophenol	3300	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0212BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02100

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0212BS1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: SBLK0212

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/12/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
117-84-0	Di-n-octylphthalate	330	U
206-44-0	Fluoranthene	330	U
86-73-7	Fluorene	330	U
118-74-1	Hexachlorobenzene	330	U
87-68-3	Hexachlorobutadiene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
67-72-1	Hexachloroethane	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
78-59-1	Isophorone	330	U
91-57-6	2-Methylnaphthalene	330	U
91-20-3	Naphthalene	330	U
106-44-5	4-Methylphenol	330	U
95-48-7	2-Methylphenol	330	U
88-74-4	2-Nitroaniline	1300	U
99-09-2	3-Nitroaniline	1300	U
100-01-6	4-Nitroaniline	1300	U
98-95-3	Nitrobenzene	330	U
88-75-5	2-Nitrophenol	330	U
100-02-7	4-Nitrophenol	1300	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
87-86-5	Pentachlorophenol	1300	U
85-01-8	Phenanthrene	330	U
108-95-2	Phenol	330	U
129-00-0	Pyrene	330	U
95-95-4	2,4,5-Trichlorophenol	330	U
88-06-2	2,4,6-Trichlorophenol	330	U

(1) - Cannot be separated from Diphenylamine

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-01*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-01

Sample wt/vol: 5.8 (g/mL) G Lab File ID: 007F0101

% Moisture: 26 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/24/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	120	U
----------	Petroleum Hydrocarbon >C12-C	120	U
----------	Petroleum Hydrocarbon >C28-C	120	U

* = high surrogate recoveries.
3/2/04

3-4-04

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-01*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-02

Sample wt/vol: 6.5 (g/mL) G Lab File ID: 008F0101

% Moisture: 19 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/24/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	94	U
----------	Petroleum Hydrocarbon >C12-C	94	U
----------	Petroleum Hydrocarbon >C28-C	94	U

* = high surrogate recoveries.
3/2/04

3-4-04

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-01 *

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-03

Sample wt/vol: 5.6 (g/mL) G Lab File ID: 009F0101

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/24/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	110	U
----------	Petroleum Hydrocarbon >C12-C	630	
----------	Petroleum Hydrocarbon >C28-C	110	U

* = high surrogate recoveries. 3/2/04

3-4-04

FORM I TX1005

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-01 RR

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-03

Sample wt/vol: 5.6 (g/mL) G Lab File ID: 042F0101

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Petroleum Hydrocarbon C6-C12	110	U
	----------Petroleum Hydrocarbon >C12-C	470	
	----------Petroleum Hydrocarbon >C28-C	110	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-04

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 010F0101

% Moisture: 28 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/24/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	130	U
----------	Petroleum Hydrocarbon >C12-C	130	U
----------	Petroleum Hydrocarbon >C28-C	130	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-05

Sample wt/vol: 6.0 (g/mL) G Lab File ID: 011F0101

% Moisture: 22 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/24/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Petroleum Hydrocarbon C6-C12	110	U
	----------Petroleum Hydrocarbon >C12-C	110	U
	----------Petroleum Hydrocarbon >C28-C	110	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-06

Sample wt/vol: 5.9 (g/mL) G Lab File ID: 012F0101

% Moisture: 15 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/24/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	130	
----------	Petroleum Hydrocarbon >C12-C	8800	
----------	Petroleum Hydrocarbon >C28-C	59	J

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402100-06

Sample wt/vol: 5.9 (g/mL) G Lab File ID: 043F0101

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	840	D
----------	Petroleum Hydrocarbon >C12-C	9900	D
----------	Petroleum Hydrocarbon >C28-C	200	UD

FORM 2
SOIL TX1005 SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

GC Column(1): RTX-5 ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	S2 %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	TXSBLK0221	97	104					0
02	TXSBLK0221LC	133*	140*					2
03	TXSBLK0221LC	132*	151*					2
04	SS57-SB04-01	150*	150*					2
05	SS57-SB05-01	140*	138*					2
06	SS57-SB02-01	138*	134*					2
07	SS57-SB04-02	93	95					0
08	SS57-SB05-02	91	87					0
09	SS57-SB02-02	92	93					0
10	SS57-SB02-01	102	100					0
11	SS57-SB02-02	103	101					0
12	TXSBLK0221LC	97	105					0
13	TXSBLK0221LC	97	106					0
14								
15								
16								
17								
18								
19								
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		ELAB QC LIMITS	SPIKE CONC (mg/Kg)
S1	= ortho-terphenyl	(70-130)	50
S2	= 1-chloro-octane	(70-130)	50

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
SOIL TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix Spike Client Sample No.: TXSBLK0221

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	250.0	0.0000	283.7	113	75-125
Petroleum Hydrocarbon >	250.0	0.0000	288.6	115	75-125

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	250.0	306.2	122	8	40	75-125
Petroleum Hydrocarbon >	250.0	299.8	120	4	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS: Surrogate recoveries high - spike recoveries within limits RR 2/25 follows.
m 3/2/04

FORM III TX1005

FORM 3
SOIL TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix Spike - Client Sample No.: TXSBLK0221

Rh 3/2/00

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	250.0	0.0000	252.6	101	75-125
Petroleum Hydrocarbon >	250.0	0.0000	301.1	120	75-125

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	250.0	244.0	98	3	40	75-125
Petroleum Hydrocarbon >	250.0	302.2	121	0	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

FORM 4
TX1005 METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

TXSBLK0221

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Lab Sample ID: TXSBLK0221 Lab File ID: 004F0101

Matrix (soil/water) SOIL Extraction: (SepF/Cont/Sonc/Soxh) SONC

Sulfur Cleanup (Y/N) N Date Extracted: 02/21/04

Date Analyzed (1): 02/24/04 Date Analyzed (2):

Time Analyzed (1): 1505 Time Analyzed (2):

Instrument ID (1): GCTCDFID Instrument ID (2):

GC Column (1): RTX-5 ID: 0.32(mm) GC Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TXSBLK0221LC	TXSBLK0221LCS	02/24/04	
02	TXSBLK0221LC	TXSBLK0221LCSD	02/24/04	
03	SS57-SB04-01	0402100-01	02/24/04	
04	SS57-SB05-01	0402100-02	02/24/04	
05	SS57-SB02-01	0402100-03	02/24/04	
06	SS57-SB04-02	0402100-04	02/24/04	
07	SS57-SB05-02	0402100-05	02/24/04	
08	SS57-SB02-02	0402100-06	02/24/04	
09	SS57-SB02-01	0402100-03	02/27/04	
10	SS57-SB02-02	0402100-06	02/27/04	
11	TXSBLK0221LC	TXSBLK0221LCS	02/27/04	
12	TXSBLK0221LC	TXSBLK0221LCSD	02/27/04	
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TXSBLK0221

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix: (soil/water) SOIL Lab Sample ID: TXSBLK0221

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 004F0101

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/24/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	50	U
----------	Petroleum Hydrocarbon >C12-C	50	U
----------	Petroleum Hydrocarbon >C28-C	50	U

ELAB
SDG 042119

ANALYTICAL REPORT

MAIN DATA PACKAGE - ORGANIC

BHATE

WO #0402119

Marcia K. McGinnity
Senior Project Manager
ELAB of Tennessee, LLC.

March 15, 2004

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WO #0402119

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ORGANIC CASE NARRATIVE
Bhate – Holloman AFB
Work Orders: 0402119

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5035/8260B (5 gram EnCore field sampling followed by laboratory preservation then purge and trap followed by capillary column GC/MS) for soils or 5030B/8260B (purge and trap followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Note: Soil samples were refrigerated upon receipt at the laboratory then placed in 40ml VOA vials with 5ml water and stirbar then frozen within 48 hours of sampling.
- Preparation blank PFBLK0212 had a reported concentration of xylene at 5.4µg/L. Reported concentrations in the associated samples were flagged with a "B".
- Trip blank sample TB 11020403 had reported concentrations of acetone and carbon disulfide. These analytes were not detected in the associated soil samples.
- The relative percent difference for bromomethane in spike samples V3BLK0218LCS/LCSD exceeded the limit of 30 at 39. It was not detected in the associated samples.
- Recoveries of methyl acetate in spike samples V1BLK0218LCS and SS57-SB03-02MS/MSD exceeded the limit of 130% at 135% and 134%/139%, respectively. It was not detected in the associated samples.

Semi-Volatiles

Method: The samples were extracted/analyzed by USEPA SW-846 Methods 3541/8270C (soxtherm extraction followed by capillary column GC/MS) for soils upon receipt to the laboratory in satisfactory condition.
Comments: The semi-volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Recoveries of 4-chloroaniline and hexachlorocyclopentadiene in spike samples SS57-SB03-02MS/MSD were below the respective limits of 32% and 30% at 23%/(37%) and 16%/18%, respectively. All other recoveries were within limits.

Total Petroleum Hydrocarbons

Method: The samples were analyzed by TNRCC Method 1005 for total petroleum hydrocarbons revision 03 June 1, 2001 (pentane extraction followed by direct injection capillary column GC/FID) for soils upon receipt to the laboratory in satisfactory condition.

Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Note: Soils were received in tared VOA vials and frozen upon receipt at the laboratory. Sample weights at extraction were determined to be less than the method recommended weight of 10 grams as low as 5.4 grams. Quantitation limits were increased accordingly.
- Recoveries of some of the surrogates exceeded the limits on the high side in some of the samples. No target analytes were detected above the quantitation limit in the associated samples.
- Recoveries of the spike analytes in spike samples SS57-SB03-02MS/MSD exceeded the limits on the high side. These analytes were not detected in the unspiked sample.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

Bhate

Parameters Requested

Laboratory Sample ID	Client Field ID	Matrix	Date and Time Sampled	Parameters Requested
0402119-01	SS57-SB03-01	Soil	2/11/04 9:10:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/11/04 9:10:00 AM	VOA 8260B (Soil)
0402119-02	SS57-SB03-02	Soil	2/11/04 9:40:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/11/04 9:40:00 AM	VOA 8260B (Soil)
0402119-03	SS57-SB01-01	Soil	2/11/04 10:35:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/11/04 10:35:00 AM	VOA 8260B (Soil)
0402119-04	SS57-SB01-02	Soil	2/11/04 11:00:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/11/04 11:00:00 AM	VOA 8260B (Soil)
0402119-05	TB 11020403	Trip Blank	2/11/04 9:10:00 AM	VOA 8260B (Water)-5mL

Project Number: 904000 2

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Chain of Custody Number [1]: 02-11-04-01

LIMS Number: ——

Facility/Base I.D.: Hollomon AFB

Project Name / Site Name: SS-57 Data Aquistition / O-club

Client Name:

Collected by: Greg Dill / Robert Cutrence

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code - [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TPH (1005)	VOC (8260)	SVOC (8270)	Carbon Section (1006)*	Soil moisture				Ambient Blank Lot Control Number	~~Equipment Blank Lot Control Number~~ WO II	Trip Blank Lot Control Number	Cooler ID
SS57-SB03-01		11-Feb-04	0910	8 - 9	N	01	SO	4	Y	X	X	X	X					2119-01	11020403	1
SS57-SB03-02		↓	0940	4 - 6	N	01	SO	4	X	X	X	X	X					-02	↓	1
SS57-SB03-02-MS			0940	4 - 6	MS	01	SO	4	Y	X	X	X						↓		1
SS57-SB03-02-SD			0940	4 - 6	SD ~~MS~~	01	SO	4	X	X	X	X						↓		1
SS57-SB01-01			1035	8 - 9	N	01	SO	4	X	X	X	X	X					-03		1
SS57-SB01-02		↓	1100	2 - 4	N	01	SO	4	X	X	X	X	X					↓-04	↓	1
11020403		2/11/04	0910	-			W			X								2119-05		1
				-																
				-																
				-																
				-																

Sample Analysis Requested [5] — Quality Assurance Samples [6]

COMMENTS: 48 hour TAT
Send Copy of Results to Atul

* Contingent Upon Hit in TX 1005

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. [signature]	2/11/04	1245	1. Anthony Lee	2/12/04	0900
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped No. ____
Method of Shipment: ____ Airbill Number: ____
Analytical Lab: ____ Delivery Location: ____
Lab Recipient: ____ Delivery Date/Time: ____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

ELAB OF TN COOLER RECEIPT FORM

LIMS Number 0402119 COC ID(s): 02-11-04-01

Client BHATE Project SS-57

Sample Custodian Anthony Russo Today's Date 2/12/04

Date/Time Samples Received 2/12/04 09:00
Airbill Number Federal Express
Cooler Opened: Date 2/12/04

Chain of custody seal intact?	Yes	No
Chain of custody provided?	Yes	No
Sample labels present?	Yes	No
Bottle labels correspond w/COC	Yes	No

Number of Custody Seals on Cooler(s): 2 Seal Date(s): 2/11/04

Type of coolant used ICE

Coolant condition : Melted _____ Partially melted/frozen ✓
Frozen _____

# of Coolers 2 Temp. of Coolers 3.0°c

Condition of Bottles in Shipment: Broken Leaking Intact Missing

If broken or leaking list sample ID#s and bottle types affected:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-01

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 0211901A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 20 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	55	U
71-43-2	Benzene	5.5	U
75-27-4	Bromodichloromethane	5.5	U
75-25-2	Bromoform	5.5	U
74-83-9	Bromomethane	11	U
78-93-3	2-Butanone	55	U
75-15-0	Carbon disulfide	5.5	U
56-23-5	Carbon tetrachloride	5.5	U
108-90-7	Chlorobenzene	5.5	U
75-00-3	Chloroethane	11	U
67-66-3	Chloroform	5.5	U
74-87-3	Chloromethane	11	U
110-82-7	Cyclohexane	11	U
124-48-1	Dibromochloromethane	5.5	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
106-93-4	1,2-Dibromoethane	5.5	U
95-50-1	1,2-Dichlorobenzene	5.5	U
541-73-1	1,3-Dichlorobenzene	5.5	U
106-46-7	1,4-Dichlorobenzene	5.5	U
75-71-8	Dichlorodifluoromethane	11	U
75-34-3	1,1-Dichloroethane	5.5	U
107-06-2	1,2-Dichloroethane	5.5	U
75-35-4	1,1-Dichloroethene	5.5	U
156-59-2	cis-1,2-Dichloroethene	5.5	U
156-60-5	trans-1,2-Dichloroethene	5.5	U
78-87-5	1,2-Dichloropropane	5.5	U
10061-01-5	cis-1,3-Dichloropropene	5.5	U
10061-02-6	trans-1,3-Dichloropropene	5.5	U
100-41-4	Ethylbenzene	5.5	U
110-54-3	Hexane	5.5	U
591-78-6	2-Hexanone	27	U
98-82-8	Isopropylbenzene	5.5	U
79-20-9	Methyl acetate	5.5	U
75-09-2	Methylene chloride	11	U
108-87-2	Methyl cyclohexane	5.5	U
1634-04-4	MTBE	5.5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-01

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 0211901A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 20 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	27	U
100-42-5	Styrene	5.5	U
79-34-5	1,1,2,2-Tetrachloroethane	5.5	U
127-18-4	Tetrachloroethene	5.5	U
108-88-3	Toluene	5.5	U
120-82-1	1,2,4-Trichlorobenzene	5.5	U
71-55-6	1,1,1-Trichloroethane	5.5	U
79-00-5	1,1,2-Trichloroethane	5.5	U
79-01-6	Trichloroethene	5.5	U
76-13-1	Trichlorotrifluoroethane	5.5	U
75-69-4	Trichlorofluoromethane	11	U
95-63-6	1,2,4-Trimethylbenzene	5.5	U
108-67-8	1,3,5-Trimethylbenzene	5.5	U
75-01-4	Vinyl chloride	11	U
1330-20-7	Xylene(total)	3.3	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0211902A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 23 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	65	U
71-43-2	Benzene	6.5	U
75-27-4	Bromodichloromethane	6.5	U
75-25-2	Bromoform	6.5	U
74-83-9	Bromomethane	13	U
78-93-3	2-Butanone	65	U
75-15-0	Carbon disulfide	6.5	U
56-23-5	Carbon tetrachloride	6.5	U
108-90-7	Chlorobenzene	6.5	U
75-00-3	Chloroethane	13	U
67-66-3	Chloroform	6.5	U
74-87-3	Chloromethane	13	U
110-82-7	Cyclohexane	13	U
124-48-1	Dibromochloromethane	6.5	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
106-93-4	1,2-Dibromoethane	6.5	U
95-50-1	1,2-Dichlorobenzene	6.5	U
541-73-1	1,3-Dichlorobenzene	6.5	U
106-46-7	1,4-Dichlorobenzene	6.5	U
75-71-8	Dichlorodifluoromethane	13	U
75-34-3	1,1-Dichloroethane	6.5	U
107-06-2	1,2-Dichloroethane	6.5	U
75-35-4	1,1-Dichloroethene	6.5	U
156-59-2	cis-1,2-Dichloroethene	6.5	U
156-60-5	trans-1,2-Dichloroethene	6.5	U
78-87-5	1,2-Dichloropropane	6.5	U
10061-01-5	cis-1,3-Dichloropropene	6.5	U
10061-02-6	trans-1,3-Dichloropropene	6.5	U
100-41-4	Ethylbenzene	6.5	U
110-54-3	Hexane	1.2	J
591-78-6	2-Hexanone	33	U
98-82-8	Isopropylbenzene	6.5	U
79-20-9	Methyl acetate	6.5	U
75-09-2	Methylene chloride	13	U
108-87-2	Methyl cyclohexane	6.5	U
1634-04-4	MTBE	6.5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0211902A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 23 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	33	U
100-42-5	Styrene	6.5	U
79-34-5	1,1,2,2-Tetrachloroethane	6.5	U
127-18-4	Tetrachloroethene	6.5	U
108-88-3	Toluene	6.5	U
120-82-1	1,2,4-Trichlorobenzene	6.5	U
71-55-6	1,1,1-Trichloroethane	6.5	U
79-00-5	1,1,2-Trichloroethane	6.5	U
79-01-6	Trichloroethene	6.5	U
76-13-1	Trichlorotrifluoroethane	6.5	U
75-69-4	Trichlorofluoromethane	13	U
95-63-6	1,2,4-Trimethylbenzene	6.5	U
108-67-8	1,3,5-Trimethylbenzene	6.5	U
75-01-4	Vinyl chloride	13	U
1330-20-7	Xylene(total)	2.9	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-03

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 0211903A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 11 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	51	U
71-43-2	Benzene	5.1	U
75-27-4	Bromodichloromethane	5.1	U
75-25-2	Bromoform	5.1	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	51	U
75-15-0	Carbon disulfide	5.1	U
56-23-5	Carbon tetrachloride	5.1	U
108-90-7	Chlorobenzene	5.1	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.1	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.1	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.1	U
95-50-1	1,2-Dichlorobenzene	5.1	U
541-73-1	1,3-Dichlorobenzene	5.1	U
106-46-7	1,4-Dichlorobenzene	5.1	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.1	U
107-06-2	1,2-Dichloroethane	5.1	U
75-35-4	1,1-Dichloroethene	5.1	U
156-59-2	cis-1,2-Dichloroethene	5.1	U
156-60-5	trans-1,2-Dichloroethene	5.1	U
78-87-5	1,2-Dichloropropane	5.1	U
10061-01-5	cis-1,3-Dichloropropene	5.1	U
10061-02-6	trans-1,3-Dichloropropene	5.1	U
100-41-4	Ethylbenzene	5.1	U
110-54-3	Hexane	5.1	U
591-78-6	2-Hexanone	26	U
98-82-8	Isopropylbenzene	5.1	U
79-20-9	Methyl acetate	5.1	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.1	U
1634-04-4	MTBE	5.1	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-03

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 0211903A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 11 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	26	U
100-42-5	Styrene	5.1	U
79-34-5	1,1,2,2-Tetrachloroethane	5.1	U
127-18-4	Tetrachloroethene	5.1	U
108-88-3	Toluene	5.1	U
120-82-1	1,2,4-Trichlorobenzene	5.1	U
71-55-6	1,1,1-Trichloroethane	5.1	U
79-00-5	1,1,2-Trichloroethane	5.1	U
79-01-6	Trichloroethene	5.1	U
76-13-1	Trichlorotrifluoroethane	5.1	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.1	U
108-67-8	1,3,5-Trimethylbenzene	5.1	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	2.3	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-04

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 0211904A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 30 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	70	U
71-43-2	Benzene	7.0	U
75-27-4	Bromodichloromethane	7.0	U
75-25-2	Bromoform	7.0	U
74-83-9	Bromomethane	14	U
78-93-3	2-Butanone	70	U
75-15-0	Carbon disulfide	7.0	U
56-23-5	Carbon tetrachloride	7.0	U
108-90-7	Chlorobenzene	7.0	U
75-00-3	Chloroethane	14	U
67-66-3	Chloroform	7.0	U
74-87-3	Chloromethane	14	U
110-82-7	Cyclohexane	14	U
124-48-1	Dibromochloromethane	7.0	U
96-12-8	1,2-Dibromo-3-chloropropane	14	U
106-93-4	1,2-Dibromoethane	7.0	U
95-50-1	1,2-Dichlorobenzene	7.0	U
541-73-1	1,3-Dichlorobenzene	7.0	U
106-46-7	1,4-Dichlorobenzene	7.0	U
75-71-8	Dichlorodifluoromethane	14	U
75-34-3	1,1-Dichloroethane	7.0	U
107-06-2	1,2-Dichloroethane	7.0	U
75-35-4	1,1-Dichloroethene	7.0	U
156-59-2	cis-1,2-Dichloroethene	7.0	U
156-60-5	trans-1,2-Dichloroethene	7.0	U
78-87-5	1,2-Dichloropropane	7.0	U
10061-01-5	cis-1,3-Dichloropropene	7.0	U
10061-02-6	trans-1,3-Dichloropropene	7.0	U
100-41-4	Ethylbenzene	7.0	U
110-54-3	Hexane	2.3	J
591-78-6	2-Hexanone	35	U
98-82-8	Isopropylbenzene	7.0	U
79-20-9	Methyl acetate	7.0	U
75-09-2	Methylene chloride	14	U
108-87-2	Methyl cyclohexane	7.0	U
1634-04-4	MTBE	7.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-04

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 0211904A

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. 30 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	35	U
100-42-5	Styrene	7.0	U
79-34-5	1,1,2,2-Tetrachloroethane	7.0	U
127-18-4	Tetrachloroethene	7.0	U
108-88-3	Toluene	7.0	U
120-82-1	1,2,4-Trichlorobenzene	7.0	U
71-55-6	1,1,1-Trichloroethane	7.0	U
79-00-5	1,1,2-Trichloroethane	7.0	U
79-01-6	Trichloroethene	7.0	U
76-13-1	Trichlorotrifluoroethane	7.0	U
75-69-4	Trichlorofluoromethane	14	U
95-63-6	1,2,4-Trimethylbenzene	7.0	U
108-67-8	1,3,5-Trimethylbenzene	7.0	U
75-01-4	Vinyl chloride	14	U
1330-20-7	Xylene(total)	4.4	JB

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TB 11020403

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) WATER Lab Sample ID: 0402119-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0211905

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	4.7	J
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	12	
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TB 11020403

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) WATER Lab Sample ID: 0402119-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0211905

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Level: (low/med) LOW

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V1BLK0218LCS	96	96	100	99	0
02	V1BLK0218	106	117	105	106	0
03	PFBLK0212	97	97	107	98	0
04	SS57-SB03-01	100	96	104	98	0
05	SS57-SB03-02	98	97	105	103	0
06	SS57-SB01-01	99	98	107	100	0
07	SS57-SB01-02	101	102	108	103	0
08	V1BLK0219LCS	93	94	96	95	0
09	V1BLK0219	104	117	103	103	0
10	SS57-SB03-02	99	99	99	98	0
11	SS57-SB03-02	99	98	96	95	0
12						
13						
14						
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27						
28						
29						
30						

		ELAB QC LIMITS	SPIKE CONC (ug/Kg)
SMC1 (DFM)	= Dibromofluoromethane	(65-142)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(72-141)	50
SMC3 (TOL)	= Toluene-d8	(78-120)	50
SMC4 (BFB)	= Bromofluorobenzene	(78-127)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V3BLK0218LCS	104	102	95	97	0
02	V3BLK0218	103	102	98	98	0
03	TB 11020403	102	102	99	100	0
04	V3BLK0218LCS	100	101	99	95	0
05						
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29						
30						

		ELAB QC LIMITS	SPIKE CONC (ug/L)
SMC1 (DFM)	= Dibromofluoromethane	(80-130)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(75-131)	50
SMC3 (TOL)	= Toluene-d8	(80-116)	50
SMC4 (BFB)	= Bromofluorobenzene	(72-129)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Acetone	136.0	0.0000	167.6	123	50-150
Benzene	67.99	0.0000	60.30	89	71-123
Bromodichloromethane	67.99	0.0000	73.02	107	71-130
Bromoform	67.99	0.0000	66.27	97	62-141
Bromomethane	67.99	0.0000	49.30	72	57-153
2-Butanone	136.0	0.0000	133.7	98	50-150
Carbon disulfide	136.0	0.0000	113.0	83	64-123
Carbon tetrachloride	67.99	0.0000	56.64	83	69-132
Chlorobenzene	67.99	0.0000	60.90	90	69-118
Chloroethane	67.99	0.0000	55.90	82	62-140
Chloroform	67.99	0.0000	60.67	89	75-132
Chloromethane	67.99	0.0000	57.02	84	56-144
Cyclohexane	67.99	0.0000	56.48	83	70-130
Dibromochloromethane	67.99	0.0000	68.65	101	61-147
1,2-Dibromo-3-chloropro	67.99	0.0000	70.76	104	70-128
1,2-Dibromoethane	67.99	0.0000	69.91	103	62-150
1,2 Dichlorobenzene	67.99	0.0000	64.92	95	75 132
1,3-Dichlorobenzene	67.99	0.0000	54.25	80	75-122
1,4-Dichlorobenzene	67.99	0.0000	58.32	86	74-126
Dichlorodifluoromethane	67.99	0.0000	48.25	71	43-134
1,1-Dichloroethane	67.99	0.0000	59.43	87	80-126
1,2-Dichloroethane	67.99	0.0000	66.60	98	75-121
1,1-Dichloroethene	67.99	0.0000	45.49	67	57-142
cis-1,2-Dichloroethene	67.99	0.0000	59.49	87	70-129
trans-1,2-Dichloroethen	67.99	0.0000	53.64	79	75-123
1,2-Dichloropropane	67.99	0.0000	68.33	100	72-124
cis-1,3-Dichloropropene	67.99	0.0000	70.50	104	72-132
trans-1,3-Dichloroprope	67.99	0.0000	61.64	91	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Ethylbenzene	67.99	0.0000	57.38	84	75-120
2-Hexanone	136.0	0.0000	145.4	107	55-144
Isopropylbenzene	67.99	0.0000	52.92	78	76-126
Methyl acetate	67.99	0.0000	91.06	134*	70-130
Methylene chloride	67.99	0.0000	48.64	72	66-131
Methyl cyclohexane	67.99	0.0000	51.22	75	70-130
MTBE	67.99	0.0000	64.06	94	58-146
4-Methyl-2-pentanone	136.0	0.0000	132.9	98	50-150
Styrene	67.99	0.0000	60.43	89	75-130
1,1,2,2-Tetrachloroetha	67.99	0.0000	78.70	116	68-144
Tetrachloroethene	67.99	0.0000	54.87	81	75-129
Toluene	67.99	0.0000	58.02	85	63-128
1,2,4-Trichlorobenzene	67.99	0.0000	55.40	81	69-139
1,1,1-Trichloroethane	67.99	0.0000	53.35	78	75-133
1,1,2-Trichloroethane	67.99	0.0000	71.56	105	71-129
Trichloroethene	67.99	0.0000	58.69	86	69-120
Trichlorotrifluoroethan	67.99	0.0000	46.85	69	50-145
Trichlorofluoromethane	67.99	0.0000	52.67	77	61-139
1,3,5-Trimethylbenzene	67.99	0.0000	56.94	84	75-125
Vinyl chloride	67.99	0.0000	51.64	76	75-134
Xylene(total)	204.0	2.908	179.5	86	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acetone	133.2	158.2	119	6	50	50-150
Benzene	66.61	61.76	93	2	50	71-123
Bromodichloromethane	66.61	76.31	114	4	50	71-130
Bromoform	66.61	61.24	92	8	50	62-141
Bromomethane	66.61	52.22	78	6	50	57-153
2-Butanone	133.2	147.0	110	9	50	50-150
Carbon disulfide	133.2	114.6	86	1	50	64-123
Carbon tetrachloride	66.61	57.93	87	2	50	69-132
Chlorobenzene	66.61	58.36	88	4	50	69-118
Chloroethane	66.61	56.43	85	1	50	62-140
Chloroform	66.61	62.11	93	2	50	75-132
Chloromethane	66.61	61.76	93	8	50	56-144
Cyclohexane	66.61	55.57	83	2	50	70-130
Dibromochloromethane	66.61	64.31	96	6	50	61-147
1,2-Dibromo-3-chloropro	66.61	71.90	108	2	50	70-128
1,2-Dibromoethane	66.61	66.42	100	5	50	62-150
1,2 Dichlorobenzene	66.61	61.46	92	5	50	75-132
1,3-Dichlorobenzene	66.61	51.95	78	4	50	75-122
1,4-Dichlorobenzene	66.61	54.23	81	7	50	74-126
Dichlorodifluoromethane	66.61	48.21	72	0	50	43-134
1,1-Dichloroethane	66.61	62.67	94	5	50	80-126
1,2-Dichloroethane	66.61	65.65	98	1	50	75-121
1,1-Dichloroethene	66.61	45.91	69	1	50	57-142
cis-1,2-Dichloroethene	66.61	59.61	89	0	50	70-129
trans-1,2-Dichloroethen	66.61	53.12	80	1	50	75-123
1,2-Dichloropropane	66.61	67.74	102	1	50	72-124
cis-1,3-Dichloropropene	66.61	69.87	105	1	50	72-132
trans-1,3-Dichloroprope	66.61	61.52	92	0	50	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Ethylbenzene	66.61	55.71	84	3	50	75-120
2-Hexanone	133.2	146.2	110	0	50	55-144
Isopropylbenzene	66.61	51.48	77	3	50	76-126
Methyl acetate	66.61	92.51	139*	2	50	70-130
Methylene chloride	66.61	48.98	74	1	50	66-131
Methyl cyclohexane	66.61	49.96	75	2	50	70-130
MTBE	66.61	65.09	98	2	50	58-146
4-Methyl-2-pentanone	133.2	136.9	103	3	50	50-150
Styrene	66.61	59.38	89	2	50	75-130
1,1,2,2-Tetrachloroetha	66.61	71.80	108	9	50	68-144
Tetrachloroethene	66.61	52.13	78	5	50	75-129
Toluene	66.61	55.49	83	4	50	63-128
1,2,4-Trichlorobenzene	66.61	52.81	79	5	50	69-139
1,1,1-Trichloroethane	66.61	53.84	81	1	50	75-133
1,1,2 Trichloroethane	66.61	69.47	104	3	50	71 129
Trichloroethene	66.61	58.97	88	0	50	69-120
Trichlorotrifluoroethan	66.61	47.69	72	2	50	50-145
Trichlorofluoromethane	66.61	51.49	77	2	50	61-139
1,3,5-Trimethylbenzene	66.61	53.96	81	5	50	75-125
Vinyl chloride	66.61	54.38	82	5	50	75-134
Xylene(total)	199.8	175.8	86	2	50	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 49 outside limits
Spike Recovery: 2 out of 98 outside limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V1BLK0218 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	90.82	91	50-150
Benzene	50.00	0.0000	51.36	103	71-123
Bromodichloromethane	50.00	0.0000	58.40	117	71-130
Bromoform	50.00	0.0000	50.53	101	62-141
Bromomethane	50.00	0.0000	43.84	88	57-153
2-Butanone	100.0	0.0000	92.60	93	50-150
Carbon disulfide	100.0	0.0000	105.8	106	64-123
Carbon tetrachloride	50.00	0.0000	51.73	103	69-132
Chlorobenzene	50.00	0.0000	50.17	100	69-118
Chloroethane	50.00	0.0000	46.52	93	62-140
Chloroform	50.00	0.0000	48.85	98	75-132
Chloromethane	50.00	0.0000	44.68	89	56-144
Cyclohexane	50.00	0.0000	55.48	111	70-130
Dibromochloromethane	50.00	0.0000	52.08	104	61-147
1,2-Dibromo-3-chloropro	50.00	0.0000	56.74	113	70-128
1,2-Dibromoethane	50.00	0.0000	51.46	103	62-150
1,2-Dichlorobenzene	50.00	0.0000	51.60	103	75-132
1,3-Dichlorobenzene	50.00	0.0000	48.64	97	75-122
1,4-Dichlorobenzene	50.00	0.0000	50.14	100	74-126
Dichlorodifluoromethane	50.00	0.0000	45.02	90	43-134
1,1-Dichloroethane	50.00	0.0000	49.55	99	80-126
1,2-Dichloroethane	50.00	0.0000	48.94	98	75-121
1,1-Dichloroethene	50.00	0.0000	41.85	84	57-142
cis-1,2-Dichloroethene	50.00	0.0000	47.38	95	70-129
trans-1,2-Dichloroethen	50.00	0.0000	47.55	95	75-123
1,2-Dichloropropane	50.00	0.0000	54.02	108	72-124
cis-1,3-Dichloropropene	50.00	0.0000	55.34	111	72-132
trans-1,3-Dichloroprope	50.00	0.0000	48.12	96	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V1BLK0218 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	50.00	0.0000	49.63	99	75-120
2-Hexanone	100.0	0.0000	107.6	108	55-144
Isopropylbenzene	50.00	0.0000	48.11	96	76-126
Methyl acetate	50.00	0.0000	67.42	135*	70-130
Methylene chloride	50.00	0.0000	37.61	75	66-131
Methyl cyclohexane	50.00	0.0000	52.05	104	70-130
MTBE	50.00	0.0000	47.60	95	58-146
4-Methyl-2-pentanone	100.0	0.0000	96.24	96	50-150
Styrene	50.00	0.0000	48.91	98	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	58.22	116	68-144
Tetrachloroethene	50.00	0.0000	51.00	102	75-129
Toluene	50.00	0.0000	49.80	100	63-128
1,2,4-Trichlorobenzene	50.00	0.0000	49.36	99	69-139
1,1,1-Trichloroethane	50.00	0.0000	46.82	94	75-133
1,1,2-Trichloroethane	50.00	0.0000	54.23	108	71-129
Trichloroethene	50.00	0.0000	48.47	97	69-120
Trichlorotrifluoroethan	50.00	0.0000	48.54	97	50-145
Trichlorofluoromethane	50.00	0.0000	48.14	96	61-139
1,3,5-Trimethylbenzene	50.00	0.0000	49.77	100	75-125
Vinyl chloride	50.00	0.0000	42.11	84	75-134
Xylene(total)	150.0	0.0000	151.0	101	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 49 outside limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V1BLK0219 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	90.43	90	50-150
Benzene	50.00	0.0000	50.47	101	71-123
Bromodichloromethane	50.00	0.0000	56.95	114	71-130
Bromoform	50.00	0.0000	49.37	99	62-141
Bromomethane	50.00	0.0000	43.26	86	57-153
2-Butanone	100.0	0.0000	91.59	92	50-150
Carbon disulfide	100.0	0.0000	107.1	107	64-123
Carbon tetrachloride	50.00	0.0000	53.59	107	69-132
Chlorobenzene	50.00	0.0000	48.11	96	69-118
Chloroethane	50.00	0.0000	48.68	97	62-140
Chloroform	50.00	0.0000	48.52	97	75-132
Chloromethane	50.00	0.0000	44.33	89	56-144
Cyclohexane	50.00	0.0000	55.02	110	70-130
Dibromochloromethane	50.00	0.0000	49.46	99	61-147
1,2-Dibromo-3-chloropro	50.00	0.0000	58.51	117	70-128
1,2-Dibromoethane	50.00	0.0000	49.32	99	62-150
1,2-Dichlorobenzene	50.00	0.0000	51.99	104	75-132
1,3-Dichlorobenzene	50.00	0.0000	46.56	93	75-122
1,4-Dichlorobenzene	50.00	0.0000	53.81	108	74 126
Dichlorodifluoromethane	50.00	0.0000	45.98	92	43-134
1,1-Dichloroethane	50.00	0.0000	51.11	102	80-126
1,2-Dichloroethane	50.00	0.0000	48.36	97	75-121
1,1-Dichloroethene	50.00	0.0000	41.55	83	57-142
cis-1,2-Dichloroethene	50.00	0.0000	47.36	95	70-129
trans-1,2-Dichloroethen	50.00	0.0000	48.11	96	75-123
1,2-Dichloropropane	50.00	0.0000	53.13	106	72-124
cis-1,3-Dichloropropene	50.00	0.0000	55.01	110	72-132
trans-1,3-Dichloroprope	50.00	0.0000	45.70	91	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike Client Sample No.: V1BLK0219 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	50.00	0.0000	47.57	95	75-120
2-Hexanone	100.0	0.0000	98.92	99	55-144
Isopropylbenzene	50.00	0.0000	45.67	91	76-126
Methyl acetate	50.00	0.0000	63.77	128	70-130
Methylene chloride	50.00	0.0000	39.64	79	66-131
Methyl cyclohexane	50.00	0.0000	51.01	102	70-130
MTBE	50.00	0.0000	46.92	94	58-146
4-Methyl-2-pentanone	100.0	0.0000	94.82	95	50-150
Styrene	50.00	0.0000	47.44	95	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	57.57	115	68-144
Tetrachloroethene	50.00	0.0000	48.48	97	75-129
Toluene	50.00	0.0000	46.60	93	63-128
1,2,4-Trichlorobenzene	50.00	0.0000	49.68	99	69-139
1,1,1-Trichloroethane	50.00	0.0000	47.95	96	75-133
1,1,2-Trichloroethane	50.00	0.0000	51.48	103	71-129
Trichloroethene	50.00	0.0000	50.87	102	69-120
Trichlorotrifluoroethan	50.00	0.0000	48.70	97	50 145
Trichlorofluoromethane	50.00	0.0000	50.18	100	61-139
1,3,5-Trimethylbenzene	50.00	0.0000	50.85	102	75-125
Vinyl chloride	50.00	0.0000	43.37	87	75-134
Xylene(total)	150.0	0.0000	144.8	96	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 49 outside limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V3BLK0218

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	125.6	126	51-157
Benzene	50.00	0.0000	51.84	104	70-125
Bromodichloromethane	50.00	0.0000	61.94	124	70-130
Bromoform	50.00	0.0000	47.87	96	72-136
Bromomethane	50.00	0.0000	56.22	112	35-153
2-Butanone	100.0	0.0000	111.9	112	45-150
Carbon disulfide	100.0	0.0000	99.57	100	74-123
Carbon tetrachloride	50.00	0.0000	59.11	118	71-132
Chlorobenzene	50.00	0.0000	50.72	101	78-114
Chloroethane	50.00	0.0000	57.66	115	72-129
Chloroform	50.00	0.0000	53.98	108	74-127
Chloromethane	50.00	0.0000	48.31	97	58-135
Dibromochloromethane	50.00	0.0000	52.51	105	74-145
1,2-Dibromo-3-chloropro	50.00	0.0000	46.13	92	75-132
1,2-Dibromoethane	50.00	0.0000	51.43	103	75-127
1,2-Dichlorobenzene	50.00	0.0000	50.63	101	73-120
1,3-Dichlorobenzene	50.00	0.0000	48.68	97	73-120
1,4-Dichlorobenzene	50.00	0.0000	49.52	99	74-123
Dichlorodifluoromethane	50.00	0.0000	59.04	118	59-134
1,1-Dichloroethane	50.00	0.0000	54.12	108	75-133
1,2-Dichloroethane	50.00	0.0000	51.53	103	67-132
1,1-Dichloroethene	50.00	0.0000	47.23	94	74-133
cis-1,2-Dichloroethene	50.00	0.0000	52.45	105	73-133
trans-1,2-Dichloroethen	50.00	0.0000	50.87	102	75-134
1,2-Dichloropropane	50.00	0.0000	52.35	105	75-133
cis-1,3-Dichloropropene	50.00	0.0000	56.86	114	73-132
trans-1,3-Dichloroprope	50.00	0.0000	49.10	98	74-131
Ethylbenzene	50.00	0.0000	48.34	97	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V3BLK0218

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2-Hexanone	100.0	0.0000	103.3	103	53-139
Isopropylbenzene	50.00	0.0000	44.86	90	75-126
Methylene chloride	50.00	0.0000	52.46	105	69-118
MTBE	50.00	0.0000	51.80	104	59-129
4-Methyl-2-pentanone	100.0	0.0000	106.6	107	59-150
Styrene	50.00	0.0000	48.08	96	75-130
1,1,2,2 Tetrachloroetha	50.00	0.0000	51.39	103	68-129
Tetrachloroethene	50.00	0.0000	48.71	97	75-129
Toluene	50.00	0.0000	47.52	95	73-119
1,2,4-Trichlorobenzene	50.00	0.0000	46.25	92	75-130
1,1,1-Trichloroethane	50.00	0.0000	55.22	110	70-127
1,1,2-Trichloroethane	50.00	0.0000	50.50	101	75-136
Trichloroethene	50.00	0.0000	50.02	100	74-118
Trichlorofluoromethane	50.00	0.0000	55.25	110	68-133
Vinyl chloride	50.00	0.0000	45.72	91	73-134
Xylene(total)	150.0	0.0000	146.6	98	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V3BLK0218

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acetone	100.0	130.8	131	4	30	51-157
Benzene	50.00	47.73	95	8	30	70-125
Bromodichloromethane	50.00	55.91	112	10	30	70-130
Bromoform	50.00	48.71	97	2	30	72-136
Bromomethane	50.00	37.96	76	39*	30	35-153
2-Butanone	100.0	114.5	114	2	30	45-150
Carbon disulfide	100.0	92.07	92	8	30	74-123
Carbon tetrachloride	50.00	52.52	105	12	30	71-132
Chlorobenzene	50.00	51.33	103	1	30	78-114
Chloroethane	50.00	51.53	103	11	30	72-129
Chloroform	50.00	50.18	100	7	30	74-127
Chloromethane	50.00	40.17	80	18	30	58-135
Dibromochloromethane	50.00	52.43	105	0	30	74-145
1,2-Dibromo-3-chloropro	50.00	48.85	98	6	30	75-132
1,2-Dibromoethane	50.00	53.52	107	4	30	75-127
1,2-Dichlorobenzene	50.00	52.12	104	3	30	73-120
1,3-Dichlorobenzene	50.00	49.42	99	2	30	73-120
1,4-Dichlorobenzene	50.00	50.73	101	2	30	74-123
Dichlorodifluoromethane	50.00	51.53	103	14	30	59-134
1,1-Dichloroethane	50.00	48.61	97	11	30	75-133
1,2-Dichloroethane	50.00	48.77	98	6	30	67-132
1,1-Dichloroethene	50.00	43.76	88	8	30	74-133
cis-1,2-Dichloroethene	50.00	49.12	98	6	30	73-133
trans-1,2-Dichloroethen	50.00	47.33	95	7	30	75-134
1,2-Dichloropropane	50.00	47.16	94	10	30	75-133
cis-1,3 Dichloropropene	50.00	50.79	102	11	30	73-132
trans-1,3-Dichloroprope	50.00	47.92	96	2	30	74-131
Ethylbenzene	50.00	48.57	97	0	30	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix Spike - Client Sample No.: V3BLK0218

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
2-Hexanone	100.0	112.4	112	8	30	53-139
Isopropylbenzene	50.00	44.61	89	0	30	75-126
Methylene chloride	50.00	48.64	97	8	30	69-118
MTBE	50.00	49.43	99	5	30	59-129
4-Methyl-2-pentanone	100.0	105.4	105	1	30	59-150
Styrene	50.00	49.19	98	2	30	75-130
1,1,2,2-Tetrachloroetha	50.00	54.39	109	6	30	68-129
Tetrachloroethene	50.00	49.66	99	2	30	75-129
Toluene	50.00	47.35	95	0	30	73-119
1,2,4-Trichlorobenzene	50.00	46.26	92	0	30	75-130
1,1,1-Trichloroethane	50.00	49.71	99	10	30	70-127
1,1,2-Trichloroethane	50.00	52.76	106	4	30	75-136
Trichloroethene	50.00	46.85	94	6	30	74-118
Trichlorofluoromethane	50.00	50.72	101	8	30	68-133
Vinyl chloride	50.00	41.92	84	9	30	73-134
Xylene(total)	150.0	147.6	98	1	30	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 44 outside limits
Spike Recovery: 0 out of 88 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V1BLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Lab File ID: V1BLK01 Lab Sample ID: V1BLK0218

Date Analyzed: 02/18/04 Time Analyzed: 1247

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1BLK0218LCS	V1BLK0218LCS	V1LCS01	1130
02	PFBLK0212	PFBLK0212	PFBK212B	1444
03	SS57-SB03-01	0402119-01	0211901A	1839
04	SS57-SB03-02	0402119-02	0211902A	1918
05	SS57-SB01-01	0402119-03	0211903A	1957
06	SS57-SB01-02	0402119-04	0211904A	2036
07				
08				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0218

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0218

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V1BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Lab File ID: V1BLK01 Lab Sample ID: V1BLK0219

Date Analyzed: 02/19/04 Time Analyzed: 1344

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1BLK0219LCS	V1BLK0219LCS	V1LCS01	1226
02	SS57-SB03-02	0402119-02	M211902A	2135
03	SS57-SB03-02	0402119-02	D211902A	2214
04				
05				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0219

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2 Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0219

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V3BLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Lab File ID: V3BLK01 Lab Sample ID: V3BLK0218

Date Analyzed: 02/18/04 Time Analyzed: 1146

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V3BLK0218LCS	V3BLK0218LCS	V3LCS01	1051
02	TB 11020403	0402119-05	0211905	1219
03	V3BLK0218LCS	V3BLK0218LCSD	V3LCSD01	2000
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) WATER Lab Sample ID: V3BLK0218

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2 Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) WATER Lab Sample ID: V3BLK0218

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

PFBLK0212

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Lab File ID: PFBK212B Lab Sample ID: PFBLK0212

Date Analyzed: 02/18/04 Time Analyzed: 1444

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SS57-SB03-01	0402119-01	0211901A	1839
02	SS57-SB03-02	0402119-02	0211902A	1918
03	SS57-SB01-01	0402119-03	0211903A	1957
04	SS57-SB01-02	0402119-04	0211904A	2036
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PFBLK0212

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: PFBLK0212

Sample wt/vol: 5.0 (g/mL) G Lab File ID: PFBK212B

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PFBLK0212

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02119

Matrix: (soil/water) SOIL Lab Sample ID: PFBLK0212

Sample wt/vol: 5.0 (g/mL) G Lab File ID: PFBK212B

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/18/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.4	

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-01

Sample wt/vol: 15.1 (g/mL) G Lab File ID: 0211901

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/13/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	410	U
208-96-8	Acenaphthylene	410	U
98-86-2	Acetophenone	410	U
120-12-7	Anthracene	410	U
1912-24-9	Atrazine	410	U
100-52-7	Benzaldehyde	410	U
56-55-3	Benzo(a)anthracene	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U
50-32-8	Benzo(a)pyrene	410	U
111-91-1	bis(2-Chloroethoxy)methane	410	U
92-52-4	1,1'-Biphenyl	410	U
111-44-4	bis(2-Chloroethyl)ether	410	U
108-60-1	bis(2-Chloroisopropyl)ether	410	U
117-81-7	Bis(2-ethylhexyl)phthalate	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
85-68-7	Butylbenzylphthalate	410	U
105-60-2	Caprolactam	410	U
86-74-8	Carbazole	410	U
106-47-8	4-Chloroaniline	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-58-7	2-Chloronaphthalene	410	U
95-57-8	2-Chlorophenol	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
218-01-9	Chrysene	410	U
53-70-3	Dibenz(a,h)anthracene	410	U
132-64-9	Dibenzofuran	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
120-83-2	2,4-Dichlorophenol	410	U
84-66-2	Diethylphthalate	410	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	410	U
84-74-2	Di-n-butylphthalate	410	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	4100	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-01

Sample wt/vol: 15.1 (g/mL) G Lab File ID: 0211901

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/13/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
117-84-0	Di-n-octylphthalate	410	U
206-44-0	Fluoranthene	410	U
86-73-7	Fluorene	410	U
118-74-1	Hexachlorobenzene	410	U
87-68-3	Hexachlorobutadiene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
67-72-1	Hexachloroethane	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
78-59-1	Isophorone	410	U
91-57-6	2-Methylnaphthalene	410	U
91-20-3	Naphthalene	410	U
106-44-5	4-Methylphenol	410	U
95-48-7	2-Methylphenol	410	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	410	U
88-75-5	2-Nitrophenol	410	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
621-64-7	N-Nitroso-di-n-propylamine	410	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	410	U
108-95-2	Phenol	410	U
129-00-0	Pyrene	410	U
95-95-4	2,4,5-Trichlorophenol	410	U
88-06-2	2,4,6-Trichlorophenol	410	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-02

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0211902

% Moisture: 23 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	420	U
208-96-8	Acenaphthylene	420	U
98-86-2	Acetophenone	420	U
120-12-7	Anthracene	420	U
1912-24-9	Atrazine	420	U
100-52-7	Benzaldehyde	420	U
56-55-3	Benzo(a)anthracene	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U
50-32-8	Benzo(a)pyrene	420	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
92-52-4	1,1'-Biphenyl	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
108-60-1	bis(2-Chloroisopropyl)ether	420	U
117-81-7	Bis(2-ethylhexyl)phthalate	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
85-68-7	Butylbenzylphthalate	420	U
105-60-2	Caprolactam	420	U
86-74-8	Carbazole	420	U
106-47-8	4-Chloroaniline	420	U
59-50-7	4-Chloro 3 methylphenol	420	U
91-58-7	2-Chloronaphthalene	420	U
95-57-8	2-Chlorophenol	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
218-01-9	Chrysene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
132-64-9	Dibenzofuran	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
120-83-2	2,4-Dichlorophenol	420	U
84-66-2	Diethylphthalate	420	U
105-67-9	2,4-Dimethylphenol	1700	U
131-11-3	Dimethylphthalate	420	U
84-74-2	Di-n-butylphthalate	420	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
51-28-5	2,4-Dinitrophenol	4200	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-02

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0211902

% Moisture: 23 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	420	U
606-20-2	2,6-Dinitrotoluene	420	U
117-84-0	Di-n-octylphthalate	420	U
206-44-0	Fluoranthene	420	U
86-73-7	Fluorene	420	U
118-74-1	Hexachlorobenzene	420	U
87-68-3	Hexachlorobutadiene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
67-72-1	Hexachloroethane	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
78-59-1	Isophorone	420	U
91-57-6	2-Methylnaphthalene	420	U
91-20-3	Naphthalene	420	U
106-44-5	4-Methylphenol	420	U
95-48-7	2-Methylphenol	420	U
88-74-4	2-Nitroaniline	1700	U
99-09-2	3-Nitroaniline	1700	U
100-01-6	4-Nitroaniline	1700	U
98-95-3	Nitrobenzene	420	U
88-75-5	2-Nitrophenol	420	U
100-02-7	4-Nitrophenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	420	U
108-95-2	Phenol	420	U
129-00-0	Pyrene	420	U
95-95-4	2,4,5-Trichlorophenol	420	U
88-06-2	2,4,6-Trichlorophenol	420	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-03

Sample wt/vol: 15.3 (g/mL) G Lab File ID: 0211903

% Moisture: 11 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	370	U
208-96-8	Acenaphthylene	370	U
98-86-2	Acetophenone	370	U
120-12-7	Anthracene	370	U
1912-24-9	Atrazine	370	U
100-52-7	Benzaldehyde	370	U
56-55-3	Benzo(a)anthracene	370	U
205-99-2	Benzo(b)fluoranthene	370	U
207-08-9	Benzo(k)fluoranthene	370	U
191-24-2	Benzo(g,h,i)perylene	370	U
50-32-8	Benzo(a)pyrene	370	U
111-91-1	bis(2-Chloroethoxy)methane	370	U
92-52-4	1,1'-Biphenyl	370	U
111-44-4	bis(2-Chloroethyl)ether	370	U
108-60-1	bis(2-Chloroisopropyl)ether	370	U
117-81-7	Bis(2-ethylhexyl)phthalate	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
85-68-7	Butylbenzylphthalate	370	U
105-60-2	Caprolactam	370	U
86-74-8	Carbazole	370	U
106-47-8	4-Chloroaniline	370	U
59-50-7	4-Chloro-3-methylphenol	370	U
91-58-7	2-Chloronaphthalene	370	U
95-57-8	2-Chlorophenol	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
218-01-9	Chrysene	370	U
53-70-3	Dibenz(a,h)anthracene	370	U
132-64-9	Dibenzofuran	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
120-83-2	2,4-Dichlorophenol	370	U
84-66-2	Diethylphthalate	370	U
105-67-9	2,4-Dimethylphenol	1500	U
131-11-3	Dimethylphthalate	370	U
84-74-2	Di-n-butylphthalate	370	U
534-52-1	4,6-Dinitro-2-methylphenol	1500	U
51-28-5	2,4-Dinitrophenol	3700	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-03

Sample wt/vol: 15.3 (g/mL) G Lab File ID: 0211903

% Moisture: 11 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
117-84-0	Di-n-octylphthalate	370	U
206-44-0	Fluoranthene	370	U
86-73-7	Fluorene	370	U
118-74-1	Hexachlorobenzene	370	U
87-68-3	Hexachlorobutadiene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
67-72-1	Hexachloroethane	370	U
193-39-5	Indeno(1,2,3-cd)pyrene	370	U
78-59-1	Isophorone	370	U
91-57-6	2-Methylnaphthalene	370	U
91-20-3	Naphthalene	370	U
106-44-5	4-Methylphenol	370	U
95-48-7	2-Methylphenol	370	U
88-74-4	2-Nitroaniline	1500	U
99-09-2	3-Nitroaniline	1500	U
100-01-6	4-Nitroaniline	1500	U
98-95-3	Nitrobenzene	370	U
88-75-5	2-Nitrophenol	370	U
100-02-7	4-Nitrophenol	1500	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
621-64-7	N-Nitroso-di-n-propylamine	370	U
87-86-5	Pentachlorophenol	1500	U
85-01-8	Phenanthrene	370	U
108-95-2	Phenol	370	U
129-00-0	Pyrene	370	U
95-95-4	2,4,5-Trichlorophenol	370	U
88-06-2	2,4,6-Trichlorophenol	370	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-04

Sample wt/vol: 15.1 (g/mL) G Lab File ID: 0211904

% Moisture: 30 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	470	U
208-96-8	Acenaphthylene	470	U
98-86-2	Acetophenone	470	U
120-12-7	Anthracene	470	U
1912-24-9	Atrazine	470	U
100-52-7	Benzaldehyde	470	U
56-55-3	Benzo(a)anthracene	530	
205-99-2	Benzo(b)fluoranthene	460	J
207-08-9	Benzo(k)fluoranthene	370	J
191-24-2	Benzo(g,h,i)perylene	260	J
50-32-8	Benzo(a)pyrene	530	
111-91-1	bis(2-Chloroethoxy)methane	470	U
92-52-4	1,1'-Biphenyl	470	U
111-44-4	bis(2-Chloroethyl)ether	470	U
108-60-1	bis(2-Chloroisopropyl)ether	470	U
117-81-7	Bis(2-ethylhexyl)phthalate	470	U
101-55-3	4-Bromophenyl-phenylether	470	U
85-68-7	Butylbenzylphthalate	470	U
105-60-2	Caprolactam	470	U
86-74-8	Carbazole	470	U
106-47-8	4-Chloroaniline	470	U
59-50-7	4-Chloro-3-methylphenol	470	U
91-58-7	2-Chloronaphthalene	470	U
95-57-8	2-Chlorophenol	470	U
7005-72-3	4-Chlorophenyl-phenylether	470	U
218-01-9	Chrysene	660	
53-70-3	Dibenz(a,h)anthracene	470	U
132-64-9	Dibenzofuran	470	U
91-94-1	3,3'-Dichlorobenzidine	470	U
120-83-2	2,4-Dichlorophenol	470	U
84-66-2	Diethylphthalate	470	U
105-67-9	2,4-Dimethylphenol	1900	U
131-11-3	Dimethylphthalate	470	U
84-74-2	Di-n-butylphthalate	470	U
534-52-1	4,6-Dinitro-2-methylphenol	1900	U
51-28-5	2,4-Dinitrophenol	4700	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-04

Sample wt/vol: 15.1 (g/mL) G Lab File ID: 0211904

% Moisture: 30 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/16/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	470	U
606-20-2	2,6-Dinitrotoluene	470	U
117-84-0	Di-n-octylphthalate	470	U
206-44-0	Fluoranthene	830	
86-73-7	Fluorene	470	U
118-74-1	Hexachlorobenzene	470	U
87-68-3	Hexachlorobutadiene	470	U
77-47-4	Hexachlorocyclopentadiene	470	U
67-72-1	Hexachloroethane	470	U
193-39-5	Indeno(1,2,3-cd)pyrene	220	J
78-59-1	Isophorone	470	U
91-57-6	2-Methylnaphthalene	470	U
91-20-3	Naphthalene	470	U
106-44-5	4-Methylphenol	470	U
95-48-7	2-Methylphenol	470	U
88-74-4	2-Nitroaniline	1900	U
99-09-2	3-Nitroaniline	1900	U
100-01-6	4-Nitroaniline	1900	U
98-95-3	Nitrobenzene	470	U
88-75-5	2-Nitrophenol	470	U
100-02-7	4-Nitrophenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	470	U
621-64-7	N-Nitroso-di-n-propylamine	470	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	170	J
108-95-2	Phenol	470	U
129-00-0	Pyrene	790	
95-95-4	2,4,5-Trichlorophenol	470	U
88-06-2	2,4,6-Trichlorophenol	470	U

(1) - Cannot be separated from Diphenylamine

FORM 2
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	SBLK0213BS1	66	68	72	72	62	81			0
02	SBLK0213BS1L	66	68	65	71	68	78			0
03	SS57-SB03-01	56	58	58	60	55	76			0
04	SS57-SB03-02	52	55	53	54	57	74			0
05	SS57-SB03-02	40	43	40	45	55	63			0
06	SS57-SB03-02	48	52	47	52	55	64			0
07	SS57-SB01-01	60	63	64	66	59	77			0
08	SS57-SB01-02	56	60	60	64	52	71			0
09										
10										
11										
12										
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28										
29										
30										

		ELAB QC LIMITS	SPIKE CONC (UG/KG)
S1 (2FP)	- 2-Fluorophenol	(21-100)	13000
S2 (PHL)	= Phenol-d6	(19-106)	13000
S3 (NBZ)	= Nitrobenzene-d5	(27-100)	6700
S4 (FBP)	= 2-Fluorobiphenyl	(31-100)	6700
S5 (TBP)	= 2,4,6-Tribromophenol	(38-121)	13000
S6 (TPH)	= Terphenyl-d14	(35-123)	6700

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Acenaphthene	4294	0.0000	2240	52	27-116
Acenaphthylene	4294	0.0000	2310	54	33-120
Anthracene	4294	0.0000	2944	68	35-122
Benzo(a)anthracene	4294	0.0000	3011	70	33-139
Benzo(b)fluoranthene	4294	0.0000	2949	69	30-140
Benzo(k)fluoranthene	4294	0.0000	2977	69	30-150
Benzo(g,h,i)perylene	4294	0.0000	3214	75	30-146
Benzo(a)pyrene	4294	0.0000	3233	75	30-144
bis(2-Chloroethoxy)meth	4294	0.0000	1829	42	30-126
bis(2-Chloroethyl)ether	4294	0.0000	1686	39	30-121
bis(2-Chloroisopropyl)e	4294	0.0000	2033	47	30-131
Bis(2-ethylhexyl)phthal	4294	0.0000	2619	61	34-149
4-Bromophenyl-phenyleth	4294	0.0000	2131	50	34-120
Butylbenzylphthalate	4294	0.0000	2779	65	30-153
Carbazole	4294	0.0000	3186	74	30-142
4-Chloroaniline	4294	0.0000	982.4	23*	32-121
4-Chloro-3-methylphenol	4294	0.0000	2292	53	18-111
2-Chloronaphthalene	4294	0.0000	2053	48	32-115
2-Chlorophenol	4294	0.0000	1869	44	10-110
4-Chlorophenyl-phenylet	4294	0.0000	2456	57	33-118
Chrysene	4294	0.0000	2980	69	33-142
Dibenz(a,h)anthracene	4294	0.0000	3263	76	34-148
Dibenzofuran	4294	0.0000	2350	55	34-120
3,3'-Dichlorobenzidine	4294	0.0000	2086	48	31-137
2,4-Dichlorophenol	4294	0.0000	1960	46	32-121
Diethylphthalate	4294	0.0000	2773	64	32-126
2,4-Dimethylphenol	4294	0.0000	1978	46	33-119
Dimethylphthalate	4294	0.0000	2448	57	36-124

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Di-n-butylphthalate	4294	0.0000	2721	63	36-135
4,6-Dinitro-2-methylphe	4294	0.0000	2851	66	30-160
2,4-Dinitrophenol	4294	0.0000	2682	62	34-160
2,4-Dinitrotoluene	4294	0.0000	2713	63	34-110
2,6-Dinitrotoluene	4294	0.0000	2572	60	32-133
Di-n-octylphthalate	4294	0.0000	2726	63	50-160
Fluoranthene	4294	0.0000	3079	72	32-122
Fluorene	4294	0.0000	2574	60	32-127
Hexachlorobenzene	4294	0.0000	2681	62	32-127
Hexachlorobutadiene	4294	0.0000	1568	36	30-118
Hexachlorocyclopentadie	4294	0.0000	682.3	16*	30-123
Hexachloroethane	4294	0.0000	1432	33	30-115
Indeno(1,2,3-cd)pyrene	4294	0.0000	3325	77	34-147
Isophorone	4294	0.0000	1829	42	34-115
2-Methylnaphthalene	4294	0.0000	1826	42	30-120
Naphthalene	4294	0.0000	1752	41	30-115
4-Methylphenol	4294	0.0000	2114	49	30-127
2-Methylphenol	4294	0.0000	2003	47	30-123
2-Nitroaniline	4294	0.0000	2650	62	30-148
3-Nitroaniline	4294	0.0000	1671	39	30-135
4-Nitroaniline	4294	0.0000	2625	61	30-148
Nitrobenzene	4294	0.0000	1611	38	30-115
2-Nitrophenol	4294	0.0000	1795	42	30-126
4-Nitrophenol	4294	0.0000	3272	76	24-120
N-Nitrosodiphenylamine	4294	0.0000	2544	59	50-134
N-Nitroso-di-n-prop.(1)	4294	0.0000	1704	40	24-112
Pentachlorophenol	4294	0.0000	3248	76	10-114
Phenanthrene	4294	0.0000	2853	66	35-119

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Phenol	4294	0.0000	1908	44	10-110
Pyrene	4294	0.0000	2759	64	33-150
2,4,5-Trichlorophenol	4294	0.0000	2324	54	34-128
2,4,6-Trichlorophenol	4294	0.0000	2279	53	35-120

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike - Client Sample No.: SS57 SB03 02 Lab Sample ID: 0402119-02

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	4352	2492	57	11	50	27-116
Acenaphthylene	4352	2593	60	12	50	33-120
Anthracene	4352	3062	70	4	50	35-122
Benzo(a)anthracene	4352	3053	70	1	50	33-139
Benzo(b)fluoranthene	4352	2953	68	0	50	30-140
Benzo(k)fluoranthene	4352	3124	72	5	50	30-150
Benzo(g,h,i)perylene	4352	3126	72	3	50	30-146
Benzo(a)pyrene	4352	3284	75	2	50	30-144
bis(2-Chloroethoxy)meth	4352	2159	50	16	50	30-126
bis(2-Chloroethyl)ether	4352	1994	46	17	50	30-121
bis(2-Chloroisopropyl)e	4352	2461	56	19	50	30-131
Bis(2-ethylhexyl)phthal	4352	2682	62	2	50	34-149
4-Bromophenyl-phenyleth	4352	2222	51	4	50	34-120
Butylbenzylphthalate	4352	2832	65	2	50	30-153
Carbazole	4352	3314	76	4	50	30-142
4-Chloroaniline	4352	1597	37	48	50	32-121
4-Chloro-3-methylphenol	4352	2440	56	6	50	18-111
2-Chloronaphthalene	4352	2392	55	15	50	32-115
2-Chlorophenol	4352	2246	52	18	50	10-110
4-Chlorophenyl-phenylet	4352	2603	60	6	50	33-118
Chrysene	4352	3048	70	2	50	33-142
Dibenz(a,h)anthracene	4352	3212	74	2	50	34-148
Dibenzofuran	4352	2561	59	8	50	34-120
3,3'-Dichlorobenzidine	4352	2595	60	22	50	31-137
2,4-Dichlorophenol	4352	2254	52	14	50	32-121
Diethylphthalate	4352	2844	65	2	50	32-126
2,4-Dimethylphenol	4352	2304	53	15	50	33-119
Dimethylphthalate	4352	2562	59	4	50	36-124

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Di-n-butylphthalate	4352	2838	65	4	50	36-135
4,6-Dinitro-2-methylphe	4352	2768	64	3	50	30-160
2,4-Dinitrophenol	4352	2869	66	7	50	34-160
2,4-Dinitrotoluene	4352	2790	64	3	50	34-110
2,6-Dinitrotoluene	4352	2714	62	5	50	32-133
Di-n-octylphthalate	4352	2757	63	1	50	50-160
Fluoranthene	4352	3171	73	3	50	32-122
Fluorene	4352	2721	62	6	50	32-127
Hexachlorobenzene	4352	2797	64	4	50	32-127
Hexachlorobutadiene	4352	1870	43	18	50	30-118
Hexachlorocyclopentadie	4352	783.8	18*	14	50	30-123
Hexachloroethane	4352	1770	41	21	50	30-115
Indeno(1,2,3-cd)pyrene	4352	3249	75	2	50	34-147
Isophorone	4352	2121	49	15	50	34-115
2-Methylnaphthalene	4352	2126	49	15	50	30-120
Naphthalene	4352	2087	48	17	50	30-115
4-Methylphenol	4352	2507	58	17	50	30-127
2-Methylphenol	4352	2379	55	17	50	30-123
2-Nitroaniline	4352	2774	64	4	50	30-148
3-Nitroaniline	4352	2272	52	30	50	30-135
4-Nitroaniline	4352	2883	66	9	50	30-148
Nitrobenzene	4352	1900	44	16	50	30-115
2-Nitrophenol	4352	2095	48	15	50	30-126
4-Nitrophenol	4352	2967	68	10	50	24-120
N-Nitrosodiphenylamine	4352	2649	61	4	50	50-134
N-Nitroso-di-n-prop.(1)	4352	2048	47	18	50	24-112
Pentachlorophenol	4352	2786	64	15	50	10-114
Phenanthrene	4352	2960	68	4	50	35-119

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spikc - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	4352	2304	53	19	50	10-110
Pyrene	4352	2809	64	2	50	33-150
2,4,5-Trichlorophenol	4352	2438	56	5	50	34-128
2,4,6-Trichlorophenol	4352	2436	56	7	50	35-120

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 60 outside limits
Spike Recovery: 3 out of 120 outside limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike Client Sample No.: SBLK0213BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	3333	0.0000	2339	70	27-116
Acenaphthylene	3333	0.0000	2464	74	33-120
Anthracene	3333	0.0000	2615	78	35-122
Benzo(a)anthracene	3333	0.0000	2600	78	33-139
Benzo(b)fluoranthene	3333	0.0000	2511	75	30-140
Benzo(k)fluoranthene	3333	0.0000	2622	79	30-150
Benzo(g,h,i)perylene	3333	0.0000	2680	80	30-146
Benzo(a)pyrene	3333	0.0000	2797	84	30-144
bis(2-Chloroethoxy)meth	3333	0.0000	2166	65	30-126
bis(2-Chloroethyl)ether	3333	0.0000	2041	61	30-121
bis(2-Chloroisopropyl)e	3333	0.0000	2468	74	30-131
Bis(2-ethylhexyl)phthal	3333	0.0000	2350	70	34-149
4-Bromophenyl-phenyleth	3333	0.0000	1957	59	34-120
Butylbenzylphthalate	3333	0.0000	2457	74	30-153
Carbazole	3333	0.0000	2866	86	30-142
4-Chloroaniline	3333	0.0000	1093	33	32-121
4-Chloro-3-methylphenol	3333	0.0000	2282	68	18-111
2-Chloronaphthalene	3333	0.0000	2334	70	32-115
2-Chlorophenol	3333	0.0000	2294	69	10-110
4-Chlorophenyl-phenylet	3333	0.0000	2391	72	33-118
Chrysene	3333	0.0000	2590	78	33-142
Dibenz(a,h)anthracene	3333	0.0000	2744	82	34-148
Dibenzofuran	3333	0.0000	2358	71	34-120
3,3'-Dichlorobenzidine	3333	0.0000	2158	65	31-137
2,4-Dichlorophenol	3333	0.0000	2242	67	32-121
Diethylphthalate	3333	0.0000	2332	70	32-126
2,4-Dimethylphenol	3333	0.0000	2181	65	33-119
Dimethylphthalate	3333	0.0000	2296	69	36-124

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike Client Sample No.: SBLK0213BS1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Di-n-butylphthalate	3333	0.0000	2451	74	36-135
4,6-Dinitro-2-methylphe	3333	0.0000	2363	71	30-160
2,4-Dinitrophenol	3333	0.0000	2065	62	34-160
2,4-Dinitrotoluene	3333	0.0000	2459	74	34-110
2,6-Dinitrotoluene	3333	0.0000	2454	74	32-133
Di-n-octylphthalate	3333	0.0000	2405	72	50-160
Fluoranthene	3333	0.0000	2664	80	32-122
Fluorene	3333	0.0000	2448	73	32-127
Hexachlorobenzene	3333	0.0000	2432	73	32-127
Hexachlorobutadiene	3333	0.0000	1936	58	30-118
Hexachlorocyclopentadie	3333	0.0000	1050	32	30-123
Hexachloroethane	3333	0.0000	1826	55	30-115
Indeno(1,2,3-cd)pyrene	3333	0.0000	2787	84	34-147
Isophorone	3333	0.0000	2105	63	34-115
2-Methylnaphthalene	3333	0.0000	2096	63	30-120
Naphthalene	3333	0.0000	2087	63	30-115
4-Methylphenol	3333	0.0000	2487	75	30-127
2-Methylphenol	3333	0.0000	2405	72	30-123
2-Nitroaniline	3333	0.0000	2492	75	30-148
3-Nitroaniline	3333	0.0000	1430	43	30-135
4-Nitroaniline	3333	0.0000	2395	72	30-148
Nitrobenzene	3333	0.0000	1907	57	30-115
2-Nitrophenol	3333	0.0000	2128	64	30-126
4-Nitrophenol	3333	0.0000	2563	77	24-120
N-Nitrosodiphenylamine	3333	0.0000	2328	70	50-134
N-Nitroso-di-n-prop.(1)	3333	0.0000	2052	62	24-112
Pentachlorophenol	3333	0.0000	2172	65	10-114
Phenanthrene	3333	0.0000	2524	76	35-119

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix Spike - Client Sample No.: SBLK0213BS1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Phenol	3333	0.0000	2154	65	10-110
Pyrene	3333	0.0000	2434	73	33-150
2,4,5-Trichlorophenol	3333	0.0000	2278	68	34-128
2,4,6-Trichlorophenol	3333	0.0000	2304	69	35-120

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 60 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0213BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Lab File ID: SBLK0213 Lab Sample ID: SBLK0213BS1

Instrument ID: BNA3 Date Extracted: 02/13/04

Matrix: (soil/water) SOIL Date Analyzed: 02/13/04

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1910

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0213BS1L	SBLK0213BS1LCS	SLCS0213	02/13/04
02	SS57-SB03-01	0402119-01	0211901	02/13/04
03	SS57-SB03-02	0402119-02	0211902	02/16/04
04	SS57-SB03-02	0402119-02	0211902M	02/16/04
05	SS57-SB03-02	0402119-02	0211902S	02/16/04
06	SS57-SB01-01	0402119-03	0211903	02/16/04
07	SS57-SB01-02	0402119-04	0211904	02/16/04
08				
09				
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COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0213BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0213BS1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: SBLK0213

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/13/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	330	U
208-96-8	Acenaphthylene	330	U
98-86-2	Acetophenone	330	U
120-12-7	Anthracene	330	U
1912-24-9	Atrazine	330	U
100-52-7	Benzaldehyde	330	U
56-55-3	Benzo(a)anthracene	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U
50-32-8	Benzo(a)pyrene	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
92-52-4	1,1'-Biphenyl	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
117-81-7	Bis(2-ethylhexyl)phthalate	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
85-68-7	Butylbenzylphthalate	330	U
105-60-2	Caprolactam	330	U
86-74-8	Carbazole	330	U
106-47-8	4-Chloroaniline	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-58-7	2-Chloronaphthalene	330	U
95-57-8	2-Chlorophenol	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
218-01-9	Chrysene	330	U
53-70-3	Dibenz(a,h)anthracene	330	U
132-64-9	Dibenzofuran	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
120-83-2	2,4-Dichlorophenol	330	U
84-66-2	Diethylphthalate	330	U
105-67-9	2,4-Dimethylphenol	1300	U
131-11-3	Dimethylphthalate	330	U
84-74-2	Di-n-butylphthalate	330	U
534-52-1	4,6-Dinitro-2-methylphenol	1300	U
51-28-5	2,4-Dinitrophenol	3300	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0213BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02119

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0213BS1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: SBLK0213

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/13/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/13/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
117-84-0	Di-n-octylphthalate	330	U
206-44-0	Fluoranthene	330	U
86-73-7	Fluorene	330	U
118-74-1	Hexachlorobenzene	330	U
87-68-3	Hexachlorobutadiene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
67-72-1	Hexachloroethane	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
78-59-1	Isophorone	330	U
91-57-6	2-Methylnaphthalene	330	U
91-20-3	Naphthalene	330	U
106-44-5	4-Methylphenol	330	U
95-48-7	2-Methylphenol	330	U
88-74-4	2-Nitroaniline	1300	U
99-09-2	3-Nitroaniline	1300	U
100-01-6	4-Nitroaniline	1300	U
98-95-3	Nitrobenzene	330	U
88-75-5	2-Nitrophenol	330	U
100-02-7	4-Nitrophenol	1300	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
87-86-5	Pentachlorophenol	1300	U
85-01-8	Phenanthrene	330	U
108-95-2	Phenol	330	U
129-00-0	Pyrene	330	U
95-95-4	2,4,5-Trichlorophenol	330	U
88-06-2	2,4,6-Trichlorophenol	330	U

(1) - Cannot be separated from Diphenylamine

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-01*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-01

Sample wt/vol: 6.1 (g/mL) G Lab File ID: 013F0101

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/25/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	100	U
----------	Petroleum Hydrocarbon >C12-C	100	U
----------	Petroleum Hydrocarbon >C28-C	100	U

* = high surrogate recoveries.
3/2/04

3-4-04

FORM I TX1005

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-02

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 014F0101

% Moisture: 23 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/25/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	120	U
----------	Petroleum Hydrocarbon >C12-C	120	U
----------	Petroleum Hydrocarbon >C28-C	120	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-01*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-03

Sample wt/vol: 6.0 (g/mL) G Lab File ID: 015F0101

% Moisture: 11 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/21/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/25/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	94	U
----------	Petroleum Hydrocarbon >C12-C	94	U
----------	Petroleum Hydrocarbon >C28-C	94	U

* = high surrogate recoveries.

M 3/2/04

3-4-04

FORM I TX1005

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-02

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402119-04

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 016F0101

% Moisture: 30 decanted: (Y/N) N Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/25/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Petroleum Hydrocarbon C6-C12	130	U
	----------Petroleum Hydrocarbon >C12-C	130	U
	----------Petroleum Hydrocarbon >C28-C	130	U

FORM 2
SOIL TX1005 SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

GC Column(1): RTX-5 ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	S2 %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	TXSBLK0221	97	104					0
02	TXSBLK0221LC	133*	140*					2
03	TXSBLK0221LC	132*	151*					2
04	SS57-SB03-01	149*	146*					2
05	SS57-SB03-02	82	81					0
06	SS57-SB01-01	155*	159*					2
07	SS57-SB01-02	127	127					0
08	SS57-SB03-02 MS	145*	152*					2
09	SS57-SB03-02 MSD	123	133*					1
10	TXSBLK0221LC	97	105					0
11	TXSBLK0221LC	97	106					0
12								
13								
14								
15								
16								
17								
18								
19								
20								
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29								
30								

		ELAB QC LIMITS	SPIKE CONC (mg/Kg)
S1	= ortho-terphenyl	(70-130)	50
S2	= 1-chloro-octane	(70-130)	50

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
SOIL TX1005 MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Matrix Spike - Client Sample No.: SS57-SB03-02 Lab Sample ID: 0402119-02

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	694.4	0.0000	878.4	126*	75-125
Petroleum Hydrocarbon >	694.4	0.0000	901.6	130*	75-125

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	674.3	767.3	114	14	40	75-125
Petroleum Hydrocarbon >	674.3	771.7	114	16	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 2 out of 4 outside limits

COMMENTS: * Surr recoveries high - Sample ND. 3/2/04

FORM III TX1005

FORM 3
SOIL TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02~~100~~19-01

Matrix Spike - Client Sample No.: TXSBLK0221

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	250.0	0.0000	283.7	113	75-125
Petroleum Hydrocarbon >	250.0	0.0000	288.6	115	75-125

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	250.0	306.2	122	8	40	75-125
Petroleum Hydrocarbon >	250.0	299.8	120	4	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS: Surrogate recoveries high. See RR from 2/25 following

3/2/04

FORM III TX1005

FORM 3
SOIL TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02100-01

Matrix Spike - Client Sample No.: TXSBLK0221

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	250.0	0.0000	252.6	101	75-125
Petroleum Hydrocarbon >	250.0	0.0000	301.1	120	75-125

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	250.0	244.0	98	3	40	75-125
Petroleum Hydrocarbon >	250.0	302.2	121	0	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III TX1005

FORM 4
TX1005 METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

TXSBLK0221

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Lab Sample ID: TXSBLK0221 Lab File ID: 004F0101

Matrix (soil/water) SOIL Extraction: (SepF/Cont/Sonc/Soxh) SONC

Sulfur Cleanup (Y/N) N Date Extracted: 02/21/04

Date Analyzed (1): 02/24/04 Date Analyzed (2):

Time Analyzed (1): 1505 Time Analyzed (2):

Instrument ID (1): GCTCDFID Instrument ID (2):

GC Column (1): RTX-5 ID: 0.32(mm) GC Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TXSBLK0221LC	TXSBLK0221LCS	02/24/04	
02	TXSBLK0221LC	TXSBLK0221LCSD	02/24/04	
03	SS57-SB03-01	0402119-01	02/25/04	
04	SS57-SB03-02	0402119-02	02/25/04	
05	SS57-SB01-01	0402119-03	02/25/04	
06	SS57-SB01-02	0402119-04	02/25/04	
07	SS57-SB03-02	0402119-02	02/25/04	
08	SS57-SB03-02	0402119-02	02/25/04	
09	TXSBLK0221LC	TXSBLK0221LCS	02/27/04	
10	TXSBLK0221LC	TXSBLK0221LCSD	02/27/04	
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TXSBLK0221

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02119-01

Matrix: (soil/water) SOIL Lab Sample ID: TXSBLK0221

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 004F0101

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/21/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/24/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	50	U
----------	Petroleum Hydrocarbon >C12-C	50	U
----------	Petroleum Hydrocarbon >C28-C	50	U

ELAB
SDG 0402164

ANALYTICAL REPORT

MAIN DATA PACKAGE - ORGANIC

BHATE

WO #0402164

Marcia K. McGinnity
Senior Project Manager
ELAB of Tennessee, LLC.

March 15, 2004

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WO #0402164

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ORGANIC CASE NARRATIVE
Bhate – Holloman AFB
Work Orders: 0402164

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5035/8260B (5 gram EnCore field sampling followed by laboratory preservation then purge and trap followed by capillary column GC/MS) for soils or 5030B/8260B (purge and trap followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Note: Soil samples were refrigerated upon receipt at the laboratory then placed in 40ml VOA vials with 5ml water and stirbar then frozen within 48 hours of sampling.
- Preparation blank PFBLK0218 and method blank V1BLK0220 had reported concentrations of hexane. Reported concentrations in the associated samples were flagged with a "B".
- Recovery of methyl acetate in spike sample V1BLK0220LCS exceeded the limit of 130% at 143%. It was not detected in the associated samples.
- Due to laboratory oversight, sample Trip Blank 002 was missed for analysis. All reported concentrations in the samples associated with this trip blank are less than the quantitation limit.

Semi-Volatiles

Method: The samples were extracted/analyzed by USEPA SW-846 Methods 3541/8270C (soxtherm extraction followed by capillary column GC/MS) for soils upon receipt to the laboratory in satisfactory condition.
Comments: The semi-volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Recoveries of hexachlorocyclopentadiene in spike samples SS57-SV03 02-03MS/MSD were below the limit of 30% at (36%)/22%. The relative percent difference (RPD) also exceeded the limit of 30 at 46. All other recoveries and RPDs were within limits.

Total Petroleum Hydrocarbons

Method: The samples were analyzed by TNRCC Method 1005 for total petroleum hydrocarbons revision 03 June 1, 2001 (pentane extraction followed by direct injection capillary column GC/FID) for soils upon receipt to the laboratory in satisfactory condition.
Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Note: Soils were received in tared VOA vials and frozen upon receipt at the laboratory. Sample weights at extraction were determined to be less than the method recommended weight of 10 grams as low as 4.7 grams. Quantitation limits were increased accordingly.

- Recoveries of some of the surrogates exceeded the limits on the high side in some of the samples. No target analytes were detected above the quantitation limit in the associated samples.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

Bhate

Parameters Requested

Laboratory Sample ID	Client Field ID	Matrix	Date and Time Sampled	Parameters Requested
0402164-01	SS57-SV03 02-03	Soil	1/16/04 8:45:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	1/16/04 8:45:00 AM	VOA 8260B (Soil)
0402164-02	SS57-SV03 7-8	Soil	2/16/04 9:05:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/16/04 9:05:00 AM	VOA 8260B (Soil)
0402164-03	SS57-SV03 DUP	Soil	2/16/04 9:05:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/16/04 9:05:00 AM	VOA 8260B (Soil)
0402164-04	SS57-SV02 2-3	Soil	2/16/04 10:15:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/16/04 10:15:00 AM	VOA 8260B (Soil)
0402164-05	SS57-SV02 7-8	Soil	2/16/04 10:25:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/16/04 10:25:00 AM	VOA 8260B (Soil)
0402164-06	SS57-SV01 2-3	Soil	2/16/04 11:25:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/16/04 11:25:00 AM	VOA 8260B (Soil)
0402164-07	SS57-SV01 7-8	Soil	2/16/04 11:35:00 AM	Semivolatiles, 8270 (Soil) Low Level, Soxhlet
		Soil	2/16/04 11:35:00 AM	VOA 8260B (Soil)
0402164-08	Trip Blank 002	Trip Blank	2/16/04	VOA 8260B (Water)-5mL

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page

Project Number: 904

Chain of Custody Number [1]: 16-02-04-01

LIMS Number:

Facility/Base I.D.: Holloman AFB

Project Name / Site Name: SSS7 Data Aquisition

Client Name:

Collected by: Greg Dill

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TPH 1005	VOC 8260	SVOC 8270	Carbon Fraction 1006	Soil Moisture				~~Ambient Blank or Equipment Blank~~ WO #	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
SSS7-SV03		16-Feb-04	0845	02-03	N	01	SO	5	X	X	X	X	X				2164-01		16020403	
SSS7-SV03			0905	7-8	N	01	SO	5									02			
SSS7-SV03-Dup			0905	7-8	FD	01	SO	5									03			
SSS7-SV02			1015	2-3	N	01	SO	5									04			
SSS7-SV02			1025	7-8	N	01	SO	5									05			
SSS7-SV01			1125	2-3	N	01	SO	5									06			
SSS7-SV01			1135	7-8	N	01	SO	5									07			
Trip Blank 002		2/16/04		-													08			
				-																
				-																
				-																

COMMENTS: 48 hr TAT
Send results to Atul

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Greg Dill	2/16/04	1300	1. Anthony Ross	2/17/04	09:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.: _____
Method of Shipment: _____ Airbill Number: _____
Analytical Lab: _____ Delivery Location: _____
Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 1010990! in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

ELAB OF TN COOLER RECEIPT FORM

LIMS Number 0402144 COC ID(s): 16-02-04-01

Client BHATE Project 904 0002

Sample Custodian Anthony Russo Today's Date 2/17/04

Date/Time Samples Received 2/17/04 09:00
Airbill Number Federal Express
Cooler Opened: Date 2/17/04

Chain of custody seal intact?	Yes	No
Chain of custody provided?	Yes	No
Sample labels present?	Yes	No
Bottle labels correspond w/COC	Yes	No

Number of Custody Seals on Cooler(s): 2 Seal Date(s): 2/16/04

Type of coolant used ICE

Coolant condition : Melted _____ Partially melted/frozen ✓
Frozen _____

# of Coolers 1 Temp. of Coolers 3.0°C

Condition of Bottles in Shipment: Broken Leaking Intact Missing

If broken or leaking list sample ID#s and bottle types affected:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 02-03

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-01

Sample wt/vol: 5.9 (g/mL) G Lab File ID: 0216401A

Level: (low/med) LOW Date Sampled: 01/16/04

% Moisture: not dec. 18 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	51	U
71-43-2	Benzene	5.1	U
75-27-4	Bromodichloromethane	5.1	U
75-25-2	Bromoform	5.1	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	51	U
75-15-0	Carbon disulfide	5.1	U
56-23-5	Carbon tetrachloride	5.1	U
108-90-7	Chlorobenzene	5.1	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.1	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.1	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.1	U
95-50-1	1,2-Dichlorobenzene	5.1	U
541-73-1	1,3-Dichlorobenzene	5.1	U
106-46-7	1,4-Dichlorobenzene	5.1	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.1	U
107-06-2	1,2-Dichloroethane	5.1	U
75-35-4	1,1-Dichloroethene	5.1	U
156-59-2	cis-1,2-Dichloroethene	5.1	U
156-60-5	trans-1,2-Dichloroethene	5.1	U
78-87-5	1,2-Dichloropropane	5.1	U
10061-01-5	cis-1,3-Dichloropropene	5.1	U
10061-02-6	trans-1,3-Dichloropropene	5.1	U
100-41-4	Ethylbenzene	5.1	U
110-54-3	Hexane	0.82	JB
591-78-6	2-Hexanone	26	U
98-82-8	Isopropylbenzene	5.1	U
79-20-9	Methyl acetate	5.1	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.1	U
1634-04-4	MTBE	5.1	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 02-03

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-01

Sample wt/vol: 5.9 (g/mL) G Lab File ID: 0216401A

Level: (low/med) LOW Date Sampled: 01/16/04

% Moisture: not dec. 18 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	26	U
100-42-5	Styrene	5.1	U
79-34-5	1,1,2,2-Tetrachloroethane	5.1	U
127-18-4	Tetrachloroethene	5.1	U
108-88-3	Toluene	5.1	U
120-82-1	1,2,4-Trichlorobenzene	5.1	U
71-55-6	1,1,1-Trichloroethane	5.1	U
79-00-5	1,1,2-Trichloroethane	5.1	U
79-01-6	Trichloroethene	5.1	U
76 13-1	Trichlorotrifluoroethane	5.1	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.1	U
108-67-8	1,3,5-Trimethylbenzene	5.1	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	1.4	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-02

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 0216402A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 16 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	55	U
71-43-2	Benzene	5.5	U
75-27-4	Bromodichloromethane	5.5	U
75-25-2	Bromoform	5.5	U
74-83-9	Bromomethane	11	U
78-93-3	2-Butanone	55	U
75-15-0	Carbon disulfide	5.5	U
56-23-5	Carbon tetrachloride	5.5	U
108-90-7	Chlorobenzene	5.5	U
75-00-3	Chloroethane	11	U
67-66-3	Chloroform	5.5	U
74-87-3	Chloromethane	11	U
110-82-7	Cyclohexane	11	U
124-48-1	Dibromochloromethane	5.5	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
106-93-4	1,2-Dibromoethane	5.5	U
95-50-1	1,2-Dichlorobenzene	5.5	U
541-73-1	1,3-Dichlorobenzene	5.5	U
106-46-7	1,4-Dichlorobenzene	5.5	U
75-71-8	Dichlorodifluoromethane	11	U
75-34-3	1,1-Dichloroethane	5.5	U
107-06-2	1,2-Dichloroethane	5.5	U
75-35-4	1,1-Dichloroethene	5.5	U
156-59-2	cis-1,2-Dichloroethene	5.5	U
156-60-5	trans-1,2-Dichloroethene	5.5	U
78-87-5	1,2-Dichloropropane	5.5	U
10061-01-5	cis-1,3-Dichloropropene	5.5	U
10061-02-6	trans-1,3-Dichloropropene	5.5	U
100-41-4	Ethylbenzene	5.5	U
110-54-3	Hexane	5.5	U
591-78-6	2-Hexanone	27	U
98-82-8	Isopropylbenzene	5.5	U
79-20-9	Methyl acetate	5.5	U
75-09-2	Methylene chloride	11	U
108-87-2	Methyl cyclohexane	5.5	U
1634-04-4	MTBE	5.5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-02

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 0216402A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 16 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	27	U
100-42-5	Styrene	5.5	U
79-34-5	1,1,2,2-Tetrachloroethane	5.5	U
127-18-4	Tetrachloroethene	5.5	U
108-88-3	Toluene	5.5	U
120-82-1	1,2,4-Trichlorobenzene	5.5	U
71-55-6	1,1,1-Trichloroethane	5.5	U
79-00-5	1,1,2-Trichloroethane	5.5	U
79-01-6	Trichloroethene	5.5	U
76-13-1	Trichlorotrifluoroethane	5.5	U
75-69-4	Trichlorofluoromethane	11	U
95-63-6	1,2,4-Trimethylbenzene	5.5	U
108-67-8	1,3,5-Trimethylbenzene	5.5	U
75-01-4	Vinyl chloride	11	U
1330-20-7	Xylene(total)	1.3	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV0
3 DUP 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-03

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 0216403A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 16 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	55	U
71-43-2	Benzene	5.5	U
75-27-4	Bromodichloromethane	5.5	U
75-25-2	Bromoform	5.5	U
74-83-9	Bromomethane	11	U
78-93-3	2-Butanone	55	U
75-15-0	Carbon disulfide	5.5	U
56-23-5	Carbon tetrachloride	5.5	U
108-90-7	Chlorobenzene	5.5	U
75-00-3	Chloroethane	11	U
67-66-3	Chloroform	5.5	U
74-87-3	Chloromethane	11	U
110-82-7	Cyclohexane	11	U
124-48-1	Dibromochloromethane	5.5	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
106-93-4	1,2-Dibromoethane	5.5	U
95-50-1	1,2-Dichlorobenzene	5.5	U
541-73-1	1,3-Dichlorobenzene	5.5	U
106-46-7	1,4-Dichlorobenzene	5.5	U
75-71-8	Dichlorodifluoromethane	11	U
75-34-3	1,1-Dichloroethane	5.5	U
107-06-2	1,2-Dichloroethane	5.5	U
75-35-4	1,1-Dichloroethene	5.5	U
156-59-2	cis-1,2-Dichloroethene	5.5	U
156-60-5	trans-1,2-Dichloroethene	5.5	U
78-87-5	1,2-Dichloropropane	5.5	U
10061-01-5	cis-1,3-Dichloropropene	5.5	U
10061-02-6	trans-1,3-Dichloropropene	5.5	U
100-41-4	Ethylbenzene	5.5	U
110-54-3	Hexane	5.5	U
591-78-6	2-Hexanone	27	U
98-82-8	Isopropylbenzene	5.5	U
79-20-9	Methyl acetate	5.5	U
75-09-2	Methylene chloride	11	U
108-87-2	Methyl cyclohexane	5.5	U
1634-04-4	MTBE	5.5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV0
3 DUP 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-03

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 0216403A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 16 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	27	U
100-42-5	Styrene	5.5	U
79-34-5	1,1,2,2-Tetrachloroethane	5.5	U
127-18-4	Tetrachloroethene	5.5	U
108-88-3	Toluene	5.5	U
120-82-1	1,2,4-Trichlorobenzene	5.5	U
71-55-6	1,1,1-Trichloroethane	5.5	U
79-00-5	1,1,2-Trichloroethane	5.5	U
79-01-6	Trichloroethene	5.5	U
76-13-1	Trichlorotrifluoroethane	5.5	U
75-69-4	Trichlorofluoromethane	11	U
95-63-6	1,2,4-Trimethylbenzene	5.5	U
108-67-8	1,3,5-Trimethylbenzene	5.5	U
75-01-4	Vinyl chloride	11	U
1330-20-7	Xylene(total)	1.2	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-04

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 0216404A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 21 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	62	U
71-43-2	Benzene	6.2	U
75-27-4	Bromodichloromethane	6.2	U
75-25-2	Bromoform	6.2	U
74-83-9	Bromomethane	12	U
78-93-3	2-Butanone	62	U
75-15-0	Carbon disulfide	6.2	U
56-23-5	Carbon tetrachloride	6.2	U
108-90-7	Chlorobenzene	6.2	U
75-00-3	Chloroethane	12	U
67-66-3	Chloroform	6.2	U
74-87-3	Chloromethane	12	U
110-82-7	Cyclohexane	12	U
124-48-1	Dibromochloromethane	6.2	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
106-93-4	1,2-Dibromoethane	6.2	U
95-50-1	1,2-Dichlorobenzene	6.2	U
541-73-1	1,3-Dichlorobenzene	6.2	U
106-46-7	1,4-Dichlorobenzene	6.2	U
75-71-8	Dichlorodifluoromethane	12	U
75-34-3	1,1-Dichloroethane	6.2	U
107-06-2	1,2-Dichloroethane	6.2	U
75-35-4	1,1-Dichloroethene	6.2	U
156-59-2	cis-1,2-Dichloroethene	6.2	U
156-60-5	trans-1,2-Dichloroethene	6.2	U
78-87-5	1,2-Dichloropropane	6.2	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U
100-41-4	Ethylbenzene	6.2	U
110-54-3	Hexane	6.2	U
591-78-6	2-Hexanone	31	U
98-82-8	Isopropylbenzene	6.2	U
79-20-9	Methyl acetate	6.2	U
75-09-2	Methylene chloride	12	U
108-87-2	Methyl cyclohexane	6.2	U
1634-04-4	MTBE	6.2	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-04

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 0216404A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 21 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	31	U
100-42-5	Styrene	6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U
127-18-4	Tetrachloroethene	6.2	U
108-88-3	Toluene	6.2	U
120-82-1	1,2,4-Trichlorobenzene	6.2	U
71-55-6	1,1,1-Trichloroethane	6.2	U
79-00-5	1,1,2-Trichloroethane	6.2	U
79-01-6	Trichloroethene	6.2	U
76-13-1	Trichlorotrifluoroethane	6.2	U
75-69-4	Trichlorofluoromethane	12	U
95-63-6	1,2,4-Trimethylbenzene	6.2	U
108-67-8	1,3,5-Trimethylbenzene	6.2	U
75-01-4	Vinyl chloride	12	U
1330-20-7	Xylene(total)	1.2	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0216405B

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 28 Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	70	U
71-43-2	Benzene	7.0	U
75-27-4	Bromodichloromethane	7.0	U
75-25-2	Bromoform	7.0	U
74-83-9	Bromomethane	14	U
78-93-3	2-Butanone	70	U
75-15-0	Carbon disulfide	7.0	U
56-23-5	Carbon tetrachloride	7.0	U
108-90-7	Chlorobenzene	7.0	U
75-00-3	Chloroethane	14	U
67-66-3	Chloroform	7.0	U
74-87-3	Chloromethane	14	U
110-82-7	Cyclohexane	14	U
124-48-1	Dibromochloromethane	7.0	U
96-12-8	1,2-Dibromo-3-chloropropane	14	U
106-93-4	1,2-Dibromoethane	7.0	U
95-50-1	1,2-Dichlorobenzene	7.0	U
541-73-1	1,3-Dichlorobenzene	7.0	U
106-46-7	1,4-Dichlorobenzene	7.0	U
75-71-8	Dichlorodifluoromethane	14	U
75-34-3	1,1-Dichloroethane	7.0	U
107-06-2	1,2-Dichloroethane	7.0	U
75-35-4	1,1-Dichloroethene	7.0	U
156-59-2	cis-1,2-Dichloroethene	7.0	U
156-60-5	trans-1,2-Dichloroethene	7.0	U
78-87-5	1,2-Dichloropropane	7.0	U
10061-01-5	cis-1,3-Dichloropropene	7.0	U
10061-02-6	trans-1,3-Dichloropropene	7.0	U
100-41-4	Ethylbenzene	7.0	U
110-54-3	Hexane	0.81	JB
591-78-6	2-Hexanone	35	U
98-82-8	Isopropylbenzene	7.0	U
79-20-9	Methyl acetate	7.0	U
75-09-2	Methylene chloride	14	U
108-87-2	Methyl cyclohexane	7.0	U
1634-04-4	MTBE	7.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0216405B

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 28 Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	35	U
100-42-5	Styrene	7.0	U
79-34-5	1,1,2,2-Tetrachloroethane	7.0	U
127-18-4	Tetrachloroethene	7.0	U
108-88-3	Toluene	7.0	U
120-82-1	1,2,4-Trichlorobenzene	7.0	U
71-55-6	1,1,1-Trichloroethane	7.0	U
79-00-5	1,1,2-Trichloroethane	7.0	U
79-01-6	Trichloroethene	7.0	U
76-13-1	Trichlorotrifluoroethane	7.0	U
75-69-4	Trichlorofluoromethane	14	U
95-63-6	1,2,4-Trimethylbenzene	7.0	U
108-67-8	1,3,5-Trimethylbenzene	7.0	U
75-01-4	Vinyl chloride	14	U
1330-20-7	Xylene(total)	3.6	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-06

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 0216406A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 25 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	62	U
71-43-2	Benzene	6.2	U
75-27-4	Bromodichloromethane	6.2	U
75-25-2	Bromoform	6.2	U
74-83-9	Bromomethane	12	U
78-93-3	2-Butanone	62	U
75-15-0	Carbon disulfide	6.2	U
56-23-5	Carbon tetrachloride	6.2	U
108-90-7	Chlorobenzene	6.2	U
75-00-3	Chloroethane	12	U
67-66-3	Chloroform	6.2	U
74-87-3	Chloromethane	12	U
110-82-7	Cyclohexane	12	U
124-48-1	Dibromochloromethane	6.2	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
106-93-4	1,2-Dibromoethane	6.2	U
95-50-1	1,2-Dichlorobenzene	6.2	U
541-73-1	1,3-Dichlorobenzene	6.2	U
106-46-7	1,4-Dichlorobenzene	6.2	U
75-71-8	Dichlorodifluoromethane	12	U
75-34-3	1,1-Dichloroethane	6.2	U
107-06-2	1,2-Dichloroethane	6.2	U
75-35-4	1,1-Dichloroethene	6.2	U
156-59-2	cis-1,2-Dichloroethene	6.2	U
156-60-5	trans-1,2-Dichloroethene	6.2	U
78-87-5	1,2-Dichloropropane	6.2	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U
100-41-4	Ethylbenzene	6.2	U
110-54-3	Hexane	6.2	U
591-78-6	2-Hexanone	31	U
98-82-8	Isopropylbenzene	6.2	U
79-20-9	Methyl acetate	6.2	U
75-09-2	Methylene chloride	12	U
108-87-2	Methyl cyclohexane	6.2	U
1634-04-4	MTBE	6.2	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-06

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 0216406A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 25 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	31	U
100-42-5	Styrene	6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U
127-18-4	Tetrachloroethene	6.2	U
108-88-3	Toluene	6.2	U
120-82-1	1,2,4-Trichlorobenzene	6.2	U
71-55-6	1,1,1-Trichloroethane	6.2	U
79-00-5	1,1,2-Trichloroethane	6.2	U
79-01-6	Trichloroethene	6.2	U
76-13-1	Trichlorotrifluoroethane	6.2	U
75-69-4	Trichlorofluoromethane	12	U
95-63-6	1,2,4-Trimethylbenzene	6.2	U
108-67-8	1,3,5-Trimethylbenzene	6.2	U
75-01-4	Vinyl chloride	12	U
1330-20-7	Xylene(total)	2.9	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-07

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 0216407A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 20 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	60	U
71-43-2	Benzene	6.0	U
75-27-4	Bromodichloromethane	6.0	U
75-25-2	Bromoform	6.0	U
74-83-9	Bromomethane	12	U
78-93-3	2-Butanone	60	U
75-15-0	Carbon disulfide	6.0	U
56-23-5	Carbon tetrachloride	6.0	U
108-90-7	Chlorobenzene	6.0	U
75-00-3	Chloroethane	12	U
67-66-3	Chloroform	6.0	U
74-87-3	Chloromethane	12	U
110-82-7	Cyclohexane	12	U
124-48-1	Dibromochloromethane	6.0	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
106-93-4	1,2-Dibromoethane	6.0	U
95-50-1	1,2-Dichlorobenzene	6.0	U
541-73-1	1,3-Dichlorobenzene	6.0	U
106-46-7	1,4-Dichlorobenzene	6.0	U
75-71-8	Dichlorodifluoromethane	12	U
75-34-3	1,1-Dichloroethane	6.0	U
107-06-2	1,2-Dichloroethane	6.0	U
75-35-4	1,1-Dichloroethene	6.0	U
156-59-2	cis-1,2-Dichloroethene	6.0	U
156-60-5	trans-1,2-Dichloroethene	6.0	U
78-87-5	1,2-Dichloropropane	6.0	U
10061-01-5	cis-1,3-Dichloropropene	6.0	U
10061-02-6	trans-1,3-Dichloropropene	6.0	U
100-41-4	Ethylbenzene	6.0	U
110-54-3	Hexane	6.0	U
591-78-6	2-Hexanone	30	U
98-82-8	Isopropylbenzene	6.0	U
79-20-9	Methyl acetate	6.0	U
75-09-2	Methylene chloride	12	U
108-87-2	Methyl cyclohexane	6.0	U
1634-04-4	MTBE	6.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-07

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 0216407A

Level: (low/med) LOW Date Sampled: 02/16/04

% Moisture: not dec. 20 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	30	U
100-42-5	Styrene	6.0	U
79-34-5	1,1,2,2-Tetrachloroethane	6.0	U
127-18-4	Tetrachloroethene	6.0	U
108-88-3	Toluene	6.0	U
120-82-1	1,2,4-Trichlorobenzene	6.0	U
71-55-6	1,1,1-Trichloroethane	6.0	U
79-00-5	1,1,2-Trichloroethane	6.0	U
79-01-6	Trichloroethene	6.0	U
76-13-1	Trichlorotrifluoroethane	6.0	U
75-69-4	Trichlorofluoromethane	12	U
95-63-6	1,2,4-Trimethylbenzene	6.0	U
108-67-8	1,3,5-Trimethylbenzene	6.0	U
75-01-4	Vinyl chloride	12	U
1330-20-7	Xylene(total)	1.2	J

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Level: (low/med) LOW

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V1BLK0219LCS	93	94	96	95	0
02	V1BLK0219	104	117	103	103	0
03	PBLK0218	100	96	110	103	0
04	SS57-SV03 02	101	103	106	98	0
05	SS57-SV03 7-	99	102	105	103	0
06	SS57-SV03 DU	100	99	105	103	0
07	SS57-SV02 2-	100	98	106	100	0
08	SS57-SV01 2-	103	102	105	100	0
09	SS57-SV01 7-	98	99	108	100	0
10	V1BLK0220LCS	96	98	101	98	0
11	V1BLK0220	98	96	103	100	0
12	SS57-SV02 7-	101	101	104	100	0
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

		ELAB QC LIMITS	SPIKE CONC (ug/Kg)
SMC1 (DFM)	= Dibromofluoromethane	(65-142)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(72-141)	50
SMC3 (TOL)	= Toluene-d8	(78-120)	50
SMC4 (BFB)	= Bromofluorobenzene	(78-127)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix Spike - Client Sample No.: V1BLK0219 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	90.43	90	50-150
Benzene	50.00	0.0000	50.47	101	71-123
Bromodichloromethane	50.00	0.0000	56.95	114	71-130
Bromoform	50.00	0.0000	49.37	99	62-141
Bromomethane	50.00	0.0000	43.26	86	57-153
2-Butanone	100.0	0.0000	91.59	92	50-150
Carbon disulfide	100.0	0.0000	107.1	107	64-123
Carbon tetrachloride	50.00	0.0000	53.59	107	69-132
Chlorobenzene	50.00	0.0000	48.11	96	69-118
Chloroethane	50.00	0.0000	48.68	97	62-140
Chloroform	50.00	0.0000	48.52	97	75-132
Chloromethane	50.00	0.0000	44.33	89	56-144
Cyclohexane	50.00	0.0000	55.02	110	70-130
Dibromochloromethane	50.00	0.0000	49.46	99	61-147
1,2-Dibromo-3-chloropro	50.00	0.0000	58.51	117	70-128
1,2-Dibromoethane	50.00	0.0000	49.32	99	62-150
1,2-Dichlorobenzene	50.00	0.0000	51.99	104	75-132
1,3-Dichlorobenzene	50.00	0.0000	46.56	93	75-122
1,4-Dichlorobenzene	50.00	0.0000	53.81	108	74-126
Dichlorodifluoromethane	50.00	0.0000	45.98	92	43-134
1,1-Dichloroethane	50.00	0.0000	51.11	102	80-126
1,2-Dichloroethane	50.00	0.0000	48.36	97	75-121
1,1-Dichloroethene	50.00	0.0000	41.55	83	57-142
cis-1,2-Dichloroethene	50.00	0.0000	47.36	95	70-129
trans-1,2-Dichloroethen	50.00	0.0000	48.11	96	75-123
1,2-Dichloropropane	50.00	0.0000	53.13	106	72-124
cis-1,3-Dichloropropene	50.00	0.0000	55.01	110	72-132
trans-1,3-Dichloroprope	50.00	0.0000	45.70	91	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix Spike - Client Sample No.: V1BLK0219 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	50.00	0.0000	47.57	95	75-120
2-Hexanone	100.0	0.0000	98.92	99	55-144
Isopropylbenzene	50.00	0.0000	45.67	91	76-126
Methyl acetate	50.00	0.0000	63.77	128	70-130
Methylene chloride	50.00	0.0000	39.64	79	66-131
Methyl cyclohexane	50.00	0.0000	51.01	102	70-130
MTBE	50.00	0.0000	46.92	94	58-146
4-Methyl-2-pentanone	100.0	0.0000	94.82	95	50-150
Styrene	50.00	0.0000	47.44	95	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	57.57	115	68-144
Tetrachloroethene	50.00	0.0000	48.48	97	75-129
Toluene	50.00	0.0000	46.60	93	63-128
1,2,4-Trichlorobenzene	50.00	0.0000	49.68	99	69-139
1,1,1-Trichloroethane	50.00	0.0000	47.95	96	75-133
1,1,2-Trichloroethane	50.00	0.0000	51.48	103	71-129
Trichloroethene	50.00	0.0000	50.87	102	69-120
Trichlorotrifluoroethan	50.00	0.0000	48.70	97	50-145
Trichlorofluoromethane	50.00	0.0000	50.18	100	61-139
1,3,5-Trimethylbenzene	50.00	0.0000	50.85	102	75-125
Vinyl chloride	50.00	0.0000	43.37	87	75-134
Xylene(total)	150.0	0.0000	144.8	96	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 49 outside limits

COMMENTS:

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix Spike - Client Sample No.: V1BLK0220 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	93.55	94	50-150
Benzene	50.00	0.0000	50.93	102	71-123
Bromodichloromethane	50.00	0.0000	58.03	116	71-130
Bromoform	50.00	0.0000	48.58	97	62-141
Bromomethane	50.00	0.0000	39.94	80	57-153
2-Butanone	100.0	0.0000	106.4	106	50-150
Carbon disulfide	100.0	0.0000	103.9	104	64-123
Carbon tetrachloride	50.00	0.0000	51.02	102	69-132
Chlorobenzene	50.00	0.0000	49.06	98	69-118
Chloroethane	50.00	0.0000	47.03	94	62-140
Chloroform	50.00	0.0000	49.29	98	75-132
Chloromethane	50.00	0.0000	43.06	86	56-144
Cyclohexane	50.00	0.0000	55.15	110	70-130
Dibromochloromethane	50.00	0.0000	51.14	102	61-147
1,2-Dibromo-3-chloropro	50.00	0.0000	55.00	110	70-128
1,2-Dibromoethane	50.00	0.0000	53.00	106	62-150
1,2-Dichlorobenzene	50.00	0.0000	49.97	100	75-132
1,3-Dichlorobenzene	50.00	0.0000	49.18	98	75-122
1,4-Dichlorobenzene	50.00	0.0000	46.42	93	74-126
Dichlorodifluoromethane	50.00	0.0000	42.72	85	43-134
1,1-Dichloroethane	50.00	0.0000	50.88	102	80-126
1,2-Dichloroethane	50.00	0.0000	50.18	100	75-121
1,1-Dichloroethene	50.00	0.0000	41.33	83	57-142
cis-1,2-Dichloroethene	50.00	0.0000	48.82	98	70-129
trans-1,2-Dichloroethen	50.00	0.0000	45.62	91	75-123
1,2-Dichloropropane	50.00	0.0000	53.88	108	72-124
cis-1,3-Dichloropropene	50.00	0.0000	55.60	111	72-132
trans-1,3-Dichloroprope	50.00	0.0000	49.45	99	69-131

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix Spike - Client Sample No.: V1BLK0220 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	50.00	0.0000	48.50	97	75-120
2-Hexanone	100.0	0.0000	113.7	114	55-144
Isopropylbenzene	50.00	0.0000	46.89	94	76-126
Methyl acetate	50.00	0.0000	71.50	143*	70-130
Methylene chloride	50.00	0.0000	43.01	86	66-131
Methyl cyclohexane	50.00	0.0000	51.62	103	70-130
MTBE	50.00	0.0000	48.55	97	58-146
4-Methyl-2-pentanone	100.0	0.0000	99.18	99	50-150
Styrene	50.00	0.0000	48.51	97	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	57.08	114	68-144
Tetrachloroethene	50.00	0.0000	49.78	100	75-129
Toluene	50.00	0.0000	49.61	99	63-128
1,2,4-Trichlorobenzene	50.00	0.0000	46.65	93	69-139
1,1,1-Trichloroethane	50.00	0.0000	47.70	95	75-133
1,1,2-Trichloroethane	50.00	0.0000	55.58	111	71-129
Trichloroethene	50.00	0.0000	49.27	98	69-120
Trichlorotrifluoroethan	50.00	0.0000	46.83	94	50-145
Trichlorofluoromethane	50.00	0.0000	47.41	95	61-139
1,3,5-Trimethylbenzene	50.00	0.0000	47.76	96	75-125
Vinyl chloride	50.00	0.0000	40.26	80	75-134
Xylene(total)	150.0	0.0000	148.7	99	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 49 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V1BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Lab File ID: V1BLK01 Lab Sample ID: V1BLK0219

Date Analyzed: 02/19/04 Time Analyzed: 1344

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1BLK0219LCS	V1BLK0219LCS	V1LCS01	1226
02	PBLK0218	PBLK0218	PBK0218A	1502
03	SS57-SV03 02	0402164-01	0216401A	1620
04	SS57-SV03 7-	0402164-02	0216402A	1659
05	SS57-SV03 DU	0402164-03	0216403A	1739
06	SS57-SV02 2-	0402164-04	0216404A	1818
07	SS57-SV01 2-	0402164-06	0216406A	1936
08	SS57-SV01 7-	0402164-07	0216407A	2016
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0219

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	5.0	U
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0219

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V1BLK0220

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Lab File ID: V1BLK01 Lab Sample ID: V1BLK0220

Date Analyzed: 02/20/04 Time Analyzed: 1515

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V1BLK0220LCS	V1BLK0220LCS	V1LCS01	1356
02	SS57-SV02 7-	0402164-05	0216405B	1949
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0220

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0220

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	0.96	J
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V1BLK0220

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: V1BLK0220

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V1BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

PBLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Lab File ID: PBK0218A Lab Sample ID: PBLK0218

Date Analyzed: 02/19/04 Time Analyzed: 1502

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SS57-SV03 02	0402164-01	0216401A	1620
02	SS57-SV03 7-	0402164-02	0216402A	1659
03	SS57-SV03 DU	0402164-03	0216403A	1739
04	SS57-SV02 2-	0402164-04	0216404A	1818
05	SS57-SV01 2-	0402164-06	0216406A	1936
06	SS57-SV01 7-	0402164-07	0216407A	2016
07	SS57-SV02 7-	0402164-05	0216405B	1949
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: PBLK0218

Sample wt/vol: 5.0 (g/mL) G Lab File ID: PBK0218A

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
67-64-1	Acetone	50	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	50	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
110-82-7	Cyclohexane	10	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
106-93-4	1,2-Dibromoethane	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
110-54-3	Hexane	0.52	J
591-78-6	2-Hexanone	25	U
98-82-8	Isopropylbenzene	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	10	U
108-87-2	Methyl cyclohexane	5.0	U
1634-04-4	MTBE	5.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK0218

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02164

Matrix: (soil/water) SOIL Lab Sample ID: PBLK0218

Sample wt/vol: 5.0 (g/mL) G Lab File ID: PBK0218A

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-10-1	4-Methyl-2-pentanone	25	U
100-42-5	Styrene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
75-69-4	Trichlorofluoromethane	10	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylene(total)	5.0	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 02-03

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-01

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0216401

% Moisture: 18 decanted: (Y/N) N Date Sampled: 01/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	390	U
208-96-8	Acenaphthylene	390	U
98-86-2	Acetophenone	390	U
120-12-7	Anthracene	390	U
1912-24-9	Atrazine	390	U
100-52-7	Benzaldehyde	390	U
56-55-3	Benzo(a)anthracene	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U
50-32-8	Benzo(a)pyrene	390	U
111-91-1	bis(2-Chloroethoxy)methane	390	U
92-52-4	1,1'-Biphenyl	390	U
111-44-4	bis(2-Chloroethyl)ether	390	U
108-60-1	bis(2-Chloroisopropyl)ether	390	U
117-81-7	Bis(2-ethylhexyl)phthalate	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
85-68-7	Butylbenzylphthalate	390	U
105-60-2	Caprolactam	390	U
86-74-8	Carbazole	390	U
106-47-8	4-Chloroaniline	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-58-7	2-Chloronaphthalene	390	U
95-57-8	2-Chlorophenol	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
218-01-9	Chrysene	390	U
53-70-3	Dibenz(a,h)anthracene	390	U
132-64-9	Dibenzofuran	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
120-83-2	2,4-Dichlorophenol	390	U
84-66-2	Diethylphthalate	390	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	390	U
84-74-2	Di-n-butylphthalate	390	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	3900	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 02-03

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-01

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0216401

% Moisture: 18 decanted: (Y/N) N Date Sampled: 01/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
117-84-0	Di-n-octylphthalate	390	U
206-44-0	Fluoranthene	390	U
86-73-7	Fluorene	390	U
118-74-1	Hexachlorobenzene	390	U
87-68-3	Hexachlorobutadiene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
67-72-1	Hexachloroethane	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
78-59-1	Isophorone	390	U
91-57-6	2-Methylnaphthalene	390	U
91-20-3	Naphthalene	390	U
106-44-5	4-Methylphenol	390	U
95 48-7	2-Methylphenol	390	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	390	U
88-75-5	2-Nitrophenol	390	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
621-64-7	N-Nitroso-di-n-propylamine	390	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	390	U
108-95-2	Phenol	390	U
129-00-0	Pyrene	390	U
95-95-4	2,4,5-Trichlorophenol	390	U
88-06-2	2,4,6-Trichlorophenol	390	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-02

Sample wt/vol: 15.7 (g/mL) G Lab File ID: 0216402

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	380	U
208-96-8	Acenaphthylene	380	U
98-86-2	Acetophenone	380	U
120-12-7	Anthracene	380	U
1912-24-9	Atrazine	380	U
100-52-7	Benzaldehyde	380	U
56-55-3	Benzo(a)anthracene	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U
50-32-8	Benzo(a)pyrene	380	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
92-52-4	1,1'-Biphenyl	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
117-81-7	Bis(2-ethylhexyl)phthalate	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
85-68-7	Butylbenzylphthalate	380	U
105-60-2	Caprolactam	380	U
86-74-8	Carbazole	380	U
106-47-8	4-Chloroaniline	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-58-7	2-Chloronaphthalene	380	U
95-57-8	2-Chlorophenol	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
218-01-9	Chrysene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
132-64-9	Dibenzofuran	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
120-83-2	2,4-Dichlorophenol	380	U
84-66-2	Diethylphthalate	380	U
105-67-9	2,4-Dimethylphenol	1500	U
131-11-3	Dimethylphthalate	380	U
84-74-2	Di-n-butylphthalate	380	U
534-52-1	4,6-Dinitro-2-methylphenol	1500	U
51-28-5	2,4-Dinitrophenol	3800	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-02

Sample wt/vol: 15.7 (g/mL) G Lab File ID: 0216402

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
117-84-0	Di-n-octylphthalate	380	U
206-44-0	Fluoranthene	380	U
86-73-7	Fluorene	380	U
118-74-1	Hexachlorobenzene	380	U
87-68-3	Hexachlorobutadiene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
67-72-1	Hexachloroethane	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
78-59-1	Isophorone	380	U
91-57-6	2-Methylnaphthalene	380	U
91-20-3	Naphthalene	380	U
106-44-5	4-Methylphenol	380	U
95-48-7	2-Methylphenol	380	U
88-74-4	2-Nitroaniline	1500	U
99-09-2	3-Nitroaniline	1500	U
100-01-6	4-Nitroaniline	1500	U
98-95-3	Nitrobenzene	380	U
88-75-5	2-Nitrophenol	380	U
100-02-7	4-Nitrophenol	1500	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
87-86-5	Pentachlorophenol	1500	U
85-01-8	Phenanthrene	380	U
108-95-2	Phenol	380	U
129-00-0	Pyrene	380	U
95-95-4	2,4,5-Trichlorophenol	380	U
88-06-2	2,4,6-Trichlorophenol	380	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV0
3 DUP 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-03

Sample wt/vol: 15.1 (g/mL) G Lab File ID: 0216403

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	390	U
208-96-8	Acenaphthylene	390	U
98-86-2	Acetophenone	390	U
120-12-7	Anthracene	390	U
1912-24-9	Atrazine	390	U
100-52-7	Benzaldehyde	390	U
56-55-3	Benzo(a)anthracene	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U
50-32-8	Benzo(a)pyrene	390	U
111-91-1	bis(2-Chloroethoxy)methane	390	U
92-52-4	1,1'-Biphenyl	390	U
111-44-4	bis(2-Chloroethyl)ether	390	U
108-60-1	bis(2-Chloroisopropyl)ether	390	U
117-81-7	Bis(2-ethylhexyl)phthalate	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
85-68-7	Butylbenzylphthalate	390	U
105-60-2	Caprolactam	390	U
86-74-8	Carbazole	390	U
106-47-8	4-Chloroaniline	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-58-7	2-Chloronaphthalene	390	U
95-57-8	2-Chlorophenol	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
218-01-9	Chrysene	390	U
53-70-3	Dibenz(a,h)anthracene	390	U
132-64-9	Dibenzofuran	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
120-83-2	2,4-Dichlorophenol	390	U
84-66-2	Diethylphthalate	390	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	390	U
84-74-2	Di-n-butylphthalate	390	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	3900	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV0
3 DUP 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-03

Sample wt/vol: 15.1 (g/mL) G Lab File ID: 0216403

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
117-84-0	Di-n-octylphthalate	390	U
206-44-0	Fluoranthene	390	U
86-73-7	Fluorene	390	U
118-74-1	Hexachlorobenzene	390	U
87-68-3	Hexachlorobutadiene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
67-72-1	Hexachloroethane	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
78-59-1	Isophorone	390	U
91-57-6	2-Methylnaphthalene	390	U
91-20-3	Naphthalene	390	U
106-44-5	4-Methylphenol	390	U
95-48-7	2-Methylphenol	390	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	390	U
88-75-5	2-Nitrophenol	390	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
621-64-7	N-Nitroso-di-n-propylamine	390	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	390	U
108-95-2	Phenol	390	U
129-00-0	Pyrene	390	U
95-95-4	2,4,5-Trichlorophenol	390	U
88-06-2	2,4,6-Trichlorophenol	390	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-04

Sample wt/vol: 15.7 (g/mL) G Lab File ID: 0216404

% Moisture: 21 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	400	U
208-96-8	Acenaphthylene	400	U
98-86-2	Acetophenone	400	U
120-12-7	Anthracene	400	U
1912-24-9	Atrazine	400	U
100-52-7	Benzaldehyde	400	U
56-55-3	Benzo(a)anthracene	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
50-32-8	Benzo(a)pyrene	400	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
92-52-4	1,1'-Biphenyl	400	U
111-44-4	bis(2-Chloroethyl)ether	400	U
108-60-1	bis(2-Chloroisopropyl)ether	400	U
117-81-7	Bis(2-ethylhexyl)phthalate	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
85-68-7	Butylbenzylphthalate	400	U
105-60-2	Caprolactam	400	U
86-74-8	Carbazole	400	U
106-47-8	4-Chloroaniline	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-58-7	2-Chloronaphthalene	400	U
95-57-8	2-Chlorophenol	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
218-01-9	Chrysene	400	U
53-70-3	Dibenz(a,h)anthracene	400	U
132-64-9	Dibenzofuran	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
120-83-2	2,4-Dichlorophenol	400	U
84-66-2	Diethylphthalate	400	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	400	U
84-74-2	Di-n-butylphthalate	400	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	4000	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-04

Sample wt/vol: 15.7 (g/mL) G Lab File ID: 0216404

% Moisture: 21 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
117-84-0	Di-n-octylphthalate	400	U
206-44-0	Fluoranthene	400	U
86-73-7	Fluorene	400	U
118-74-1	Hexachlorobenzene	400	U
87-68-3	Hexachlorobutadiene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
67-72-1	Hexachloroethane	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
78-59-1	Isophorone	400	U
91-57-6	2-Methylnaphthalene	400	U
91-20-3	Naphthalene	400	U
106-44-5	4-Methylphenol	400	U
95-48-7	2-Methylphenol	400	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	400	U
88-75-5	2-Nitrophenol	400	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	400	U
108-95-2	Phenol	400	U
129-00-0	Pyrene	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
88-06-2	2,4,6-Trichlorophenol	400	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-05

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0216405

% Moisture: 28 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	450	U
208-96-8	Acenaphthylene	450	U
98-86-2	Acetophenone	450	U
120-12-7	Anthracene	450	U
1912-24-9	Atrazine	450	U
100-52-7	Benzaldehyde	450	U
56-55-3	Benzo(a)anthracene	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U
50-32-8	Benzo(a)pyrene	450	U
111-91-1	bis(2-Chloroethoxy)methane	450	U
92-52-4	1,1'-Biphenyl	450	U
111-44-4	bis(2-Chloroethyl)ether	450	U
108-60-1	bis(2-Chloroisopropyl)ether	450	U
117-81-7	Bis(2-ethylhexyl)phthalate	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
85-68-7	Butylbenzylphthalate	450	U
105-60-2	Caprolactam	450	U
86-74-8	Carbazole	450	U
106-47-8	4-Chloroaniline	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-58-7	2-Chloronaphthalene	450	U
95-57-8	2-Chlorophenol	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
218-01-9	Chrysene	450	U
53-70-3	Dibenz(a,h)anthracene	450	U
132-64-9	Dibenzofuran	450	U
91-94-1	3,3'-Dichlorobenzidine	450	U
120-83-2	2,4-Dichlorophenol	450	U
84-66-2	Diethylphthalate	450	U
105-67-9	2,4-Dimethylphenol	1800	U
131-11-3	Dimethylphthalate	450	U
84-74-2	Di-n-butylphthalate	450	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
51-28-5	2,4-Dinitrophenol	4500	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-05

Sample wt/vol: 15.5 (g/mL) G Lab File ID: 0216405

% Moisture: 28 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	450	U
606-20-2	2,6-Dinitrotoluene	450	U
117-84-0	Di-n-octylphthalate	450	U
206-44-0	Fluoranthene	450	U
86-73-7	Fluorene	450	U
118-74-1	Hexachlorobenzene	450	U
87-68-3	Hexachlorobutadiene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
67-72-1	Hexachloroethane	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
78-59-1	Isophorone	450	U
91-57-6	2-Methylnaphthalene	450	U
91-20-3	Naphthalene	450	U
106-44-5	4-Methylphenol	450	U
95-48-7	2-Methylphenol	450	U
88-74-4	2-Nitroaniline	1800	U
99-09-2	3-Nitroaniline	1800	U
100-01-6	4-Nitroaniline	1800	U
98-95-3	Nitrobenzene	450	U
88-75-5	2-Nitrophenol	450	U
100-02-7	4-Nitrophenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
621-64-7	N-Nitroso-di-n-propylamine	450	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	450	U
108-95-2	Phenol	450	U
129-00-0	Pyrene	450	U
95-95-4	2,4,5-Trichlorophenol	450	U
88-06-2	2,4,6-Trichlorophenol	450	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-06

Sample wt/vol: 15.2 (g/mL) G Lab File ID: 0216406

% Moisture: 25 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	440	U
208-96-8	Acenaphthylene	440	U
98-86-2	Acetophenone	440	U
120-12-7	Anthracene	440	U
1912-24-9	Atrazine	440	U
100-52-7	Benzaldehyde	440	U
56-55-3	Benzo(a)anthracene	440	U
205-99-2	Benzo(b)fluoranthene	440	U
207-08-9	Benzo(k)fluoranthene	440	U
191-24-2	Benzo(g,h,i)perylene	440	U
50-32-8	Benzo(a)pyrene	440	U
111-91-1	bis(2-Chloroethoxy)methane	440	U
92-52-4	1,1'-Biphenyl	440	U
111-44-4	bis(2-Chloroethyl)ether	440	U
108-60-1	bis(2-Chloroisopropyl)ether	440	U
117-81-7	Bis(2-ethylhexyl)phthalate	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
85-68-7	Butylbenzylphthalate	440	U
105-60-2	Caprolactam	440	U
86-74-8	Carbazole	440	U
106-47-8	4-Chloroaniline	440	U
59-50-7	4-Chloro-3-methylphenol	440	U
91-58-7	2-Chloronaphthalene	440	U
95-57-8	2-Chlorophenol	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
218-01-9	Chrysene	440	U
53-70-3	Dibenz(a,h)anthracene	440	U
132-64-9	Dibenzofuran	440	U
91-94-1	3,3'-Dichlorobenzidine	440	U
120-83-2	2,4-Dichlorophenol	440	U
84-66-2	Diethylphthalate	440	U
105-67-9	2,4-Dimethylphenol	1700	U
131-11-3	Dimethylphthalate	440	U
84-74-2	Di-n-butylphthalate	440	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
51-28-5	2,4-Dinitrophenol	4400	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-06

Sample wt/vol: 15.2 (g/mL) G Lab File ID: 0216406

% Moisture: 25 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	440	U
606-20-2	2,6-Dinitrotoluene	440	U
117-84-0	Di-n-octylphthalate	440	U
206-44-0	Fluoranthene	440	U
86-73-7	Fluorene	440	U
118-74-1	Hexachlorobenzene	440	U
87-68-3	Hexachlorobutadiene	440	U
77-47-4	Hexachlorocyclopentadiene	440	U
67-72-1	Hexachloroethane	440	U
193-39-5	Indeno(1,2,3-cd)pyrene	440	U
78-59-1	Isophorone	440	U
91-57-6	2-Methylnaphthalene	440	U
91-20-3	Naphthalene	440	U
106-44-5	4-Methylphenol	440	U
95-48-7	2-Methylphenol	440	U
88-74-4	2-Nitroaniline	1700	U
99-09-2	3-Nitroaniline	1700	U
100-01-6	4-Nitroaniline	1700	U
98-95-3	Nitrobenzene	440	U
88-75-5	2-Nitrophenol	440	U
100-02-7	4-Nitrophenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	440	U
621-64-7	N-Nitroso-di-n-propylamine	440	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	440	U
108-95-2	Phenol	440	U
129-00-0	Pyrene	440	U
95-95-4	2,4,5-Trichlorophenol	440	U
88-06-2	2,4,6-Trichlorophenol	440	U

(1) - Cannot be separated from Diphenylamine

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-07

Sample wt/vol: 15.8 (g/mL) G Lab File ID: 0216407

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	400	U
208-96-8	Acenaphthylene	400	U
98-86-2	Acetophenone	400	U
120-12-7	Anthracene	400	U
1912-24-9	Atrazine	400	U
100-52-7	Benzaldehyde	400	U
56-55-3	Benzo(a)anthracene	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U
50-32-8	Benzo(a)pyrene	400	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
92-52-4	1,1'-Biphenyl	400	U
111-44-4	bis(2-Chloroethyl)ether	400	U
108-60-1	bis(2-Chloroisopropyl)ether	400	U
117-81-7	Bis(2-ethylhexyl)phthalate	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
85-68-7	Butylbenzylphthalate	400	U
105-60-2	Caprolactam	400	U
86-74-8	Carbazole	400	U
106-47-8	4-Chloroaniline	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-58-7	2-Chloronaphthalene	400	U
95-57-8	2-Chlorophenol	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
218-01-9	Chrysene	400	U
53-70-3	Dibenz(a,h)anthracene	400	U
132-64-9	Dibenzofuran	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
120-83-2	2,4-Dichlorophenol	400	U
84-66-2	Diethylphthalate	400	U
105-67-9	2,4-Dimethylphenol	1600	U
131-11-3	Dimethylphthalate	400	U
84-74-2	Di-n-butylphthalate	400	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	4000	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-07

Sample wt/vol: 15.8 (g/mL) G Lab File ID: 0216407

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	400	U
606-20-2	2,6-Dinitrotoluene	400	U
117-84-0	Di-n-octylphthalate	400	U
206-44-0	Fluoranthene	400	U
86-73-7	Fluorene	400	U
118-74-1	Hexachlorobenzene	400	U
87-68-3	Hexachlorobutadiene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
67-72-1	Hexachloroethane	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
78-59-1	Isophorone	400	U
91-57-6	2-Methylnaphthalene	400	U
91-20-3	Naphthalene	400	U
106-44-5	4-Methylphenol	400	U
95-48-7	2-Methylphenol	400	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	400	U
88-75-5	2-Nitrophenol	400	U
100-02-7	4-Nitrophenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	400	U
108-95-2	Phenol	400	U
129-00-0	Pyrene	400	U
95-95-4	2,4,5-Trichlorophenol	400	U
88-06-2	2,4,6-Trichlorophenol	400	U

(1) - Cannot be separated from Diphenylamine

FORM 2
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	SBLK0220BS1	54	54	61	65	72	71			0
02	SBLK0220BS1L	54	57	63	65	80	77			0
03	SS57-SV03 7-	43	45	47	52	63	69			0
04	SS57-SV03 DU	49	53	58	64	73	72			0
05	SS57-SV02 2-	44	48	49	54	63	69			0
06	SS57-SV02 7-	44	47	49	55	63	70			0
07	SS57-SV01 2-	41	44	47	53	59	70			0
08	SS57-SV01 7-	50	54	58	62	72	81			0
09	SS57-SV03 02	50	53	57	65	79	82			0
10	SS57-SV03 02	49	51	53	58	75	73			0
11	SS57-SV03 02	52	54	56	63	79	85			0
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		ELAB QC LIMITS	SPIKE CONC (UG/KG)
S1 (2FP)	= 2-Fluorophenol	(21-100)	13000
S2 (PHL)	= Phenol-d6	(19-106)	13000
S3 (NBZ)	= Nitrobenzene-d5	(27-100)	6700
S4 (FBP)	= 2-Fluorobiphenyl	(31-100)	6700
S5 (TBP)	= 2,4,6-Tribromophenol	(38-121)	13000
S6 (TPH)	= Terphenyl-d14	(35-123)	6700

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SS57-SV03 02-03 Lab Sample ID: 0402164-

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Acenaphthene	3971	0.0000	2683	68	40-112
Acenaphthylene	3971	0.0000	2715	68	37-115
Anthracene	3971	0.0000	3021	76	45-118
Benzo(a)anthracene	3971	0.0000	2872	72	43-138
Benzo(b)fluoranthene	3971	0.0000	2773	70	31-146
Benzo(k)fluoranthene	3971	0.0000	2951	74	40-127
Benzo(g,h,i)perylene	3971	0.0000	3137	79	35-129
Benzo(a)pyrene	3971	0.0000	3070	77	38-144
bis(2-Chloroethoxy)meth	3971	0.0000	2257	57	30-115
bis(2-Chloroethyl)ether	3971	0.0000	1870	47	30-115
bis(2-Chloroisopropyl)e	3971	0.0000	2394	60	50-150
Bis(2-ethylhexyl)phthal	3971	0.0000	2941	74	30-154
4-Bromophenyl-phenyleth	3971	0.0000	2588	65	43-118
Butylbenzylphthalate	3971	0.0000	2903	73	37-136
Carbazole	3971	0.0000	3970	100	49-126
4-Chloroaniline	3971	0.0000	1962	49	30-133
4-Chloro-3-methylphenol	3971	0.0000	2722	68	32-110
2-Chloronaphthalene	3971	0.0000	2623	66	35-115
2-Chlorophenol	3971	0.0000	2486	63	29-110
4-Chlorophenyl-phenylet	3971	0.0000	2830	71	40-115
Chrysene	3971	0.0000	3036	76	42-142
Dibenz(a,h)anthracene	3971	0.0000	3136	79	38-130
Dibenzofuran	3971	0.0000	2691	68	40-115
3,3'-Dichlorobenzidine	3971	0.0000	1863	47	30-160
2,4-Dichlorophenol	3971	0.0000	2572	65	34-115
Diethylphthalate	3971	0.0000	2766	70	43-132
2,4-Dimethylphenol	3971	0.0000	2601	65	31-120
Dimethylphthalate	3971	0.0000	2525	64	42-116

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SS57-SV03 02-03 Lab Sample ID: 0402164-

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Di-n-butylphthalate	3971	0.0000	2601	65	46-123
4,6-Dinitro-2-methylphe	3971	0.0000	2717	68	42-144
2,4-Dinitrophenol	3971	0.0000	2522	64	29-146
2,4-Dinitrotoluene	3971	0.0000	2785	70	46-122
2,6-Dinitrotoluene	3971	0.0000	2633	66	43-122
Di-n-octylphthalate	3971	0.0000	2892	73	36-151
Fluoranthene	3971	0.0000	2618	66	47-132
Fluorene	3971	0.0000	2820	71	41-115
Hexachlorobenzene	3971	0.0000	3200	80	42-123
Hexachlorobutadiene	3971	0.0000	2364	60	30-120
Hexachlorocyclopentadie	3971	0.0000	1435	36	30-115
Hexachloroethane	3971	0.0000	1999	50	30-120
Indeno(1,2,3-cd)pyrene	3971	0.0000	3031	76	37-130
Isophorone	3971	0.0000	2199	55	33-115
2-Methylnaphthalene	3971	0.0000	2434	61	32-115
Naphthalene	3971	0.0000	2346	59	30-119
4-Methylphenol	3971	0.0000	2518	63	31-115
2-Methylphenol	3971	0.0000	2491	63	30-116
2-Nitroaniline	3971	0.0000	2813	71	36-140
3-Nitroaniline	3971	0.0000	2395	60	30-138
4-Nitroaniline	3971	0.0000	2968	75	30-140
Nitrobenzene	3971	0.0000	2052	52	31-115
2-Nitrophenol	3971	0.0000	2298	58	33-115
4-Nitrophenol	3971	0.0000	2722	68	21-110
N-Nitrosodiphenylamine	3971	0.0000	2978	75	35-124
N-Nitroso-di-n-prop.(1)	3971	0.0000	2221	56	39-110
Pentachlorophenol	3971	0.0000	3161	80	32-133
Phenanthrene	3971	0.0000	2933	74	45-117

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SS57-SV03 02-03 Lab Sample ID: 0402164-

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Phenol	3971	0.0000	2262	57	10-110
Pyrene	3971	0.0000	3157	80	51-137
2,4,5-Trichlorophenol	3971	0.0000	3091	78	36-135
2,4,6-Trichlorophenol	3971	0.0000	2840	72	39-115

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SS57-SV03 02-03 Lab Sample ID: 0402164-

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	3997	2835	71	6	30	40-112
Acenaphthylene	3997	2891	72	6	30	37-115
Anthracene	3997	3129	78	4	30	45-118
Benzo(a)anthracene	3997	3128	78	8	30	43-138
Benzo(b)fluoranthene	3997	3083	77	10	30	31-146
Benzo(k)fluoranthene	3997	3462	87	16	30	40-127
Benzo(g,h,i)perylene	3997	3360	84	7	30	35-129
Benzo(a)pyrene	3997	3380	84	10	30	38-144
bis(2-Chloroethoxy)meth	3997	2378	59	5	30	30-115
bis(2-Chloroethyl)ether	3997	1901	48	2	30	30-115
bis(2-Chloroisopropyl)e	3997	2451	61	2	30	50-150
Bis(2-ethylhexyl)phthal	3997	3403	85	14	30	30-154
4-Bromophenyl-phenyleth	3997	2646	66	2	30	43-118
Butylbenzylphthalate	3997	3174	79	9	30	37-136
Carbazole	3997	4252	106	7	30	49-126
4-Chloroaniline	3997	1938	48	1	30	30-133
4-Chloro-3-methylphenol	3997	2823	71	4	30	32-110
2-Chloronaphthalene	3997	2733	68	4	30	35-115
2-Chlorophenol	3997	2468	62	1	30	29-110
4-Chlorophenyl-phenylet	3997	3047	76	7	30	40-115
Chrysene	3997	3210	80	6	30	42-142
Dibenz(a,h)anthracene	3997	3402	85	8	30	38-130
Dibenzofuran	3997	2923	73	8	30	40-115
3,3'-Dichlorobenzidine	3997	1435	36	26	30	30-160
2,4-Dichlorophenol	3997	2614	65	2	30	34-115
Diethylphthalate	3997	2920	73	5	30	43-132
2,4-Dimethylphenol	3997	2776	69	6	30	31-120
Dimethylphthalate	3997	2650	66	5	30	42-116

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SS57-SV03 02-03 Lab Sample ID: 0402164-

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Di-n-butylphthalate	3997	2790	70	7	30	46-123
4,6-Dinitro-2-methylphe	3997	2354	59	14	30	42-144
2,4-Dinitrophenol	3997	2266	57	11	30	29-146
2,4-Dinitrotoluene	3997	3000	75	7	30	46-122
2,6-Dinitrotoluene	3997	2810	70	6	30	43-122
Di-n-octylphthalate	3997	3558	89	21	30	36-151
Fluoranthene	3997	2902	73	10	30	47-132
Fluorene	3997	3137	78	11	30	41-115
Hexachlorobenzene	3997	3342	84	4	30	42-123
Hexachlorobutadiene	3997	2398	60	1	30	30-120
Hexachlorocyclopentadie	3997	896.1	22*	46*	30	30-115
Hexachloroethane	3997	1984	50	1	30	30-120
Indeno(1,2,3-cd)pyrene	3997	3254	81	7	30	37-130
Isophorone	3997	2294	57	4	30	33-115
2-Methylnaphthalene	3997	2517	63	3	30	32-115
Naphthalene	3997	2542	64	8	30	30-119
4-Methylphenol	3997	2497	62	1	30	31-115
2-Methylphenol	3997	2493	62	0	30	30-116
2-Nitroaniline	3997	3070	77	9	30	36-140
3-Nitroaniline	3997	2560	64	7	30	30-138
4-Nitroaniline	3997	3203	80	8	30	30-140
Nitrobenzene	3997	2185	55	6	30	31-115
2-Nitrophenol	3997	2435	61	6	30	33-115
4-Nitrophenol	3997	3028	76	11	30	21-110
N-Nitrosodiphenylamine	3997	3146	79	5	30	35-124
N-Nitroso-di-n-prop.(1)	3997	2222	56	0	30	39-110
Pentachlorophenol	3997	3253	81	3	30	32-133
Phenanthrene	3997	3215	80	9	30	45-117

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SS57-SV03 02-03 Lab Sample ID: 0402164-

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	3997	2297	57	2	30	10-110
Pyrene	3997	3690	92	16	30	51-137
2,4,5-Trichlorophenol	3997	3270	82	6	30	36-135
2,4,6-Trichlorophenol	3997	3019	76	6	30	39-115

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 60 outside limits
Spike Recovery: 1 out of 120 outside limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SBLK0220BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	3333	0.0000	2338	70	40-112
Acenaphthylene	3333	0.0000	2364	71	37-115
Anthracene	3333	0.0000	2529	76	45-118
Benzo(a)anthracene	3333	0.0000	2462	74	43-138
Benzo(b)fluoranthene	3333	0.0000	2337	70	31-146
Benzo(k)fluoranthene	3333	0.0000	2583	77	40-127
Benzo(g,h,i)perylene	3333	0.0000	2660	80	35-129
Benzo(a)pyrene	3333	0.0000	2770	83	38-144
bis(2-Chloroethoxy)meth	3333	0.0000	2094	63	30-115
bis(2-Chloroethyl)ether	3333	0.0000	1890	57	30-115
bis(2-Chloroisopropyl)e	3333	0.0000	2124	64	50-150
Bis(2 ethylhexyl)phthal	3333	0.0000	2240	67	30-154
4-Bromophenyl-phenyleth	3333	0.0000	2206	66	43-118
Butylbenzylphthalate	3333	0.0000	2215	66	37-136
Carbazole	3333	0.0000	3460	104	49-126
4-Chloroaniline	3333	0.0000	1788	54	30-133
4-Chloro-3-methylphenol	3333	0.0000	2188	66	32-110
2-Chloronaphthalene	3333	0.0000	2344	70	35-115
2-Chlorophenol	3333	0.0000	2058	62	29-110
4-Chlorophenyl-phenylet	3333	0.0000	2382	71	40-115
Chrysene	3333	0.0000	2600	78	42-142
Dibenz(a,h)anthracene	3333	0.0000	2715	81	38-130
Dibenzofuran	3333	0.0000	2331	70	40-115
3,3'-Dichlorobenzidine	3333	0.0000	3124	94	30-160
2,4-Dichlorophenol	3333	0.0000	2226	67	34-115
Diethylphthalate	3333	0.0000	2290	69	43-132
2,4-Dimethylphenol	3333	0.0000	2322	70	31-120
Dimethylphthalate	3333	0.0000	2196	66	42-116

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SBLK0220BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Di-n-butylphthalate	3333	0.0000	2196	66	46-123
4,6-Dinitro-2-methylphe	3333	0.0000	2384	72	42-144
2,4-Dinitrophenol	3333	0.0000	1964	59	29-146
2,4-Dinitrotoluene	3333	0.0000	2267	68	46-122
2,6-Dinitrotoluene	3333	0.0000	2258	68	43-122
Di-n-octylphthalate	3333	0.0000	2076	62	36-151
Fluoranthene	3333	0.0000	2400	72	47-132
Fluorene	3333	0.0000	2469	74	41-115
Hexachlorobenzene	3333	0.0000	2613	78	42-123
Hexachlorobutadiene	3333	0.0000	2178	65	30-120
Hexachlorocyclopentadie	3333	0.0000	2066	62	30-115
Hexachloroethane	3333	0.0000	1825	55	30-120
Indeno(1,2,3-cd)pyrene	3333	0.0000	2572	77	37-130
Isophorone	3333	0.0000	1959	59	33-115
2-Methylnaphthalene	3333	0.0000	2216	66	32-115
Naphthalene	3333	0.0000	2130	64	30-119
4-Methylphenol	3333	0.0000	2169	65	31-115
2-Methylphenol	3333	0.0000	2157	65	30-116
2-Nitroaniline	3333	0.0000	2340	70	36-140
3-Nitroaniline	3333	0.0000	2178	65	30-138
4-Nitroaniline	3333	0.0000	2583	77	30-140
Nitrobenzene	3333	0.0000	1831	55	31-115
2-Nitrophenol	3333	0.0000	2056	62	33-115
4-Nitrophenol	3333	0.0000	2271	68	21-110
N-Nitrosodiphenylamine	3333	0.0000	2549	76	35-124
N-Nitroso-di-n-prop.(1)	3333	0.0000	1906	57	39-110
Pentachlorophenol	3333	0.0000	2475	74	32-133
Phenanthrene	3333	0.0000	2534	76	45-117

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix Spike - Client Sample No.: SBLK0220BS1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Phenol	3333	0.0000	1949	58	10-110
Pyrene	3333	0.0000	2636	79	51-137
2,4,5-Trichlorophenol	3333	0.0000	2544	76	36-135
2,4,6-Trichlorophenol	3333	0.0000	2402	72	39-115

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 60 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0220BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Lab File ID: SBLK0220 Lab Sample ID: SBLK0220BS1

Instrument ID: BNA1 Date Extracted: 02/20/04

Matrix: (soil/water) SOIL Date Analyzed: 02/24/04

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1216

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0220BS1L	SBLK0220BS1LCS	SLCS0220	02/24/04
02	SS57-SV03 7-	0402164-02	0216402	02/24/04
03	SS57-SV03 DU	0402164-03	0216403	02/24/04
04	SS57-SV02 2-	0402164-04	0216404	02/24/04
05	SS57-SV02 7-	0402164-05	0216405	02/24/04
06	SS57-SV01 2-	0402164-06	0216406	02/24/04
07	SS57-SV01 7-	0402164-07	0216407	02/24/04
08	SS57-SV03 02	0402164-01	0216401	02/24/04
09	SS57-SV03 02	0402164-01	0216401M	02/24/04
10	SS57-SV03 02	0402164-01	0216401S	02/24/04
11				
12				
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COMMENTS:

FORM IV SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0220BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0220BS1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: SBLK0220

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9	Acenaphthene	330	U
208-96-8	Acenaphthylene	330	U
98-86-2	Acetophenone	330	U
120-12-7	Anthracene	330	U
1912-24-9	Atrazine	330	U
100-52-7	Benzaldehyde	330	U
56-55-3	Benzo(a)anthracene	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U
50-32-8	Benzo(a)pyrene	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
92-52-4	1,1'-Biphenyl	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
117-81-7	Bis(2-ethylhexyl)phthalate	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
85-68-7	Butylbenzylphthalate	330	U
105-60-2	Caprolactam	330	U
86-74-8	Carbazole	330	U
106-47-8	4-Chloroaniline	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-58-7	2-Chloronaphthalene	330	U
95-57-8	2-Chlorophenol	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
218-01-9	Chrysene	330	U
53-70-3	Dibenz(a,h)anthracene	330	U
132-64-9	Dibenzofuran	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
120-83-2	2,4-Dichlorophenol	330	U
84-66-2	Diethylphthalate	330	U
105-67-9	2,4-Dimethylphenol	1300	U
131 11 3	Dimethylphthalate	330	U
84-74-2	Di-n-butylphthalate	330	U
534-52-1	4,6-Dinitro-2-methylphenol	1300	U
51-28-5	2,4-Dinitrophenol	3300	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0220BS1

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.B02164

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0220BS1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: SBLK0220

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/20/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/24/04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
117-84-0	Di-n-octylphthalate	330	U
206-44-0	Fluoranthene	330	U
86-73-7	Fluorene	330	U
118-74-1	Hexachlorobenzene	330	U
87-68-3	Hexachlorobutadiene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
67-72-1	Hexachloroethane	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
78-59-1	Isophorone	330	U
91-57-6	2-Methylnaphthalene	330	U
91-20-3	Naphthalene	330	U
106-44-5	4-Methylphenol	330	U
95-48-7	2-Methylphenol	330	U
88-74-4	2-Nitroaniline	1300	U
99-09-2	3-Nitroaniline	1300	U
100-01-6	4-Nitroaniline	1300	U
98-95-3	Nitrobenzene	330	U
88-75-5	2-Nitrophenol	330	U
100-02-7	4-Nitrophenol	1300	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
87-86-5	Pentachlorophenol	1300	U
85-01-8	Phenanthrene	330	U
108-95-2	Phenol	330	U
129-00-0	Pyrene	330	U
95-95-4	2,4,5-Trichlorophenol	330	U
88-06-2	2,4,6-Trichlorophenol	330	U

(1) - Cannot be separated from Diphenylamine

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 02-03

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-01

Sample wt/vol: 5.3 (g/mL) G Lab File ID: 031F0101

% Moisture: 18 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/26/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	110	U
----------	Petroleum Hydrocarbon >C12-C	110	U
----------	Petroleum Hydrocarbon >C28-C	110	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 7-8

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-02

Sample wt/vol: 4.7 (g/mL) G Lab File ID: 032F0101

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 02/26/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/27/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	130	U
----------	Petroleum Hydrocarbon >C12-C	130	U
----------	Petroleum Hydrocarbon >C28-C	130	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV03 DUP

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-03

Sample wt/vol: 4.9 (g/mL) G Lab File ID: 033F0101

% Moisture: 16 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted: 02/26/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	120	U
----------	Petroleum Hydrocarbon >C12-C	120	U
----------	Petroleum Hydrocarbon >C28-C	120	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-04

Sample wt/vol: 5.9 (g/mL) G Lab File ID: 034F0101

% Moisture: 21 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:02/26/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	110	U
----------	Petroleum Hydrocarbon >C12-C	110	U
----------	Petroleum Hydrocarbon >C28-C	110	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV02 7-8*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-05

Sample wt/vol: 5.9 (g/mL) G Lab File ID: 035F0101

% Moisture: 28 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/26/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	120	U
----------	Petroleum Hydrocarbon >C12-C	120	U
----------	Petroleum Hydrocarbon >C28-C	120	U

* = high surrogate recoveries.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 2-3

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-06

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 036F0101

% Moisture: 25 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/26/04

Concentrated Extract Volume: 10 (mL) Date Analyzed: 02/27/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Petroleum Hydrocarbon C6-C12	130	U
	----------Petroleum Hydrocarbon >C12-C	130	U
	----------Petroleum Hydrocarbon >C28-C	130	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SV01 7-8 *

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: 0402164-07

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 037F0101

% Moisture: 20 decanted: (Y/N) N Date Sampled: 02/16/04

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/26/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Petroleum Hydrocarbon C6-C12	110	U
	----------Petroleum Hydrocarbon >C12-C	110	U
	----------Petroleum Hydrocarbon >C28-C	110	U

* = high surrogate recoveries.
3/2/04

FORM 2
SOIL TX1005 SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

GC Column(1): RTX-5 ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	S2 %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	TXSBLK0226	89	97					0
02	TXSBLK0226LC	79	89					0
03	SS57-SV03 02	79	79					0
04	SS57-SV03 7-	92	97					0
05	SS57-SV03 DU	83	85					0
06	SS57-SV02 2-	85	90					0
07	SS57-SV02 7-	139*	135*					2
08	SS57-SV01 2-	131*	129					1
09	SS57-SV01 7-	166*	164*					2
10	TXSBLK0226LC	94	102					0
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		ELAB QC LIMITS	SPIKE CONC (mg/Kg)
S1	= ortho-terphenyl	(70-130)	50
S2	= 1-chloro-octane	(70-130)	50

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
SOIL TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix Spike - Client Sample No.: TXSBLK0226

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	250.0	0.0000	199.4	80	75-125
Petroleum Hydrocarbon >	250.0	0.0000	192.2	77	75-125

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	250.0	222.5	89	11	40	75-125
Petroleum Hydrocarbon >	250.0	221.9	89	14	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

FORM 4
TX1005 METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

TXSBLK0226

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Lab Sample ID: TXSBLK0226 Lab File ID: 028F0101

Matrix (soil/water) SOIL Extraction: (SepF/Cont/Sonc/Soxh) SONC

Sulfur Cleanup (Y/N) N Date Extracted: 02/26/04

Date Analyzed (1): 02/26/04 Date Analyzed (2):

Time Analyzed (1): 2056 Time Analyzed (2):

Instrument ID (1): GCTCDFID Instrument ID (2):

GC Column (1): RTX-5 ID: 0.32(mm) GC Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TXSBLK0226LC	TXSBLK0226LCS	02/26/04	
02	SS57-SV03 02	0402164-01	02/27/04	
03	SS57-SV03 7-	0402164-02	02/27/04	
04	SS57-SV03 DU	0402164-03	02/27/04	
05	SS57-SV02 2-	0402164-04	02/27/04	
06	SS57-SV02 7-	0402164-05	02/27/04	
07	SS57-SV01 2-	0402164-06	02/27/04	
08	SS57-SV01 7-	0402164-07	02/27/04	
09	TXSBLK0226LC	TXSBLK0226LCSD	02/27/04	
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TXSBLK0226

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02164-01

Matrix: (soil/water) SOIL Lab Sample ID: TXSBLK0226

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 028F0101

% Moisture: 0 decanted: (Y/N) N Date Sampled: 01/00/70

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 02/26/04

Concentrated Extract Volume: 10(mL) Date Analyzed: 02/26/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
----------	Petroleum Hydrocarbon C6-C12	50	U
----------	Petroleum Hydrocarbon >C12-C	50	U
----------	Petroleum Hydrocarbon >C28-C	50	U

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SDG 384827

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8/10/04

CASE NARRATIVE

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name: SS57 O'CLUB
Project Number: 9040002.01.03.
Laboratory Project Number: 384827.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accredidation.

Sample Identification	Lab Number	Collection Date
SS57-SB06-2.0	04-A119894	8/ 4/04
SS57-SB06-3.5	04-A119895	8/ 4/04
SS57-SB06-3.5-A	04-A119896	8/ 4/04
SS57-TB	04-A119897	8/ 4/04

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Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
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Report Approved By: Sandra McMillin Report Date: 8/10/04

Johnny A. Mitchell, Operations Manager
Michael H. Dunn, M.S., Technical Director
Pamela A. Langford, Technical Services
Eric S. Smith, QA/QC Director
Sandra McMillin, Technical Services
Gail A. Lage, Technical Services
Glenn L. Norton, Technical Services
Kelly S. Comstock, Technical Services
Roxanne L. Connor, Technical Services
Mark Hollingsworth, Director of Project

Laboratory Certification Number: 41150

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ANALYTICAL REPORT

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

Lab Number: 04-A119894
Sample ID: SS57-SB06-2.0
Sample Type: Soil
Site ID:

Project: 9040002.01.03
Project Name: SS57 O'CLUB
Sampler: K.GERMANN/J.TUCKER

Date Collected: 8/ 4/04
Time Collected: 10:30
Date Received: 8/ 5/04
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	83.3	%		1	8/ 5/04	16:48	B.Plett	CLP	3731
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C12 - C16 Aliphatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C16 - C21 Aliphatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C21 - C35 Aliphatics	ND	ug/kg	8900	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C10 - C12 Aromatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C12 - C16 Aromatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C16 - C21 Aromatics	ND	ug/kg	8900	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C21 - C35 Aromatics	20200	ug/kg	8900	1	8/ 9/04	18:00	Weatherly	TX1006	5924
>C6 - C8 Aromatics	6000	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
>C8 - C10 Aromatics	15500	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C6 - C8 Aliphatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
>C8 - C10 Aliphatics	ND	ug/kg	6000	1	8/ 9/04	18:00	Weatherly	TX1006	5924
C6 - C35 Hydrocarbons	80800	ug/kg	29800	1	8/ 9/04	18:00	Weatherly	CALCULATED	5924
>C6 - C12 Hydrocarbons	ND	ug/kg	29800	1	8/ 9/04	18:00	Weatherly	TX1005	5924
>C12 - C28 Hydrocarbons	ND	ug/kg	29800	1	8/ 9/04	18:00	Weatherly	TX1005	5924
>C28 - C35 Hydrocarbons	54600	ug/kg	29800	1	8/ 9/04	18:00	Weatherly	TX1005	5924
Naphthalene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Acenaphthene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Anthracene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Fluoranthene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Fluorene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Pyrene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Benzo(a)anthracene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Benzo(a)pyrene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Benzo(b)fluoranthene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Benzo(k)fluoranthene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Chrysene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Dibenzo(a,h)anthracene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Indeno(1,2,3-cd)pyrene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119894
Sample ID: SS57-SB06-2.0
Project: 9040002.01.03

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Acenaphthylene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Benzo(g,h,i)perylene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
Phenanthrene	ND	ug/kg	79	1	8/ 9/04	12:08	CHollingsw	8270C	6531
VOLATILE ORGANICS									
Benzene	ND	ug/kg	126	50	8/ 9/04	13:50	J. Adams	8260B	7482
Ethylbenzene	ND	ug/kg	126	50	8/ 9/04	13:50	J. Adams	8260B	7482
Toluene	ND	ug/kg	126	50	8/ 9/04	13:50	J. Adams	8260B	7482
Xylenes (Total)	ND	ug/kg	126	50	8/ 9/04	13:50	J. Adams	8260B	7482

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.2 gm	1.0 ml	8/ 5/04		K. Turner	3550
Texas TRPH	10.1 gm	10.0 ml	8/ 9/04		K. Turner	TX1005/1006
Volatile Organics	23.9 g	25.0 ml	8/ 5/04	10:25	Fitzwater	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	89.	59. - 134.
VOA Surr Toluene-d8	89.	67. - 129.
VOA Surr, 4-BFB	98.	60. - 134.
VOA Surr, DBFM	101.	67. - 126.
BNA Surr-Nitrobenzene-d5	56.	10. - 164.
BNA Surr-2-Fluorobiphenyl	64.	51. - 96.
BNA Surr-Terphenyl-d14	68.	52. - 106.
EPH SUR 2-FLUOROBIPHENYL	92.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	96.	40. - 140.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119894
Sample ID: SS57-SB06-2.0
Project: 9040002.01.03

LABORATORY COMMENTS:
ND = Not detected at the limit of detection
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All reported results for metals or Organic analyses have been corrected for dry weight.

End of Sample Report.

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ANALYTICAL REPORT

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

Project: 9040002.01.03
Project Name: SS57 O'CLUB
Sampler: K.GERMANN/J.TUCKER

Lab Number: 04-A119895
Sample ID: SS57-SB06-3.5
Sample Type: Soil
Site ID:

Date Collected: 8/ 4/04
Time Collected: 10:30
Date Received: 8/ 5/04
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	81.9	%		1	8/ 5/04	16:48	B.Plett	CLP	3731
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C12 - C16 Aliphatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C16 - C21 Aliphatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C21 - C35 Aliphatics	ND	ug/kg	9200	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C10 - C12 Aromatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C12 - C16 Aromatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C16 - C21 Aromatics	ND	ug/kg	9200	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C21 - C35 Aromatics	48800	ug/kg	9200	1	8/ 9/04	18:34	Weatherly	TX1006	5924
>C6 - C8 Aromatics	6100	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
>C8 - C10 Aromatics	15900	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C6 - C8 Aliphatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
>C8 - C10 Aliphatics	ND	ug/kg	6100	1	8/ 9/04	18:34	Weatherly	TX1006	5924
C6 - C35 Hydrocarbons	83000	ug/kg	30500	1	8/ 9/04	18:34	Weatherly	CALCULATED	5924
>C6 - C12 Hydrocarbons	ND	ug/kg	30500	1	8/ 9/04	18:34	Weatherly	TX1005	5924
>C12 - C28 Hydrocarbons	ND	ug/kg	30500	1	8/ 9/04	18:34	Weatherly	TX1005	5924
>C28 - C35 Hydrocarbons	52500	ug/kg	30500	1	8/ 9/04	18:34	Weatherly	TX1005	5924
Naphthalene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Acenaphthene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Anthracene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Fluoranthene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Fluorene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Pyrene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Benzo(a)anthracene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Benzo(a)pyrene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Benzo(b)fluoranthene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Benzo(k)fluoranthene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Chrysene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Dibenzo(a,h)anthracene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Indeno(1,2,3-cd)pyrene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119895
Sample ID: SS57-SB06-3.5
Project: 9040002.01.03

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Acenaphthylene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Benzo(g,h,i)perylene	96	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
Phenanthrene	ND	ug/kg	81	1	8/ 9/04	11:20	CHollingsw	8270C	6531
VOLATILE ORGANICS									
Benzene	ND	ug/kg	2.4	1	8/ 9/04	14:52	J. Adams	8260B	7482
Ethylbenzene	ND	ug/kg	2.4	1	8/ 9/04	14:52	J. Adams	8260B	7482
Toluene	ND	ug/kg	2.4	1	8/ 9/04	14:52	J. Adams	8260B	7482
Xylenes (Total)	ND	ug/kg	2.4	1	8/ 9/04	14:52	J. Adams	8260B	7482

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	29.7 gm	1.0 ml	8/ 5/04		K. Turner	3550
Texas TRPH	10.0 gm	10.0 ml	8/ 9/04		K. Turner	TX1005/1006
Volatile Organics	5.10 g	5.0 ml	8/ 5/04	10:30	Fitzwater	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	100.	59. - 134.
VOA Surr Toluene-d8	88.	67. - 129.
VOA Surr, 4-BFB	99.	60. - 134.
VOA Surr, DBFM	103.	67. - 126.
BNA Surr-Nitrobenzene-d5	65.	10. - 164.
BNA Surr-2-Fluorobiphenyl	73.	51. - 96.
BNA Surr-Terphenyl-d14	75.	52. - 106.
EPH SUR 2-FLUOROBIPHENYL	88.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	88.	40. - 140.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119895
Sample ID: SS57-SB06-3.5
Project: 9040002.01.03

LABORATORY COMMENTS:
ND = Not detected at the limit of detection
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All reported results for metals or Organic analyses have been corrected for dry weight.

End of Sample Report.

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ANALYTICAL REPORT

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

Lab Number: 04-A119896
Sample ID: SS57-SB06-3.5-A
Sample Type: Soil
Site ID:

Project: 9040002.01.03
Project Name: SS57 O'CLUB
Sampler: K.GERMANN/J.TUCKER

Date Collected: 8/ 4/04
Time Collected: 10:30
Date Received: 8/ 5/04
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	79.9	%		1	8/ 5/04	16:48	B.Plett	CLP	3731
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C12 - C16 Aliphatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C16 - C21 Aliphatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C21 - C35 Aliphatics	ND	ug/kg	9400	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C10 - C12 Aromatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C12 - C16 Aromatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C16 - C21 Aromatics	ND	ug/kg	9400	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C21 - C35 Aromatics	55100	ug/kg	9400	1	8/ 9/04	19:07	Weatherly	TX1006	5924
>C6 - C8 Aromatics	7500	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
>C8 - C10 Aromatics	16300	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C6 - C8 Aliphatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
>C8 - C10 Aliphatics	ND	ug/kg	6300	1	8/ 9/04	19:07	Weatherly	TX1006	5924
C6 - C35 Hydrocarbons	88900	ug/kg	31300	1	8/ 9/04	19:07	Weatherly	CALCULATED	5924
>C6 - C12 Hydrocarbons	ND	ug/kg	31300	1	8/ 9/04	19:07	Weatherly	TX1005	5924
>C12 - C28 Hydrocarbons	ND	ug/kg	31300	1	8/ 9/04	19:07	Weatherly	TX1005	5924
>C28 - C35 Hydrocarbons	60100	ug/kg	31300	1	8/ 9/04	19:07	Weatherly	TX1005	5924
Naphthalene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Acenaphthene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Anthracene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Fluoranthene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Fluorene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Pyrene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Benzo(a)anthracene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Benzo(a)pyrene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Benzo(b)fluoranthene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Benzo(k)fluoranthene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Chrysene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Dibenzo(a,h)anthracene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Indeno(1,2,3-cd)pyrene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119896
Sample ID: SS57-SB06-3.5-A
Project: 9040002.01.03

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Acenaphthylene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Benzo(g,h,i)perylene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
Phenanthrene	ND	ug/kg	83	1	8/ 9/04	11:44	CHollingsw	8270C	6531
VOLATILE ORGANICS									
Benzene	ND	ug/kg	120	50	8/ 9/04	14:21	J. Adams	8260B	7482
Ethylbenzene	ND	ug/kg	120	50	8/ 9/04	14:21	J. Adams	8260B	7482
Toluene	ND	ug/kg	120	50	8/ 9/04	14:21	J. Adams	8260B	7482
Xylenes (Total)	ND	ug/kg	120	50	8/ 9/04	14:21	J. Adams	8260B	7482

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.0 gm	1.0 ml	8/ 5/04		K. Turner	3550
Texas TRPH	10.0 gm	10.0 ml	8/ 9/04		K. Turner	TX1005/1006
Volatile Organics	26.0 g	25.0 ml	8/ 5/04	10:33	Fitzwater	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	94.	59. - 134.
VOA Surr Toluene-d8	89.	67. - 129.
VOA Surr, 4-BFB	99.	60. - 134.
VOA Surr, DBFM	99.	67. - 126.
BNA Surr-Nitrobenzene-d5	62.	10. - 164.
BNA Surr-2-Fluorobiphenyl	71.	51. - 96.
BNA Surr-Terphenyl-d14	71.	52. - 106.
EPH SUR 2-FLUOROBIPHENYL	96.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	100.	40. - 140.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119896
Sample ID: SS57-SB06-3.5-A
Project: 9040002.01.03

LABORATORY COMMENTS:
ND = Not detected at the limit of detection
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All reported results for metals or Organic analyses have been corrected for dry weight.

End of Sample Report.

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ANALYTICAL REPORT

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

Project: 9040002.01.03
Project Name: SS57 O'CLUB
Sampler: K.GERMANN/J.TUCKER

Lab Number: 04-A119897
Sample ID: SS57-TB
Sample Type: Water
Site ID:

Date Collected: 8/ 4/04
Time Collected:
Date Received: 8/ 5/04
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/l	1.0	1.0	8/ 5/04	17:35	B.Herford	8260B	3732
Toluene	ND	ug/l	1.0	1.0	8/ 5/04	17:35	B.Herford	8260B	3732
Ethylbenzene	ND	ug/l	1.0	1.0	8/ 5/04	17:35	B.Herford	8260B	3732
Xylenes (Total)	ND	ug/l	1.0	1.0	8/ 5/04	17:35	B.Herford	8260B	3732

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	92.	71. - 128.
VOA Surr Toluene-d8	95.	77. - 119.
VOA Surr, 4-BFB	103.	79. - 123.
VOA Surr, DBFM	94.	78. - 124.

LABORATORY COMMENTS:
ND = Not detected at the limit of detection
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002.01.03
Project Name: SS57 O'CLUB
Page: 1
Laboratory Receipt Date: 8/ 5/04

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
UST ANALYSIS								
>C6 - C12 Hydrocarbons	mg/kg	< 25.0	491.	500.	98	75. - 125.	5924	blank
>C6 - C12 Hydrocarbons	mg/kg	< 25.0	505.	500.	101	75. - 125.	5924	blank
>C12 - C28 Hydrocarbons	mg/kg	< 25.0	535.	500.	107	75. - 125.	5924	blank
>C12 - C28 Hydrocarbons	mg/kg	< 25.0	560.	500.	112	75. - 125.	5924	blank
Naphthalene	mg/kg	< 0.066	1.12	1.67	67	34. - 111.	6531	04-A119894
Acenaphthene	mg/kg	< 0.066	1.12	1.67	67	39. - 116.	6531	04-A119894
Anthracene	mg/kg	< 0.066	1.22	1.67	73	41. - 118.	6531	04-A119894
Fluoranthene	mg/kg	< 0.066	1.09	1.67	65	42. - 123.	6531	04-A119894
Fluorene	mg/kg	< 0.066	1.16	1.67	69	40. - 120.	6531	04-A119894
Pyrene	mg/kg	< 0.066	1.16	1.67	69	40. - 125.	6531	04-A119894
Benzo(a)anthracene	mg/kg	< 0.066	1.16	1.67	69	42. - 123.	6531	04-A119894
Benzo(a)pyrene	mg/kg	< 0.066	1.16	1.67	69	41. - 123.	6531	04-A119894
Benzo(b)fluoranthene	mg/kg	< 0.066	1.16	1.67	69	40. - 123.	6531	04-A119894
Benzo(k)fluoranthene	mg/kg	< 0.066	1.06	1.67	63	42. - 130.	6531	04-A119894
Chrysene	mg/kg	< 0.066	1.09	1.67	65	40. - 123.	6531	04-A119894
Dibenzo(a,h)anthracene	mg/kg	< 0.066	1.09	1.67	65	16. - 139.	6531	04-A119894
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.066	1.09	1.67	65	12. - 138.	6531	04-A119894
Acenaphthylene	mg/kg	< 0.066	1.12	1.67	67	39. - 116.	6531	04-A119894
Benzo(g,h,i)perylene	mg/kg	< 0.066	1.39	1.67	83	9. - 144.	6531	04-A119894
Phenanthrene	mg/kg	< 0.066	1.09	1.67	65	39. - 119.	6531	04-A119894
VOA PARAMETERS								
Benzene	mg/l	< 0.0010	0.0477	0.0500	95	73 - 135	3732	119281
Benzene	mg/kg	< 0.0020	0.0517	0.0500	103	33 - 139	7482	04-A119895
Toluene	mg/l	< 0.0010	0.0510	0.0500	102	69 - 139	3732	119281
Toluene	mg/kg	< 0.0020	0.0382	0.0500	76	18 - 150	7482	04-A119895
VOA Surr 1,2-DCA-d4	% Rec				94	71 - 128	3732	
VOA Surr Toluene-d8	% Rec				98	77 - 119	3732	
VOA Surr, 4-BFB	% Rec				103	79 - 123	3732	
VOA Surr, DBFM	% Rec				97	78 - 124	3732	

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002.01.03
Project Name: SS57 O'CLUB
Page: 2
Laboratory Receipt Date: 8/ 5/04

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
UST PARAMETERS						
>C6 - C12 Hydrocarbons	mg/kg	491.	505.	2.81	20.	5924
>C12 - C28 Hydrocarbons	mg/kg	535.	560.	4.57	20.	5924
Naphthalene	mg/kg	1.12	1.02	9.35	38.	6531
Acenaphthene	mg/kg	1.12	1.06	5.50	40.	6531
Anthracene	mg/kg	1.22	1.12	8.55	34.	6531
Fluoranthene	mg/kg	1.09	1.02	6.64	42.	6531
Fluorene	mg/kg	1.16	1.06	9.01	40.	6531
Pyrene	mg/kg	1.16	1.09	6.22	37.	6531
Benzo(a)anthracene	mg/kg	1.16	1.09	6.22	35.	6531
Benzo(a)pyrene	mg/kg	1.16	1.09	6.22	36.	6531
Benzo(b)fluoranthene	mg/kg	1.16	1.09	6.22	40.	6531
Benzo(k)fluoranthene	mg/kg	1.06	0.990	6.83	36.	6531
Chrysene	mg/kg	1.09	1.02	6.64	34.	6531
Dibenzo(a,h)anthracene	mg/kg	1.09	1.09	0.00	37.	6531
Indeno(1,2,3-cd)pyrene	mg/kg	1.09	1.09	0.00	40.	6531
Acenaphthylene	mg/kg	1.12	1.02	9.35	42.	6531
Benzo(g,h,i)perylene	mg/kg	1.39	1.42	2.14	37.	6531
Phenanthrene	mg/kg	1.09	1.02	6.64	34.	6531
VOA PARAMETERS						
Benzene	mg/l	0.0477	0.0485	1.66	21.	3732
Benzene	mg/kg	0.0517	0.0443	15.42	43.	7482
Toluene	mg/l	0.0510	0.0512	0.39	24.	3732
Toluene	mg/kg	0.0382	0.0351	8.46	48.	7482
VOA Surr 1,2-DCA-d4	% Rec		95.			3732
VOA Surr 1,2-DCA-d4	% Rec		100.			7482
VOA Surr Toluene-d8	% Rec		98.			3732
VOA Surr Toluene-d8	% Rec		88.			7482
VOA Surr, 4-BFB	% Rec		103.			3732
VOA Surr, 4-BFB	% Rec		97.			7482
VOA Surr, DBFM	% Rec		98.			3732
VOA Surr, DBFM	% Rec		104.			7482

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002.01.03
Project Name: SS57 O'CLUB
Page: 3
Laboratory Receipt Date: 8/ 5/04

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
UST PARAMETERS						
>C6 - C12 Hydrocarbons	mg/kg	500.	494.	99	75 - 125	5924
>C12 - C28 Hydrocarbons	mg/kg	500.	544.	109	75 - 125	5924
UST PARAMETERS						
Naphthalene	mg/kg	1.67	1.12	67	34 - 111	6531
Acenaphthene	mg/kg	1.67	1.19	71	39 - 116	6531
Anthracene	mg/kg	1.67	1.32	79	41 - 118	6531
Fluoranthene	mg/kg	1.67	1.22	73	42 - 123	6531
Fluorene	mg/kg	1.67	1.22	73	40 - 120	6531
Pyrene	mg/kg	1.67	1.25	75	40 - 125	6531
Benzo(a)anthracene	mg/kg	1.67	1.25	75	42 - 123	6531
Benzo(a)pyrene	mg/kg	1.67	1.29	77	41 - 123	6531
Benzo(b)fluoranthene	mg/kg	1.67	1.25	75	40 - 123	6531
Benzo(k)fluoranthene	mg/kg	1.67	1.19	71	42 - 130	6531
Chrysene	mg/kg	1.67	1.12	67	40 - 123	6531
Dibenzo(a,h)anthracene	mg/kg	1.67	1.25	75	16 - 139	6531
Indeno(1,2,3-cd)pyrene	mg/kg	1.67	1.25	75	12 - 138	6531
Acenaphthylene	mg/kg	1.67	1.19	71	39 - 116	6531
Benzo(g,h,i)perylene	mg/kg	1.67	1.19	71	9 - 144	6531
Phenanthrene	mg/kg	1.67	1.19	71	39 - 119	6531
VOA PARAMETERS						
Benzene	mg/l	0.0500	0.0484	97	81 - 121	3732
Benzene	mg/kg	0.0500	0.0609	122	69 - 128	7482
Ethylbenzene	mg/l	0.0500	0.0528	106	78 - 126	3732
Ethylbenzene	mg/kg	0.0500	0.0471	94	72 - 125	7482
Toluene	mg/l	0.0500	0.0518	104	77 - 125	3732
Toluene	mg/kg	0.0500	0.0488	98	74 - 123	7482
Xylenes (Total)	mg/l	0.150	0.162	108	78 - 127	3732
Xylenes (Total)	mg/kg	0.150	0.138	92	70 - 128	7482
VOA Surr 1,2-DCA-d4	% Rec			93	71 - 128	3732
VOA Surr 1,2-DCA-d4	% Rec			92	59 - 134	7482
VOA Surr Toluene-d8	% Rec			98	77 - 119	3732
VOA Surr Toluene-d8	% Rec			90	67 - 129	7482
VOA Surr, 4-BFB	% Rec			105	79 - 123	3732
VOA Surr, 4-BFB	% Rec			99	60 - 134	7482

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002.01.03
Project Name: SS57 O'CLUB
Page: 4
Laboratory Receipt Date: 8/ 5/04

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA Surr, DBFM	% Rec			97	78 - 124	3732
VOA Surr, DBFM	% Rec			102	67 - 126	7482

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
UST PARAMETERS					
C10 - C12 Aliphatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
C12 - C16 Aliphatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
C16 - C21 Aliphatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
C21 - C35 Aliphatics	< 7.5	mg/kg	5924	8/ 9/04	16:08
C10 - C12 Aromatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
C12 - C16 Aromatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
C16 - C21 Aromatics	< 7.5	mg/kg	5924	8/ 9/04	16:08
C21 - C35 Aromatics	< 7.5	mg/kg	5924	8/ 9/04	16:08
>C6 - C8 Aromatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
>C8 - C10 Aromatics	11.0	mg/kg	5924	8/ 9/04	16:08
C6 - C8 Aliphatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
>C8 - C10 Aliphatics	< 5.0	mg/kg	5924	8/ 9/04	16:08
C6 - C35 Hydrocarbons	< 25.0	mg/kg	5924	8/ 9/04	16:08
>C6 - C12 Hydrocarbons	< 25.0	mg/kg	5924	8/ 9/04	16:08
>C12 - C28 Hydrocarbons	< 25.0	mg/kg	5924	8/ 9/04	16:08
>C28 - C35 Hydrocarbons	< 25.0	mg/kg	5924	8/ 9/04	16:08
Naphthalene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Acenaphthene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Anthracene	< 0.066	mg/kg	6531	8/ 9/04	2:37

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002.01.03
Project Name: SS57 O'CLUB
Page: 5
Laboratory Receipt Date: 8/ 5/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
Fluoranthene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Fluorene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Pyrene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Benzo(a)anthracene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Benzo(a)pyrene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Benzo(b)fluoranthene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Benzo(k)fluoranthene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Chrysene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Dibenzo(a,h)anthracene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Indeno(1,2,3-cd)pyrene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Acenaphthylene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Benzo(g,h,i)perylene	< 0.066	mg/kg	6531	8/ 9/04	2:37
Phenanthrene	< 0.066	mg/kg	6531	8/ 9/04	2:37
EPH SUR 2-FLUOROBIPHENYL	118.	% Recovery	5924	8/ 9/04	16:08
EPH Surr 2-BROMONAPHTHALENE	118.	% Recovery	5924	8/ 9/04	16:08
VOA PARAMETERS					
Benzene	< 0.0005	mg/l	3732	8/ 5/04	12:50
Benzene	< 0.0003	mg/kg	7482	8/ 9/04	8:11
Ethylbenzene	< 0.0003	mg/l	3732	8/ 5/04	12:50
Ethylbenzene	< 0.0005	mg/kg	7482	8/ 9/04	8:11
Toluene	< 0.0006	mg/l	3732	8/ 5/04	12:50
Toluene	< 0.0008	mg/kg	7482	8/ 9/04	8:11
Xylenes (Total)	< 0.0009	mg/l	3732	8/ 5/04	12:50
Xylenes (Total)	< 0.0013	mg/kg	7482	8/ 9/04	8:11
VOA Surr 1,2-DCA-d4	92.	% Rec	3732	8/ 5/04	12:50
VOA Surr 1,2-DCA-d4	100.	% Rec	7482	8/ 9/04	8:11
VOA Surr Toluene-d8	96.	% Rec	3732	8/ 5/04	12:50
VOA Surr Toluene-d8	88.	% Rec	7482	8/ 9/04	8:11
VOA Surr, 4-BFB	103.	% Rec	3732	8/ 5/04	12:50
VOA Surr, 4-BFB	99.	% Rec	7482	8/ 9/04	8:11
VOA Surr, DBFM	96.	% Rec	3732	8/ 5/04	12:50
VOA Surr, DBFM	106.	% Rec	7482	8/ 9/04	8:11

= Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 384827

384827

BHATE

Environmental Engineers and Scientists

#2701

Chain of Custody and Analytical Request

Project Number: **9040002, 01.03**

P.O. NA

Chain of Custody # [1]:08-04-2004-01

LIMS Number: NA

Facility/Base I.D.: HOLMN

Project Name / Site Name: SS57 O' Club

Client Name: USACE

Collected by: K. Germann, J. Tucker

Field Sample ID (30 Characters Max)		ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	BTEX 8260B	PAH 8270C	TPH TX1005	TPH TX1006	% Moisture				Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
SS57-SB06-2.0	119894	SS57	04Aug2004	1030	2.00 - 2.00	N	1	SO	4	X	X	X	X	X							1
SS57-SB06-3.5	95	SS57	04Aug2004	1030	3.50 - 3.50	N	1	SO	4	X	X	X	X	X							1
SS57-SB06-3.5-ms	95	SS57	04Aug2004	1030	3.50 - 3.50	MS	1	SO		X											1
SS57-SB06-3.5-msd	95	SS57	04Aug2004	1030	3.50 - 3.50	SD	1	SO		X											1
SS57-SB06-3.5-a	96	SS57	04Aug2004	1030	3.50 - 3.50	FD	1	SO	9	X	X	X	X	X					48 Hour TAT		1
SS57-TB	119897	SS57	04Aug2004			TB		WQ	1											408200401	1

COMMENTS: TEST AMERICA
2960 Foster Creighton Dr.
Nashville, TN 37204
615-726-0177

Take MS and MSD from sample number SS57-SB06-3.5

Fax analytical results to: 505-679-2148

Email results to: rrenvironmental@zianet.com, jpelfrey@bhate.com, dmeder@bhate.com, mdauben@bhate.com, keving@zianet.com

Add: c/o Bhate Associates
1641 Vander Grift Rd.
Holloman AFB, NM 88330

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Sean M. Delfy	8/4/2004	~~1030~~ 1440	1. [illegible]	8/5/04	8:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab:
Method of Shipment: FEDEX
Analytical Lab: TestAmerica
Lab Recipient:

Shipped No.:
Airbill Number: 845705833664
Delivery Location: 2960 Foster Creighton Dr., Nashville, TN
Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 101099001 in the Equipment Blank Lot Control

TestAmerica
ANALYTICAL TESTING CORPORATION

Nashville Division

COOLER RECEIPT FORM **BC#** 384827

Client Name : Blute

Cooler Received/Opened On: 8/5/04 **Accessioned By:** Mark Beasley

Log-in Personnel Signature

1. Temperature of Cooler when triaged: 0.C **Degrees Celsius**
2. Were custody seals on outside of cooler?..... YES...NO...NA
   a. If yes, how many, what kind and where: 1 Front
3. Were custody seals on containers and intact?..... NO...YES...NA
4. Were the seals intact, signed, and dated correctly?..... YES...NO...NA
5. Were custody papers inside cooler?..... YES...NO...NA
6. Were custody papers properly filled out (ink, signed, etc)?..... YES...NO...NA
7. Did you sign the custody papers in the appropriate place?..... YES...NO...NA
8. What kind of packing material used? Bubblewrap Peanuts Vermiculite Other None
9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None
10. Did all containers arrive in good condition (unbroken)?..... YES...NO...NA
11. Were all container labels complete (#, date, signed, pres., etc)?..... YES...NO...NA
12. Did all container labels and tags agree with custody papers?..... YES...NO...NA
13. Were correct containers used for the analysis requested?..... YES...NO...NA
14. a. Were VOA vials received?..... YES...NO...NA
    b. Was there any observable head space present in any VOA vial?..... NO...YES...NA
15. Was sufficient amount of sample sent in each container?..... YES...NO...NA
16. Were correct preservatives used?..... YES...NO...NA
    If not, record standard ID of preservative used here_____
17. Was residual chlorine present?..... NO...YES...NA
18. Indicate the Airbill Tracking Number (last 4 digits for Fedex only) and Name of Courier below:

3623					
UPS	Velocity	Airborne	Route	Off-street	Fedex	Misc.

19. If a Non-Conformance exists, see attached or comments below:

Test America
SDG 366032

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3/11/04 CASE NARRATIVE

ELAB of TN 4017
HERBIE JOHNSON
227 FRENCH LANDING DRIVE
NASHVILLE, TN 37228

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name:
Project Number: .
Laboratory Project Number: 366032.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accredidation.

Sample Identification	Lab Number	Collection Date
MBLK	04-A28999	2/21/04
LCS	04-A29000	2/21/04
LCSD	04-A29001	2/21/04
2100-03	04-A29002	2/21/04
2100-06	04-A29003	2/21/04

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Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: _____ Report Date: 3/ 8/04

Johnny A. Mitchell, Operations Manager
Michael H. Dunn, M.S., Technical Director
Pamela A. Langford, Technical Serv
Eric S. Smith, QA/QC
Gail A. Lage, QA/QC
Glenn L. Norton, QA/QC
Kelly S. Comstock, QA/QC
Roxanne L. Connor, QA/QC

Laboratory Certification Number: 02008

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ANALYTICAL REPORT

ELAB of TN 4017
HERBIE JOHNSON
227 FRENCH LANDING DRIVE
NASHVILLE, TN 37228

Lab Number: 04-A28999
Sample ID: MBLK
Sample Type: Soil
Site ID:

Date Collected: 2/21/04
Time Collected:
Date Received: 3/ 2/04
Time Received: 13:45
Page: 1

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C12 - C16 Aliphatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C16 - C21 Aliphatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C21 - C35 Aliphatics	ND	mg/kg	7.5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C10 - C12 Aromatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C12 - C16 Aromatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C16 - C21 Aromatics	ND	mg/kg	7.5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C21 - C35 Aromatics	ND	mg/kg	7.5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
>C6 - C8 Aromatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
>C8 - C10 Aromatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C6 - C8 Aliphatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
>C8 - C10 Aliphatics	ND	mg/kg	5	1	3/ 3/04	11:11	M.Jarrett	TX1006	9060
C6 - C35 Hydrocarbons	ND	mg/kg	25	1	3/ 3/04	11:11	M.Jarrett	CALCULATED	9060
>C6 - C12 Hydrocarbons	ND	mg/kg	25	1	3/ 3/04	11:11	M.Jarrett	TX1005	9060
>C12 - C28 Hydrocarbons	ND	mg/kg	25	1	3/ 3/04	11:11	M.Jarrett	TX1005	9060
>C28 - C35 Hydrocarbons	ND	mg/kg	25	1	3/ 3/04	11:11	M.Jarrett	TX1005	9060

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A28999
Sample ID: MBLK
Project:

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Texas TRPH	10.0 gm	10.0 ml	3/ 2/04		J.Gott	TX1005/1006

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

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ANALYTICAL REPORT

ELAB of TN 4017
HERBIE JOHNSON
227 FRENCH LANDING DRIVE
NASHVILLE, TN 37228

Project:
Project Name:
Sampler:

Lab Number: 04-A29000
Sample ID: LCS
Sample Type: Soil
Site ID:

Date Collected: 2/21/04
Time Collected:
Date Received: 3/ 2/04
Time Received: 13:45
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	35	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C12 - C16 Aliphatics	37	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C16 - C21 Aliphatics	20	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C21 - C35 Aliphatics	ND	mg/kg	7.5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C10 - C12 Aromatics	19	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C12 - C16 Aromatics	17	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C16 - C21 Aromatics	31	mg/kg	7.5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C21 - C35 Aromatics	ND	mg/kg	7.5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
>C6 - C8 Aromatics	12	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
>C8 - C10 Aromatics	25	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C6 - C8 Aliphatics	28	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
>C8 - C10 Aliphatics	10	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C6 - C35 Hydrocarbons	234	mg/kg	25	1	3/ 4/04	17:41	M.Jarrett	CALCULATED	2049
>C6 - C12 Hydrocarbons	246	mg/kg	25	1	3/ 3/04	10:16	M.Jarrett	TX1005	9060
>C12 - C28 Hydrocarbons	202	mg/kg	25	1	3/ 3/04	10:16	M.Jarrett	TX1005	9060
>C28 - C35 Hydrocarbons	ND	mg/kg	25	1	3/ 3/04	10:16	M.Jarrett	TX1005	9060

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A29000
Sample ID: LCS
Project:

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Texas TRPH	10.0 gm	10.0 ml	3/ 2/04		J.Gott	TX1005/1006

Surrogate	% Recovery	Target Range
EPH SUR 2-FLUOROBIPHENYL	48.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	72.	40. - 140.

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

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ANALYTICAL REPORT

ELAB of TN 4017
HERBIE JOHNSON
227 FRENCH LANDING DRIVE
NASHVILLE, TN 37228

Project:
Project Name:
Sampler:

Lab Number: 04-A29001
Sample ID: LCSD
Sample Type: Soil
Site ID:

Date Collected: 2/21/04
Time Collected:
Date Received: 3/ 2/04
Time Received: 13:45
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	41	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C12 - C16 Aliphatics	42	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C16 - C21 Aliphatics	23	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C21 - C35 Aliphatics	ND	mg/kg	7.5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C10 - C12 Aromatics	25	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C12 - C16 Aromatics	24	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C16 - C21 Aromatics	48	mg/kg	7.5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C21 - C35 Aromatics	ND	mg/kg	7.5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
>C6 - C8 Aromatics	15	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
>C8 - C10 Aromatics	34	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C6 - C8 Aliphatics	20	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
>C8 - C10 Aliphatics	11	mg/kg	5	1	3/ 4/04	17:41	M.Jarrett	TX1006	2049
C6 - C35 Hydrocarbons	283	mg/kg	25	1	3/ 4/04	17:41	M.Jarrett	CALCULATED	2049
>C6 - C12 Hydrocarbons	204	mg/kg	25	1	3/ 3/04	10:44	M.Jarrett	TX1005	9060
>C12 - C28 Hydrocarbons	271	mg/kg	25	1	3/ 3/04	10:44	M.Jarrett	TX1005	9060
>C28 - C35 Hydrocarbons	ND	mg/kg	25	1	3/ 3/04	10:44	M.Jarrett	TX1005	9060

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A29001
Sample ID: LCSD
Project:

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Texas TRPH	10.0 gm	10.0 ml	3/ 2/04		J.Gott	TX1005/1006

Surrogate	% Recovery	Target Range
EPH SUR 2-FLUOROBIPHENYL	68.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	92.	40. - 140.

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

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ANALYTICAL REPORT

ELAB of TN 4017
HERBIE JOHNSON
227 FRENCH LANDING DRIVE
NASHVILLE, TN 37228

Project:
Project Name:
Sampler:

Lab Number: 04-A29002
Sample ID: 2100-03
Sample Type: Soil
Site ID:

Date Collected: 2/21/04
Time Collected:
Date Received: 3/ 2/04
Time Received: 13:45
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	14.3	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C12 - C16 Aliphatics	33.9	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C16 - C21 Aliphatics	16.1	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C21 - C35 Aliphatics	ND	mg/kg	13.3	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C10 - C12 Aromatics	12.5	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C12 - C16 Aromatics	17.8	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C16 - C21 Aromatics	69.6	mg/kg	13.3	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C21 - C35 Aromatics	ND	mg/kg	13.3	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
>C6 - C8 Aromatics	ND	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
>C8 - C10 Aromatics	ND	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C6 - C8 Aliphatics	28.6	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
>C8 - C10 Aliphatics	ND	mg/kg	9	1	3/ 3/04	9:21	M.Jarrett	TX1006	9060
C6 - C35 Hydrocarbons	290	mg/kg	44.7	1	3/ 3/04	9:21	M.Jarrett	CALCULATED	9060
>C6 - C12 Hydrocarbons	51.8	mg/kg	44.7	1	3/ 3/04	9:21	M.Jarrett	TX1005	9060
>C12 - C28 Hydrocarbons	223	mg/kg	44.7	1	3/ 3/04	9:21	M.Jarrett	TX1005	9060
>C28 - C35 Hydrocarbons	ND	mg/kg	44.7	1	3/ 3/04	9:21	M.Jarrett	TX1005	9060

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A29002
Sample ID: 2100-03
Project:

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Texas TRPH	5.6 gm	10.0 ml	3/ 2/04		J.Gott	TX1005/1006

Surrogate	% Recovery	Target Range
EPH SUR 2-FLUOROBIPHENYL	75.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	100.	40. - 140.

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.
TX1006s set was extracted by the client. Samples 28999-29001 were the blank and lcs/lcs dup. What was reported as the c-30 surrogate was in fact o-terphenyl and a one point calibration was used to get the result.

End of Sample Report.

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ANALYTICAL REPORT

ELAB of TN 4017
HERBIE JOHNSON
227 FRENCH LANDING DRIVE
NASHVILLE, TN 37228

Project:
Project Name:
Sampler:

Lab Number: 04-A29003
Sample ID: 2100-06
Sample Type: Soil
Site ID:

Date Collected: 2/21/04
Time Collected:
Date Received: 3/ 2/04
Time Received: 13:45
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
C10 - C12 Aliphatics	525	mg/kg	42.4	5	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C12 - C16 Aliphatics	1360	mg/kg	42.4	5	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C16 - C21 Aliphatics	856	mg/kg	42.4	5	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C21 - C35 Aliphatics	144	mg/kg	63.6	5	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C10 - C12 Aromatics	71.2	mg/kg	16.9	2	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C12 - C16 Aromatics	597	mg/kg	16.9	2	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C16 - C21 Aromatics	702	mg/kg	25.4	2	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C21 - C35 Aromatics	285	mg/kg	25.4	2	3/ 3/04	12:40	M.Jarrett	TX1006	9060
>C6 - C8 Aromatics	37.3	mg/kg	16.9	2	3/ 3/04	12:40	M.Jarrett	TX1006	9060
>C8 - C10 Aromatics	ND	mg/kg	16.9	2	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C6 - C8 Aliphatics	161	mg/kg	42.4	5	3/ 3/04	12:40	M.Jarrett	TX1006	9060
>C8 - C10 Aliphatics	ND	mg/kg	42.4	5	3/ 3/04	12:40	M.Jarrett	TX1006	9060
C6 - C35 Hydrocarbons	9430	mg/kg	84.7	2	3/ 3/04	12:40	M.Jarrett	CALCULATED	9060
>C6 - C12 Hydrocarbons	1080	mg/kg	84.7	2	3/ 3/04	12:40	M.Jarrett	TX1005	9060
>C12 - C28 Hydrocarbons	8290	mg/kg	84.7	2	3/ 3/04	12:40	M.Jarrett	TX1005	9060
>C28 - C35 Hydrocarbons	ND	mg/kg	84.7	2	3/ 3/04	12:40	M.Jarrett	TX1005	9060

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A29003
Sample ID: 2100-06
Project:
Page 2

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Texas TRPH	5.9 gm	10.0 ml	3/ 2/04		J.Gott	TX1005/1006

Surrogate	% Recovery	Target Range
EPH SUR 2-FLUOROBIPHENYL	72.	40. - 140.
EPH Surr 2-BROMONAPHTHALENE	80.	40. - 140.

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name:
Page: 1
Laboratory Receipt Date: 3/ 2/04

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name:
Page: 2
Laboratory Receipt Date: 3/ 2/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
UST PARAMETERS					
C6 - C35 Hydrocarbons	< 25.0	mg/kg	2049	3/ 4/04	17:41

= Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 366032

401 1

366032

ELAB OF TENNESSEE CHAIN OF CUSTODY RECORI

No. 30336

Ship to:
ELAB of Tennessee
(formerly Cooperfolder Laboratory)
227 French Landing Drive
Nashville, TN 37228
Attn: Analytical Laboratory
(615) 345-1115 (phone)
(615) 846-5426 (fax)

Send Results to:
Name MARCIA McGinnity
Company ELAB-TN
Address
City & State
Phone
Fax

Send Invoice To:
Name SAME
Company
Address
City & State
Phone
Purchase Order

Details:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 3/2/04
Shipped By
Turnaround Std.
(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

Project No./Name

Samplers (Signature)*

Lab Use Only Lab #	Date Sampled	Time	Comp./ Grab	Sample Location/Description	Sample Matrix	Field pH/Temp	Field Cond.	ANALYSIS REQUIRED	No. of Bottles	Lab Use Only Containers/Pres.
	2/21/04			MBIK 28999				TPH (TX 1006)	1 ext. vial	
				LCS 29000						
				LCSD 29001						
				2100-03 29002						
				2100-06 29003						

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time 3/2/04 13:20	Received By: (Signature)
Relinquished by: (Signature)	Date/Time 3/2/04 1345	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time 3/2/04 1345	Temperature 4/16

REMARKS
*Signature required to ensure validity

Lab Use Only			
VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #
CAR #

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers

TestAmerica
ANALYTICAL TESTING CORPORATION

Nashville Division

COOLER RECEIPT FORM **BC#** 366032

Client: ELAB of Tennessee

Cooler Received On: 3/02/04 **And Opened On:** 3/02/04 **By:** Shawn Gracey

(Signature)

1. Temperature of Cooler when opened -1.6 Degrees Celsius
2. Were custody seals on outside of cooler?.....YES...NO...NA
   a. If yes, how many, what kind and where:_____
3. Were custody seals on containers and intact?.....NO...YES...NA
4. Were the seals intact, signed, and dated correctly?.....YES...NO...NA
5. Were custody papers inside cooler?.....YES...NO...NA
6. Were custody papers properly filled out (ink,signed,etc)?.....YES...NO...NA
7. Did you sign the custody papers in the appropriate place?.....YES...NO...NA
8. What kind of packing material used? Bubblewrap Peanuts Vermiculite Other None
9. Cooling process: Ice Ice pack Ice(direct contact) Dry ice Other None
10. Did all containers arrive in good condition(unbroken)?.....YES...NO...NA
11. Were all container labels complete (#,date,signed,pres,etc)?.....YES...NO...NA
12. Did all container labels and tags agree with custody papers?.....YES...NO...NA
13. Were correct containers used for the analysis requested?.....YES...NO...NA
14. a. Were VOA vials received?.....YES...NO...NA
    b. Was there any observable head space present in any VOA vial?.....NO...YES...NA
15. Was sufficient amount of sample sent in each container?.....YES...NO...NA
16. Were correct preservatives used?.....YES...NO...NA
    If not, record standard ID of preservative used here_____
17. Was residual chlorine present?.....NO...YES...NA
18. See attached for resolution of non-conformance:

Fed-Ex UPS Velocity Airborne Route Off-street Misc.

Groundwater Analytical Results

ELAB
SDG 0402131

ANALYTICAL REPORT

MAIN DATA PACKAGE - ORGANIC

BHATE

WO #0402131

Marcia K. McGinnity
Senior Project Manager
ELAB of Tennessee, LLC.

March 15, 2004

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WO #0402131

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ORGANIC CASE NARRATIVE
Bhate – Holloman AFB
Work Orders: 0402131

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5030B/8260B (purge and trap followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Due to a laboratory oversight, hexane was not included in the mix for the continuing calibration verification associated with these samples. Results for hexane are flagged with an "*" on the Form I.
- Trip blank sample 10020401 had a reported concentration of acetone. The reported concentration in sample SS57-SB01-GW should be evaluated as potentially from a source external to the sample.
- Recoveries of some of the spike analytes exceeded the limits on the high side in spike sample V5BLK0219LCS. See form 3 for specifics.

Total Petroleum Hydrocarbons

Method: The samples were analyzed by TNRCC Method 1005 for total petroleum hydrocarbons revision 03 June 1, 2001 (pentane extraction followed by direct injection capillary column GC/FID) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Recoveries of the surrogates and spikes exceeded the limits on the high side spike samples TXWBLK0221LCS/LCSD. No target analytes were detected above the quantitation limit in the associated samples.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

Bhate

Parameters Requested

Laboratory Sample ID	Client Field ID	Matrix	Date and Time Sampled	Parameters Requested
0402131-01	SS57-SB02-GW	Water	2/10/04 4:05:00 PM	VOA 8260B (Water)-5mL
0402131-02	SS57-SB01-GW	Water	2/11/04 1:27:00 PM	VOA 8260B (Water)-5mL
0402131-03	SS57-SB05-GW	Water	2/11/04 4:00:00 PM	VOA 8260B (Water)-5mL
0402131-04	SS57-SB04-GW	Water	2/11/04 6:00:00 PM	VOA 8260B (Water)-5mL
0402131-05	10020401	Trip Blank	2/10/04 4:05:00 PM	VOA 8260B (Water)-5mL

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page 1 of 1

Project Number: 504000 R

Chain of Custody Number [1]: 2-10-04-02 ~~10-09-04~~

LIMS Number:

Facility/Base I.D.: Hollomon AFB

Project Name / Site Name: SS57 Data Aquisition / O-Club

Client Name:

Collected by: Greg Dill / Robert Currence

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOCs 8260	TPH 1005	Carbon Fraction 1006						~~Ambient Blank Lot Control Number~~	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
									Sample Analysis Requested [5]								Quality Assurance Samples [6]			
SS57-SB02-GW		10-Feb-04	1605	-	N	01	WG	5	X	X	X	SIM 2J UC	CONTACT				2131-01		10020401	1
SS57-SB01-GW		11-Feb-04	1327	-	N	01	WG	5	X	X	X						02			1
SS57-SB05-GW		11-Feb-04	1600	-	N	01	WG	5	X	X	X						03			1
SS57-SB04-GW		11-Feb-04	1800	-	N	01	WG	5	X	X	X						04			1
10020401*		10-Feb-04	1605	-					X		2 + HCL	pH<2					05			
				-																
				-																
				-																
				-																
				-																
				-																

COMMENTS: Added to COC by LAB AMK

Custody Transfers Prior to Receipt by Laboratory

Relinquished by (Signed)	Date	Time	Received by (signed)	Date	Time
1 Robert Currence	2/10/04	0900	1 Anthony Lane	2/13/04	0900
2			2		
3.			3		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.: _____
Method of Shipment: _____ Airbill Number: _____
Analytical Lab: _____ Delivery Location: _____
Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

ELAB OF TN COOLER RECEIPT FORM

LIMS Number 0402131 COC ID(s): 2-10-04-02

Client Bhate Project SS-57

Sample Custodian Anthony Russo Today's Date 2/13/04

Date/Time Samples Received 2/13/04 09:00
Airbill Number Federal Express
Cooler Opened: Date 2/13/04

Chain of custody seal intact?	(Yes)	No
Chain of custody provided?	(Yes)	No
Sample labels present?	(Yes)	No
Bottle labels correspond w/COC	(Yes)	No

Number of Custody Seals on Cooler(s): 2 Seal Date(s): 2/12/04

Type of coolant used ICE

Coolant condition : Melted _____ Partially melted/frozen ✓
Frozen _____

# of Coolers 2 Temp. of Coolers 5.0°c

Condition of Bottles in Shipment: Broken Leaking (Intact) Missing

If broken or leaking list sample ID#s and bottle types affected:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213101

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	11	
75-15-0	Carbon disulfide	3.5	
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	0.79	J
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95 50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	40	
110-54-3	Hexane	1.0	U *
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	6.0	
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

*- Hexane not included in calibration verification Standard

3/1/04

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213101

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	0.56	J
108-67-8	1,3,5-Trimethylbenzene	0.53	J
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	2.1	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213102

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	5.6	J
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	44	
75-15-0	Carbon disulfide	0.48	J
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.38	J
106-46-7	1,4-Dichlorobenzene	0.93	J
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	0.26	J
110-54-3	Hexane	1.0	U *
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

* = Hexane not included in calibration verification standard.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213102

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213103

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U * m 31.104
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

* = Hexane not included in calibration verification standards

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213103

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213104

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95 50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.58	J
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U * ~ 3l.lot
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

* = Hexane not included in calibration verification standards

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213104

Level: (low/med) LOW Date Sampled: 02/11/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

10020401

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213105

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	9.6	J
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U * m 3/1.104
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

Hexane not included in calibration verification standard

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

10020401

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: 0402131-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0213105

Level: (low/med) LOW Date Sampled: 02/10/04

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V5BLK0219LCS	107	114	98	116	0
02	V5BLK0219	119	122	100	89	0
03	10020401	111	114	101	91	0
04	SS57-SB02-GW	122	129	101	100	0
05	SS57-SB01-GW	117	122	102	94	0
06	SS57-SB05-GW	117	120	104	92	0
07	SS57-SB04-GW	116	119	103	92	0
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		ELAB QC LIMITS	SPIKE CONC (ug/L)
SMC1 (DFM)	= Dibromofluoromethane	(80-130)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(75-131)	50
SMC3 (TOL)	= Toluene-d8	(80-116)	50
SMC4 (BFB)	= Bromofluorobenzene	(72-129)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix Spike - Client Sample No.: V5BLK0219

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	154.8	155	51-157
Benzene	50.00	0.0000	53.72	107	70-125
Bromodichloromethane	50.00	0.0000	63.08	126	70-130
Bromoform	50.00	0.0000	52.70	105	72-136
Bromomethane	50.00	0.0000	59.42	119	35-153
2-Butanone	100.0	0.0000	130.0	130	45-150
Carbon disulfide	100.0	0.0000	114.7	115	74-123
Carbon tetrachloride	50.00	0.0000	53.75	108	71-132
Chlorobenzene	50.00	0.0000	54.80	110	78-114
Chloroethane	50.00	0.0000	58.62	117	72-129
Chloroform	50.00	0.0000	56.80	114	74-127
Chloromethane	50.00	0.0000	82.21	164*	58-135
Dibromochloromethane	50.00	0.0000	51.51	103	74-145
1,2-Dibromo-3-chloropro	50.00	0.0000	51.34	103	75-132
1,2-Dibromoethane	50.00	0.0000	53.62	107	75-127
1,2-Dichlorobenzene	50.00	0.0000	50.82	102	73-120
1,3-Dichlorobenzene	50.00	0.0000	50.67	101	73-120
1,4-Dichlorobenzene	50.00	0.0000	53.89	108	74-123
Dichlorodifluoromethane	50.00	0.0000	77.89	156*	59-134
1,1-Dichloroethane	50.00	0.0000	55.96	112	75-133
1,2-Dichloroethane	50.00	0.0000	57.91	116	67-132
1,1-Dichloroethene	50.00	0.0000	37.64	75	74-133
cis-1,2-Dichloroethene	50.00	0.0000	53.08	106	73-133
trans-1,2-Dichloroethen	50.00	0.0000	52.34	105	75-134
1,2-Dichloropropane	50.00	0.0000	53.62	107	75-133
cis-1,3-Dichloropropene	50.00	0.0000	57.35	115	73-132
trans-1,3-Dichloroprope	50.00	0.0000	47.99	96	74-131
Ethylbenzene	50.00	0.0000	57.45	115	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix Spike - Client Sample No.: V5BLK0219

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2-Hexanone	100.0	0.0000	135.9	136	53-139
Isopropylbenzene	50.00	0.0000	58.82	118	75-126
Methylene chloride	50.00	0.0000	46.69	93	69-118
MTBE	50.00	0.0000	56.08	112	59-129
4-Methyl-2-pentanone	100.0	0.0000	121.7	122	59-150
Styrene	50.00	0.0000	62.24	124	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	59.28	118	68-129
Tetrachloroethene	50.00	0.0000	45.39	91	75-129
Toluene	50.00	0.0000	51.50	103	73-119
1,2,4-Trichlorobenzene	50.00	0.0000	44.12	88	75-130
1,1,1-Trichloroethane	50.00	0.0000	53.74	107	70-127
1,1,2-Trichloroethane	50.00	0.0000	54.49	109	75-136
Trichloroethene	50.00	0.0000	50.76	102	74-118
Trichlorofluoromethane	50.00	0.0000	66.87	134*	68-133
Vinyl chloride	50.00	0.0000	67.28	134	73-134
Xylene(total)	150.0	0.0000	184.3	123*	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 4 out of 44 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V5BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Lab File ID: V5BLK01 Lab Sample ID: V5BLK0219

Date Analyzed: 02/19/04 Time Analyzed: 1408

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA5

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V5BLK0219LCS	V5BLK0219LCS	V5LCS01	1307
02	10020401	0402131-05	0213105	1441
03	SS57-SB02-GW	0402131-01	0213101	2022
04	SS57-SB01-GW	0402131-02	0213102	2053
05	SS57-SB05-GW	0402131-03	0213103	2124
06	SS57-SB04-GW	0402131-04	0213104	2155
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COMMENTS:

FORM IV VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V5BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: V5BLK0219

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V5BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2 Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U * ~~m~~ 81.low
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

* = Hexane not included in calibration verification standard

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V5BLK0219

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02131

Matrix: (soil/water) WATER Lab Sample ID: V5BLK0219

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V5BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/19/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB02-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Matrix: (soil/water) WATER Lab Sample ID: 0402131-01

Sample wt/vol: 33.55 (g/mL) ML Lab File ID: 044F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/10/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/21/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
	----------Petroleum Hydrocarbon C6-C12	4.5	U
	----------Petroleum Hydrocarbon >C12-C	3.4	J
	----------Petroleum Hydrocarbon >C28-C	4.5	U

FORM I PESTA

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB01-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Matrix: (soil/water) WATER Lab Sample ID: 0402131-02

Sample wt/vol: 33.99 (g/mL) ML Lab File ID: 045F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/21/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/27/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	4.4	U
----------	Petroleum Hydrocarbon >C28-C	4.4	U

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB05-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Matrix: (soil/water) WATER Lab Sample ID: 0402131-03

Sample wt/vol: 33.83 (g/mL) ML Lab File ID: 046F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/21/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6 C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	4.4	U
----------	Petroleum Hydrocarbon >C28-C	4.4	U

FORM I PESTA

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB04-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Matrix: (soil/water) WATER Lab Sample ID: 0402131-04

Sample wt/vol: 33.90 (g/mL) ML Lab File ID: 047F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/11/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/21/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	3.2	J
----------	Petroleum Hydrocarbon >C28-C	4.4	U

FORM 2
WATER TX1005 SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

GC Column(1): RTX-5 ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	S2 %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	TXWBLK0221	92	96					0
02	TXWBLK0221LC	166*	185*					2
03	TXWBLK0221LC	157*	166*					2
04	SS57-SB02-GW	90	93					0
05	SS57-SB01-GW	93	87					0
06	SS57-SB05-GW	107	107					0
07	SS57-SB04-GW	92	93					0
08								
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		ELAB QC LIMITS	SPIKE CONC (mg/L)
S1	= ortho-terphenyl	(70-130)	5.0
S2	= 1-chloro-octane	(70-130)	5.0

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Matrix Spike - Client Sample No.: TXWBLK0221

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	25.00	0.0000	37.34	149*	75-125
Petroleum Hydrocarbon >	25.00	0.0000	48.00	192*	75-125

COMPOUND	SPIKE ADDED (mg/L)	LCSD CONCENTRATION (mg/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	25.00	34.35	137*	8	40	75-125
Petroleum Hydrocarbon >	25.00	47.05	188*	2	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 4 out of 4 outside limits

COMMENTS: high surrogate + spike recoveries, All sample concentrations below quantitation limit.

3/2/04

FORM III TX1005

FORM 4
TX1005 METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

TXWBLK0221

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Lab Sample ID: TXWBLK0221 Lab File ID: 004F0101

Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc/Soxh) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 02/21/04

Date Analyzed (1): 02/25/04 Date Analyzed (2):

Time Analyzed (1): 1656 Time Analyzed (2):

Instrument ID (1): GCTCDFID Instrument ID (2):

GC Column (1): RTX-5 ID: 0.32(mm) GC Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TXWBLK0221LC	TXWBLK0221LCS	02/25/04	
02	TXWBLK0221LC	TXWBLK0221LCSD	02/25/04	
03	SS57-SB02-GW	0402131-01	02/27/04	
04	SS57-SB01-GW	0402131-02	02/27/04	
05	SS57-SB05-GW	0402131-03	02/27/04	
06	SS57-SB04-GW	0402131-04	02/27/04	
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COMMENTS:

FORM 8
TX1005 ANALYTICAL SEQUENCE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

GC Column: RTX-5 ID: 0.32 (mm) Cont. Calib. Date(s):

Instrument ID: GCTCDFID

THE ANALYTICAL SEQUENCE OF PERFORMANCE BLANKS, AND SAMPLES GIVEN BELOW:

SURROGATE RT FROM CONTINUING CALIBRATION
S1 : 16.32 S2 : 9.97

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01	TXWBLK0221	TXWBLK0221	02/25/04	1656	16.32	9.97
02	TXWBLK0221LC	TXWBLK0221LC	02/25/04	1733	16.32	9.97
03	TXWBLK0221LC	TXWBLK0221LC	02/25/04	1839	16.32	9.97
04	SS57-SB02-GW	0402131-01	02/27/04	1505	16.31	9.97
05	SS57-SB01-GW	0402131-02	02/27/04	1600	16.30	9.96
06	SS57-SB05-GW	0402131-03	02/27/04	1652	16.31	9.96
07	SS57-SB04-GW	0402131-04	02/27/04	1746	16.30	9.96
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31						
32						

		QC LIMITS
S1	= ortho-terphenyl	(+/- 0.10 MINUTES)
S2	= 1-chloro-octane	(+/- 0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TXWBLK0221

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02131-01

Matrix: (soil/water) WATER Lab Sample ID: TXWBLK0221

Sample wt/vol: 30.00 (g/mL) ML Lab File ID: 004F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/21/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/25/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
	---------Petroleum Hydrocarbon C6-C12	5.0	U
	----------Petroleum Hydrocarbon >C12-C	5.0	U
	----------Petroleum Hydrocarbon >C28-C	5.0	U

ELAB
SDG 0402147

ANALYTICAL REPORT

MAIN DATA PACKAGE - ORGANIC

BHATE

WO #0402147

Marcia K. McGinnity
Senior Project Manager
ELAB of Tennessee, LLC.

March 15, 2004

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WO #0402147

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ORGANIC CASE NARRATIVE
Bhate – Holloman AFB
Work Orders: 0402147

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5030B/8260B (purge and trap followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Due to laboratory oversight, the trip blank associate with these samples was not analyzed. Reported concentrations in the samples are all less than the quantitation limit.
- The relative percent difference for bromomethane in spike samples SS57-MW02-GWMS/MSD exceeded the limit of 30 at 40. Recoveries of vinyl chloride were below the limit of 73% at 53%/68%. These analytes were not detected in the unspiked sample.

Total Petroleum Hydrocarbons

Method: The samples were analyzed by TNRCC Method 1005 for total petroleum hydrocarbons revision 03 June 1, 2001 (pentane extraction followed by direct injection capillary column GC/FID) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Recoveries of the surrogates and/or spikes exceeded the limits on the high side in some of the samples. No target analytes were detected above the quantitation limit in the associated samples.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

Bhate

Parameters Requested

Laboratory Sample ID	Client Field ID	Matrix	Date and Time Sampled	Parameters Requested
0402147-01	SS57-SB03-GW	Water	2/12/04 1:35:00 PM	VOA 8260B (Water)-5mL
0402147-02	SS57-MW02-GW	Water	2/12/04 3:45:00 PM	VOA 8260B (Water)-5mL
0402147-03	Trip Blank	Trip Blank	2/12/04	VOA 8260B (Water)-5mL

BHATE
Environmental Associates, Inc.
1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page

Project Number: 907

Chain of Custody Number [1]: 02-12-04-01

LIMS Number: ——

Facility/Base I.D.: Holloman AFB

Project Name / Site Name: SS57 Data Aquisition / O-Club

Client Name:

Collected by: Greg Dill / Robert Cullence

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOC 8260 3	TPH 1005 2J	Carbon Fraction 1006						Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
SS57-SB03-GW		12-feb-2004	1335	-	N	01	WG	5	X	X	X	3 J-HCl 2 H-HCl					2147-01		12020403	1
SS57-MW02-GW			1545	-	N	01	WG	5	X	X	X							02			1
SS57-MW02-GW-MS			1545	-	MS	01	WG	5	X	X	X									1
SS57-MW02-GW-MSD			1545	-	SD	01	WG	5	X	X	X									1
TRIP BLANK				-					X		1	J-HCl						03		
				-																
				-																
				-																
				-																
				-																
				-																

COMMENTS: 48 hour TAT
Send copy of Results to Atul

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. [signature]	2/13/04	1310	1. [signature]	2/14/04	10:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped No.: ____
Method of Shipment: ____ Airbill Number: ____
Analytical Lab: ____ Delivery Location: ____
Lab Recipient: ____ Delivery Date/Time: ____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-0.)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

40°C

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

ELAB OF TN COOLER RECEIPT FORM

LIMS Number 0402147 COC ID(s): 02-12-04-01

Client Bhate Project Holloman AFB 5557

Sample Custodian Anthony Russo Today's Date 2/16/04

Date/Time Samples Received 2/14/04 10:00
Airbill Number Federal Express
Cooler Opened: Date 2/16/04

Chain of custody seal intact?	Yes	No
Chain of custody provided?	Yes	No
Sample labels present?	Yes	No
Bottle labels correspond w/COC	Yes	No

Number of Custody Seals on Cooler(s): 2 Seal Date(s): 2/13/04

Type of coolant used FCE

Coolant condition : Melted _____ Partially melted/frozen ✓
Frozen _____

# of Coolers 2 Temp. of Coolers 3.0°C

Condition of Bottles in Shipment: Broken Leaking Intact Missing

If broken or leaking list sample ID#s and bottle types affected:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix: (soil/water) WATER Lab Sample ID: 0402147-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0214701

Level: (low/med) LOW Date Sampled: 02/12/04

% Moisture: not dec. _____ Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	0.23	J
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix: (soil/water) WATER Lab Sample ID: 0402147-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0214701

Level: (low/med) LOW Date Sampled: 02/12/04

% Moisture: not dec. _____ Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW02-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix: (soil/water) WATER Lab Sample ID: 0402147-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0214702

Level: (low/med) LOW Date Sampled: 02/12/04

% Moisture: not dec. _____ Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.43	J
106-46-7	1,4-Dichlorobenzene	0.69	J
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	0.54	J
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW02-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix: (soil/water) WATER Lab Sample ID: 0402147-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0214702

Level: (low/med) LOW Date Sampled: 02/12/04

% Moisture: not dec. _____ Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V3BLK0220LCS	101	100	96	94	0
02	V3BLK0220	102	103	102	97	0
03	SS57-SB03-GW	102	102	101	96	0
04	SS57-MW02-GW	100	100	101	96	0
05	SS57-MW02-GW MS	99	102	98	95	0
06	SS57-MW02-GW MSD	100	98	99	94	0
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		ELAB QC LIMITS	SPIKE CONC (ug/L)
SMC1 (DFM)	= Dibromofluoromethane	(80-130)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(75-131)	50
SMC3 (TOL)	= Toluene-d8	(80-116)	50
SMC4 (BFB)	= Bromofluorobenzene	(72-129)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix Spike - Client Sample No.: SS57-MW02-GW Lab Sample ID: 0402147-02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	112.8	113	51-157
Benzene	50.00	0.0000	42.76	86	70-125
Bromodichloromethane	50.00	0.0000	51.28	102	70-130
Bromoform	50.00	0.0000	45.14	90	72-136
Bromomethane	50.00	0.0000	19.18	38	35-153
2-Butanone	100.0	0.0000	104.8	105	45-150
Carbon disulfide	100.0	0.0000	80.07	80	74-123
Carbon tetrachloride	50.00	0.0000	46.64	93	71-132
Chlorobenzene	50.00	0.0000	44.34	89	78-114
Chloroethane	50.00	0.0000	41.58	83	72-129
Chloroform	50.00	0.0000	46.02	92	74-127
Chloromethane	50.00	0.0000	29.80	60	58-135
Dibromochloromethane	50.00	0.0000	47.50	95	74-145
1,2-Dibromo-3-chloropro	50.00	0.0000	45.30	91	75-132
1,2-Dibromoethane	50.00	0.0000	47.74	95	75-127
1,2-Dichlorobenzene	50.00	0.0000	46.28	92	73-120
1,3-Dichlorobenzene	50.00	0.4260	44.54	88	73-120
1,4-Dichlorobenzene	50.00	0.6903	45.89	90	74-123
Dichlorodifluoromethane	50.00	0.0000	36.93	74	59 134
1,1-Dichloroethane	50.00	0.0000	44.82	90	75-133
1,2-Dichloroethane	50.00	0.0000	44.27	88	67-132
1,1-Dichloroethene	50.00	0.0000	37.21	74	74-133
cis-1,2-Dichloroethene	50.00	0.0000	45.31	91	73-133
trans-1,2-Dichloroethen	50.00	0.0000	42.81	86	75-134
1,2-Dichloropropane	50.00	0.0000	43.30	87	75-133
cis-1,3-Dichloropropene	50.00	0.0000	46.08	92	73-132
trans-1,3-Dichloroprope	50.00	0.0000	42.45	85	74-131
Ethylbenzene	50.00	0.5443	42.51	84	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix Spike Client Sample No.: SS57-MW02-GW Lab Sample ID: 0402147-02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
2-Hexanone	100.0	0.0000	98.14	98	53-139
Isopropylbenzene	50.00	0.0000	38.62	77	75-126
Methylene chloride	50.00	0.0000	45.42	91	69-118
MTBE	50.00	0.0000	45.82	92	59-129
4-Methyl-2-pentanone	100.0	0.0000	95.18	95	59-150
Styrene	50.00	0.0000	43.38	87	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	50.60	101	68-129
Tetrachloroethene	50.00	0.0000	41.38	83	75-129
Toluene	50.00	0.0000	41.45	83	73-119
1,2,4-Trichlorobenzene	50.00	0.0000	41.30	83	75-130
1,1,1-Trichloroethane	50.00	0.0000	44.26	88	70-127
1,1,2-Trichloroethane	50.00	0.0000	46.91	94	75-136
Trichloroethene	50.00	0.0000	40.45	81	74-118
Trichlorofluoromethane	50.00	0.0000	40.42	81	68-133
Vinyl chloride	50.00	0.0000	26.62	53*	73-134
Xylene(total)	150.0	0.0000	128.6	86	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix Spike - Client Sample No.: SS57-MW02-GW Lab Sample ID: 0402147-02

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acetone	100.0	124.1	124	10	30	51-157
Benzene	50.00	48.80	98	13	30	70-125
Bromodichloromethane	50.00	58.02	116	12	30	70-130
Bromoform	50.00	51.62	103	13	30	72-136
Bromomethane	50.00	28.74	57	40*	30	35-153
2-Butanone	100.0	110.2	110	5	30	45-150
Carbon disulfide	100.0	91.52	92	13	30	74-123
Carbon tetrachloride	50.00	56.62	113	19	30	71-132
Chlorobenzene	50.00	50.70	101	13	30	78-114
Chloroethane	50.00	50.28	100	19	30	72-129
Chloroform	50.00	50.48	101	9	30	74-127
Chloromethane	50.00	33.40	67	11	30	58-135
Dibromochloromethane	50.00	54.30	109	13	30	74-145
1,2-Dibromo-3-chloropro	50.00	51.13	102	12	30	75-132
1,2-Dibromoethane	50.00	52.79	106	10	30	75-127
1,2-Dichlorobenzene	50.00	52.90	106	13	30	73-120
1,3-Dichlorobenzene	50.00	50.02	99	12	30	73-120
1,4-Dichlorobenzene	50.00	50.81	100	10	30	74-123
Dichlorodifluoromethane	50.00	47.42	95	25	30	59-134
1,1-Dichloroethane	50.00	50.40	101	12	30	75-133
1,2-Dichloroethane	50.00	48.90	98	10	30	67-132
1,1-Dichloroethene	50.00	44.12	88	17	30	74-133
cis-1,2-Dichloroethene	50.00	50.12	100	10	30	73-133
trans-1,2-Dichloroethen	50.00	47.86	96	11	30	75-134
1,2-Dichloropropane	50.00	49.31	99	13	30	75-133
cis-1,3-Dichloropropene	50.00	52.74	105	13	30	73-132
trans-1,3-Dichloroprope	50.00	49.06	98	14	30	74-131
Ethylbenzene	50.00	48.90	97	14	30	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix Spike - Client Sample No.: SS57-MW02-GW Lab Sample ID: 0402147-02

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
2-Hexanone	100.0	108.8	109	10	30	53-139
Isopropylbenzene	50.00	44.96	90	15	30	75-126
Methylene chloride	50.00	50.22	100	10	30	69-118
MTBE	50.00	50.71	101	10	30	59-129
4-Methyl-2-pentanone	100.0	106.4	106	11	30	59-150
Styrene	50.00	49.22	98	13	30	75-130
1,1,2,2-Tetrachloroetha	50.00	55.88	112	10	30	68-129
Tetrachloroethene	50.00	49.45	99	18	30	75-129
Toluene	50.00	47.18	94	13	30	73-119
1,2,4-Trichlorobenzene	50.00	47.17	94	13	30	75-130
1,1,1-Trichloroethane	50.00	51.95	104	16	30	70-127
1,1,2-Trichloroethane	50.00	53.28	106	13	30	75-136
Trichloroethene	50.00	47.85	96	17	30	74-118
Trichlorofluoromethane	50.00	49.61	99	20	30	68-133
Vinyl chloride	50.00	33.84	68*	24	30	73-134
Xylene(total)	150.0	148.0	99	14	30	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 44 outside limits
Spike Recovery: 2 out of 88 outside limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix Spike - Client Sample No.: V3BLK0220

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	119.3	119	51-157
Benzene	50.00	0.0000	47.59	95	70-125
Bromodichloromethane	50.00	0.0000	58.42	117	70-130
Bromoform	50.00	0.0000	50.46	101	72-136
Bromomethane	50.00	0.0000	45.01	90	35-153
2-Butanone	100.0	0.0000	106.9	107	45-150
Carbon disulfide	100.0	0.0000	93.27	93	74-123
Carbon tetrachloride	50.00	0.0000	57.86	116	71-132
Chlorobenzene	50.00	0.0000	49.33	99	78-114
Chloroethane	50.00	0.0000	53.39	107	72-129
Chloroform	50.00	0.0000	50.68	101	74-127
Chloromethane	50.00	0.0000	41.92	84	58-135
Dibromochloromethane	50.00	0.0000	53.83	108	74-145
1,2-Dibromo-3-chloropro	50.00	0.0000	48.86	98	75-132
1,2-Dibromoethane	50.00	0.0000	51.44	103	75-127
1,2-Dichlorobenzene	50.00	0.0000	50.28	100	73-120
1,3-Dichlorobenzene	50.00	0.0000	49.76	100	73-120
1,4-Dichlorobenzene	50.00	0.0000	50.37	101	74-123
Dichlorodifluoromethane	50.00	0.0000	53.64	107	59-134
1,1-Dichloroethane	50.00	0.0000	49.07	98	75-133
1,2-Dichloroethane	50.00	0.0000	48.95	98	67-132
1,1-Dichloroethene	50.00	0.0000	44.66	89	74-133
cis-1,2-Dichloroethene	50.00	0.0000	48.88	98	73-133
trans-1,2-Dichloroethen	50.00	0.0000	47.37	95	75-134
1,2-Dichloropropane	50.00	0.0000	47.87	96	75-133
cis-1,3-Dichloropropene	50.00	0.0000	52.74	105	73-132
trans-1,3-Dichloroprope	50.00	0.0000	47.45	95	74-131
Ethylbenzene	50.00	0.0000	47.86	96	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix Spike - Client Sample No.: V3BLK0220

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2-Hexanone	100.0	0.0000	103.2	103	53-139
Isopropylbenzene	50.00	0.0000	43.92	88	75-126
Methylene chloride	50.00	0.0000	50.76	102	69-118
MTBE	50.00	0.0000	48.51	97	59-129
4-Methyl-2-pentanone	100.0	0.0000	103.1	103	59-150
Styrene	50.00	0.0000	47.95	96	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	53.74	107	68-129
Tetrachloroethene	50.00	0.0000	48.56	97	75-129
Toluene	50.00	0.0000	46.61	93	73-119
1,2,4-Trichlorobenzene	50.00	0.0000	44.41	89	75-130
1,1,1-Trichloroethane	50.00	0.0000	52.22	104	70-127
1,1,2-Trichloroethane	50.00	0.0000	50.14	100	75-136
Trichloroethene	50.00	0.0000	47.14	94	74-118
Trichlorofluoromethane	50.00	0.0000	52.11	104	68-133
Vinyl chloride	50.00	0.0000	42.93	86	73-134
Xylene(total)	150.0	0.0000	144.5	96	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 44 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V3BLK0220

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Lab File ID: V3BLK01 Lab Sample ID: V3BLK0220

Date Analyzed: 02/20/04 Time Analyzed: 1138

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V3BLK0220LCS	V3BLK0220LCS	V3LCS01	1038
02	SS57-SB03-GW	0402147-01	0214701	1702
03	SS57-MW02-GW	0402147-02	0214702	1733
04	SS57-MW02-GW	0402147-02	M0214702 MS	1907
05	SS57-MW02-GW	0402147-02	D0214702 MSD	1938
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0220

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix: (soil/water) WATER Lab Sample ID: V3BLK0220

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0220

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02147

Matrix: (soil/water) WATER Lab Sample ID: V3BLK0220

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/20/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-SB03-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

Matrix: (soil/water) WATER Lab Sample ID: 0402147-01

Sample wt/vol: 33.13 (g/mL) ML Lab File ID: 014F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/12/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/25/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/26/04

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.5	U
----------	Petroleum Hydrocarbon >C12-C	3.6	J
----------	Petroleum Hydrocarbon >C28-C	4.5	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW02-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

Matrix: (soil/water) WATER Lab Sample ID: 0402147-02

Sample wt/vol: 34.88 (g/mL) ML Lab File ID: 015F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/12/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/25/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/26/04

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
	----------Petroleum Hydrocarbon C6-C12	4.3	U
	----------Petroleum Hydrocarbon >C12-C	4.3	U
	----------Petroleum Hydrocarbon >C28-C	4.3	U

FORM 2
WATER TX1005 SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

GC Column(1): RTX-5 ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	S2 %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	TXWBLK0225	134*	133*					2
02	TXWBLK0225LC	144*	163*					2
03	TXWBLK0225LC	123	132*					1
04	SS57-SB03-GW	96	95					0
05	SS57-MW02-GW	95	94					0
06	SS57-MW02-GW MS	102	114					0
07	SS57-MW02-GW MSD	81	94					0
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
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25								
26								
27								
28								
29								
30								

		ELAB QC LIMITS	SPIKE CONC (mg/L)
S1	= ortho-terphenyl	(70-130)	5.0
S2	= 1-chloro-octane	(70-130)	5.0

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER TX1005 MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

Matrix Spike - Client Sample No.: SS57-MW02-GW Lab Sample ID: 0402147-02

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	21.82	0.0000	26.13	120	75-125
Petroleum Hydrocarbon >	21.82	0.0000	27.40	126*	75-125

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	21.60	24.38	113	7	40	75-125
Petroleum Hydrocarbon >	21.60	24.89	115	10	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 1 out of 4 outside limits

COMMENTS: _____

FORM 3
WATER TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

Matrix Spike - Client Sample No.: TXWBLK0225

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (mg/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	25.00	0.0000	37.22	149*	75-125
Petroleum Hydrocarbon >	25.00	0.0000	41.62	166*	75-125

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	25.00	28.85	115	25	40	75-125
Petroleum Hydrocarbon >	25.00	33.34	133*	22	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 3 out of 4 outside limits

COMMENTS: _____

FORM 4
TX1005 METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

TXWBLK0225

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

Lab Sample ID: TXWBLK0225 Lab File ID: 011F0101

Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc/Soxh) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 02/25/04

Date Analyzed (1): 02/26/04 Date Analyzed (2):

Time Analyzed (1): 0118 Time Analyzed (2):

Instrument ID (1): GCTCDFID Instrument ID (2):

GC Column (1): RTX-5 ID: 0.32(mm) GC Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TXWBLK0225LC	TXWBLK0225LCS	02/26/04	
02	TXWBLK0225LC	TXWBLK0225LCSD	02/26/04	
03	SS57-SB03-GW	0402147-01	02/26/04	
04	SS57-MW02-GW	0402147-02	02/26/04	
05	SS57-MW02-GW	0402147-02	02/26/04	
06	SS57-MW02-GW	0402147-02	02/26/04	
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TXWBLK0225

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

Matrix: (soil/water) WATER Lab Sample ID: TXWBLK0225

Sample wt/vol: 30.00 (g/mL) ML Lab File ID: 011F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/25/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/26/04

Injection Volume: 3.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	3.3	U
----------	Petroleum Hydrocarbon >C12-C	3.3	U
----------	Petroleum Hydrocarbon >C28-C	3.3	U

FORM 8
TX1005 ANALYTICAL SEQUENCE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02147-01

GC Column: RTX-5 ID: 0.32 (mm) Cont. Calib. Date(s):

Instrument ID: GCTCDFID

THE ANALYTICAL SEQUENCE OF PERFORMANCE BLANKS, AND SAMPLES GIVEN BELOW:

SURROGATE RT FROM CONTINUING CALIBRATION
S1 : 16.32 S2 : 9.97

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01	TXWBLK0225	TXWBLK0225	02/26/04	0118	16.31	9.96
02	TXWBLK0225LC	TXWBLK0225LC	02/26/04	0233	16.31	9.97
03	TXWBLK0225LC	TXWBLK0225LC	02/26/04	0348	16.31	9.96
04	SS57-SB03-GW	0402147-01	02/26/04	0451	16.31	9.96
05	SS57-MW02-GW	0402147-02	02/26/04	0608	16.31	9.96
06	SS57-MW02-GW	0402147-02	02/26/04	0717	16.31	9.96
07	SS57-MW02-GW	0402147-02	02/26/04	0822	16.31	9.96
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

		QC LIMITS
S1	= ortho-terphenyl	(+/- 0.10 MINUTES)
S2	= 1-chloro-octane	(+/- 0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

ELAB
SDG 0402163

ANALYTICAL REPORT

MAIN DATA PACKAGE - ORGANIC

BHATE

WO #0402163

Marcia K. McGinnity
Senior Project Manager
ELAB of Tennessee, LLC.

March 15, 2004

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WO #0402163

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Sample Forms and Data	27
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ORGANIC CASE NARRATIVE
Bhate – Holloman AFB
Work Orders: 0402163

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5030B/8260B (purge and trap followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.

Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Trip blank sample Trip Blank 001 had a reported concentration of acetone at 5.4µg/L. The reported concentration in sample SS57-MW05-GW-01 was greater than 10x the trip blank concentration at 120µg/L.
- Recovery of carbon disulfide exceeded the limit of 132% at 133% in spike sample V3BLK0224LCS. It was not detected in the associated samples.

Total Petroleum Hydrocarbons

Method: The samples were analyzed by TNRCC Method 1005 for total petroleum hydrocarbons revision 03 June 1, 2001 (pentane extraction followed by direct injection capillary column GC/FID) for waters upon receipt to the laboratory in satisfactory condition.

Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Samples were received without acid preservation. Extraction 10-12 days after sampling exceeds the method holding time of 7 days from sampling. Results may be considered as estimated.
- Recoveries of the surrogates and/or spikes exceeded the limits on the high side in quality control samples TXWBLK0225/LCS/LCSD. No target analytes were detected above the quantitation limit in the associated samples.
- Due to sample matrix, recoveries of the surrogates were below the limit of 70% in both analyses of sample 14020403-SB. Results for both analyses are reported and flagged as estimated.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

Bhate

Parameters Requested

Laboratory Sample ID	Client Field ID	Matrix	Date and Time Sampled	Parameters Requested
0402163-01	SS57-MW01-GW-	Water	2/13/04 1:54:00 PM	VOA 8260B (Water)-5mL
0402163-02	SS57-MW03-GW-	Water	2/13/04 12:12:00 PM	VOA 8260B (Water)-5mL
0402163-03	SS57-MW07-GW-	Water	2/13/04 4:00:00 PM	VOA 8260B (Water)-5mL
0402163-04	SS57-MW07-GW-	Water	2/13/04 4:00:00 PM	VOA 8260B (Water)-5mL
0402163-05	SS57-MW05-GW-	Water	2/14/04 4:00:00 PM	VOA 8260B (Water)-5mL
0402163-06	14020403-SB	Water	2/14/04 4:00:00 PM	VOA 8260B (Water)-5mL
0402163-07	15020403-GW	Water	2/15/04 9:30:00 AM	VOA 8260B (Water)-5mL
0402163-08	Trip Blank 001	Water	2/13/04	VOA 8260B (Water)-5mL

Project Number: 9040002

BHATE
Environmental Associates, Inc.

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Chain of Custody Number [1]: 13-02-04-01

LIMS Number: ____

Facility/Base I.D.: Holloman A.F. Base, New Mexico

Project Name / Site Name: Officers Club – SS57.

Client Name:

Collected by: Robert Currence – Greg Dill.

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOCs (8260)	TPH (1005)	Carbon Fraction (1006)						~~Ambient Blank Lot Control Number~~ WO#	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
SS57-MW01 GW-01		13-02-04	1354	-	N	01	WG	9	3	3	3						2163-01		13020403	
SS57-MW03 GW-01		130204	1212	-	N	01	WG	9	3	3	3						-02			
SS57-MW07 GW-01		130204	1600	-	N	01	WG	9	3	3	3						-03			
SS57-MW07 GW-01-Dup		130204	1600	-	N	01	FD	9	3	3	3						-04			
SS57-MW05 GW-01		140204	1600	-	N	01	WG	9	3	3	3						-05			
14020403-EB		140204	1600	-	EB	01	WQ	9	3	3	3						-06			
15020403-GW		150204	0930	-	EB	01	WQ	9	3	3	3						-07			
Trip Blank 001		2/13/04		-													-08			
				-																
				-																
				-																

Sample Analysis Requested [5] — Quality Assurance Samples [6]

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. [signature]	2/14/04	1240	1. [signature]	2/17/04	09:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped No.: ____
Method of Shipment: ____ Airbill Number: ____
Analytical Lab: ____ Delivery Location: ____
Lab Recipient: ____ Delivery Date/Time: ____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc.), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

ELAB OF TN COOLER RECEIPT FORM

LIMS Number 0402163 COC ID(s): 13-02-04-01

Client SHATE Project 9040002

Sample Custodian Anthony Russo Today's Date 2/17/04

Date/Time Samples Received 2/17/04 0910
Airbill Number Federal Express
Cooler Opened: Date 2/17/04

Chain of custody seal intact?	(Yes)	No
Chain of custody provided?	(Yes)	No
Sample labels present?	(Yes)	No
Bottle labels correspond w/COC	(Yes)	No

Number of Custody Seals on Cooler(s): 2 Seal Date(s): 2/16/04

Type of coolant used ICE

Coolant condition : Melted _____ Partially melted/frozen ✓
Frozen _____

# of Coolers 3 Temp. of Coolers 3.0°C

Condition of Bottles in Shipment: Broken Leaking (Intact) Missing

If broken or leaking list sample ID#s and bottle types affected:

Comments:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW01-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216301

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	0.36	J
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.37	J
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW01-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216301

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	0.63	J
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW03-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216302

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	0.30	J
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.3	
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	0.86	J
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.42	J
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	11	
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	8.4	
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	0.55	J
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW03-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216302

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	3.5	
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	0.28	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW07-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216303

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	3.2	
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.59	J
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW07-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216303

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	0.25	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW07
-GW-01-DUP

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216304

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	3.9	
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	0.58	J
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW07
-GW-01-DUP

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216304

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	0.27	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW05-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216305

Level: (low/med) LOW Date Sampled: 02/14/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	120	
71-43-2	Benzene	0.35	J
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW05-GW-01

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216305

Level: (low/med) LOW Date Sampled: 02/14/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

14020403-SB

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216306

Level: (low/med) LOW Date Sampled: 02/14/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95 50 1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

14020403-SB

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216306

Level: (low/med) LOW Date Sampled: 02/14/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

15020403-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216307

Level: (low/med) LOW Date Sampled: 02/15/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95 50 1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

15020403-GW

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-07

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216307

Level: (low/med) LOW Date Sampled: 02/15/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK 001

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-08

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216308

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	5.4	J
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK 001

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: 0402163-08

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0216308

Level: (low/med) LOW Date Sampled: 02/13/04

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V3BLK0224LCS	106	107	95	99	0
02	V3BLK0224	103	106	98	97	0
03	TRIP BLANK 0	105	107	97	97	0
04	SS57-MW01-GW	107	105	96	96	0
05	SS57-MW03-GW	107	105	98	100	0
06	SS57-MW07-GW	104	106	97	96	0
07	SS57-MW07-GW	106	107	97	97	0
08	SS57-MW05-GW	108	107	97	97	0
09	14020403-SB	107	107	96	97	0
10	15020403-GW	109	108	96	98	0
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		ELAB QC LIMITS	SPIKE CONC (ug/L)
SMC1 (DFM)	= Dibromofluoromethane	(80-130)	50
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(75-131)	50
SMC3 (TOL)	= Toluene-d8	(80-116)	50
SMC4 (BFB)	= Bromofluorobenzene	(72-129)	50

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix Spike Client Sample No.: V3BLK0224

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	141.1	141	51-157
Benzene	50.00	0.0000	52.42	105	70-125
Bromodichloromethane	50.00	0.0000	63.72	127	70-130
Bromoform	50.00	0.0000	53.54	107	72-136
Bromomethane	50.00	0.0000	43.32	87	35-153
2-Butanone	100.0	0.0000	121.0	121	45-150
Carbon disulfide	100.0	0.0000	104.4	104	74-123
Carbon tetrachloride	50.00	0.0000	66.56	133*	71-132
Chlorobenzene	50.00	0.0000	51.02	102	78-114
Chloroethane	50.00	0.0000	56.57	113	72-129
Chloroform	50.00	0.0000	56.68	113	74-127
Chloromethane	50.00	0.0000	47.96	96	58-135
Dibromochloromethane	50.00	0.0000	56.24	112	74-145
1,2-Dibromo-3-chloropro	50.00	0.0000	48.99	98	75-132
1,2-Dibromoethane	50.00	0.0000	52.72	105	75-127
1,2-Dichlorobenzene	50.00	0.0000	50.33	101	73-120
1,3-Dichlorobenzene	50.00	0.0000	48.71	97	73-120
1,4-Dichlorobenzene	50.00	0.0000	49.22	98	74-123
Dichlorodifluoromethane	50.00	0.0000	59.86	120	59-134
1,1-Dichloroethane	50.00	0.0000	56.32	113	75-133
1,2-Dichloroethane	50.00	0.0000	54.58	109	67-132
1,1-Dichloroethene	50.00	0.0000	51.56	103	74-133
cis-1,2-Dichloroethene	50.00	0.0000	54.60	109	73-133
trans-1,2-Dichloroethen	50.00	0.0000	54.28	108	75-134
1,2-Dichloropropane	50.00	0.0000	51.95	104	75-133
cis-1,3-Dichloropropene	50.00	0.0000	57.26	114	73-132
trans-1,3-Dichloroprope	50.00	0.0000	49.32	99	74-131
Ethylbenzene	50.00	0.0000	47.52	95	75-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix Spike - Client Sample No.: V3BLK0224

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
2-Hexanone	100.0	0.0000	106.7	107	53-139
Isopropylbenzene	50.00	0.0000	45.10	90	75-126
Methylene chloride	50.00	0.0000	56.48	113	69-118
MTBE	50.00	0.0000	54.76	110	59-129
4-Methyl-2-pentanone	100.0	0.0000	110.6	111	59-150
Styrene	50.00	0.0000	48.65	97	75-130
1,1,2,2-Tetrachloroetha	50.00	0.0000	52.26	104	68-129
Tetrachloroethene	50.00	0.0000	50.19	100	75-129
Toluene	50.00	0.0000	46.25	92	73-119
1,2,4-Trichlorobenzene	50.00	0.0000	44.45	89	75-130
1,1,1-Trichloroethane	50.00	0.0000	58.26	116	70-127
1,1,2-Trichloroethane	50.00	0.0000	52.45	105	75-136
Trichloroethene	50.00	0.0000	50.92	102	74-118
Trichlorofluoromethane	50.00	0.0000	59.40	119	68-133
Vinyl chloride	50.00	0.0000	39.04	78	73-134
Xylene(total)	150.0	0.0000	148.6	99	75-122

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 44 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V3BLK0224

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Lab File ID: V3BLK01 Lab Sample ID: V3BLK0224

Date Analyzed: 02/24/04 Time Analyzed: 1221

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V3BLK0224LCS	V3BLK0224LCS	V3LCS01	1122
02	TRIP BLANK 0	0402163-08	0216308	1324
03	SS57-MW01-GW	0402163-01	0216301	1354
04	SS57-MW03-GW	0402163-02	0216302	1424
05	SS57-MW07-GW	0402163-03	0216303	1456
06	SS57-MW07-GW	0402163-04	0216304	1528
07	SS57-MW05-GW	0402163-05	0216305	1559
08	14020403-SB	0402163-06	0216306	1630
09	15020403-GW	0402163-07	0216307	1701
10				
11				
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0224

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: V3BLK0224

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	2.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	2.0	U
110-82-7	Cyclohexane	2.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	2.0	U
106-93-4	1,2-Dibromoethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	2.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
110-54-3	Hexane	1.0	U
591-78-6	2-Hexanone	5.0	U
98-82-8	Isopropylbenzene	1.0	U
79-20-9	Methyl acetate	1.0	U
75-09-2	Methylene chloride	2.0	U
108-87-2	Methyl cyclohexane	1.0	U
1634-04-4	MTBE	1.0	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0224

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.V02163

Matrix: (soil/water) WATER Lab Sample ID: V3BLK0224

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 02/24/04

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-10-1	4-Methyl-2-pentanone	5.0	U
100-42-5	Styrene	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
76-13-1	Trichlorotrifluoroethane	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	2.0	U
1330-20-7	Xylene(total)	1.0	U

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW01-GW*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-01

Sample wt/vol: 33.49 (g/mL) ML Lab File ID: 018F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/13/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/25/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/26/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.5	U
----------	Petroleum Hydrocarbon >C12-C	4.5	U
----------	Petroleum Hydrocarbon >C28-C	4.5	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 12 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW03-GW*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-02

Sample wt/vol: 34.11 (g/mL) ML Lab File ID: 019F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/13/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/25/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/26/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
	----------Petroleum Hydrocarbon C6-C12	4.4	U
	----------Petroleum Hydrocarbon >C12-C	4.4	U
	----------Petroleum Hydrocarbon >C28-C	4.4	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 12 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW07-GW*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-03

Sample wt/vol: 33.81 (g/mL) ML Lab File ID: 020F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/13/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/25/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/26/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	4.4	U
----------	Petroleum Hydrocarbon >C28-C	4.4	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 12 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW07-GW*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-04

Sample wt/vol: 34.18 (g/mL) ML Lab File ID: 024F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/13/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/25/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/26/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	4.4	U
----------	Petroleum Hydrocarbon >C28-C	4.4	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 12 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SS57-MW05-GW*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-05

Sample wt/vol: 34.49 (g/mL) ML Lab File ID: 025F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/14/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/25/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/26/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.3	U
----------	Petroleum Hydrocarbon >C12-C	4.3	U
----------	Petroleum Hydrocarbon >C28-C	4.3	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 11 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

14020403-SB*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-06

Sample wt/vol: 33.86 (g/mL) ML Lab File ID: 026F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/14/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/25/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/26/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	4.4	U
----------	Petroleum Hydrocarbon >C28-C	4.4	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 11 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

NOTE: SURROGATE RECOVERIES BELOW 70% LIMIT AT 28% OTP/41% CHLORO-OCTANE.

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

14020403-SB RR*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-06

Sample wt/vol: 33.86 (g/mL) ML Lab File ID: 048F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/14/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/25/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/27/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.4	U
----------	Petroleum Hydrocarbon >C12-C	4.4	U
----------	Petroleum Hydrocarbon >C28-C	4.4	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 11 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

NOTE: SURROGATE RECOVERIES BELOW 70% LIMIT AT 30% OTP/42% CHLORO-OCTANE.

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

15020403-GW*

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: 0402163-07

Sample wt/vol: 33.19 (g/mL) ML Lab File ID: 027F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 02/15/04

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:02/25/04

Concentrated Extract Volume: 3(mL) Date Analyzed: 02/26/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	4.5	U
----------	Petroleum Hydrocarbon >C12-C	4.5	U
----------	Petroleum Hydrocarbon >C28-C	4.5	U

* = SAMPLES WERE RECEIVED WITHOUT ACID PRESERVATION. EXTRACTION 10 DAYS AFTER SAMPLING EXCEEDS THE METHOD HOLDING TIME OF 7 DAYS FROM SAMPLING. RESULTS MAY BE CONSIDERED AS ESTIMATED.

FORM 2
WATER TX1005 SURROGATE RECOVERY

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

GC Column(1): RTX-5 ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	S2 %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	TXWBLK0225	134*	133*					2
02	TXWBLK0225LC	144*	163*					2
03	TXWBLK0225LC	123	132*					1
04	SS57-MW01-GW	121	123					0
05	SS57-MW03-GW	88	92					0
06	SS57-MW07-GW	92	92					0
07	SS57-MW07-GW	96	97					0
08	SS57-MW05-GW	98	104					0
09	14020403-SB	28*	41*					2
10	15020403-GW	66*	77					1
11	14020403-SB	30*	42*					2
12								
13								
14								
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		ELAB QC LIMITS	SPIKE CONC (mg/L)
S1	= ortho terphenyl	(70-130)	5.0
S2	= 1-chloro-octane	(70-130)	5.0

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER TX1005 LAB CONTROL SAMPLE

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix Spike Client Sample No.: TXWBLK0225

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (mg/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Petroleum Hydrocarbon C	25.00	0.0000	37.22	149*	75-125
Petroleum Hydrocarbon >	25.00	0.0000	41.62	166*	75-125

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Hydrocarbon C	25.00	28.85	115	25	40	75-125
Petroleum Hydrocarbon >	25.00	33.34	133*	22	40	75-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 3 out of 4 outside limits

COMMENTS: _____

FORM 4
TX1005 METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

TXWBLK0225

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Lab Sample ID: TXWDLK0225 Lab File ID: 011F0101

Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc/Soxh) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 02/25/04

Date Analyzed (1): 02/26/04 Date Analyzed (2):

Time Analyzed (1): 0118 Time Analyzed (2):

Instrument ID (1): GCTCDFID Instrument ID (2):

GC Column (1): RTX-5 ID: 0.32(mm) GC Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	TXWBLK0225LC	TXWBLK0225LCS	02/26/04	
02	TXWBLK0225LC	TXWBLK0225LCSD	02/26/04	
03	SS57-MW01-GW	0402163-01	02/26/04	
04	SS57-MW03-GW	0402163-02	02/26/04	
05	SS57-MW07-GW	0402163-03	02/26/04	
06	SS57-MW07-GW	0402163-04	02/26/04	
07	SS57-MW05-GW	0402163-05	02/26/04	
08	14020403-SB	0402163-06	02/26/04	
09	15020403-GW	0402163-07	02/26/04	
10	14020403-SB	0402163-06	02/27/04	
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
TX1005 ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TXWBLK0225 *

Lab Name: ELAB Contract: BHATE

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: BHA.T02163-01

Matrix: (soil/water) WATER Lab Sample ID: TXWBLK0225

Sample wt/vol: 30.00 (g/mL) ML Lab File ID: 011F0101

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 02/25/04

Concentrated Extract Volume: 3 (mL) Date Analyzed: 02/26/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
----------	Petroleum Hydrocarbon C6-C12	5.0	U
----------	Petroleum Hydrocarbon >C12-C	5.0	U
----------	Petroleum Hydrocarbon >C28-C	5.0	U

* = high Surrogate recovered.
3/2/04

Test America
SDG 384830

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ANALYTICAL TESTING CORPORATION
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8/10/04

CASE NARRATIVE

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name: SS57 O'CLUB
Project Number: 9040002,01.03.
Laboratory Project Number: 384830.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accredidation.

Sample Identification	Lab Number	Collection Date
SS57-MW04	04-A119899	8/ 4/04
SS57-MW04-TB	04-A119900	8/ 4/04

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Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
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Report Approved By: Sandra McMillin Report Date: 8/10/04

Johnny A. Mitchell, Operations Manager
Michael H. Dunn, M.S., Technical Director
Pamela A. Langford, Technical Services
Eric S. Smith, QA/QC Director
Sandra McMillin, Technical Services
Gail A. Lage, Technical Services
Glenn L. Norton, Technical Services
Kelly S. Comstock, Technical Services
Roxanne L. Connor, Technical Services
Mark Hollingsworth, Director of Project

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ANALYTICAL REPORT

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

Lab Number: 04-A119899
Sample ID: SS57-MW04
Sample Type: Water
Site ID:

Project: 9040002,01.03
Project Name: SS57 O'CLUB
Sampler: K.GERMANN/J.TUCKER

Date Collected: 8/ 4/04
Time Collected: 12:30
Date Received: 8/ 5/04
Time Received: 8:00

Analyte	Result		Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
>C6 - C12 Hydrocarbons	ND		ug/l	1790	1	8/ 5/04	20:03	U. Burroug	TX1005	5926
>C12 - C28Hydrocarbons	ND		ug/l	1790	1	8/ 5/04	20:03	U. Burroug	TX1005	5926
>C28 - C35 Hydrocarbons	ND		ug/l	1790	1	8/ 5/04	20:03	U. Burroug	TX1005	5926
VOLATILE ORGANICS										
Benzene	ND		ug/l	1.0	1	8/ 7/04	18:58	S. Edwards	8260B	3733
Ethylbenzene	0.7	J	ug/l	1.0	1	8/ 7/04	18:58	S. Edwards	8260B	3733
Toluene	ND		ug/l	1.0	1	8/ 7/04	18:58	S. Edwards	8260B	3733
Xylenes (Total)	ND		ug/l	1.0	1	8/ 7/04	18:58	S. Edwards	8260B	3733

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Texas TRPH	35.0 ml	2.5 ml	8/ 5/04		K. Turner	TX1005

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	97.	71. - 128.
VOA Surr Toluene-d8	97.	77. - 119.
VOA Surr, 4-BFB	100.	79. - 123.
VOA Surr, DBFM	100.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A119899
Sample ID: SS57-MW04

LABORATORY COMMENTS:
ND = Not detected at the limit of detection
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

BHATE 2701
MIKE D'AUBEN
1608 13TH AVENUE SOUTH
BIRMINGHAM, AL 35205

Project: 9040002,01.03
Project Name: SS57 O'CLUB
Sampler: K.GERMANN/J.TUCKER

Lab Number: 04-A119900
Sample ID: SS57-MW04-TB
Sample Type: Water
Site ID:

Date Collected: 8/ 4/04
Time Collected: 12:30
Date Received: 8/ 5/04
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/l	1.0	1	8/ 7/04	17:59	S. Edwards	8260B	3733
Ethylbenzene	ND	ug/l	1.0	1	8/ 7/04	17:59	S. Edwards	8260B	3733
Toluene	ND	ug/l	1.0	1	8/ 7/04	17:59	S. Edwards	8260B	3733
Xylenes (Total)	ND	ug/l	1.0	1	8/ 7/04	17:59	S. Edwards	8260B	3733

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	102.	71. - 128.
VOA Surr Toluene-d8	96.	77. - 119.
VOA Surr, 4-BFB	105.	79. - 123.
VOA Surr, DBFM	104.	78. - 124.

LABORATORY COMMENTS:
ND = Not detected at the limit of detection
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002,01.03
Project Name: SS57 O'CLUB
Page: 1
Laboratory Receipt Date: 8/ 5/04

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
UST ANALYSIS								
>C6 - C12 Hydrocarbons	mg/l	< 1.78	67.5	57.1	118	75. - 125.	5926	blank
>C6 - C12 Hydrocarbons	mg/l	< 1.78	62.3	57.1	109	75. - 125.	5926	blank
>C12 - C28Hydrocarbons	mg/l	< 1.78	71.9	57.1	126#	75. - 125.	5926	blank
>C12 - C28Hydrocarbons	mg/l	< 1.78	67.7	57.1	119	75. - 125.	5926	blank
>C28 - C35 Hydrocarbons	mg/l	< 1.78	< 1.78	57.1	N/A	75. - 125.	5926	blank
>C28 - C35 Hydrocarbons	mg/l	< 1.78	< 1.78	57.1	N/A	75. - 125.	5926	blank
VOA PARAMETERS								
Benzene	mg/l	0.139	0.182	0.0500	86	73 - 135	3733	120893
Toluene	mg/l	0.0058	0.0526	0.0500	94	69 - 139	3733	120893
VOA Surr 1,2-DCA-d4	% Rec				90	71 - 128	3733	
VOA Surr Toluene-d8	% Rec				97	77 - 119	3733	
VOA Surr, 4-BFB	% Rec				103	79 - 123	3733	
VOA Surr, DBFM	% Rec				98	78 - 124	3733	

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
UST PARAMETERS						
>C6 - C12 Hydrocarbons	mg/l	67.5	62.3	8.01	20.	5926
>C12 - C28Hydrocarbons	mg/l	71.9	67.7	6.02	20.	5926
>C28 - C35 Hydrocarbons	mg/l	< 1.78	< 1.78	N/A	20.	5926
VOA PARAMETERS						
Benzene	mg/l	0.182	0.189	3.77	21.	3733
Toluene	mg/l	0.0526	0.0552	4.82	24.	3733

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002,01.03
Project Name: SS57 O'CLUB
Page: 2
Laboratory Receipt Date: 8/ 5/04

VOA Surr 1,2-DCA-d4	% Rec	88.	3733
VOA Surr Toluene-d8	% Rec	98.	3733
VOA Surr, 4-BFB	% Rec	102.	3733
VOA Surr, DBFM	% Rec	98.	3733

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
UST PARAMETERS						
>C6 - C12 Hydrocarbons	mg/l	57.1	53.9	94	75 - 125	5926
>C12 - C28Hydrocarbons	mg/l	57.1	57.5	101	75 - 125	5926
>C28 - C35 Hydrocarbons	mg/l	57.1	< 1.78	N/A	75 - 125	5926
VOA PARAMETERS						
Benzene	mg/l	0.0500	0.0541	108	81 - 121	3733
Ethylbenzene	mg/l	0.0500	0.0550	110	78 - 126	3733
Toluene	mg/l	0.0500	0.0524	105	77 - 125	3733
Xylenes (Total)	mg/l	0.150	0.175	117	78 - 127	3733
VOA Surr 1,2-DCA-d4	% Rec			99	71 - 128	3733
VOA Surr Toluene-d8	% Rec			102	77 - 119	3733
VOA Surr, 4-BFB	% Rec			97	79 - 123	3733
VOA Surr, DBFM	% Rec			101	78 - 124	3733

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
UST PARAMETERS					
>C6 - C12 Hydrocarbons	< 1.78	mg/l	5926	8/ 5/04	17:58

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: 9040002,01.03
Project Name: SS57 O'CLUB
Page: 3
Laboratory Receipt Date: 8/ 5/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
>C12 - C28Hydrocarbons	< 1.78	mg/l	5926	8/ 5/04	17:58
>C28 - C35 Hydrocarbons	< 1.78	mg/l	5926	8/ 5/04	17:58
VOA PARAMETERS					
Benzene	< 0.0005	mg/l	3733	8/ 7/04	13:03
Ethylbenzene	< 0.0003	mg/l	3733	8/ 7/04	13:03
Toluene	< 0.0006	mg/l	3733	8/ 7/04	13:03
Xylenes (Total)	< 0.0009	mg/l	3733	8/ 7/04	13:03
VOA Surr 1,2-DCA-d4	101.	% Rec	3733	8/ 7/04	13:03
VOA Surr Toluene-d8	98.	% Rec	3733	8/ 7/04	13:03
VOA Surr, 4-BFB	111.	% Rec	3733	8/ 7/04	13:03
VOA Surr, DBFM	101.	% Rec	3733	8/ 7/04	13:03

= Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 384830

TestAmerica
ANALYTICAL TESTING CORPORATION

Nashville Division

COOLER RECEIPT FORM **BC#** 384830

Client Name : BHATE

Cooler Received/Opened On: 8/5/04 **Accessioned By:** Mike McBride

Log-in Personnel Signature

1. Temperature of Cooler when triaged: 5.2 **Degrees Celsius**
2. Were custody seals on outside of cooler?..... YES...NO...NA
   a. If yes, how many, what kind and where: (1) Front
3. Were custody seals on containers and intact?..... NO...YES...NA
4. Were the seals intact, signed, and dated correctly?..... YES...NO...NA
5. Were custody papers inside cooler?..... YES...NO...NA
6. Were custody papers properly filled out (ink, signed, etc)?..... YES...NO...NA
7. Did you sign the custody papers in the appropriate place?..... YES...NO...NA
8. What kind of packing material used? Bubblewrap Peanuts Vermiculite Other None
9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None
10. Did all containers arrive in good condition (unbroken)?..... YES...NO...NA
11. Were all container labels complete (#, date, signed, pres., etc)?..... YES...NO...NA
12. Did all container labels and tags agree with custody papers?..... YES...NO...NA
13. Were correct containers used for the analysis requested?..... YES...NO...NA
14. a. Were VOA vials received?..... YES...NO...NA
    b. Was there any observable head space present in any VOA vial?..... NO...YES...NA
15. Was sufficient amount of sample sent in each container?..... YES...NO...NA
16. Were correct preservatives used?..... YES...NO...NA
    If not, record standard ID of preservative used here_____
17. Was residual chlorine present?..... NO...YES...NA
18. Indicate the Airbill Tracking Number (last 4 digits for Fedex only) and Name of Courier below:

3664						
Fed-Ex	UPS	Velocity	Airborne	Route	Off-street	Misc.

19. If a Non-Conformance exists, see attached or comments below:

384830

92701

BHATE

Environmental Engineers and Scientists

Chain of Custody and Analytical Request

Facility/Base I.D.: HOLMN

Project Name / Site Name: SS57 O' Club

Client Name: USACE

Collected by: K. Germann, J. Tucker

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	BTEX 8260B	TPH TX1005	TPH TX1006							Ambient Blank Control Numb
								Sample Analysis Requested (5)										
SS57-MW04	SS57	04Aug2004	1230	0.00 - 0.00	N	1	WG	9	3	3	3		04A	119	894			
SS57-MW04-TB	SS57	04Aug2004	1230		TB		WQ	1						119	900			

COMMENTS: TEST AMERICA
2960 Foster Creighton Dr.
Nashville, TN 37204
615-726-0177

Fax analytical results to: 505-679-2148
Email results to: rrenvironmental@zianet.com, jpelfrey@bhate.com, dmeder@bhate.com, mdaube

Add: c/o Bh
1641 Vande
Holloman A

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	[illegible]	8/4/04	1440	[illegible]	8.5.04	@ 0800
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:
Method of Shipment: FEDEX Airbill Number:
Analytical Lab: TestAmerica Delivery Location
Lab Recipient: Delivery Date/Tim

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Accutest
SDG F38567

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

02/22/06

Technical Report for

Bhate Environmental Associates, Inc.

HOLMN

PROJECT # 9050043.01.023

Accutest Job Number: F38567

Sampling Date: 02/10/06

Report to:

MDAuben@bhate.com
JSolomon@bhate.com
rrenvironmental@zianet.com
keving@zianet.com
YWatts@bhate.com
ATTN: Distribution6

Total number of pages in report: **15**

1956 - 2006
50
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Accutest Laboratories

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Sample Summary

Bhate Environmental Associates, Inc.

Job No: F38567

HOLMN
Project No: PROJECT # 9050043.01.023

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F38567-1	02/10/06	10:00	KG	02/13/06	AQ	Ground Water	SS57-MW01
F38567-2	02/10/06	10:20	KG	02/13/06	AQ	Ground Water	SS57-MW02
F38567-3	02/10/06	09:40	KG	02/13/06	AQ	Ground Water	SS57-MW03
F38567-4	02/10/06	09:10	KG	02/13/06	AQ	Ground Water	SS57-MW04

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Bhate Environmental Associates, Inc. **Job No:** F38567

Site: HOLMN **Report Date** 2/22/2006 8:52:44 AM

4 Samples were collected on 02/10/2006 and received at Accutest on 02/13/2006 properly preserved, at 4 Deg. C and intact. These Samples received an Accutest job number of F38567. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Wet Chemistry By Method EPA 160.1

Matrix: AQ **Batch ID:** GN19797

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) F38504-3DUP were used as the QC samples for Solids, Total Dissolved.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

Date: February 22, 2006

Svetlana Izosimova, QAO (signature on file)

Sample Results

Report of Analysis

Report of Analysis

3.1

3

Client Sample ID:	SS57-MW01		
Lab Sample ID:	F38567-1	Date Sampled:	02/10/06
Matrix:	AQ - Ground Water	Date Received:	02/13/06
		Percent Solids:	n/a
Project:	HOLMN		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	2040	10	10	mg/l	1	02/14/06 09:10	LE	EPA 160.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	SS57-MW02		
Lab Sample ID:	F38567-2	Date Sampled:	02/10/06
Matrix:	AQ - Ground Water	Date Received:	02/13/06
		Percent Solids:	n/a
Project:	HOLMN		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	4110	10	10	mg/l	1	02/14/06 09:10	LE	EPA 160.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

3.3

3

Client Sample ID:	SS57-MW03		
Lab Sample ID:	F38567-3	Date Sampled:	02/10/06
Matrix:	AQ - Ground Water	Date Received:	02/13/06
		Percent Solids:	n/a
Project:	HOLMN		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	3800	10	10	mg/l	1	02/14/06 09:10	LE	EPA 160.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SS57-MW04		
Lab Sample ID:	F38567-4	Date Sampled:	02/10/06
Matrix:	AQ - Ground Water	Date Received:	02/13/06
		Percent Solids:	n/a
Project:	HOLMN		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	4590	10	10	mg/l	1	02/14/06 09:10	LE	EPA 160.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

4

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

BHATE

Environmental Engineers and Scientists

F38567

Chain of Custody and Analytical Request

Page 1 of 2

Project Number: 9050043.01.023

P.O. NA

Chain of Custody # [1]: 21020061

LIMS Number: NA

Facility/Base I.D.: HOLMN

Project Name / Site Name: SS57

Client Name: USACE

Collected by: K. Germann

Field Sample ID (40 Characters Max)	EQPMS LOCID (16 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (24-hour) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of Containers	T205 1&2.1							Matrix Description		Cooler ID
SS57-MW01	SS57	10022006	1000	0.00 - 0.00	N	1	WG	1	X							Groundwater		1
SS57-MW02	SS57	10022006	1020	0.00 - 0.00	N	1	WG	1	X							Groundwater		1
SS57-MW03	SS57	10022006	0940	0.00 - 0.00	N	1	WG	1	X							Groundwater		1
SS57-MW04	SS57	10022006	0910	0.00 - 0.00	N	1	WG	1	X							Groundwater		1

Sample Analysis Requested [5]

Quality Assurance Samples [6]

COMMENTS: Attention: Sample Receiving
Accutest Laboratories
4405 Vineland Road Suite C-15
Orlando, FL 32811

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	[signature]	2/10/2006	1600	[signature]	2/10/06	0930
2.						
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.: _____

Method of Shipment: FEDEX Airbill Number: _____

Analytical Lab: Accutest Delivery Location: Orlando, FL

Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 16-07-1998-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Samples, FD = Field Duplicate (-d) Samples, FR = Field Replicate (-r) Samples, EB = Equipment Blank (-e) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-a)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/15/98 = 01, if sampled again on 10/15/98 = 02, etc.)

4.) Matrix Codes: GB = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SS = Sediment, SL = Sludge, SB = Surface Soil Samples, WQ = Aqueous Stock Samples (Mg, sequiphoff, ambient, etc), SQ = Soil Stocks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (dddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/15/98 will be designated 101598001 in the Equipment Blank Lab Coded

40

4.1

4

F38567: Chain of Custody
Page 1 of 2

ACCUTEST Laboratories

F38567

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F38567 CLIENT: BHAFE PROJECT: SSST

DATE/TIME RECEIVED: 2/13/06 0930 ~~0900~~ 2/14-6 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 4.0

METHOD OF DELIVERY: ~~FEDEX~~ UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 8548 9816 8322

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] NO COC RECEIVED
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [x] TRIP BLANK NOT PROVIDED
- [ ] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DON'T MATCH LABEL
- [ ] ID'S ON COC DON'T MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED

SOIL INFORMATION

NUMBER OF ENCORES ? 8

NUMBER OF 5035 FIELD KITS ? 0

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE AS 2/13/06 TECHNICIAN SIGNATURE/DATE

ASBD06/22/05

4.1 4

F38567: Chain of Custody
Page 2 of 2

5

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F38567
Account: BHATNM - Bhate Environmental Associates, Inc.
Project: HOLMN

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Solids, Total Dissolved	GN19797	10	<10	mg/l				

Associated Samples:
Batch GN19797: F38567-1, F38567-2, F38567-3, F38567-4

5.1 5

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F38567
Account: BHATNM - Bhate Environmental Associates, Inc.
Project: HOLMN

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Total Dissolved	GN19797	F38504-3	mg/l	24600	27600	11.2	0-29%

Associated Samples:
Batch GN19797: F38567-1, F38567-2, F38567-3, F38567-4

5.2 5

Soil-Vapor Results

Air Toxics
SDG 0404418

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404418

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4026	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/04		

FRACTION #	NAME	TEST
01A	SV-1-3	Modified NIOSH 1550
02A	SV-1-8	Modified NIOSH 1550
03A	SV-2-3	Modified NIOSH 1550
04A	SV-2-8	Modified NIOSH 1550
05A	SV-3-3	Modified NIOSH 1550
06A	SV-3-8	Modified NIOSH 1550
06AA	SV-3-8 Duplicate	Modified NIOSH 1550
07A	Lab Blank	Modified NIOSH 1550
08A	LCS	Modified NIOSH 1550

CERTIFIED BY: Linda L. Freeman DATE: 04/26/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified NIOSH 1550
Bhate Environmental Associates
Workorder# 0404418

Six NIOSH Charcoal Tube samples were received on April 22, 2004. The laboratory performed the analysis via Modified NIOSH Method 1550. The method involves solvent desorption using carbon disulfide, followed by separation and analysis using GC/FID. See the data sheets for the reporting limits for each compound.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The recovery of Diesel in the LCS was outside the internal Air Toxics Ltd. control limits for NIOSH samples. An LCS is analyzed per Air Toxics Ltd. protocol and is not required by NIOSH.

The front and back portions of each tube were analyzed separately to monitor for possible breakthrough. Analytical results from only the front tubes were reported since no breakthrough was observed.

Sample results were not corrected for desorption efficiency.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-1-3

ID#: 0404418-01A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x042327**	**Date of Collection:**	**4/19/04**
Dil. Factor:	**1.00**	**Date of Analysis:**	**4/23/04 08:45 PM**
		Date of Extraction:	**4/23/04**

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: SV-1-8

ID#: 0404418-02A

MODIFIED NIOSH 1550 GC/FID

File Name:	x042328	Date of Collection: 4/19/04
Dil. Factor:	1.00	Date of Analysis: 4/23/04 09:08 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: SV-2-3

ID#: 0404418-03A

MODIFIED NIOSH 1550 GC/FID

File Name:	x042329	Date of Collection: 4/20/04
Dil. Factor:	1.00	Date of Analysis: 4/23/04 09:31 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: SV-2-8

ID#: 0404418-04A

MODIFIED NIOSH 1550 GC/FID

File Name: x042330		Date of Collection: 4/20/04
Dil. Factor: 1.00		Date of Analysis: 4/23/04 09:54 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: SV-3-3

ID#: 0404418-05A

MODIFIED NIOSH 1550 GC/FID

File Name:	x042331	Date of Collection: 4/20/04
Dil. Factor:	1.00	Date of Analysis: 4/23/04 10:17 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: SV-3-8

ID#: 0404418-06A

MODIFIED NIOSH 1550 GC/FID

File Name:	x042332	Date of Collection: 4/20/04
Dil. Factor:	1.00	Date of Analysis: 4/23/04 10:40 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: SV-3-8 Duplicate

ID#: 0404418-06AA

MODIFIED NIOSH 1550 GC/FID

File Name:	x042333	Date of Collection: 4/20/04
Dil. Factor:	1.00	Date of Analysis: 4/23/04 11:04 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NIOSH Charcoal Tube

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404418-07A

MODIFIED NIOSH 1550 GC/FID

File Name: x042319		Date of Collection: NA
Dil. Factor: 1.00		Date of Analysis: 4/23/04 05:39 PM
		Date of Extraction: 4/23/04

Compound	Rpt. Limit (ug)	Amount (ug)
TPH ref. to Diesel	100	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404418-08A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x042318a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/04 05:16 PM**	
		Date of Extraction: 4/23/04	

Compound	**%Recovery**
TPH ref. to Diesel	72 Q

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

BHATE
Environmental Associates, Inc.

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

0404418

Page 1 of 1

Project Number: 9040002.01.03

Chain of Custody Number (1): 42120043

LIMS Number

Facility/Base I.D.: Holman

Project Name / Site Name: SS-57

Client Name: USACE

Collected by: Germann, Kevin

Sample Analysis Requested (5) — Quality Assurance Samples (6)

	Field Sample ID (20 Character Max)	ERPIMS LOCID (15 Character Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	TPH/NTEXH 1550	DRO/NTEXH 1550							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Code or ID
01A	SV-1-3	SS-57	19042004	1527	3' - 3'	N	1	GS	1	/	/										1
02A	SV-1-8	SS-57	19042004	1441	8' - 8'	N	1	GS	1	/	/										1
03A	SV-2-3	SS-57	20042004	1050	3' - 3'	N	1	GS	1	/	/										1
04A	SV-2-8	SS-57	20042004	0959	8' - 8'	N	1	GS	1	/	/										1
05A	SV-3-3	SS-57	20042004	1130	3' - 3'	N	1	GS	1	/	/										1
06A	SV-3-8	SS-57	20042004	1200	8' - 8'	N	1	GS	1	/	/										1
	Temp Blank				-				1												1
					-																
					-																
					-																
					-																

CUSTODY SEAL INTACT?
Y N NONE TEMP 12.0°C

COMMENTS: PLEASE FAX RESULTS TO 505-679-2148
FED EX # 845705836365
EMAIL PDF TO HOLMAN

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. KDF	4/21/04	1600	1. Michael Lafferty	4/22/04	1025
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:
Method of Shipment: FED EX Airbill Number:
Analytical Lab: AIR TOXICS Delivery Location: Folsom, CA
Lab Recipient: Delivery Date/Time

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-t) Sample, FD = Field Duplicate (-d) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-e) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-a)
3.) Sample Number: Unique sample number collected from a particular location per day (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SD = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Sample (trip, equipment, ambient, etc.) SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 101099-01 in the Equipment Blank Lot Control)

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab Copy PINK COPY - Working File

Air Toxics
SDG 0404419A

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404419A

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4000	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-2-3	Modified TO-15	6.0 "Hg
02A	SV-3-3	Modified TO-15	5.5 "Hg
03A	SV-3-8	Modified TO-15	4.5 "Hg
04A	Lab Blank	Modified TO-15	NA
05A	CCV	Modified TO-15	NA
06A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda S. Freeman

Laboratory Director

DATE: 04/26/04

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Bhate Environmental Associates
Workorder# 0404419A

Three 6 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	*TO-14A/TO-15*	*ATL Modifications*
BFB acceptance criteria	CLP protocol (TO-15)	SW-846 protocol
Concentration of IS spike	10 ppbv (TO-15)	25 ppbv
Dilutions for initial calibration	Dynamic dilutions or static using canisters	Syringe dilutions
Daily CCV	</= 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Primary ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91, Vinyl Acetate: 43, 2-Butanone: 43, 4-Methyl-2-Pentanone: 43.	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106, Vinyl Acetate: 86, 2-Butanone: 72, 4-Methyl-2-Pentanone: 58.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Sample Drying System	Nafion Dryer (TO-14A)	Multisorbent
Sample Load Volume	400 mL (TO-14A)	Varied to 0.2 L.
Blank Acceptance Criteria.	< 0.20 ppbv (TO-14A)	< RL
BFB Absolute Abundance Criteria (TO-14A)	Within 10% of that from the previous day.	CCV internal standard area counts are compared to ICAL, corrective action for > 40 % D.
Initial Calibration	</= 30 %RSD (TO-14A)	</= 30 % RSD with 2 compounds allowed out to </= 40 % RSD.
IS Recoveries	Within 40% of mean over ICAL for blanks, and within 40 % of daily CCV for samples. (TO-15)	Within 40% of CCV recoveries for blank and samples.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated Peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-2-3

ID#: 0404419A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042612	Date of Collection:	4/20/04
Dil. Factor:	1.68	Date of Analysis:	4/26/04 04:05 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.84	Not Detected	2.7	Not Detected
Toluene	0.84	Not Detected	3.2	Not Detected
Ethyl Benzene	0.84	Not Detected	3.7	Not Detected
m,p-Xylene	0.84	Not Detected	3.7	Not Detected
o-Xylene	0.84	Not Detected	3.7	Not Detected
2-Propanol	3.4	Not Detected	8.4	Not Detected
Methyl tert-butyl ether	3.4	Not Detected	12	Not Detected
Naphthalene	3.4	Not Detected	18	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-3-3

ID#: 0404419A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042613	Date of Collection:	4/20/04
Dil. Factor:	1.64	Date of Analysis:	4/26/04 04:46 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.82	Not Detected	2.7	Not Detected
Toluene	0.82	1.4	3.1	5.2
Ethyl Benzene	0.82	Not Detected	3.6	Not Detected
m,p-Xylene	0.82	Not Detected	3.6	Not Detected
o-Xylene	0.82	Not Detected	3.6	Not Detected
2-Propanol	3.3	Not Detected	8.2	Not Detected
Methyl tert-butyl ether	3.3	Not Detected	12	Not Detected
Naphthalene	3.3	Not Detected	17	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-3-8

ID#: 0404419A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042614	Date of Collection:	4/20/04
Dil. Factor:	1.58	Date of Analysis:	4/26/04 05:26 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.79	Not Detected	2.6	Not Detected
Toluene	0.79	Not Detected	3.0	Not Detected
Ethyl Benzene	0.79	Not Detected	3.5	Not Detected
m,p-Xylene	0.79	Not Detected	3.5	Not Detected
o-Xylene	0.79	Not Detected	3.5	Not Detected
2-Propanol	3.2	Not Detected	7.9	Not Detected
Methyl tert-butyl ether	3.2	Not Detected	12	Not Detected
Naphthalene	3.2	Not Detected	17	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404419A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	I042607	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 12:31 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
2-Propanol	2.0	Not Detected	5.0	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.3	Not Detected
Naphthalene	2.0	Not Detected	11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0404419A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042603	**Date of Collection: NA**	
Dil. Factor:	1.00	**Date of Analysis: 4/26/04 09:44 AM**	

Compound	%Recovery
Benzene	95
Toluene	104
Ethyl Benzene	100
m,p-Xylene	103
o-Xylene	104
2-Propanol	84
Methyl tert-butyl ether	92
Naphthalene	66

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404419A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**i042605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/26/04 11:06 AM**	

Compound	%Recovery
Benzene	98
Toluene	97
Ethyl Benzene	93
m,p-Xylene	93
o-Xylene	92
2-Propanol	89
Methyl tert-butyl ether	82
Naphthalene	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	107	70-130

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CHAIN-OF-CUSTODY RECORD

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX: (916) 985-1020

Contact Person: Jerry Pelfrey
Company: BHATE Environmental
Address: 1641 Vandergriff Rd. City: HAFB State: NM Zip: 88330
Phone: 505-679-2100 FAX: 505-679-2148
Collected By: (Signature) [signature]

Project info:
P.O. #
Project # 9040002.01.03
Project Name SS-57

Turn Around Time:
☐ Normal
☒ Rush 48 Hours (Specify)

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
	~~SV-1-3~~	~~4/19/04 @ 1527~~	~~SEE ATTACHMENT~~	~~-31.50~~ ~~-5.5 K~~	-5.50 K	
	~~SV-1-8~~	~~4/19/04 @ 1454~~	~~SEE ATTACHMENT~~	-28.0	-1.0 K	
01A	SV-2-3	4/20/04 @ 1050	SEE ATTACHMENT	-30.0	-5.0	6.0" Hg
	~~SV-2-8~~	~~4/20/04 @ 0959~~	~~SEE ATTACHMENT~~	~~-26.0~~	0.0 K	
02A	SV-3-3	4/20/04 @ 1130	SEE ATTACHMENT	-30.0	-5.0	5.5" Hg
03A	SV-3-8	4/20/04 @ 1200	SEE ATTACHMENT	-25.5	0.0	4.5" Hg
	~~Background~~	~~4/20/04 @ 1015~~	~~SEE ATTACHMENT~~	-26.0	0.0 K	

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
[signature] 4/21/04 1100	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time 4/22/04 1030 [signature] ATL
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes: Please FAX results to 505-679-2148
FED EX # 845705836354
Email PDF to Hollman

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	845705836343	[illegible]	—	Good	Yes No None	0404419A

Form 1233 rev. 08

Air Toxics
SDG 0404419B

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404419B

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4026	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/2004	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/2004		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-2-3	Modified TO-3	6.0 "Hg
02A	SV-3-3	Modified TO-3	5.5 "Hg
03A	SV-3-8	Modified TO-3	4.5 "Hg
04A	Lab Blank	Modified TO-3	NA
05A	LCS	Modified TO-3	NA

CERTIFIED BY: Linda L. Freeman

Laboratory Director

DATE: 04/26/04

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-3
Bhate Environmental Associates
Workorder# 0404419B

Three 6 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. The TPH (Gasoline Range) results are calculated using the response factor of Gasoline and correspond to the range of hydrocarbons from C5 to C10. A molecular weight of 100 is used to convert the TPH (Gasoline Range) ppmv result to ug/L. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	*TO-3*	*ATL Modifications*
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch </= 20 samples
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-2-3

ID#: 0404419B-01A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042312	Date of Collection:	4/20/04
Dil. Factor:	1.68	Date of Analysis:	4/23/04 01:30 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.042	0.17	0.083	0.34

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	89	75-150

AIR TOXICS LTD.

SAMPLE NAME: SV-3-3

ID#: 0404419B-02A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042313	Date of Collection:	4/20/04
Dil. Factor:	1.64	Date of Analysis:	4/23/04 02:05 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.041	0.17	0.047	0.20

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	88	75-150

AIR TOXICS LTD.

SAMPLE NAME: SV-3-8

ID#: 0404419B-03A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042314	Date of Collection:	4/20/04
Dil. Factor:	1.58	Date of Analysis:	4/23/04 02:39 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.040	0.16	0.050	0.21

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	89	75-150

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404419B-04A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042304	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/23/04 08:41 AM	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.025	0.10	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	88	75-150

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404419B-05A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042303	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	4/23/04 08:07 AM

Compound	%Recovery
TPH (Gasoline Range)	107

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	104	75-150

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CHAIN-OF-CUSTODY RECORD

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FOLSOM, CA 95630-4719
(916) 985-1000 FAX: (916) 985-1020

Contact Person: Jerry Pelfrey
Company: BHATE Environmental
Address: 1641 Vandergrift Rd. City: HAFB State: NM Zip: 88330
Phone: 505-679-2100 FAX: 505-679-2148
Collected By: Signature: [signature]

Project info:
P.O. #:
Project #: 9040002.01.03
Project Name: SS-57

Turn Around Time:
☐ Normal
☒ Rush 48 Hours
Specify

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
	~~SV-1-3~~	~~4/19/04@ 1527~~	~~SEE ATTACHMENT~~	~~-31.50~~ ~~-5.5 KG~~	~~-3.50 KG~~	
	~~SV-1-8~~	~~4/19/04@ 1454~~	~~SEE ATTACHMENT~~	~~-28.0~~	~~-1.0 KG~~	
01A	SV-2-3	4/20/04@ 1050	SEE ATTACHMENT	-30.0	-5.0	6.0" Hg
	~~SV-2-8~~	~~4/20/04@ 0959~~	~~SEE ATTACHMENT~~	~~-26.0~~	~~0.0 KG~~	
02A	SV-3-3	4/20/04@ 1130	SEE ATTACHMENT	-30.0	-5.0	5.5" Hg
03A	SV-3-8	4/20/04@ 1200	SEE ATTACHMENT	-25.5	0.0	4.5" Hg
	~~BACKGROUND~~	~~4/20/04@ 1015~~	~~SEE ATTACHMENT~~	~~-26.0~~	~~0.0 KG~~	

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
[signature] 4/21/04 1100	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
	[signature] ATL 4/22/04 1030
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes: PLEASE FAX RESULTS TO 505-679-2148
FED EX # 845705836354
EMAIL PDF TO HOLLOMAN

Lab Use Only	Shipper Name	Air Bill #	Opened By:	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	845705836343	[illegible]	—	Good	Yes No None	0404413B

Form 1298 rev. 09

Air Toxics
SDG 0404419AR1

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404419AR1

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4000	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/2004	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/2004		
DATE REISSUED:	9/1/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-2-3	Modified TO-15	6.0 "Hg
02A	SV-3-3	Modified TO-15	5.5 "Hg
03A	SV-3-8	Modified TO-15	4.5 "Hg
04A	Lab Blank	Modified TO-15	NA
05A	CCV	Modified TO-15	NA
06A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda J. Freeman

Laboratory Director

DATE: 09/07/04

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/04, Expiration date: 06/30/05
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15
Bhate Environmental Associates
Workorder# 0404419AR1

Three 6 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	*TO-15*	*ATL Modifications*
BFB acceptance criteria	CLP protocol (TO-15)	SW-846 protocol
Concentration of IS spike	10 ppbv (TO-15)	25 ppbv
Dilutions for initial calibration	Dynamic dilutions or static using canisters	Syringe dilutions
Daily CCV	</= 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Primary ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91, Vinyl Acetate: 43, 2-Butanone: 43, 4-Methyl-2-Pentanone: 43.	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106, Vinyl Acetate: 86, 2-Butanone: 72, 4-Methyl-2-Pentanone: 58.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Sample Drying System	Nafion Dryer (TO-14A)	Multisorbent
Sample Load Volume	400 mL (TO-14A)	Varied to 0.2 L.
Blank Acceptance Criteria.	< 0.20 ppbv (TO-14A)	< RL
BFB Absolute Abundance Criteria (TO-14A)	Within 10% of that from the previous day.	CCV internal standard area counts are compared to ICAL, corrective action for > 40 % D.
Initial Calibration	</= 30 %RSD (TO-14A)	</= 30 % RSD with 2 compounds allowed out to </= 40 % RSD.
IS Recoveries	Within 40% of mean over ICAL for blanks, and within 40 % of daily CCV for samples. (TO-15)	Within 40% of CCV recoveries for blank and samples.
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). In a few instances analyte concentration in the spiked replicate was 10X the MDL. A list of these compounds is available. There is no impact on data quality.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

THE WORK ORDER WAS REISSUED ON SEPTEMBER 7, 2004 TO REPORT ADDITIONAL COMPOUNDS PER CLIENT REQUEST.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated Peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-2-3

ID#: 0404419AR1-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042612r1	Date of Collection:	4/20/04
Dil. Factor:	1.68	Date of Analysis:	4/26/04 04:05 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.84	Not Detected	2.7	Not Detected
Toluene	0.84	Not Detected	3.2	Not Detected
Ethyl Benzene	0.84	Not Detected	3.7	Not Detected
m,p-Xylene	0.84	Not Detected	3.7	Not Detected
o-Xylene	0.84	Not Detected	3.7	Not Detected
2-Propanol	3.4	Not Detected	8.4	Not Detected
Methyl tert-butyl ether	3.4	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	0.84	Not Detected	4.2	Not Detected
1,3,5-Trimethylbenzene	0.84	Not Detected	4.2	Not Detected
Acetone	3.4	Not Detected	8.1	Not Detected
Carbon Disulfide	0.84	Not Detected	2.6	Not Detected
Chloroform	0.50	3.9	2.5	20
Cumene	0.84	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.84	Not Detected	2.5	Not Detected
1,4-Dichlorobenzene	0.84	Not Detected	5.1	Not Detected
Cyclohexane	0.84	Not Detected	2.9	Not Detected
Hexane	0.84	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.84	Not Detected	5.1	Not Detected
Trichloroethene	0.84	Not Detected	4.6	Not Detected
Naphthalene	3.4	Not Detected	18	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-3-3

ID#: 0404419AR1-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042613r1	Date of Collection:	4/20/04
Dil. Factor:	1.64	Date of Analysis:	4/26/04 04:46 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.82	Not Detected	2.7	Not Detected
Toluene	0.82	1.4	3.1	5.2
Ethyl Benzene	0.82	Not Detected	3.6	Not Detected
m,p-Xylene	0.82	Not Detected	3.6	Not Detected
o-Xylene	0.82	Not Detected	3.6	Not Detected
2-Propanol	3.3	Not Detected	8.2	Not Detected
Methyl tert-butyl ether	3.3	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	0.82	Not Detected	4.1	Not Detected
1,3,5-Trimethylbenzene	0.82	Not Detected	4.1	Not Detected
Acetone	3.3	Not Detected	7.9	Not Detected
Carbon Disulfide	0.82	Not Detected	2.6	Not Detected
Chloroform	0.49	2.5	2.4	12
Cumene	0.82	Not Detected	4.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	Not Detected	2.4	Not Detected
1,4-Dichlorobenzene	0.82	Not Detected	5.0	Not Detected
Cyclohexane	0.82	Not Detected	2.9	Not Detected
Hexane	0.82	Not Detected	2.9	Not Detected
1,3-Dichlorobenzene	0.82	Not Detected	5.0	Not Detected
Trichloroethene	0.82	Not Detected	4.5	Not Detected
Naphthalene	3.3	Not Detected	17	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-3-8

ID#: 0404419AR1-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042614r1	Date of Collection:	4/20/04
Dil. Factor:	1.58	Date of Analysis:	4/26/04 05:26 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.79	Not Detected	2.6	Not Detected
Toluene	0.79	Not Detected	3.0	Not Detected
Ethyl Benzene	0.79	Not Detected	3.5	Not Detected
m,p-Xylene	0.79	Not Detected	3.5	Not Detected
o-Xylene	0.79	Not Detected	3.5	Not Detected
2-Propanol	3.2	Not Detected	7.9	Not Detected
Methyl tert-butyl ether	3.2	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	0.79	Not Detected	3.9	Not Detected
1,3,5-Trimethylbenzene	0.79	Not Detected	3.9	Not Detected
Acetone	3.2	7.5	7.6	18
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
Chloroform	0.47	1.6	2.4	8.0
Cumene	0.79	Not Detected	3.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.4	Not Detected
1,4-Dichlorobenzene	0.79	Not Detected	4.8	Not Detected
Cyclohexane	0.79	Not Detected	2.8	Not Detected
Hexane	0.79	Not Detected	2.8	Not Detected
1,3-Dichlorobenzene	0.79	Not Detected	4.8	Not Detected
Trichloroethene	0.79	Not Detected	4.3	Not Detected
Naphthalene	3.2	Not Detected	17	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404419AR1-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042607	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 12:31 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
2-Propanol	2.0	Not Detected	5.0	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.3	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.5	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.5	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
Chloroform	0.30	Not Detected	1.5	Not Detected
Cumene	0.50	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Naphthalene	2.0	Not Detected	11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0404419AR1-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042603	**Date of Collection:**	NA
Dil. Factor:	1.00	**Date of Analysis:**	4/26/04 09:44 AM

Compound	%Recovery
Benzene	95
Toluene	104
Ethyl Benzene	100
m,p-Xylene	103
o-Xylene	104
2-Propanol	84
Methyl tert-butyl ether	92
1,2,4-Trimethylbenzene	97
1,3,5-Trimethylbenzene	104
Acetone	80
Carbon Disulfide	89
Chloroform	106
Cumene	114
2-Butanone (Methyl Ethyl Ketone)	99
1,4-Dichlorobenzene	90
Cyclohexane	103
Hexane	88
1,3-Dichlorobenzene	92
Trichloroethene	104
Naphthalene	66

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404419AR1-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042605	**Date of Collection: NA**	
Dil. Factor:	1.00	**Date of Analysis: 4/26/04 11:06 AM**	

Compound	%Recovery
Benzene	98
Toluene	97
Ethyl Benzene	93
m,p-Xylene	93
o-Xylene	92
2-Propanol	89
Methyl tert-butyl ether	82
1,2,4-Trimethylbenzene	79
1,3,5-Trimethylbenzene	90
Acetone	75
Carbon Disulfide	85
Chloroform	99
Cumene	87
2-Butanone (Methyl Ethyl Ketone)	84
1,4-Dichlorobenzene	79
Cyclohexane	96
Hexane	82
1,3-Dichlorobenzene	87
Trichloroethene	107
Naphthalene	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	107	70-130

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(916) 985-1000 FAX: (916) 985-1020

Contact Person: Jerry Pelfrey
Company: BHATE Environmental
Address: 1641 Vandegrift Rd. City: HAFB State: NM Zip: 88330
Phone: 505-679-2100 FAX: 505-679-2148
Collected By: Signature: [signature]

Project info:
P.O. #:
Project #: 9040002.01.03
Project Name: SS-57

Turn Around Time:
☐ Normal
☒ Rush 48 Hours (Specify)

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
	~~SV-1-3~~	~~4/19/04 @ 1527~~	~~SEE ATTACHMENT~~	~~-31.50~~ ~~-5.5 KC~~	~~-5.50 KC~~	
	~~SV-1-8~~	~~4/19/04 @ 1454~~	~~SEE ATTACHMENT~~	~~-28.0~~	~~-1.0 KC~~	
01A	SV-2-3	4/20/04 @ 1050	SEE ATTACHMENT	-30.0	-5.0	6.0" Hg
	~~SV-2-8~~	~~4/20/04 @ 0959~~	~~SEE ATTACHMENT~~	~~-26.0~~	~~0.0 KC~~	
02A	SV-3-3	4/20/04 @ 1130	SEE ATTACHMENT	-30.0	-5.0	5.5" Hg
03A	SV-3-8	4/20/04 @ 1200	SEE ATTACHMENT	-25.5	0.0	4.5" Hg
	~~Background~~	~~4/20/04 @ 1015~~	~~SEE ATTACHMENT~~	~~-26.0~~	~~0.0 KC~~	

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
[signature] 4/21/04 1600	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time: [signature] ATL 4/22/04 0930
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes: Please fax results to 505-679-2148
FED EX # 8457058363 54
Email PDF to Holloman

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	8457 0583 6343	[signature]	—	Good	Yes No None	0404419A

Form 1283 rev 08

Air Toxics
SDG 0404420A

AIR TOXICS LTD.

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WORK ORDER #: 0404420A

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4026	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-1-3	Modified TO-15	4.5 "Hg
02A	SV-1-8	Modified TO-15	4.5 "Hg
03A	SV-2-8	Modified TO-15	6.0 "Hg
04A	Background	Modified TO-15	4.0 "Hg
05A	Lab Blank	Modified TO-15	NA
06A	CCV	Modified TO-15	NA
07A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda S. Freeman

DATE: 04/26/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- Al 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15
Bhate Environmental Associates
Workorder# 0404420A

Four 6 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	*TO-14A/TO-15*	*ATL Modifications*
BFB acceptance criteria	CLP protocol (TO-15)	SW-846 protocol
Concentration of IS spike	10 ppbv (TO-15)	25 ppbv
Dilutions for initial calibration	Dynamic dilutions or static using canisters	Syringe dilutions
Daily CCV	</= 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Primary ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91, Vinyl Acetate: 43, 2-Butanone: 43, 4-Methyl-2-Pentanone: 43.	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106, Vinyl Acetate: 86, 2-Butanone: 72, 4-Methyl-2-Pentanone: 58.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Sample Drying System	Nafion Dryer (TO-14A)	Multisorbent
Sample Load Volume	400 mL (TO-14A)	Varied to 0.2 L.
Blank Acceptance Criteria.	< 0.20 ppbv (TO-14A)	< RL
BFB Absolute Abundance Criteria (TO-14A)	Within 10% of that from the previous day.	CCV internal standard area counts are compared to ICAL, corrective action for > 40 % D.
Initial Calibration	</= 30 %RSD (TO-14A)	</= 30 % RSD with 2 compounds allowed out to </= 40 % RSD.
IS Recoveries	Within 40% of mean over ICAL for blanks, and within 40 % of daily CCV for samples. (TO-15)	Within 40% of CCV recoveries for blank and samples.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated Peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-1-3

ID#: 0404420A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042611	Date of Collection:	4/19/04
Dil. Factor:	1.58	Date of Analysis:	4/26/04 03:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.79	Not Detected	2.6	Not Detected
Toluene	0.79	Not Detected	3.0	Not Detected
Ethyl Benzene	0.79	Not Detected	3.5	Not Detected
m,p-Xylene	0.79	Not Detected	3.5	Not Detected
o-Xylene	0.79	0.88	3.5	3.9
2-Propanol	3.2	Not Detected	7.9	Not Detected
Methyl tert-butyl ether	3.2	Not Detected	12	Not Detected
Naphthalene	3.2	9.6	17	51

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	105	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-1-8

ID#: 0404420A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**i042610**	**Date of Collection:**	**4/19/04**
Dil. Factor:	**1.58**	**Date of Analysis:**	**4/26/04 02:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.79	Not Detected	2.6	Not Detected
Toluene	0.79	Not Detected	3.0	Not Detected
Ethyl Benzene	0.79	Not Detected	3.5	Not Detected
m,p-Xylene	0.79	1.2	3.5	5.4
o-Xylene	0.79	2.3	3.5	10
2-Propanol	3.2	8.1	7.9	20
Methyl tert-butyl ether	3.2	Not Detected	12	Not Detected
Naphthalene	3.2	Not Detected	17	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	105	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-2-8

ID#: 0404420A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042609	Date of Collection:	4/20/04
Dil. Factor:	1.68	Date of Analysis:	4/26/04 02:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.84	Not Detected	2.7	Not Detected
Toluene	0.84	Not Detected	3.2	Not Detected
Ethyl Benzene	0.84	Not Detected	3.7	Not Detected
m,p-Xylene	0.84	Not Detected	3.7	Not Detected
o-Xylene	0.84	Not Detected	3.7	Not Detected
2-Propanol	3.4	Not Detected	8.4	Not Detected
Methyl tert-butyl ether	3.4	Not Detected	12	Not Detected
Naphthalene	3.4	Not Detected	18	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	106	70-130

AIR TOXICS LTD.

SAMPLE NAME: Background

ID#: 0404420A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042608	Date of Collection:	4/20/04
Dil. Factor:	1.55	Date of Analysis:	4/26/04 01:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.78	Not Detected	2.5	Not Detected
Toluene	0.78	Not Detected	3.0	Not Detected
Ethyl Benzene	0.78	Not Detected	3.4	Not Detected
m,p-Xylene	0.78	Not Detected	3.4	Not Detected
o-Xylene	0.78	Not Detected	3.4	Not Detected
2-Propanol	3.1	Not Detected	7.7	Not Detected
Methyl tert-butyl ether	3.1	Not Detected	11	Not Detected
Naphthalene	3.1	Not Detected	16	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404420A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042607	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 12:31 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
2-Propanol	2.0	Not Detected	5.0	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.3	Not Detected
Naphthalene	2.0	Not Detected	11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0404420A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042603	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 09:44 AM	

Compound	%Recovery
Benzene	95
Toluene	104
Ethyl Benzene	100
m,p-Xylene	103
o-Xylene	104
2-Propanol	84
Methyl tert-butyl ether	92
Naphthalene	66

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404420A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042605	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 11:06 AM	

Compound	%Recovery
Benzene	98
Toluene	97
Ethyl Benzene	93
m,p-Xylene	93
o-Xylene	92
2-Propanol	89
Methyl tert-butyl ether	82
Naphthalene	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	107	70-130

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Contact Person: Jerry Pelfrey
Company: BHATE ENVIRONMENTAL
Address: 1641 Vandergrift Rd. City: HOBB State: NM Zip: 88330
Phone: 505-679-2100 FAX: 505-679-2148
Collected By: Signature

Project info:
P.O. #
Project # 9040002.01.03
Project Name: SS-57

Turn Around Time:
☐ Normal
☒ Rush 48 Hours
Specify

MW 4.22.04

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	SV-1-3	4/19/04@ 1527	SEE ATTACHMENT	-31.50	-5.50	4.5" Hg
02A	SV-1-8	4/19/04@ 1454	SEE ATTACHMENT	-28.0	-1.0	4.5" Hg
03A	SV-2-8	4/20/04@ 0959	SEE ATTACHMENT	-26.0	0.0	6.0" Hg
04A	Background	4/20/04@ 1015	SEE ATTACHMENT	-26.0	0.0	4.0" Hg

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
Linda D. Lumsden 4/20/04 1600	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time 4/22/04 Lawrence Hathway ATL 1030
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes: PLEASE FAX RESULTS TO 505-679-2148
FED EX # 845 7058 3 6343
EMAIL PDF TO HOILOMAN

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	8457 0583 6343		—	Good	Yes No None	CA 4/22/04 ~~0404410~~

Form 1293 Rev. 09

0404420A

Air Toxics
SDG 0404420B

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404420B

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4026	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/2004	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/2004		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-1-3	Modified TO-3	4.5 "Hg
02A	SV-1-8	Modified TO-3	4.5 "Hg
03A	SV-2-8	Modified TO-3	6.0 "Hg
04A	Background	Modified TO-3	4.0 "Hg
05A	Lab Blank	Modified TO-3	NA
06A	LCS	Modified TO-3	NA

CERTIFIED BY: Linda L. Freeman

Laboratory Director

DATE: 04/26/04

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-3
Bhate Environmental Associates
Workorder# 0404420B

Four 6 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. The TPH (Gasoline Range) results are calculated using the response factor of Gasoline and correspond to the range of hydrocarbons from C5 to C10. A molecular weight of 100 is used to convert the TPH (Gasoline Range) ppmv result to ug/L. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	*TO-3*	*ATL Modifications*
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch <= 20 samples
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-1-3

ID#: 0404420B-01A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042315	Date of Collection:	4/19/04
Dil. Factor:	1.58	Date of Analysis:	4/23/04 03:13 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.040	0.16	0.074	0.31

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	87	75-150

AIR TOXICS LTD.

SAMPLE NAME: SV-1-8

ID#: 0404420B-02A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042316	Date of Collection:	4/19/04
Dil. Factor:	1.58	Date of Analysis:	4/23/04 03:48 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.040	0.16	0.072	0.30

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	89	75-150

AIR TOXICS LTD.

SAMPLE NAME: SV-2-8

ID#: 0404420B-03A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042317	Date of Collection:	4/20/04
Dil. Factor:	1.68	Date of Analysis:	4/23/04 04:25 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.042	0.17	0.13	0.53

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	89	75-150

AIR TOXICS LTD.

SAMPLE NAME: Background

ID#: 0404420B-04A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042318	Date of Collection:	4/20/04
Dil. Factor:	1.55	Date of Analysis:	4/23/04 05:06 PM

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.039	0.16	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	90	75-150

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404420B-05A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042304	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/23/04 08:41 AM	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH (Gasoline Range)	0.025	0.10	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	88	75-150

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404420B-06A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	d042303	**Date of Collection: NA**	
Dil. Factor:	1.00	**Date of Analysis: 4/23/04 08:07 AM**	

Compound	%Recovery
TPH (Gasoline Range)	107

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	104	75-150

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CHAIN-OF-CUSTODY RECORD

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FOLSOM, CA 95630-4719
(916) 985-1000 FAX: (916) 985-1020

Contact Person: Jerry Pelfrey
Company: BHATE Environmental
Address: 1641 Vandergrift Rd. City: HAFB State: NM Zip: 88330
Phone: 505-679-2100 FAX: 505-679-2148
Collected By: Signature

Project Info:
P.O. #
Project #: 9040002.06.03
Project Name: SS-57

Turn Around Time:
☐ Normal
☒ Rush: 48 Hours (Specify)

Rev 4 22.04

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	SV-1-3	4/19/04 @ 1527	SEE ATTACHMENT	-31.50	-5.50	4.5" Hg
02A	SV-1-8	4/19/04 @ 1454	SEE ATTACHMENT	-28.0	-1.0	4.5" Hg
03A	SV-2-8	4/20/04 @ 0959	SEE ATTACHMENT	-26.0	0.0	6.0" Hg
04A	Background	4/20/04 @ 1015	SEE ATTACHMENT	-26.0	0.0	4.0" Hg

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
[signature] 4/21/04 1600	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
	[signature] ATL 4/22/04 1030
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes: Please Fax results to 505-679-2148
FED Ex # 845 7058 3 6343
Email PDF to Holoman

Lab Use Only	Shipper Name	Air Bill #	Opened By:	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	845 7058 3 6343	[illegible]	—	Good	Yes No None	CA 4/22/04 040441

Form 1293 rev. 09

040440B

Air Toxics
SDG 0404420AR1

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404420AR1

Work Order Summary

CLIENT:	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001	**BILL TO:**	Mr. Michael D'auben Bhate Environmental Associates 1608 13th Avenue South Suite 300 Birmingham, AL 35285-0001
PHONE:	205-918-4000	**P.O. #**	
FAX:		**PROJECT #**	9040002.01.03 SS-57
DATE RECEIVED:	4/22/2004	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/26/2004		
DATE REISSUED:	9/1/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-1-3	Modified TO-15	4.5 "Hg
02A	SV-1-8	Modified TO-15	4.5 "Hg
03A	SV-2-8	Modified TO-15	6.0 "Hg
04A	Background	Modified TO-15	4.0 "Hg
05A	Lab Blank	Modified TO-15	NA
06A	CCV	Modified TO-15	NA
07A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda S. Freeman

DATE: 09/07/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/04, Expiration date: 06/30/05
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15
Bhate Environmental Associates
Workorder# 0404420AR1

Four 6 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	*TO-15*	*ATL Modifications*
BFB acceptance criteria	CLP protocol (TO-15)	SW-846 protocol
Concentration of IS spike	10 ppbv (TO-15)	25 ppbv
Dilutions for initial calibration	Dynamic dilutions or static using canisters	Syringe dilutions
Daily CCV	</= 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Primary ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91, Vinyl Acetate: 43, 2-Butanone: 43, 4-Methyl-2-Pentanone: 43.	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106, Vinyl Acetate: 86, 2-Butanone: 72, 4-Methyl-2-Pentanone: 58.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Sample Drying System	Nafion Dryer (TO-14A)	Multisorbent
Sample Load Volume	400 mL (TO-14A)	Varied to 0.2 L.
Blank Acceptance Criteria.	< 0.20 ppbv (TO-14A)	< RL
BFB Absolute Abundance Criteria (TO-14A)	Within 10% of that from the previous day.	CCV internal standard area counts are compared to ICAL, corrective action for > 40 % D.
Initial Calibration	</= 30 %RSD (TO-14A)	</= 30 % RSD with 2 compounds allowed out to </= 40 % RSD.
IS Recoveries	Within 40% of mean over ICAL for blanks, and within 40 % of daily CCV for samples. (TO-15)	Within 40% of CCV recoveries for blank and samples.
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). In a few instances analyte concentration in the spiked replicate was 10X the MDL. A list of these compounds is available. There is no impact on data quality.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

THE WORK ORDER WAS REISSUED ON SEPTEMBER 7, 2004 TO REPORT ADDITIONAL COMPOUNDS PER CLIENT REQUEST.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated Peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: SV-1-3

ID#: 0404420AR1-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042611r1	Date of Collection:	4/19/04
Dil. Factor:	1.58	Date of Analysis:	4/26/04 03:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.79	Not Detected	2.6	Not Detected
Toluene	0.79	Not Detected	3.0	Not Detected
Ethyl Benzene	0.79	Not Detected	3.5	Not Detected
m,p-Xylene	0.79	Not Detected	3.5	Not Detected
o-Xylene	0.79	0.88	3.5	3.9
2-Propanol	3.2	Not Detected	7.9	Not Detected
Methyl tert-butyl ether	3.2	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	0.79	Not Detected	3.9	Not Detected
1,3,5-Trimethylbenzene	0.79	Not Detected	3.9	Not Detected
Acetone	3.2	Not Detected	7.6	Not Detected
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
Chloroform	0.47	8.6	2.4	43
Cumene	0.79	Not Detected	3.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.4	Not Detected
1,4-Dichlorobenzene	0.79	Not Detected	4.8	Not Detected
Cyclohexane	0.79	Not Detected	2.8	Not Detected
Hexane	0.79	Not Detected	2.8	Not Detected
1,3-Dichlorobenzene	0.79	Not Detected	4.8	Not Detected
Trichloroethene	0.79	Not Detected	4.3	Not Detected
Naphthalene	3.2	9.6	17	51

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	105	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-1-8

ID#: 0404420AR1-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**i042610r1**	**Date of Collection:**	**4/19/04**
Dil. Factor:	**1.58**	**Date of Analysis:**	**4/26/04 02:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.79	Not Detected	2.6	Not Detected
Toluene	0.79	Not Detected	3.0	Not Detected
Ethyl Benzene	0.79	Not Detected	3.5	Not Detected
m,p-Xylene	0.79	1.2	3.5	5.4
o-Xylene	0.79	2.3	3.5	10
2-Propanol	3.2	8.1	7.9	20
Methyl tert-butyl ether	3.2	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	0.79	1.2	3.9	5.9
1,3,5-Trimethylbenzene	0.79	3.7	3.9	19
Acetone	3.2	Not Detected	7.6	Not Detected
Carbon Disulfide	0.79	Not Detected	2.5	Not Detected
Chloroform	0.47	3.7	2.4	18
Cumene	0.79	Not Detected	3.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.79	Not Detected	2.4	Not Detected
1,4-Dichlorobenzene	0.79	Not Detected	4.8	Not Detected
Cyclohexane	0.79	Not Detected	2.8	Not Detected
Hexane	0.79	Not Detected	2.8	Not Detected
1,3-Dichlorobenzene	0.79	Not Detected	4.8	Not Detected
Trichloroethene	0.79	Not Detected	4.3	Not Detected
Naphthalene	3.2	Not Detected	17	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	105	70-130

AIR TOXICS LTD.

SAMPLE NAME: SV-2-8

ID#: 0404420AR1-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042609r1	Date of Collection:	4/20/04
Dil. Factor:	1.68	Date of Analysis:	4/26/04 02:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.84	Not Detected	2.7	Not Detected
Toluene	0.84	Not Detected	3.2	Not Detected
Ethyl Benzene	0.84	Not Detected	3.7	Not Detected
m,p-Xylene	0.84	Not Detected	3.7	Not Detected
o-Xylene	0.84	Not Detected	3.7	Not Detected
2-Propanol	3.4	Not Detected	8.4	Not Detected
Methyl tert-butyl ether	3.4	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	0.84	Not Detected	4.2	Not Detected
1,3,5-Trimethylbenzene	0.84	Not Detected	4.2	Not Detected
Acetone	3.4	Not Detected	8.1	Not Detected
Carbon Disulfide	0.84	Not Detected	2.6	Not Detected
Chloroform	0.50	76	2.5	380
Cumene	0.84	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.84	Not Detected	2.5	Not Detected
1,4-Dichlorobenzene	0.84	Not Detected	5.1	Not Detected
Cyclohexane	0.84	Not Detected	2.9	Not Detected
Hexane	0.84	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.84	Not Detected	5.1	Not Detected
Trichloroethene	0.84	Not Detected	4.6	Not Detected
Naphthalene	3.4	Not Detected	18	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	106	70-130

AIR TOXICS LTD.

SAMPLE NAME: Background

ID#: 0404420AR1-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042608r1	Date of Collection:	4/20/04
Dil. Factor:	1.55	Date of Analysis:	4/26/04 01:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.78	Not Detected	2.5	Not Detected
Toluene	0.78	Not Detected	3.0	Not Detected
Ethyl Benzene	0.78	Not Detected	3.4	Not Detected
m,p-Xylene	0.78	Not Detected	3.4	Not Detected
o-Xylene	0.78	Not Detected	3.4	Not Detected
2-Propanol	3.1	Not Detected	7.7	Not Detected
Methyl tert-butyl ether	3.1	Not Detected	11	Not Detected
1,2,4-Trimethylbenzene	0.78	Not Detected	3.9	Not Detected
1,3,5-Trimethylbenzene	0.78	Not Detected	3.9	Not Detected
Acetone	3.1	Not Detected	7.5	Not Detected
Carbon Disulfide	0.78	Not Detected	2.4	Not Detected
Chloroform	0.46	Not Detected	2.3	Not Detected
Cumene	0.78	Not Detected	3.9	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.78	Not Detected	2.3	Not Detected
1,4-Dichlorobenzene	0.78	Not Detected	4.7	Not Detected
Cyclohexane	0.78	Not Detected	2.7	Not Detected
Hexane	0.78	Not Detected	2.8	Not Detected
1,3-Dichlorobenzene	0.78	Not Detected	4.7	Not Detected
Trichloroethene	0.78	Not Detected	4.2	Not Detected
Naphthalene	3.1	Not Detected	16	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404420AR1-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042607	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 12:31 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
2-Propanol	2.0	Not Detected	5.0	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.3	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.5	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.5	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
Chloroform	0.30	Not Detected	1.5	Not Detected
Cumene	0.50	Not Detected	2.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Naphthalene	2.0	Not Detected	11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	104	70-130

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SAMPLE NAME: CCV

ID#: 0404420AR1-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042603	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/26/04 09:44 AM	

Compound	%Recovery
Benzene	95
Toluene	104
Ethyl Benzene	100
m,p-Xylene	103
o-Xylene	104
2-Propanol	84
Methyl tert-butyl ether	92
1,2,4-Trimethylbenzene	97
1,3,5-Trimethylbenzene	104
Acetone	80
Carbon Disulfide	89
Chloroform	106
Cumene	114
2-Butanone (Methyl Ethyl Ketone)	99
1,4-Dichlorobenzene	90
Cyclohexane	103
Hexane	88
1,3-Dichlorobenzene	92
Trichloroethene	104
Naphthalene	66

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404420AR1-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	i042605	**Date of Collection: NA**	
Dil. Factor:	1.00	**Date of Analysis: 4/26/04 11:06 AM**	

Compound	%Recovery
Benzene	98
Toluene	97
Ethyl Benzene	93
m,p-Xylene	93
o-Xylene	92
2-Propanol	89
Methyl tert-butyl ether	82
1,2,4-Trimethylbenzene	79
1,3,5-Trimethylbenzene	90
Acetone	75
Carbon Disulfide	85
Chloroform	99
Cumene	87
2-Butanone (Methyl Ethyl Ketone)	84
1,4-Dichlorobenzene	79
Cyclohexane	96
Hexane	82
1,3-Dichlorobenzene	87
Trichloroethene	107
Naphthalene	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	107	70-130

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(916) 985-1000 FAX: (916) 985-1020

Contact Person: Jerry Peffrey
Company: BHATE Environmental
Address: 1641 Vandergrift Rd. City: KAFB State: NM Zip: 88330
Phone: 505-679-2100 FAX: 505-679-2148
Collected By: Signature

Project info:
P.O. #
Project # 9040002.01.03
Project Name: SS-57

Turn Around Time:
☐ Normal
☒ Rush 48 Hours
Specify

MW 4.22.04

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	SV-1-3	4/19/04 @ 1527	SEE ATTACHMENT	-31.50	-5.50	4.5"Hg
02A	SV-1-8	4/19/04 @ 1454	SEE ATTACHMENT	-28.0	-1.0	4.5"Hg
03A	SV-2-8	4/20/04 @ 0959	SEE ATTACHMENT	-26.0	0.0	6.0"Hg
04A	BACKGROUND	4/20/04 @ 1015	SEE ATTACHMENT	-26.0	0.0	4.0"Hg

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
[signature] 4/21/04 1600	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
	[signature] ATL 4/22/04 1030
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes: Please FAX results to 505-679-2148
FED EX # 8457 0583 6343
Email PDF to Hollomann

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	8457 0583 6343	[signature]	—	Good	Yes No None	~~0404419~~ 04/18/04

Form 1206 rev. 09

0404420A

APPENDIX E

QUALITY CONTROL SUMMARY REPORTS

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	ELAB of Tennessee, Nashville, TN
Sample Delivery Group -	0402100
Analyses -	Seven samples for VOC, SVOC, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. There was hexane and xylene reported in one or more of the blanks in this set of data. Any results in the associated field samples less than five times the blank concentration should be considered non-detects "U".

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits with the following exceptions. The recoveries for methyl acetate exceeded the associated QC limits. This may indicate a high bias to the data and all positive results for this compound in the associated field samples should be considered estimated. The recovery for hexachlorocyclopentadiene was less than the associated QC limits. This may indicate a low bias to the data and all results for this compound should be considered estimated "J" or "UJ".

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits with the following exceptions. The recovery of the SVOC surrogates in SS57-SB04-02 was less than the associated QC limits. This may indicate a low bias to the data and all results should be considered estimated "J" or "UJ". The recovery of the TPH surrogates in samples SS57-SB02-01, SS57-SB04-01, and SS57-SB05-01 exceeded the associated QC limits. This may indicate a high bias to the data and all positive results for these compounds should be considered estimated "J".

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits with the following exceptions. The recoveries for TPH were high. This may indicate a matrix effect and a high bias to the data. All positive results for this compound should be qualified "J". The recoveries for 4-chloroanaline and hexachlorocyclopentadiene were low. This may indicate a low bias to the data and a matrix effect. All results for these compounds should be considered estimated "J" or "UJ".

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group. The reporting limits for TPH were elevated due to insufficient sample volume.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	ELAB of Tennessee, Nashville, TN
Sample Delivery Group -	0402119
Analyses -	Four samples for VOC, SVOC, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. There was acetone, carbon disulfide, and xylene reported in one or more of the blanks in this set of data. Any results in the associated field samples less than five times the blank concentration (or ten times for acetone) should be considered non-detects "U".

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits with the following exceptions. The recoveries for methyl acetate exceeded the associated QC limits. This may indicate a high bias to the data and all positive results for this compound in the associated field samples should be considered estimated.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits with the following exceptions. The recovery of the TPH surrogates in SS57-SB03-01 and SS57- exceeded the associated QC limits. This may indicate a high bias to the data and any positive results should be considered estimated "J".

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits with the following exceptions. The recoveries for TPH were high. This may indicate a matrix effect and a high bias to the data. All positive results for this compound should be qualified "J". The recoveries for 4-chloroanaline and hexachlorocyclopentadiene were low. This may indicate a low bias to the data and a matrix effect. All results for these compounds should be considered estimated "J" or "UJ".

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	ELAB of Tennessee, Nashville, TN
Sample Delivery Group -	0402164
Analyses -	Seven samples for VOC, SVOC, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. There was hexane found in one or more of the associated blanks. Any results in the associated field samples less than five times the blank concentration should be considered a non-detect. Due to laboratory error, Trip Blank 02 was not analyzed for volatiles. Since there were no positive volatile results in the associated field samples, no qualification of the data is required.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits with the following exceptions. The recoveries for methyl acetate were above the associated QC limits. This may indicate a matrix effect and a high bias to the data but since no positive results were reported for this compound, no qualification of the data is required.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits with the following exceptions. The TPH recoveries for samples SS57-SV02-7-8, SS57-SV01-2-3, and SS57-SV01-7-8 exceeded the associated QC limits. This may indicate a high bias to the data but since there were no positive TPH results in the associated field samples, no qualification of the data is required.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits with the following exceptions. The recovery for hexachlorocyclopentadiene was less than the associated QC limits. This relative percent difference (RPD) exceeded the associated QC limits. This may indicate a matrix effect and a low bias to the data so all results for this compound should be considered estimated "J" or "UJ".

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met. The reporting limits for the TPH analysis were elevated due to insufficient sample volume.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	Test America, Nashville, TN
Sample Delivery Group -	384827
Analyses -	Five samples for BTEX, PAH, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. There were C8-C10 aromatics reported in one or more of the blanks associated with this data package. All results for this parameter less than five times the blank concentration should be reported as non-detect "U".

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	ELAB of Tennessee, Nashville, TN
Sample Delivery Group -	0402131
Analyses -	Four samples for VOC, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. There was acetone reported in one or more of the blanks in this set of data. Any results in the associated field samples less than 10 times the blank concentration should be considered non-detects "U".

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits with the following exceptions. The recoveries for chloromethane, dichlorodifluoromethane, trichlorofluoromethane, xylene, and TPH exceeded the associated QC limits. This may indicate a high bias to the data and all positive results for these compounds in the associated field samples should be considered estimated.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met. Due to a laboratory error hexane was not included in the calibration mix for these samples. All results for hexane in the associated field samples should be considered estimated "J" or "UJ".

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	ELAB of Tennessee, Nashville, TN
Sample Delivery Group -	0402147
Analyses -	Four samples for VOC, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. Due to laboratory error a Trip Blank was not analyzed for volatiles. Since there were no positive volatile results in the associated field samples, no qualification of the data is required.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits with the following exceptions. The recovery for vinyl chloride was less than the associated QC limits. This may indicate a matrix effect and a low bias to the data. All results for this compound should be considered estimated "J" or "UJ". The RPD for bromomethane exceeded the associated QC limits. This may indicate a matrix effect but since no positive results for this compound were reported in the associated QC samples, no qualification of the data is required.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met. The reporting limits for the TPH analysis were elevated due to insufficient sample volume.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	ELAB of Tennessee, Nashville, TN
Sample Delivery Group -	0402163
Analyses -	Seven samples for VOC, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times with the following exceptions. The TPH samples were not preserved in the field and were extracted outside of the unpreserved holding time limits. This may result in a low bias to the data and all TPH results from the associated field samples should be considered estimated "J" or "UJ".

III. BLANKS

All blank sample results were within project specific QC limits with the following exceptions. There was acetone found in one or more of the associated blanks. Since the only positive results for this compound in the associated field samples was greater than 10 times the concentration in the blank, no qualification of the data is required.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits with the following exceptions. The recoveries for TPH and carbon disulfide were above the associated QC limits. This may indicate a matrix effect and a high bias to the data but since no positive results were reported for these compounds, no qualification of the data is required.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits with the following exceptions. The recoveries for TPH surrogates in sample 14020403-SB were less than the associated QC limits. This may indicate a low bias to the data and all TPH results from this sample should be considered estimated "J" or "UJ".

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met. The reporting limits for the TPH analysis were elevated due to insufficient sample volume.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	Test America, Nashville, TN
Sample Delivery Group -	384830
Analyses -	One sample for BTEX, TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

Data Validation Report

This report contains the results of the review and validation of the specified data package performed by Judy Solomon, Bhate Environmental Associates, Inc. Birmingham, Alabama.

Introduction

This data validation report covers samples taken from Holloman Air Force Base, New Mexico, on February 10, 2006. Four groundwater samples were taken from the SS-57 site for total dissolved solids (TDS) analysis. All samples were analyzed by Accutest Laboratories of Orlando, Florida. The specific samples included in this validation are:

Sample ID	Matrix	Collection Date	Lab SDG	Analyses
SS57-MW01	Water	02/10/06	F38567	TDS (E160.1)
SS57-MW02	Water	02/10/06	F38567	TDS (E160.1)
SS57-MW03	Water	02/10/06	F38567	TDS (E160.1)
SS57-MW04	Water	02/10/06	F38567	TDS (E160.1)

As a result of the wet method used, this data was reviewed against the laboratory's QA/QC limits using knowledge of Good Laboratory Practices (GLP).

Sample Handling and Holding Times

All samples were properly preserved and transferred under chain-of-custody to the laboratory for analysis.

Blanks

TDS were not detected in the laboratory method blank; QC requirements were met.

Matrix Spike/Matrix Spike Duplicates

Not applicable to this analysis. However a duplicate was analyzed for TDS. The relative percent difference (RPD) was within the QC limits.

Blank Spike Sample/Surrogates

Not applicable to this analysis.

Project Specific Quality Assurance/Quality Control

No field duplicate samples were collected during this sampling event.

Compound Quantitation and Reporting Limits

Dilutions were not required in order to quantify the sample results; therefore no reporting limits were elevated.

Overall Assessment of Data

Overall, the data is suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman SS57 Officer's Club
Analytical Lab -	Air Toxics, Folsom, CA
Sample Delivery Group -	0404418
Analyses -	Six samples for TPH
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits with the following exception. The recovery for TPH-DRO was less than the associated QC limit. This may indicate a low bias to the data and all results should be considered estimated "J" or "UJ".

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There was one field duplicate collected as part of this sample group. The results for TPH in samples SS57-SV03-08 and SS57-SV03-08-Dup met the necessary QC criteria.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman - SS57 - 9040002
Analytical Lab -	Air Toxics, Ltd., Folsom, CA
Sample Delivery Group -	0404419
Analyses -	Three air samples for TO-15
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

QUALITY CONTROL SUMMARY REPORT

Project Name -	Holloman - SS57 - 9040002
Analytical Lab -	Air Toxics, Ltd., Folsom, CA
Sample Delivery Group -	0404420
Analyses -	Four air samples for TO-15
Prepared by -	Michael J. D'Auben, Bhate Environmental, Birmingham, AL

I. SAMPLE CUSTODY AND PRESERVATION

All samples were properly packaged and preserved, and received by the laboratory.

II. HOLDING TIMES

All holding times were within project specific sample holding times.

III. BLANKS

All blank sample results were within project specific QC limits.

IV. LABORATORY CONTROL SAMPLES (LCS)

All Laboratory Control Sample results were found to be within historical QC limits.

V. SURROGATES

All Laboratory Surrogate results were within project specific QC limits.

VI. MATRIX SPIKE SAMPLE (MS) MATRIX DUPLICATE SAMPLE (MSD)

All Matrix Spike and Matrix Spike Duplicate (MS/MSD) results were within project specific QC limits.

VII. FIELD DUPLICATE SAMPLE

There were no field duplicates collected as part of this sample group.

VIII. LABORATORY FLAGS

All other laboratory QC criteria were met.

IX. OVERALL ASSESSMENT OF DATA

Overall, the data should all be suitable for the intended data usage. All analyses were performed, and the data met the required QC criteria.

X. COMPLETENESS OF DATA

All analyses were completed, and no data was rejected due to QC failure. The data is 100% complete.

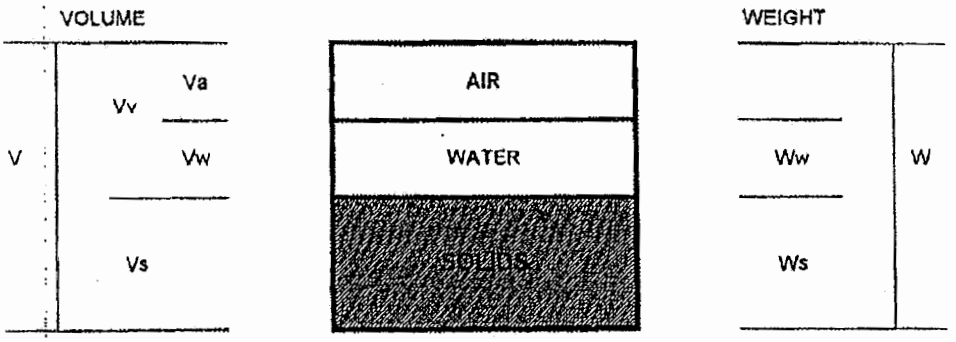
APPENDIX F

GEOTECHNICAL DATA

BEAVER ENGINEERING, INC.

7378 COCKRILL BEND BLVD
NASHVILLE, TN 37209
615-350-8124
e-mail: DATA@BEAVERENGINEERING.COM

DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



Va = VOLUMETRIC AIR, Volume of Air
Vw =VOLUMETRIC WATER , Volume of Water
Vs = Volume of Solids
Vv = Volume of voids

W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
Ws = Weight of Solids

POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE FEBRUARY 25, 2004

PROJECT NUMBER	04-4653
PROJECT	ELAB OF TENNESSEE
LOCATION OF SAMPLE	SS57-GB-0106-4-6
TYPE SAMPLE	SHELBY TUBE
SOIL TYPE AND COLOR DESCRIPTION	SAND, VERY PALE BROWN
LENGTH	12.816 cm
WEIGHT	958.5 grams
MOISTURE	5.3%

SPECIFIC GRAVITY	2.61
VOLUMETRIC AIR	0.244 cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT	0.092 cm3 H2o/cm3 soil
TOTAL SOIL POROSITY	0.336 cm3/cm3 soil
SOIL BULK DRY DENSITY	108.3 pcf.
	1.73 g soil/cm3 soil

BEAVER ENGINEERING, INC.
7378 COCKRILL BEND BLVD.
NASHVILLE, TENNESSEE 37209
615-350-8124

CLIENT ELAB OF TENNESSEE

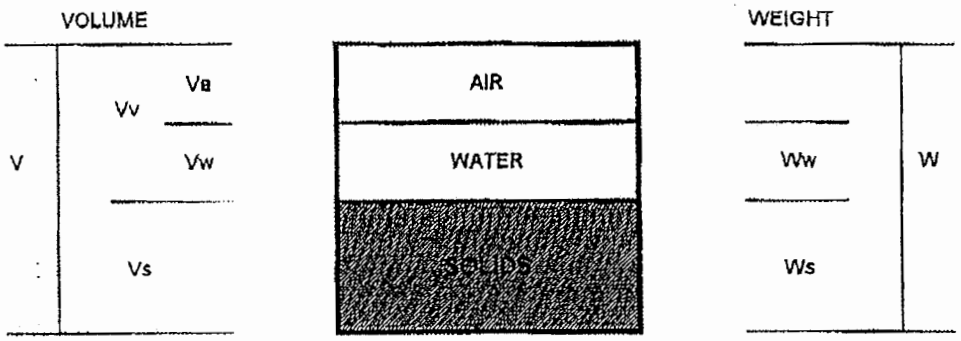
PROJECT ELAB OF TENNESEE PROJ. NO. 04-4653

TEST DESCRIPTION:
MOISTURE, ASH & Organic Matter
ASTM D 2974

LOCATION	SS57-GB-0106-4-6	
DESCRIPTION	SAND, VERY PALE BROWN	
TYPE SAMPLE	SHELBY TUBE	
MOISTURE, AS PERCENT OF AS RECEIVED		5.0%
MOISTURE AS PERCENT OF OVEN DRIED MASS		5.3%
ORGANIC MATTER, ASTM D2974		2.2%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)		1.3%

BEAVER ENGINEERING, INC.
7378 COCKRILL BEND BLVD
NASHVILLE, TN 37209
615-350-9124
e-mail: DATA@BEAVERENGINEERING.COM

DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



Va = VOLUMETRIC AIR, Volume of Air
Vw =VOLUMETRIC WATER , Volume of Water
Vs = Volume of Solids
Vv = Volume of voids

W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
Ws = Weight of Solids

POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE	FEBRUARY 25, 2004		
PROJECT NUMBER	04-4653		
PROJECT	ELAB OF TENNESSEE		
LOCATION OF SAMPLE	SS57-SVO1-ST-2-4		
TYPE SAMPLE	SHELBY TUBE		
SOIL TYPE AND COLOR DESCRIPTION	SAND, VERY PALE BROWN		
LENGTH	12.825 cm		
WEIGHT	958.9 grams		
MOISTURE	18.8%		
SPECIFIC GRAVITY		2.67	
VOLUMETRIC AIR		0.138	cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT		0.288	cm3 H2o/cm3 soil
TOTAL SOIL POROSITY		0.426	cm3/cm3 soil
SOIL BULK DRY DENSITY		95.6	pcf.
		1.53	g soil/cm3 soil

BEAVER ENGINEERING, INC.
7378 COCKRILL BEND BLVD.
NASHVILLE, TENNESSEE 37209
615-350-8124

CLIENT ELAB OF TENNESSEE

PROJECT ELAB OF TENNESEE PROJ. NO. 04-4653

TEST DESCRIPTION:
MOISTURE, ASH & Organic Matter
ASTM D 2974

LOCATION	SS57-SV01-ST-2-4	
DESCRIPTION	SAND, VERY PALE BROWN	
TYPE SAMPLE	SHELBY TUBE	
MOISTURE, AS PERCENT OF AS RECEIVED		15.8%
MOISTURE AS PERCENT OF OVEN DRIED MASS		18.8%
ORGANIC MATTER, ASTM D2974		2.7%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)		1.6%

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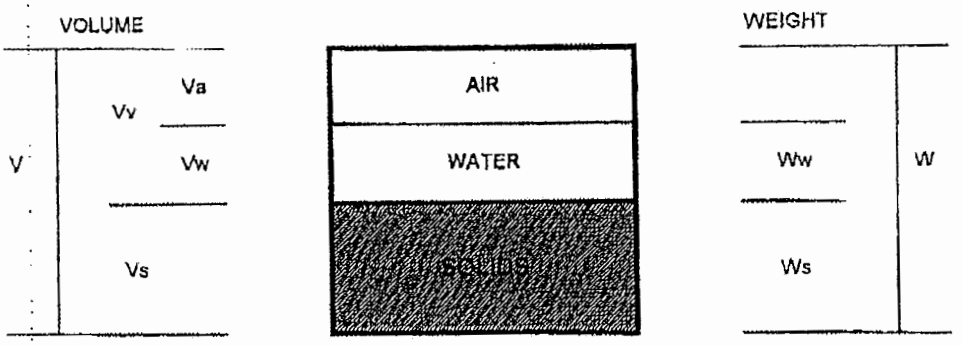
DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



Va = VOLUMETRIC AIR, Volume of Air
Vw =VOLUMETRIC WATER , Volume of Water
Vs = Volume of Solids
Vv = Volume of voids

W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
Ws = Weight of Solids

POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE	FEBRUARY 25, 2004
PROJECT NUMBER	04-4653
PROJECT	ELAB OF TENNESSEE
LOCATION OF SAMPLE	SS57-SVO1-ST-7-9
TYPE SAMPLE	SHELBY TUBE
SOIL TYPE AND COLOR DESCRIPTION	SAND, LIGHT YELLOWISH BROWN
LENGTH	12.961 cm
WEIGHT	979.7 grams
MOISTURE	15.8%
SPECIFIC GRAVITY	2.63
VOLUMETRIC AIR	0.142 cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT	0.252 cm3 H2o/cm3 soil
TOTAL SOIL POROSITY	0.394 cm3/cm3 soil
SOIL BULK DRY DENSITY	99.5 pcf.
	1.59 g soil/cm3 soil

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615-350-8124

CLIENT ELAB OF TENNESSEE

PROJECT ELAB OF TENNESEE PROJ. NO. 04-4653

TEST DESCRIPTION: MOISTURE, ASH & Organic Matter ASTM D 2974		
LOCATION	3357-SV01-ST-7-9	
DESCRIPTION	SAND, LIGHT YELLOWISH BROWN	
TYPE SAMPLE	SHELBY TUBE	
MOISTURE, AS PERCENT OF AS RECEIVED		13.7%
MOISTURE AS PERCENT OF OVEN DRIED MASS		15.8%
ORGANIC MATTER, ASTM D2974		2.1%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)		1.2%

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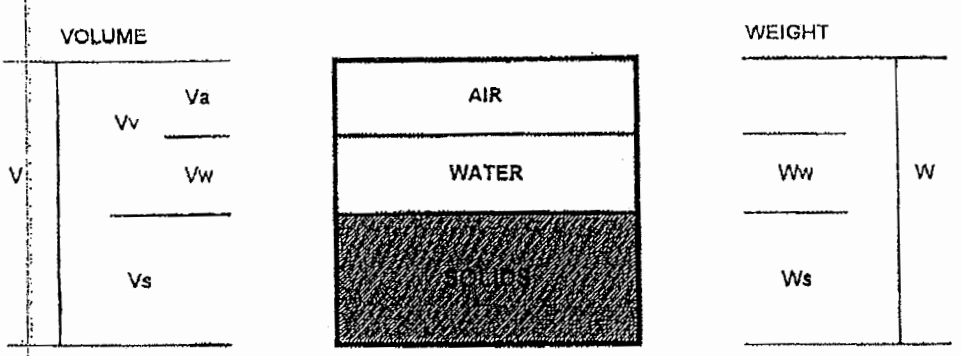
DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



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W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
Ws = Weight of Soilds

POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE FEBRUARY 25, 2004

PROJECT NUMBER	04-4653
PROJECT	ELAB OF TENNESSEE
LOCATION OF SAMPLE	SS57-SV02-ST-2-4
TYPE SAMPLE	SHELBY TUBE
SOIL TYPE AND COLOR DESCRIPTION	SAND, LIGHT YELLOWISH BROWN
LENGTH	11.808 cm
WEIGHT	883.3 grams
MOISTURE	11.6%
SPECIFIC GRAVITY	2.68
VOLUMETRIC AIR	0.190 cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT	0.192 cm3 H2o/cm3 soil
TOTAL SOIL POROSITY	0.382 cm3/cm3 soil
SOIL BULK DRY DENSITY	103.4 pcf.
	1.66 g soil/cm3 soil

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CLIENT	ELAB OF TENNESSEE		
PROJECT	ELAB OF TENNESEE	PROJ. NO.	04-4653

TEST DESCRIPTION:
MOISTURE, ASH & Organic Matter
ASTM D 2974

LOCATION	SS57-SV02-ST-2-4	
DESCRIPTION	SAND, LIGHT YELLOWISH BROWN	
TYPE SAMPLE	SHELBY TUBE	
MOISTURE, AS PERCENT OF AS RECEIVED		10.4%
MOISTURE AS PERCENT OF OVEN DRIED MASS		11.6%
ORGANIC MATTER, ASTM D2974		1.2%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)		0.7%

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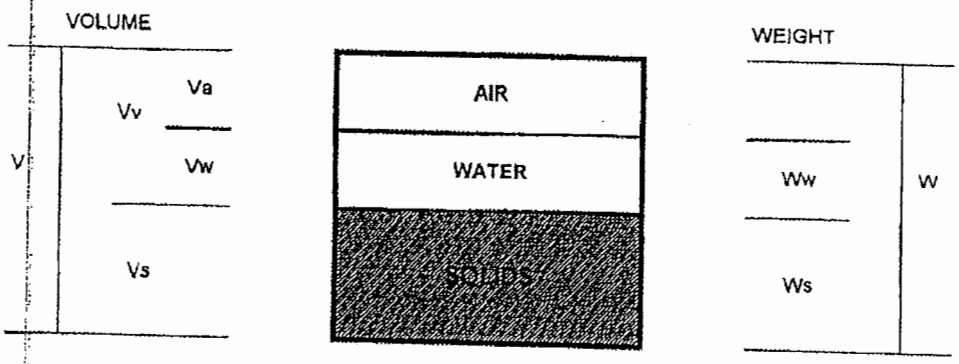
DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



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W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
Ws = Weight of Soilds

POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE FEBRUARY 25, 2004

PROJECT NUMBER	04-4653
PROJECT	ELAB OF TENNESSEE
LOCATION OF SAMPLE	SS57-SVO2-ST-7-9
TYPE SAMPLE	SHELBY TUBE
SOIL TYPE AND COLOR DESCRIPTION	SAND, LIGHT YELLOWISH BROWN
LENGTH	12.838 cm
WEIGHT	966.9 grams
MOISTURE	16.1%
SPECIFIC GRAVITY	2.64
VOLUMETRIC AIR	0.152 cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT	0.253 cm3 H2o/cm3 soil
TOTAL SOIL POROSITY	0.405 cm3/cm3 soil
SOIL BULK DRY DENSITY	98.1 pcf.
	1.57 g soil/cm3 soil

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CLIENT: ELAB OF TENNESSEE

PROJECT: ELAB OF TENNESEE PROJ. NO. 04-4653

TEST DESCRIPTION:
MOISTURE, ASH & Organic Matter
ASTM D 2974

LOCATION	3357-SV02-ST-7-9
DESCRIPTION	SAND, LIGHT YELLOWISH BROWN
TYPE SAMPLE	SHELBY TUBE

MOISTURE, AS PERCENT OF AS RECEIVED	13.9%
MOISTURE AS PERCENT OF OVEN DRIED MASS	16.1%
ORGANIC MATTER, ASTM D2974	1.1%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)	0.6%

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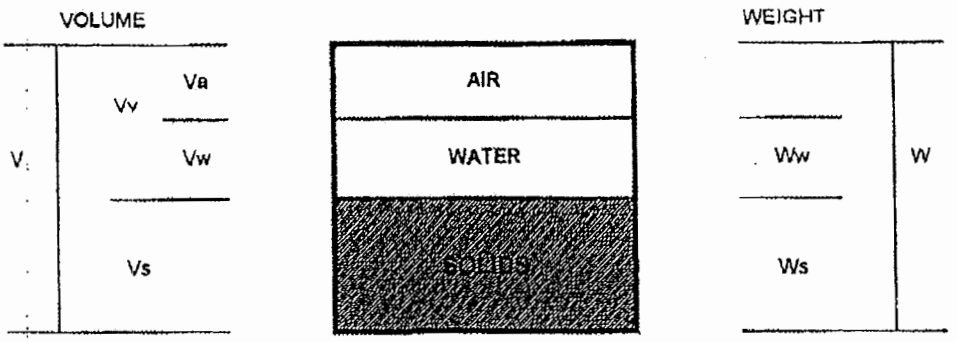
DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



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W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
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POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE	FEBRUARY 25, 2004
PROJECT NUMBER	04-4653
PROJECT	ELAB OF TENNESSEE
LOCATION OF SAMPLE	SS57-SV03-ST-2-4
TYPE SAMPLE	SHELBY TUBE
SOIL TYPE AND COLOR DESCRIPTION	SAND, VERY PALE BROWN
LENGTH	12.575 cm
WEIGHT	887.4 grams
MOISTURE	17.3%

SPECIFIC GRAVITY	2.62
VOLUMETRIC AIR	0.183 cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT	0.255 cm3 H2o/cm3 soil
TOTAL SOIL POROSITY	0.438 cm3/cm3 soil
SOIL BULK DRY DENSITY	92.0 pcf.
	1.47 g soil/cm3 soil

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615-350-8124

CLIENT ELAB OF TENNESSEE

PROJECT ELAB OF TENNESEE PROJ. NO. 04-4653

TEST DESCRIPTION:
MOISTURE, ASH & Organic Matter
ASTM D 2974

LOCATION	SS57-SV03-ST-2-4	
DESCRIPTION	SAND, VERY PALE BROWN	
TYPE SAMPLE	SHELBY TUBE	
MOISTURE, AS PERCENT OF AS RECEIVED		14.8%
MOISTURE AS PERCENT OF OVEN DRIED MASS		17.3%
ORGANIC MATTER, ASTM D2974		1.3%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)		0.8%

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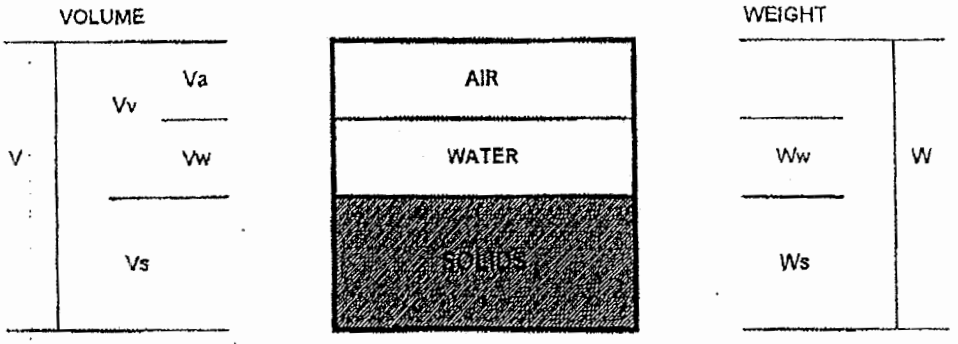
DETERMINATION OF PHYSICAL PROPERTIES OF SOILS



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Vs = Volume of Solids
Vv = Volume of voids

W = TOTAL SAMPLE WEIGHT
Ww = Weight of Water
Ws = Weight of Soilds

POROSITY = Ratio of volume of voids to the total volume (V) of a given mass, Vv / V

SAMPLE IDENTIFICATION AND TEST RESULTS

DATE	FEBRUARY 25, 2004
PROJECT NUMBER	04-4853
PROJECT	ELAB OF TENNESSEE
LOCATION OF SAMPLE	SS57-SV03-ST-7-9
TYPE SAMPLE	SHELBY TUBE
SOIL TYPE AND COLOR DESCRIPTION	SAND, STRONG BROWN
LENGTH	16.491 cm
WEIGHT	1253.4 grams
MOISTURE	2.9%
SPECIFIC GRAVITY	2.61
VOLUMETRIC AIR	0.233 cm3 air/cm3 soil
VOLUMETRIC WATER CONTENT	0.054 cm3 H2o/cm3 soil
TOTAL SOIL POROSITY	0.287 cm3/cm3 soil
SOIL BULK DRY DENSITY	116.1 pcf.
	1.86 g soil/cm3 soil

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CLIENT	ELAB OF TENNESSEE		
PROJECT	ELAB OF TENNESEE	PROJ. NO.	04-4653

TEST DESCRIPTION:
MOISTURE, ASH & Organic Matter
ASTM D 2974

LOCATION	SS57-SV03-ST-7-9	
DESCRIPTION	SAND, STRONG BROWN	
TYPE SAMPLE	SHELBY TUBE	
MOISTURE, AS PERCENT OF AS RECEIVED		2.7%
MOISTURE AS PERCENT OF OVEN DRIED MASS		2.9%
ORGANIC MATTER, ASTM D2974		1.8%
FRACTIONAL ORGANIC CARBON,(ORGANIC MATTER/1.72)		1.1%

APPENDIX G

JOHNSON AND ETTINGER OUTPUT

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	1.55E+08	1.55E+08	6.95E+05	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	1.21E+07	1.21E+07	1.27E+08	1.21E+07

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

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RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
1.79E+09	NA	1.79E+09	1.85E+04	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

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RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	2.11E+05	2.11E+05	8.10E+05	2.11E+05

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
5.74E+10	NA	5.74E+10	2.51E+04	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
2.65E+07	1.04E+07	1.04E+07	6.38E+05	6.38E+05

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

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RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	5.29E+03	5.29E+03	7.50E+04	5.29E+03

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	7.82E+04	7.82E+04	4.94E+05	7.82E+04

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

indoor exposure soil conc., carcinogen (µg/kg)	indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	3.32E+11	3.32E+11	1.42E+06	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	2.82E+04	2.82E+04	5.70E+04	2.82E+04

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	2.97E+04	2.97E+04	2.00E+03	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
NOC = NOT OF CONCERN. The groundwater conc. at or above the solubility limit is not of concern for this pathway.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	8.44E+05	8.44E+05	1.34E+05	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
NOC = NOT OF CONCERN. The groundwater conc. at or above the solubility limit is not of concern for this pathway.
MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	8.35E+06	8.35E+06	7.90E+04	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
NOC = NOT OF CONCERN. The groundwater conc. at or above the solubility limit is not of concern for this pathway.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	3.04E+08	3.04E+08	2.23E+08	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
NOC = NOT OF CONCERN. The groundwater conc. at or above the solubility limit is not of concern for this pathway.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	9.57E+07	9.57E+07	1.00E+09	9.57E+07

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

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RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
1.10E+04	NA	1.10E+04	1.79E+06	1.10E+04

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

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RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	3.12E+05	3.12E+05	1.19E+06	3.12E+05

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
4.65E+03	NA	4.65E+03	7.92E+06	4.65E+03

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	1.32E+04	1.32E+04	2.80E+05	1.32E+04

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
7.09E+06	2.79E+06	2.79E+06	1.69E+05	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
NOC = NOT OF CONCERN. The groundwater conc. at or above the solubility limit is not of concern for this pathway.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	9.81E+03	9.81E+03	6.13E+04	9.81E+03

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	6.09E+05	6.09E+05	1.40E+04	NOC

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.
NOC = NOT OF CONCERN. The groundwater conc. at or above the solubility limit is not of concern for this pathway.

SCROLL DOWN TO "END"

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	1.14E+05	1.14E+05	1.10E+06	1.14E+05

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END