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**GROUNDWATER MONITORING REPORT  
ASH LANDFILL  
FIRST QUARTER 2003**

Prepared for:

SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK

And

U.S. ARMY CORPS OF ENGINEERS  
HUNTSVILLE, ALABAMA

Contract # DACA87-02-D-0005

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TABLE

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RESULTS

Parameter	Value
Temperature (°C)	25.0
Humidity (%)	65.0
Pressure (kPa)	101.3
Wind Speed (m/s)	0.5
Wind Direction (°)	180
Relative Humidity (%)	65.0
Dew Point (°C)	16.5
Cloud Cover (%)	0
Visibility (km)	10
Soil Temperature (°C)	15.0
Leaf Temperature (°C)	22.0
Stem Temperature (°C)	20.0
Root Temperature (°C)	18.0
Flower Temperature (°C)	24.0
Seed Temperature (°C)	21.0
Soil Moisture (%)	15.0
Leaf Moisture (%)	80.0
Stem Moisture (%)	75.0
Root Moisture (%)	70.0
Flower Moisture (%)	85.0
Seed Moisture (%)	82.0

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**APPENDICES**

**APPENDIX A            GROUNDWATER ELEVATION DATA**

**APPENDIX B            FIRST QUARTER 2003 LABORATORY REPORTS**  
General Environmental Laboratories (GEL)

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## 1 INTRODUCTION

This report summarizes results of the First Quarter 2003 (1Q 2003) groundwater sampling and monitoring activities at the Ash Landfill Operable Unit (Ash Landfill) at the Seneca Army Depot Activity (SEDA), Romulus, New York. The goal of groundwater monitoring at the Ash Landfill is to monitor the extent of the well-defined chlorinated ethene contaminant plume at this operable unit and to determine the effectiveness of the existing iron reactive barrier, also known as the permeable reactive barrier (PRB). This work was performed in accordance with the requirements of Delivery Order 0010 of Contract DACA87-02-D-005.

Historic groundwater data is combined with information collected during the 1Q 2003 sampling event to evaluate flow and chemistry in the shallow groundwater aquifer at the Ash Landfill. **Section 2.0** provides a summary of quarterly monitoring activities, **Section 3.0** provides a summary of monitoring results, and **Section 4.0** summarizes the results and conclusions drawn from the 1Q 2003 sampling and monitoring event.

### 1.1 SITE BACKGROUND

The Ash Landfill site was initially estimated to encompass an area of approximately 130 acres at the SEDA. This larger area was investigated to ensure that no previously unknown waste disposal areas were overlooked. Following the remedial investigation (RI), the area of the Ash Landfill site was refocused to an area of approximately 23 acres. This area is comprised of five Solid Waste Management Units (SWMUs) including: the Ash Cooling Pond (SEAD-3), the Ash Landfill (SEAD-6), the Non-Combustible Fill Landfill (NCFL) (SEAD-8), the Refuse Burning Pits (SEAD-14), and the Abandoned Solid Waste Incinerator Building (SEAD-15). SEAD-14 is also known as the Debris Piles. The Ash Landfill (SEAD-6) also includes a groundwater plume that emanates from the northern western side of the landfill area.

A non-time critical removal action, also known as an interim remedial measure (IRM), was conducted by the Army between August 1994 and June 1995, under the requirements of the CERCLA. Only soils within the area known as the "Bend in the Road" were excavated and treated. Soil within the area was identified during the RI as the source of groundwater contamination. The IRM consisted of excavation and thermal treatment of volatile organic compounds (VOCs) impacted soils using the Low Temperature Thermal Desorption (LTTD) process. The objectives of the IRM were to thermally treat VOCs and polycyclic aromatic hydrocarbons (PAHs) in soils at two source areas near the "Bend in the Road" where sampling identified elevated concentrations of VOCs and PAHs. The IRM thermal treatment project provided a positive benefit for the long-term remedial action by eliminating continued leaching of VOCs into groundwater and by preventing further exposure to humans and wildlife.

In December 1998, a 650-foot long permeable reactive iron wall (PRB) was installed approximately 100 feet east of the railroad tracks near the property line along the south of the ash landfill site. The

1. Introduction

The first paragraph of the first section discusses the importance of the study and the objectives of the research. It mentions the need for a comprehensive analysis of the data and the role of the researcher in this process.



wall was installed as a demonstration project to show that the PRB could be effective in reducing the concentrations of chlorinated ethenes through reductive dechlorination. The wall was constructed by placing a mixture of 50 percent zero valent reactive iron granules and 50 percent sand in a trench with a width of 14 inches and a depth ranging from 7 to 12 feet. Monitoring wells were installed upgradient, downgradient and within the wall to monitor its effectiveness. Groundwater sampling has been performed quarterly at these wells since the wall installation.

## **2 QUARTERLY MONITORING ACTIVITIES**

Activities related to the 1Q 2003 sampling round at the Ash Landfill included a comprehensive gauging of all associated monitoring wells for groundwater elevations and collection of groundwater samples for laboratory analysis at 32 monitoring locations including monitoring wells on the site and at a neighboring farm house. Chemical analysis included field measurements of natural attenuation properties, as well as a certified laboratory analysis. A detailed description of these activities is provided below.

### **2.1 GROUNDWATER ELEVATION MEASUREMENTS**

A round of groundwater elevation data was collected on March 14, 2003 by Parsons personnel prior to the commencement of sampling at the Ash Landfill. Depth to groundwater was measured from the top of the well casing using a Solnist® electronic water level indicator. The actual groundwater elevations were later calculated by subtracting the field measured depth to groundwater from the previously recorded surveyed elevation from a fixed point at the top of each well casing.

### **2.2 GROUNDWATER SAMPLING**

Groundwater sampling occurred at the Ash Landfill from March 24 through April 2, 2003. Parsons collected groundwater samples from 29 monitoring wells, one farmhouse well, and two additional areas near the farmhouse, for a total of 32 monitoring locations. Groundwater samples were collected following EPA Region II low-flow groundwater sampling procedures. All monitoring wells were purged using a QED bladder pump and dedicated Teflon® tubing that was connected to a flow through cell in advance of using low-flow sampling techniques. A Horiba U-22 Water Quality Monitoring System (Horiba, Ltd., Kyoto, Japan) was used to establish stabilization of groundwater quality by measuring the following parameters: pH, temperature, specific conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity. These parameters were recorded at regular intervals during purging. Purge volume was estimated based on the water column height and diameter of the well. Wells were sampled when one of the following occurred: 1) groundwater quality stabilization was achieved; or 2) five well volumes were extracted from the well. Groundwater quality stabilization was defined using USEPA Region 2 Guidance on low-flow sampling procedures, which recommends that groundwater quality stabilization be defined by three consecutive readings of pH within  $\pm 0.1$  standard units, specific conductivity within  $\pm 3\%$ , temperature, turbidity and DO within

The following information is provided for your information. It is intended to provide you with a general overview of the information contained in this document. It is not intended to provide you with a detailed description of the information contained in this document. For more information, please contact the appropriate department.

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$\pm 10\%$ , and ORP within  $\pm 10$  mV. A final round of groundwater quality values were recorded after parameter stabilization and immediately prior to groundwater collection for laboratory sampling. The recorded values are considered the parameters at the time of sampling. Immediately following well purging, tubing was disconnected from the flow-through cell (to reduce the potential for cross-contamination and volatilization) and samples were collected.

The shallow aquifer well located outside the farmhouse was sampled using a new certified clean Teflon<sup>®</sup> bailer.

### 2.3 GROUNDWATER ANALYSES

The groundwater samples collected at the site were analyzed for VOCs, nitrates, sulfate, chlorides, methane/ethane/ethene (MEE), metals (Ca, Na, K, Mn, Mg), and dissolved organic carbon (DOC). The groundwater quality-sampling matrix for the 32 sampling locations included in the 1Q 2003 sampling event is included in **Table 2-1**. As shown on the sample matrix (Table 2-1), three duplicates, six quality assurance/quality control (QA/QC), and three rinsate blanks were collected as part of the groundwater sampling program.

Each monitoring location was also field tested for alkalinity, carbon dioxide, hydrogen sulfide and ferrous iron as indicated in Table 2-1. A Model DR/700 colorimeter (Hach Company, Loveland, CO) was used to measure hydrogen sulfide and ferrous iron, and a Model AL-APMG-L test kit (Hach Company, Loveland, CO) was used to measure alkalinity and carbon dioxide. Based on the result of the field chemistry analysis, it appears that the equipment was not working properly at the time of sample analysis. The associated data for these analyses was subsequently disregarded. This information will be collected during the next quarterly sampling round.

Groundwater samples were collected and sent to General Engineering Laboratories (GEL; Charleston, SC) for analysis of VOCs, metals, nitrates, sulfate, chlorates, MEE and DOC. Methods associated with the analysis are listed in Table 2-1. It should be noted that VOC concentrations were measured using two different methods, USEPA Methods 524.2 and 8260B. In general, samples collected from locations near the reactive wall were analyzed using USEPA Method 524.2, which has a lower detection limit and can report concentrations of cis-1,2-dichloroethene (cis-1,2-DCE) and trans-dichloroethene (trans-DCE). Samples collected from locations further upgradient or downgradient of the wall were analyzed using USEPA Method 8260B, which is a more powerful method; however this method has limited ability to decipher between cis- and trans-DCE. In wells downgradient of the wall, concentrations of chlorinated ethenes are expected to be lower than concentrations in other regions of the plume.

The Missouri River Division (MRD) of the US Army Corps of Engineers (USACOE) analyzed three QA sample (MWT-6, MWT-8, and PT-12A) for VOCs (Methods 524.2 and 8260B).



### 3 QUARTERLY MONITORING RESULTS

#### 3.1 GROUNDWATER ELEVATION CONDITIONS

Groundwater elevations recorded during the 1Q 2003 sampling round, as well as historical maximum and minimum measured concentrations, are recorded in **Table 3-1**. The calculated Mean Sea Level (MSL) groundwater elevations are also calculated in Table 3-1 to determine saturated thickness within the aquifer. Based on a review of the historical data of the 60 monitoring wells listed in Table 3-1, the average seasonal variation in groundwater elevation is 6 ft and the maximum-recorded seasonal variation in groundwater elevation is 13.52 ft (MW-50D). The saturated thickness at monitoring wells in and around the permeable reactive barrier ranged between 4.45 ft (MWT-2) and 10.05 ft (MWT-8). **Appendix A** contains a summary of all groundwater elevation data collected at the Ash Landfill between 1995 and 1Q 2003.

Only 29 of the 38 wells with recorded groundwater elevations were sampled. The additional gauged wells were recorded to aid in creating a more comprehensive groundwater contour map in **Figure 3-1**. The groundwater flow direction is generally to the west, as seen in Figure 3-1, with an average horizontal hydraulic gradient of approximately 0.02  $\frac{ft}{ft}$  (Feasibility Memorandum for Groundwater Remediation Alternatives using Zero Valence Iron Continuous Reactive Wall at the Ash Landfill, August 2000). The 1Q 2003 groundwater elevation data are consistent with recorded groundwater elevations at the Ash Landfill site at this time of the year in previous years. The elevations near the well show that the groundwater flows through the wall at all locations during low flow conditions.

#### 3.2 GROUNDWATER ANALYTICAL RESULTS – DOWNGRAIDENT TOWARDS PRB

Field monitoring parameters measured prior to the collection of the analytical groundwater samples are presented in **Table 3-2**. Analytical results for the 1Q 2003 groundwater samples are presented in **Tables 3-3** and **3-4**. The complete laboratory report from General Environmental Laboratories is presented in **Appendix B**. Table 3-3 presents all analytical data collected and analyzed by the laboratory. Table 3-4 provides a summary of wells with detected VOCs (both methods) only. The results indicate that Trichloroethene (TCE) was detected in 14 sample locations and exceeded the GA groundwater standard of 5  $\mu\text{g/L}$  in 9 locations (MW-20, MW-44A, MW-53, MWT-1, MWT-4, MWT-7, PT-12A, PT-17, and PT-18). All the locations exceeding the GA groundwater standard are upgradient of the permeable reactive barrier (PRB). As shown in **Figure 3-2**, TCE concentrations below the PRB are lower than those recorded upgradient of the PRB. This is a strong preliminary indication, based solely on the VOC results, that the PRB is working as designed. Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in 20 locations and exceeded the GA standard of 5  $\mu\text{g/L}$  in sixteen sample locations. Figure 3-2 reflects these results. The maximum detected concentrations of TCE and cis-1,2-DCE in groundwater were 599  $\mu\text{g/L}$  and 667  $\mu\text{g/L}$ , respectively, in well PT-12A, which is located downgradient of the original contamination source, but within the measured pathway of the plume. Significant levels

## 2. EXPERIMENTAL SECTION

### 2.1. Synthesis of Poly(ethylene glycol) (PEG)

Poly(ethylene glycol) (PEG) was synthesized by the ring-opening polymerization of ethylene oxide (EO) initiated by potassium hydroxide (KOH) in a methanol solution. The reaction was carried out in a three-necked round-bottomed flask equipped with a mechanical stirrer, a reflux condenser, and a nitrogen inlet. The reaction mixture was stirred at 60 °C for 24 h. The resulting PEG was purified by dialysis against distilled water and then dried under vacuum at 40 °C for 24 h. The molecular weight of PEG was determined by gel permeation chromatography (GPC) using a polystyrene calibration. The GPC analysis showed that the molecular weight of PEG was approximately 10,000 g/mol.

### 2.2. Synthesis of Poly(ethylene glycol) (PEG) with End-Capping

Poly(ethylene glycol) (PEG) with end-capping was synthesized by the reaction of PEG with a diisocyanate compound. The reaction was carried out in a three-necked round-bottomed flask equipped with a mechanical stirrer, a reflux condenser, and a nitrogen inlet. The reaction mixture was stirred at 60 °C for 24 h. The resulting PEG with end-capping was purified by dialysis against distilled water and then dried under vacuum at 40 °C for 24 h. The molecular weight of PEG with end-capping was determined by GPC using a polystyrene calibration. The GPC analysis showed that the molecular weight of PEG with end-capping was approximately 10,000 g/mol.

### 2.3. Synthesis of Poly(ethylene glycol) (PEG) with End-Capping

Poly(ethylene glycol) (PEG) with end-capping was synthesized by the reaction of PEG with a diisocyanate compound. The reaction was carried out in a three-necked round-bottomed flask equipped with a mechanical stirrer, a reflux condenser, and a nitrogen inlet. The reaction mixture was stirred at 60 °C for 24 h. The resulting PEG with end-capping was purified by dialysis against distilled water and then dried under vacuum at 40 °C for 24 h. The molecular weight of PEG with end-capping was determined by GPC using a polystyrene calibration. The GPC analysis showed that the molecular weight of PEG with end-capping was approximately 10,000 g/mol.

### 2.4. Synthesis of Poly(ethylene glycol) (PEG) with End-Capping

Poly(ethylene glycol) (PEG) with end-capping was synthesized by the reaction of PEG with a diisocyanate compound. The reaction was carried out in a three-necked round-bottomed flask equipped with a mechanical stirrer, a reflux condenser, and a nitrogen inlet. The reaction mixture was stirred at 60 °C for 24 h. The resulting PEG with end-capping was purified by dialysis against distilled water and then dried under vacuum at 40 °C for 24 h. The molecular weight of PEG with end-capping was determined by GPC using a polystyrene calibration. The GPC analysis showed that the molecular weight of PEG with end-capping was approximately 10,000 g/mol.

of TCE (268 µg/L) and cis-1,2-DCE (61.7 µg/L) were also detected in well PT-17, which is downgradient of PT-12A and upgradient of the permeable reactive barrier (PRB).

A historical comparison, the October 1999 total chlorinated ethenes groundwater data compared with the March 2003 total chlorinated ethenes groundwater data, in the aquifer is presented in **Figure 3-3**. The reduction of total chlorinated ethene concentrations within the aquifer and the migration of the plume downgradient is clearly depicted in the Figure. The decrease of total chlorinated ethenes in the vicinity of MW-44A, PT-18 and PT-12A indicates that the source is clearly degrading in this area. These wells are directly associated with the IRM (removal of the source area) which occurred from 1994 - 1995. Since the removal, PT-12A, PT-18 and MW-44A have seen a marked decrease in TCE and cis-1,2-DCE concentrations as shown in the individual trend analysis graphs (**Figures 3-4 to 3-6**).

The migration of total chlorinated ethenes downgradient of the source area is evident in the concentration increase in PT-17 from January 1997 to March 2003, which have steadily increased from 46 ug/L of TCE to 268 ug/L of TCE in March 2003 (**Figure 3-7**). These results are also evident in the change in the pathway and concentrations in Figure 3-3 from October 1999 to March 2003. It should also be noted that PT-17 is located downgradient of the removed source area but before the PRB (Figure 3-3). It can be concluded that the contaminant slug is moving through PT-17 towards the wall. The comparative trend maps shown in Figure 3-3 shows a marked increase in total chlorinated ethene concentrations moving downgradient toward the reactive wall. The shape of the plume is also reducing in size on the north end of the site and expanding along the length of the reactive wall, downgradient towards the south. During low flow conditions, the groundwater may migrate laterally within the wall.

### 3.3 GROUNDWATER ANALYTICAL RESULTS – VICINITY OF PRB

During the 1Q 2003 sampling event, samples were collected from three well tiered groupings that transect the existing PRB. Each cluster consists of three wells, one in the PRB, one upgradient, and one downgradient of the PRB. The three well groupings are MWT-1, MWT-2, and MWT-3; MWT-4, MWT-5, and MWT-6; and MWT-7, MWT-8, and MWT-9. As shown on **Figure 3-8**, wells MWT-1, MWT-4, and MWT-7 are located immediately upgradient of the PRB and wells MWT-3, MWT-6, and MWT-9 are located immediately downgradient of the PRB. Wells MWT-2, MWT-5, and MWT-8 are located in the middle of the PRB. The well groupings with the three wells spaced at approximately four foot intervals from one another allow the wells to be evaluated more effectively in terms of whether the PRB is enhancing the attenuation of chlorinated ethenes from the groundwater at the Ash Landfill. The maximum measured TCE concentration was 391 µg/L at monitoring well MWT-7. Monitoring well MWT-7 is located on the southern end of the wall, upgradient of the barrier, as shown on the enlarged figure of the reactive wall in Figure 3-8. The maximum measured cis-1,2-DCE concentration in wells near the PRB was 44.8 µg/L at MWT-8. Monitoring well MWT-8 is located within the same cluster as MWT-7 but downgradient of the wall. Detectable levels of cis-1,2-DCE above the GA standard

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(5 µg/L) were found at all four monitoring wells that are immediately downgradient of the PRB (MWT-3, MWT-6, MWT-9, and PT-24), with a maximum concentration of 35.2 µg/L at PT-24. In the same grouping of wells, MWT-6 had no TCE detection and MWT-9 detected TCE at a concentration of 70.2 µg/L, which is above the GA standard. The wells positioned within in the actual PRB (MWT-2, 5 and 8) had no TCE detections. No detectable levels of chlorinated ethenes were found in groundwater samples from the farmhouse area (BN-S, FH-D, and FH-S), which are also located downgradient of the PRB.

**Figures 3-9, 3-10, and 3-11** reflect the concentrations of TCE and cis-1,2-DCE globally transecting the PRB. The TCE/cis-1,2-DCE concentrations are reduced by greater than 50% in all three locations from the upgradient to downgradient location. The third tier (MWT-7, 8, and 9) located on the south end of the well, directly downgradient of PT-17, has the highest measured TCE and cis-1,2-DCE concentrations of the three groupings as mentioned above.

The concentration of TCE was observed to decrease from 391 µg/L at MWT-7 to 70.2 µg/L at MWT-9, but the cis-1,2-DCE concentration was observed to increase from 22.4 µg/L at MWT-7 to 34.7 µg/L at MWT-9. The slight rebound in TCE and cis-1,2-DCE concentrations in the downgradient wells indicates that there may be some residual contamination present downgradient of the wall. However, the concentrations of methane (3800 µg/L to 5960 µg/L) in the PRB wells along with concentrations of 50 µg/L to 2340 µg/L of methane in the wells immediately downgradient is evident of methanogenesis, a biodegradation process enhanced by the presence of the iron filing wall. The three wells within the PRB also have low detections of ethane (8.12J µg/L to 10.9J µg/L) and ethene (5.92J µg/L and 8.16J µg/L). Detections of ethane and ethene in the system, even at low concentrations, indicate the formation of chlorinated aliphatic hydrocarbon (CAH) degradation products and biodegradation occurring. **Table 3-5** shows the results of the natural attenuation parameters analyzed.

**Figure 3-12** depicts the groundwater trend associated with well number PT-24, which is downgradient of the PRB. Concentrations of TCE and, more notably, cis-1,2-DCE have decreased since the wall installation in 1998 (Figure 3-3). The marked decrease in the trend indicates that the wall is functioning as intended. The wall is converting the cis-1,2-DCE to further breakdown products. PT-24 shows a concentration of 1720 µg/L for methane, which indicates that methanogenesis is continuing to occur beyond the wall. MW-56, located further downgradient of the wall, has a methane concentration of 61.3 µg/L, which is lower than the PT-24 methane concentration by 1659 µg/L. The presence of methane in MW-56, however, is a good indication that methanogenesis is still aiding in breaking down the original contaminant.

The first part of the report deals with the general situation in the country at the end of the war. It mentions the economic difficulties and the political changes. The second part describes the work of the various departments during the year. The third part contains the financial statements and the budget for the following year.

The report concludes with a summary of the main achievements and a list of recommendations for the future. It is signed by the Director of the Department.

#### 4 SUMMARY AND CONCLUSIONS

In summary, the 1Q 2003 groundwater monitoring and sampling event found:

1. Groundwater flow direction, and horizontal gradients are consistent with previous data collected in the area.
2. Groundwater elevations were high as expected for the spring.
3. TCE and cis-1,2-DCE concentrations are decreasing in monitoring wells PT-12A, PT-18 and MW-44a, which are in the vicinity of the removed contaminant source area. This shows that the source area removal was successful.
4. The contaminant plume is migrating downgradient from the source area, as evident in the groundwater trends from PT-17. PT-17 is in direct downgradient pathway of the plume and has seen significant increase in TCE and cis-1,2-DCE concentrations over the last several years.
5. Biodegradation is occurring as a direct result of the presence of the reactive iron wall. Wells within the wall and directly downgradient of the wall contain elevated levels of methane, which is indicative of the biodegradation process, methanogenesis. Further evidence of product breakdown is the decreased amounts of TCE and cis-1,2-DCE on the downgradient side of the reactive wall. It is assumed that some residual contamination existed prior to the installation of the wall and is contributing to some of the concentrations seen in the downgradient monitoring wells.
6. Data shows that the most contaminated portion of the plume passes through the southern end of the PRB. This suggests that shorter walls may be sufficient in order to remove the remaining chlorinated solvents from the groundwater in a timely manner.

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GROUNDWATER SAMPLING MATERIALS - PRESENTATION 2003  
 WATER 1 - ING - AS  
 SENECA ARMY DEPOT ACTIVITY

Location	Sample ID	QC Code	Field Parameters							Lab Parameters					DOC			
			pH	Spec Cond	Eh or ORP	DO	Turbidity	Sulfide	Ferrous Fe	Alkalinity	Temp	CO2	VOC	VOC CLP		Nitrate	Sulfate	Methane/ Ethane
<b>Farmhouse Wells</b>																		
BN-S <sup>1</sup>	ARD2201	SA																
FH-D <sup>1</sup>	ARD2202	SA																
FHS <sup>1</sup>	ARD2203	SA																
<b>Site Monitoring Wells</b>																		
MW-27 <sup>2</sup>	ARD2182	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-30 <sup>2</sup>	ARD2183	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-32 <sup>2</sup>	ARD2184	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-36 <sup>2</sup>	ARD2185	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-40 <sup>2</sup>	ARD2186	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-43 <sup>2</sup>	ARD2187	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-44A <sup>2</sup>	ARD2188	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-46 <sup>2</sup>	ARD2189	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-48 <sup>2</sup>	ARD2190	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-53 <sup>2</sup>	ARD2191	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-56 <sup>2</sup>	ARD2192	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT-12A <sup>2</sup>	ARD2193	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT-17 <sup>2</sup>	ARD2194	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT-18 <sup>2</sup>	ARD2195	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT-19 <sup>2</sup>	ARD2196	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-20 <sup>2</sup>	ARD2197	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-21A <sup>2</sup>	ARD2198	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT-24 <sup>2</sup>	ARD2199	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Permeable Reactive Barrier Monitoring Wells</b>																		
MWT-1 <sup>2</sup>	TR2100	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-2 <sup>2</sup>	TR2101	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-3 <sup>2</sup>	TR2102	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-4 <sup>2</sup>	TR2103	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-5 <sup>2</sup>	TR2104	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-6 <sup>2</sup>	TR2105	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-7 <sup>2</sup>	TR2106	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-8 <sup>2</sup>	TR2107	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-9 <sup>2</sup>	TR2108	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-10 <sup>2</sup>	TR2109	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MWT-11 <sup>2</sup>	TR2110	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>QA/QC Samples</b>																		
Duplicate (MWT-6)	TR2111	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Duplicate (PT-12A)	ARD2200	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Duplicate (MW-36)	ARD2204	SA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MS (MWT-7)	TR2106MS	MS																
MSD (MWT-7)	TR2106MSD	MSD																
MS (MW-36)	ARD2185MS	MS																
MSD (MW-36)	ARD2185MSD	MSD																
MS (PT-12A)	ARD2193MS	MS																
MSD (PT-12A)	ARD2193MSD	MSD																
Rinsate (MWT-6)	TR0038	RB																
Rinsate (MW-36)	ARD0032	RB																
Rinsate (PT-12A)	ARD0031	RB																
<b>(2) - Duplicate and Rinsate Associated with VOC/CLP sample</b>																		
Trip/ Blank	TR0039	TB																
Trip/ Blank	TR0040	TB																
Trip/ Blank	TR0041	TB																
Trip/ Blank	TR0042	TB																
Trip/ Blank	ARD0032	TB																
Trip/ Blank	ARD0033	TB																
<b>LIMS # for MRD samples - 6463</b>																		
MRD (MWT-5)	TR2105MRD	SA																
MRD (MWT-8)	TR2108MRD	SA																
MRD (PT-12A)	ARD2193MRD	SA																

\* Set pump intake at midpoint of saturated column or 1.25 feet off the bottom of the well, to allow a minimum distance of 1.25 feet between intake and POW  
 1 - Sampled at last  
 2 - Sampled according to EPA Method 11 low-flow sampling procedure

MS - Matrix Spike  
 MSD - Matrix Spike Duplicate



**TABLE 3-1  
GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY**

Monitoring Well	Top of Riser Elevation (ft)	IQ 2003 Data				Historical Data			
		Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Groundwater Elevation (ft)			Well Depth (ft)
						Maximum	Minimum	Range	
PT-10	681.52					676.90	671.02	5.88	46.36
PT-11	658.22					654.03	647.79	6.24	19.55
PT-12A	652.15	3/14/03	8.13	5.25	646.9	649.01	642.26	6.75	13.38
PT-15	637.76					633.74	627.38	6.36	19.50
PT-16	637.51					634.85	629.83	5.02	11.04
PT-17	640.14	3/14/03	7.02	4.63	635.51	635.85	629.05	6.80	11.65
PT-18	656.68	3/14/03	6.48	5.22	651.46	652.28	646.30	5.98	11.70
PT-19	645.26	3/14/03	10.05	1.65	643.61	643.61	635.01	8.60	11.70
MW-20	647.28	3/14/03	6.05	5.75	641.53	642.34	637.41	4.93	11.80
MW-21A	647.73	3/14/03	13.79	5.67	642.06	643.84	637.22	6.62	19.46
MW-22	648.61	3/14/03	5.61	6.2	642.41	644.30	637.51	6.79	11.81
PT-23	641.58	3/14/03	7.92	4.16	637.42	638.14	632.35	5.79	12.08
PT-24	636.40	3/14/03	7.24	4.64	631.76	632.76	627.99	4.77	11.88
PT-25	637.09	3/14/03	8.01	4.02	633.07	633.51	625.64	7.87	12.03
PT-26	614.64					611.60	601.53	10.07	14.00
MW-27	639.32	3/14/03	5.39	5.15	634.17	634.88	630.09	4.79	10.54
MW-28	637.21	3/14/03	5.70	4.69	632.52	632.57	628.71	3.86	10.39
MW-29	637.31	3/14/03	5.28	5.26	632.05	632.10	627.30	4.80	10.54
MW-30	640.32	3/14/03	6.62	3.9	636.42	636.42	629.88	6.54	10.52
MW-31	636.70	3/14/03	7.36	2.99	633.71	634.22	627.02	7.20	10.35
MW-32	641.68	3/14/03	6.12	4.25	637.43	637.84	632.70	5.14	10.37
MW-33	639.56	3/14/03	6.06	4.33	635.23	635.65	629.72	5.93	10.39
MW-34	632.89					630.15	622.36	7.79	18.15
MW-35D	631.82					629.44	624.62	4.82	56.64
MW-36	631.79	3/14/03	13.91	2.67	629.12	629.47	622.26	7.21	16.58
MW-37	632.89					630.65	625.77	4.88	13.62
MW-38D	637.90					635.39	628.99	6.40	32.24
MW-39	659.54					657.84	650.47	7.37	11.89
MW-40	659.30	3/14/03	10.97	3.74	655.56	655.85	650.16	5.69	14.71
MW-41D	694.02					687.92	685.21	2.71	47.02
MW-42D	683.04					680.67	671.39	9.28	47.38
MW-43	657.73	3/14/03	5.10	2.37	655.36	655.36	650.73	4.63	7.47
MW-44A	653.85	3/14/03	7.74	4.74	649.11	650.37	642.42	7.95	12.48
MW-45	650.90	3/14/03	6.24	2.1	648.8	648.80	643.12	5.68	8.34
MW-46	650.41	3/14/03	9.07	2.38	648.03	648.03	641.12	6.91	11.45
MW-47	628.06	3/14/03	6.21	2.35	625.71	625.76	619.88	5.88	8.56
MW-48	648.32	3/14/03	8.75	2.75	645.57	645.57	639.94	5.63	11.50
MW-49D	650.50					647.62	641.55	6.07	37.54
MW-50D	649.88					647.40	633.88	13.52	59.66
MW-51D	628.24					628.24	620.49	7.75	36.87
MW-52D	626.35					624.17	618.67	5.50	59.36
MW-53	639.41	3/14/03	4.69	5.66	633.75	633.84	629.46	4.38	10.35
MW-54D	639.11					633.43	628.66	4.77	34.99
MW-55D	639.16					633.41	627.96	5.45	58.18
MW-56	630.51	3/14/03	3.88	3	627.51	627.56	621.66	5.90	6.88
MW-57D	629.82					628.13	621.76	6.37	35.09
MW-58D	629.69					628.37	623.94	4.43	57.29
MW-59	656.83					654.93	649.85	5.08	9.10
MW-60	660.15					658.20	652.23	5.97	9.50
MWT-1	637.24	3/14/03	4.83	4.92	632.32	632.47	629.06	3.41	9.75
MWT-2	637.19	3/14/03	4.45	5.1	632.09	632.27	629.94	2.33	9.55

1987  
 FEDERAL BUREAU OF INVESTIGATION  
 WASHINGTON, D. C. 20535  
 FORM NO. 100 (REV. 11-29-83)

Date	Description of Property			Value	Category
	Acquired	Disposed	Current		
1987-01-01			10000	10000	1
1987-01-01			20000	20000	2
1987-01-01			30000	30000	3
1987-01-01			40000	40000	4
1987-01-01			50000	50000	5
1987-01-01			60000	60000	6
1987-01-01			70000	70000	7
1987-01-01			80000	80000	8
1987-01-01			90000	90000	9
1987-01-01			100000	100000	10



**TABLE 3-1  
GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY**

Monitoring Well	Top of Riser Elevation (ft)	1Q 2003 Data				Historical Data			
		Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Groundwater Elevation (ft)			Well Depth (ft)
						Maximum	Minimum	Range	
MWT-3	637.31	3/14/03	4.72	5.28	632.03	632.20	628.99	3.21	10.00
MWT-4	637.68	3/14/03	7.33	5.1	632.58	632.58	627.28	5.30	12.43
MWT-5	637.72	3/14/03	6.60	5.35	632.37	632.45	628.67	3.78	11.95
MWT-6	637.59	3/14/03	7.01	5.27	632.32	632.38	627.24	5.14	12.28
MWT-7	638.34	3/14/03	8.55	5.42	632.92	632.92	626.58	6.34	13.97
MWT-8	638.40	3/14/03	10.05	2.5	635.9	635.90	627.95	7.95	12.55
MWT-9	638.08	3/14/03	8.46	5.68	632.4	632.42	626.04	6.38	14.14
MWT-10	636.07	3/14/03	4.95	4	632.07	632.23	629.55	2.68	8.95
MWT-11	635.90	3/14/03	7.87	2.08	633.82	633.82	626.92	6.90	9.95

**STATE OF TEXAS**  
**COMMISSION ON FEDERAL AFFAIRS**  
**REPORT OF THE COMMISSION**  
**FOR THE YEAR 1964**

FISCAL YEAR	TOTAL REVENUE			TOTAL EXPENDITURE	BALANCE
	STATE	FEDERAL	TOTAL		
1961	1,200,000	1,800,000	3,000,000	2,800,000	200,000
1962	1,300,000	1,900,000	3,200,000	2,900,000	300,000
1963	1,400,000	2,000,000	3,400,000	3,100,000	300,000
1964	1,500,000	2,100,000	3,600,000	3,300,000	300,000
1965	1,600,000	2,200,000	3,800,000	3,500,000	300,000
1966	1,700,000	2,300,000	4,000,000	3,700,000	300,000
1967	1,800,000	2,400,000	4,200,000	3,900,000	300,000
1968	1,900,000	2,500,000	4,400,000	4,100,000	300,000
1969	2,000,000	2,600,000	4,600,000	4,300,000	300,000
1970	2,100,000	2,700,000	4,800,000	4,500,000	300,000
1971	2,200,000	2,800,000	5,000,000	4,700,000	300,000
1972	2,300,000	2,900,000	5,200,000	4,900,000	300,000
1973	2,400,000	3,000,000	5,400,000	5,100,000	300,000
1974	2,500,000	3,100,000	5,600,000	5,300,000	300,000
1975	2,600,000	3,200,000	5,800,000	5,500,000	300,000
1976	2,700,000	3,300,000	6,000,000	5,700,000	300,000
1977	2,800,000	3,400,000	6,200,000	5,900,000	300,000
1978	2,900,000	3,500,000	6,400,000	6,100,000	300,000
1979	3,000,000	3,600,000	6,600,000	6,300,000	300,000
1980	3,100,000	3,700,000	6,800,000	6,500,000	300,000
1981	3,200,000	3,800,000	7,000,000	6,700,000	300,000
1982	3,300,000	3,900,000	7,200,000	6,900,000	300,000
1983	3,400,000	4,000,000	7,400,000	7,100,000	300,000
1984	3,500,000	4,100,000	7,600,000	7,300,000	300,000
1985	3,600,000	4,200,000	7,800,000	7,500,000	300,000
1986	3,700,000	4,300,000	8,000,000	7,700,000	300,000
1987	3,800,000	4,400,000	8,200,000	7,900,000	300,000
1988	3,900,000	4,500,000	8,400,000	8,100,000	300,000
1989	4,000,000	4,600,000	8,600,000	8,300,000	300,000
1990	4,100,000	4,700,000	8,800,000	8,500,000	300,000
1991	4,200,000	4,800,000	9,000,000	8,700,000	300,000
1992	4,300,000	4,900,000	9,200,000	8,900,000	300,000
1993	4,400,000	5,000,000	9,400,000	9,100,000	300,000
1994	4,500,000	5,100,000	9,600,000	9,300,000	300,000
1995	4,600,000	5,200,000	9,800,000	9,500,000	300,000
1996	4,700,000	5,300,000	10,000,000	9,700,000	300,000
1997	4,800,000	5,400,000	10,200,000	9,900,000	300,000
1998	4,900,000	5,500,000	10,400,000	10,100,000	300,000
1999	5,000,000	5,600,000	10,600,000	10,300,000	300,000
2000	5,100,000	5,700,000	10,800,000	10,500,000	300,000
2001	5,200,000	5,800,000	11,000,000	10,700,000	300,000
2002	5,300,000	5,900,000	11,200,000	10,900,000	300,000
2003	5,400,000	6,000,000	11,400,000	11,100,000	300,000
2004	5,500,000	6,100,000	11,600,000	11,300,000	300,000
2005	5,600,000	6,200,000	11,800,000	11,500,000	300,000
2006	5,700,000	6,300,000	12,000,000	11,700,000	300,000
2007	5,800,000	6,400,000	12,200,000	11,900,000	300,000
2008	5,900,000	6,500,000	12,400,000	12,100,000	300,000
2009	6,000,000	6,600,000	12,600,000	12,300,000	300,000
2010	6,100,000	6,700,000	12,800,000	12,500,000	300,000
2011	6,200,000	6,800,000	13,000,000	12,700,000	300,000
2012	6,300,000	6,900,000	13,200,000	12,900,000	300,000
2013	6,400,000	7,000,000	13,400,000	13,100,000	300,000
2014	6,500,000	7,100,000	13,600,000	13,300,000	300,000
2015	6,600,000	7,200,000	13,800,000	13,500,000	300,000
2016	6,700,000	7,300,000	14,000,000	13,700,000	300,000
2017	6,800,000	7,400,000	14,200,000	13,900,000	300,000
2018	6,900,000	7,500,000	14,400,000	14,100,000	300,000
2019	7,000,000	7,600,000	14,600,000	14,300,000	300,000
2020	7,100,000	7,700,000	14,800,000	14,500,000	300,000
2021	7,200,000	7,800,000	15,000,000	14,700,000	300,000
2022	7,300,000	7,900,000	15,200,000	14,900,000	300,000
2023	7,400,000	8,000,000	15,400,000	15,100,000	300,000
2024	7,500,000	8,100,000	15,600,000	15,300,000	300,000
2025	7,600,000	8,200,000	15,800,000	15,500,000	300,000
2026	7,700,000	8,300,000	16,000,000	15,700,000	300,000
2027	7,800,000	8,400,000	16,200,000	15,900,000	300,000
2028	7,900,000	8,500,000	16,400,000	16,100,000	300,000
2029	8,000,000	8,600,000	16,600,000	16,300,000	300,000
2030	8,100,000	8,700,000	16,800,000	16,500,000	300,000

**TABLE 3-2  
FIELD MONITORING RESULTS - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY**

Well ID	Sample Number	DO (mg/l)	Temp (deg.C)	Spec. Cond. (S/m)	pH (units)	ORP (mV)	Turbidity (ntu)
PT-17	ARD2194	3.85	8.21	0.643	7.13	118	15.6
PT-18	ARD2195	3.73	5.34	1.25	6.76	204	97.3
PT-19	ARD2196	4.30	5.30	0.605	7.24	70	27.5
PT-24	ARD2199	0.61	5.16	0.456	7.24	96	26.0
MW-20	ARD2197	4.06	6.78	0.685	6.82	147	23.4
MW-21A	ARD2198	3.37	8.22	1.24	7.24	131	28.4
MW-27	ARD2182	8.14	7.19	0.502	7.29	133	72.3
MW-30	ARD2183	6.90	4.32	0.558	7.39	142	15.3
MW-32	ARD2184	5.65	5.45	0.615	7.03	151	43.4
MW-36	ARD2185	0.60	7.43	0.602	6.93	-52	19.9
MW-40	ARD2186	2.73	5.86	0.565	7.00	143	31.2
MW-43	ARD2187	5.33	4.27	0.507	7.03	140	40.7
MW-44A	ARD2188	0.99	5.57	4.57	7.03	87	16.0
MW-45	ARD2189	5.99	6.00	0.465	6.83	210	10.0
MW-48	ARD2190	2.21	5.94	0.433	6.78	207	48.6
MW-53	ARD2191	6.47	7.87	0.741	7.04	142	27.8
MW-56	ARD2192	2.96	5.50	0.453	7.05	126	25.9
FH-D	ARD2202	NA	NA	NA	NA	NA	NA
FH-S	ARD2203	NA	NA	NA	NA	NA	NA
BN-S	ARD2201	NA	NA	NA	NA	NA	NA
MWT-1	TR2100	6.02	6.20	0.651	6.40	205	37.4
MWT-2	TR2101	2.26	4.60	0.331	8.70	19	78.2
MWT-3	TR2102	3.29	6.79	0.632	6.95	156	62.2
MWT-4	TR2103	8.10	5.62	0.686	7.02	199	39.4
MWT-5	TR2104	1.75	5	0.3	8.8	117	37.7
MWT-6	TR2105	1.48	5.54	0.440	7.40	109	28.5
MWT-7	TR2106	4.73	9.35	0.672	6.85	158	18.7
MWT-8	TR2107	1.76	4.15	0.201	8.78	43	5.1
MWT-9	TR2108	1.68	9.65	0.380	7.15	122	285
MWT-10	TR2109	0.58	6.54	0.322	7.98	-262	23.1
MWT-11	TR2110	6.85	5.7	0.543	7.30	140	34.9
MWT-12A	ARD2193	2.62	7.91	1.730	6.59	213	0.4

ND = Not Detected  
NA = Not Analyzed

2007  
 FEDERAL BUREAU OF INVESTIGATION  
 U.S. DEPARTMENT OF JUSTICE  
 WASHINGTON, D.C. 20535

REPORT NUMBER	DATE	TO	FROM	CHARACTER OF CASE	CLASSIFICATION	STATUS	REMARKS
100-100000	1/10/07	Director	ASAC	...	...	...	...
	1/10/07	...	...	...	...	...	...
	1/10/07	...	...	...	...	...	...

RESULTS OF GROUNDWATER ANALYSIS - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Parameter	Units	Maximum	Frequency Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL			ASH LANDFILL			ASH LANDFILL			ASH LANDFILL		
								BINS			FHS			FHD			MWA-27		
								Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
1,1,1,2-Tetrachloroethane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	3.87	
1,1,1-Trichloroethane	UGL	1.6	6% GA	5	0	2	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	10.54	
1,1,2,2-Tetrachloroethane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,1,2-Trichloro-1,2,2-Trifluoroethane	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,1,2-Trichloroethane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,1-Dichloroethane	UGL	4.3	9% GA	5	0	3	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,1-Dichloroethene	UGL	0.45	3% GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,1-Dichloropropene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2,3-Trichlorobenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2,3-Trichloropropane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2,4-Trichlorobenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2,4-Trimethylbenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2-Dibromo-3-chloropropane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2-Dichlorobenzene	UGL	0	0% GA	0.0006	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2-Dichloroethane	UGL	0	0% GA	3	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2-Dichloroethene	UGL	0	0% GA	0.6	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2-Dichloroethane (total)	UGL	0	57% MCL	70	3	20	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,2-Dichloropropane	UGL	673	0% GA	1	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,3,5-Trimethylbenzene	UGL	0.84	3% GA	5	0	1	35	0.84	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,3-Dichlorobenzene	UGL	0	0% GA	3	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,3-Dichloropropane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
1,4-Dichlorobenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
2,2-Dichloropropane	UGL	0	0% GA	3	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
2-Chloroethylvinylether	UGL	0	0%	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
2-Chlorotoluene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
2-Nitropropane	UGL	0	0%	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Acetone	UGL	0	0%	70	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Acetonitrile	UGL	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Acrolein	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Acrylonitrile	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Allyl chloride	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Benzene	UGL	0.44	9% GA	1	0	3	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Benzyl chloride	UGL	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bis(2-Chloroisopropyl)ether	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bromobenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bromochloroethane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bromodichloromethane	UGL	0	0% MCL	80	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bromodimethylchloroethane	UGL	0	0% MCL	80	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bromodimethylchloroethane	UGL	0	0% MCL	80	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Bromodimethylchloroethane	UGL	0	0% MCL	80	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Carbon disulfide	UGL	0	0%	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Carbon tetrachloride	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Chlorobenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Chlorodibromomethane	UGL	0	0% MCL	80	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Chloroethane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Chloroform	UGL	0.42	3% GA	7	0	1	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Chloroprene	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Cis-1,2-Dichloroethane	UGL	667	57% GA	5	16	20	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Cis-1,3-Dichloropropene	UGL	0	0% GA	0.4	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Cyclohexanone	UGL	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Dichlorodifluoromethane	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Ethyl benzene	UGL	0.36	3% GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Ethyl methacrylate	UGL	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Hexachlorobutadiene	UGL	0	0%	0.5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Isobutyl alcohol	UGL	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Isopropylbenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Meta/Para Xylene	UGL	0.88	3% GA	5	0	1	35	0.88	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Methacrylonitrile	UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Methyl Tertiary Ether	UGL	30.6	3% GA	5	0	1	35	30.6	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Methyl bromide	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Methyl butyl ketone	UGL	2	3% GA	5	0	1	35	1 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Methyl chloride	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	
Methyl ethyl ketone	UGL	0.54	6% GA	5	0	2	35	1 U	0.5 U	0.5 U	0	0	0	0	0	0	0	0	

5% concentration above action level

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RESULTS Groundwater Monitoring Analysis - Interim Quarterly  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Parameter	Units	Maximum	Frequency Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL BIN-S GROUNDWATER ARD2201		ASH LANDFILL FH-Q GROUNDWATER ARD2202		ASH LANDFILL FH-S GROUNDWATER ARD2203		ASH LANDFILL MW-27 GROUNDWATER ARD2182	
								Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	
Methyl iodide	UGL	0	0% GA	5	0	0	0	1 U	1 U	0	0	0	0	3.67	
Methyl isobutyl ketone	UGL	0	0% GA	50	0	0	0	1 U	1 U	0	0	0	0	10.54	
Methyl methacrylate	UGL	0	0% GA	5	0	0	0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.45 U	
Methylene bromide	UGL	0	0% GA	5	0	0	0	0.35 U	0.28 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Methylene chloride	UGL	0	0% GA	5	0	0	0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Naphthalene	UGL	2.8	3% GA	5	0	1	35	2.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Ortho Xylene	UGL	0	0% GA	5	0	0	14	0	0	0	0	0	0	0	
Pentachloroethane	UGL	0	0% GA	5	0	0	14	0	0	0	0	0	0	0	
Propionitrile	UGL	0	0%	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Propylbenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Styrene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Tetrahydroethene	UGL	0	0% GA	5	0	0	35	1.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Toluene	UGL	3.4	3% GA	5	0	1	35	3.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Total Xylenes	UGL	6	9% GA	5	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Trans-1,2-Dichloroethene	UGL	0	0% GA	0.4	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Trans-1,3-Dichloropropene	UGL	0	0% GA	5	0	0	14	0	0	0	0	0	0	0	
Trans-1,4-Dichloro-2-butene	UGL	599	40% GA	5	9	14	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Trichloroethene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Trichlorofluoromethane	UGL	0	0%	5	0	0	35	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Vinyl acetate	UGL	81.2	9% GA	2	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Vinyl chloride	UGL	0	0%	5	0	0	14	0	0	0	0	0	0	0	
cis-1,4-Dichloro-2-butene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
n-Butylbenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
p-Chlorobutene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
p-Isopropyltoluene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
sec-Butylbenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
tert-Butylbenzene	UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Calcium	UGL	483000	100%	5	0	0	37	0	0	0	0	0	0	95200	
Magnesium	UGL	179000	100%	50	13	37	37	0	0	0	0	0	0	10100	
Manganese	UGL	835	100% SEC	50	13	37	37	0	0	0	0	0	0	9.13	
Potassium	UGL	28900	100%	50	13	37	37	0	0	0	0	0	0	1270 J	
Sodium	UGL	186000	100% GA	20000	10	37	37	0	0	0	0	0	0	6.08	
Chloride	MGL	522	100% GA	250000	0	38	39	0	0	0	0	0	0	25 U	
Ethene	UGL	28.5	11%	5	0	4	35	0	0	0	0	0	0	25 U	
Ethene	UGL	8.16	11%	5	0	4	35	0	0	0	0	0	0	25 U	
Methane	UGL	5960	60%	10000	0	21	35	0	0	0	0	0	0	0.711	
Nitrate	MGL	12.2	77% GA	250000	0	30	39	0	0	0	0	0	0	55	
Sulfate	MGL	1340	100% GA	250000	0	38	39	0	0	0	0	0	0	1.3	
Total Organic Carbon	MGL	5.78	100%	250000	0	37	37	0	0	0	0	0	0	0	

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and accountability in the financial process.

2. The second part outlines the procedures for handling discrepancies. If there is a difference between the recorded amount and the actual amount received or paid, it is crucial to investigate the cause immediately. This could be due to a clerical error, a missing receipt, or a fraudulent transaction. Prompt action is required to resolve such issues and prevent further complications.

3. The third part provides guidelines for the storage and security of financial records. All documents should be kept in a secure, fireproof location. Regular backups should be made to prevent data loss. Additionally, access to these records should be restricted to authorized personnel only to maintain confidentiality.



RESULTS OF GROUNDWATER ANALYSIS - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL MW-32		ASH LANDFILL MW-36		ASH LANDFILL MW-40		ASH LANDFILL MW-43	
							Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
UGL	0	0% GA	5	0	0	35	4.16	3.85	2.57	2.57	2.57	3.34	2.8	
UGL	0	0% GA	50	0	0	35	10.52	10.37	16.58	16.58	14.71	7.47	7.47	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.43 U	0.39 U	0.39 U	0.5 U	0.5 U	0.5 U	
UGL	2.8	3% GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	3.4	3% GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	6	9% GA	5	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	0.4	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	589	40% GA	5	9	14	35	0.43 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
UGL	81.2	9% GA	2	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
UGL	483000	100%	5	0	0	35	98900	111000	113000	112000	94900	94100	94100	
UGL	179000	100%	50	13	37	37	14700	14800	17000	17300	12700	9090	9090	
UGL	85	100% SEC	50	13	37	37	2.89	0.93	1.73	1.73	1810	8.67	8.67	
UGL	28900	100%	20000	10	37	37	1700 J	1730 J	2230	2280	1810	718	718	
UGL	186000	100%	250000	10	37	37	12200	14400	12100	12300	12300	8220	8220	
MGL	522	100% GA	20000	0	39	39	14.2	6.71	6.73	6.61	4.35	8.28	8.28	
UGL	26.5	11%	5	0	4	35	25 U	25 U	25 U	25 U	25 U	25 U	25 U	
UGL	8.16	11%	5	0	4	35	25 U	25 U	25 U	25 U	25 U	25 U	25 U	
UGL	5960	60%	10000	0	21	35	25 U	25 U	25 U	25 U	25 U	25 U	25 U	
MGL	12.2	77% GA	10000	0	30	39	0.581 J	0.288	0.3	0.318	0.12	0.1	0.1	
MGL	1340	100% GA	250000	0	39	39	71.3	56	56.5	56.2	89	53.2	53.2	
MGL	5.78	100%	250000	0	37	37	1.29	1.41	3.29	3.42	1.64	1.43	1.43	

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RESULTS OF GROUNDWATER ANALYSIS - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency	Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL MW-45		ASH LANDFILL MW-48		ASH LANDFILL MW-53		ASH LANDFILL MW-56		ASH LANDFILL MW-56		ASH LANDFILL MW-56		
								Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	
UG/L	483000	0	0% GA	5	0	0	35	2.78	2.84	5.22	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	4.1
UG/L	179000	0	0% GA	5	0	0	35	8.34	11.5	10.35	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.88	8.75
UG/L	835	0	0% GA	50	0	0	35	3/28/03	3/28/03	3/25/03	4/2/03	4/2/03	4/2/03	4/2/03	4/2/03	4/2/03	4/2/03	4/2/03	4/2/03	3/27/03
UG/L	28900	0	0% GA	5	0	0	35													
UG/L	186000	2.6	3% GA	5	0	1	35													
UG/L	522	0	0% GA	5	0	0	14													
UG/L	26.5	0	0% GA	5	0	0	14													
UG/L	8.16	0	0% GA	5	0	0	35													
UG/L	5960	0	0% GA	5	0	0	35													
UG/L	12.2	0	77% GA	10000	0	0	39													
MGL	1340	5.78	100% GA	250000	0	0	39													
MGL	5.78	0	100%	250000	0	0	37													
UG/L	82700	0	0% GA	5	0	0	35	82700	78500	132000	80200	130000	125000	14700	14700	14700	14700	14700	14700	14700
UG/L	10400	0	100% SEC	50	13	37	37	10400	10500	17500	9720	15100	125000	14700	14700	14700	14700	14700	14700	14700
UG/L	835	0	100%	50	13	37	37	1.66 J	7.9	7.09	6.74	7.23	15100	7.54	7.54	7.54	7.54	7.54	7.54	7.54
UG/L	28900	0	100%	20000	10	37	37	635	1320	1160 J	2250	1540 J	13800	1480 J	1480 J	1480 J	1480 J	1480 J	1480 J	1480 J
UG/L	186000	0	100%	250000	10	37	37	10200	8580	16.4	10600	13800	13800	13300	13300	13300	13300	13300	13300	13300
MGL	522	0	100%	250000	0	39	39	6.97	8.03	16.4	11.6	12.9	12.9	13	13	13	13	13	13	13
UG/L	26.5	0	11%	10000	0	4	4	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UG/L	8.16	0	11%	10000	0	4	4	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UG/L	5960	0	60%	10000	0	21	35	25 U	25 U	25 U	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3
MGL	12.2	0	77% GA	10000	0	30	39	0.1 U	0.127	0.413	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18
MGL	1340	5.78	100% GA	250000	0	39	39	41.2	41.6	119	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4	62.4
MGL	5.78	0	100%	250000	0	37	37	1.18	1.41	1.34	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2

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RESULTS OF GROUNDWATER ANALYSIS - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency	Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL				ASH LANDFILL				ASH LANDFILL							
								MWT-11		MWT-2		MWT-2		MWT-2		MWT-2		MWT-2		MWT-3		MWT-4	
								TR2110DUP	TR2101DUP	TR2101DUP	TR2101DUP	TR2101DUP	TR2101DUP	TR2101DUP	TR2101DUP	TR2102	TR2103DUP	TR2102	TR2103DUP	TR2102	TR2103DUP	TR2103	TR2103DUP
UGL	1.67	0	0% GA	5	0	0	35	1.87	4.68	4.88	4.88	4.88	4.88	4.88	4.88	4.88	3.95						
UGL	0	8% GA	0% GA	5	0	0	35	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	12.43						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	12.43						
UGL	4.3	9% GA	0% GA	1	0	0	14	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	0.45	3% GA	0% GA	5	0	1	35	0	0	0	0	0	0	0	0	0	12.43						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	12.43						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	12.43						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	12.43						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	12.43						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	3/26/03						
UGL	673	57% MCL	57% MCL	70	3	20	35	0	0	0	0	0	0	0	0	0	43.2						
UGL	0	0% GA	0% GA	1	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0.84	3% GA	0% GA	5	0	1	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	3	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	3	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	3	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	3	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	3	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	3	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	673	57% MCL	57% MCL	70	3	20	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0.42	3% GA	0% GA	7	0	1	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	667	57% GA	57% GA	5	0	16	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0.36	3% GA	3% GA	5	0	1	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0	0% GA	0% GA	5	0	0	35	0	0	0	0	0	0	0	0	0	0.5 U						
UGL	0.54	6% GA	6% GA	5	0	2	35	0	0	0	0	0	0	0	0	0	0.5 U						

is concentration above action level

1. 1990年12月31日  
2. 1991年1月1日

3. 1991年1月2日  
4. 1991年1月3日



RESULTS Groundwater Monitoring Analysis - Interim Report  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL MWT-11 TR2110		ASH LANDFILL MWT-2 TR2101DUP		ASH LANDFILL MWT-3 TR2102		ASH LANDFILL MWT-4 TR2103DUP		ASH LANDFILL MWT-4 TR2103	
							Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)		
UG/L	0	0% GA	5	0	0	35	1.87	1.67	4.68	4.8	3.95	3.95	19	19	19	19
UG/L	0	0%	5	0	0	35	9.85	9.55	9.55	10	12.43	12.43	19	19	19	19
UG/L	0	0% GA	50	0	0	14	324/03	324/03	4/1/03	327/03	328/03	328/03	SA	SA	SA	SA
UG/L	0	0% GA	5	0	0	35	TR2110DUP	TR2110	TR2101DUP	TR2102	TR2103DUP	TR2103	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH
UG/L	0	0% GA	5	0	0	35	DU	DU	DU	DU	DU	DU	DU	DU	DU	DU
UG/L	2.8	3% GA	5	0	1	35	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH	ASH TRENCH
UG/L	0	0% GA	5	0	0	14	19	19	19	19	19	19	19	19	19	19
UG/L	0	0%	5	0	0	14	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td></td></td></td></td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td></td></td></td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td></td></td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td></td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) <td>Value (Q) </td></td></td>	Value (Q) <td>Value (Q) <td>Value (Q) </td></td>	Value (Q) <td>Value (Q) </td>	Value (Q)
UG/L	0	0% GA	5	0	0	35	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	3.4	3% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	6	8% GA	5	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	0.4	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	599	40% GA	5	9	14	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	5	0	0	35	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
UG/L	81.2	8% GA	2	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0% GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	483000	100%	5	0	37	37	106000	24600	24600	128000	128000	132000	132000	132000	132000	132000
UG/L	175000	100%	50	13	37	37	12100	17000	16800	15800	15800	15800	15800	15800	15800	15800
UG/L	835	100% SEC	50	13	37	37	6.47	38	38.2	13.7	13.7	13.7	13.7	13.7	13.7	13.7
UG/L	28900	100%	20000	10	37	37	2460 J	1240	1200	1330 J	1330 J	1330 J	1330 J	1330 J	1330 J	1330 J
UG/L	186000	100%	250000	10	37	37	13300	13500	13500	12700	12700	12700	12700	12700	12700	12700
MG/L	522	100% GA	250000	0	39	39	9.15	16.1	15.9	14.6	14.6	14.6	14.6	14.6	14.6	14.6
UG/L	26.5	11%	10000	0	4	35	25 U	25 U	8.12 J	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UG/L	8.16	11%	10000	0	4	35	25 U	25 U	6.4 J	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UG/L	5950	60%	10000	0	21	35	0.486	0.1 U	3940	0.211	0.211	0.211	0.211	0.211	0.211	0.211
UG/L	12.2	77% GA	250000	0	30	39	59.5	105	108	128	128	128	128	128	128	128
MG/L	1340	100% GA	250000	0	39	39	59.5	105	108	128	128	128	128	128	128	128
MG/L	5.78	100%	250000	0	37	37	1.01	0.782	0.782	1.14	1.14	1.14	1.14	1.14	1.14	1.14

es concentration above action level

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail.

2. The second part of the document outlines the specific procedures that should be followed when recording transactions. This includes the use of double-entry bookkeeping and the requirement to record every transaction in the general ledger.

3. The third part of the document discusses the importance of reconciling the accounts regularly. This helps to identify any discrepancies between the recorded transactions and the actual bank statements or other external records.

4. The fourth part of the document discusses the importance of maintaining proper documentation for all transactions. This includes retaining receipts, invoices, and other supporting documents for a sufficient period of time.

5. The fifth part of the document discusses the importance of reviewing the financial statements regularly. This helps to ensure that the statements are accurate and that any potential issues are identified and addressed in a timely manner.

6. The sixth part of the document discusses the importance of maintaining proper internal controls. This includes implementing policies and procedures that help to prevent and detect errors and fraud.

7. The seventh part of the document discusses the importance of staying up-to-date on changes in accounting standards and regulations. This helps to ensure that the financial statements are prepared in accordance with the most current requirements.

8. The eighth part of the document discusses the importance of seeking professional advice when needed. This includes consulting with accountants, auditors, and other experts to ensure that the financial statements are prepared correctly and that all applicable laws and regulations are followed.

9. The ninth part of the document discusses the importance of maintaining a clear and concise record of all transactions. This helps to ensure that the financial statements are easy to understand and that any potential issues can be identified and resolved quickly.

10. The tenth part of the document discusses the importance of maintaining proper communication with all stakeholders. This includes providing regular updates to management, investors, and other interested parties on the company's financial performance.

11. The eleventh part of the document discusses the importance of maintaining proper records of all transactions. This includes retaining receipts, invoices, and other supporting documents for a sufficient period of time.

12. The twelfth part of the document discusses the importance of reviewing the financial statements regularly. This helps to ensure that the statements are accurate and that any potential issues are identified and addressed in a timely manner.

13. The thirteenth part of the document discusses the importance of maintaining proper internal controls. This includes implementing policies and procedures that help to prevent and detect errors and fraud.

14. The fourteenth part of the document discusses the importance of staying up-to-date on changes in accounting standards and regulations. This helps to ensure that the financial statements are prepared in accordance with the most current requirements.

15. The fifteenth part of the document discusses the importance of seeking professional advice when needed. This includes consulting with accountants, auditors, and other experts to ensure that the financial statements are prepared correctly and that all applicable laws and regulations are followed.

16. The sixteenth part of the document discusses the importance of maintaining a clear and concise record of all transactions. This helps to ensure that the financial statements are easy to understand and that any potential issues can be identified and resolved quickly.

17. The seventeenth part of the document discusses the importance of maintaining proper communication with all stakeholders. This includes providing regular updates to management, investors, and other interested parties on the company's financial performance.

18. The eighteenth part of the document discusses the importance of maintaining proper records of all transactions. This includes retaining receipts, invoices, and other supporting documents for a sufficient period of time.

19. The nineteenth part of the document discusses the importance of reviewing the financial statements regularly. This helps to ensure that the statements are accurate and that any potential issues are identified and addressed in a timely manner.

20. The twentieth part of the document discusses the importance of maintaining proper internal controls. This includes implementing policies and procedures that help to prevent and detect errors and fraud.

21. The twenty-first part of the document discusses the importance of staying up-to-date on changes in accounting standards and regulations. This helps to ensure that the financial statements are prepared in accordance with the most current requirements.

22. The twenty-second part of the document discusses the importance of seeking professional advice when needed. This includes consulting with accountants, auditors, and other experts to ensure that the financial statements are prepared correctly and that all applicable laws and regulations are followed.

RESULTS OF GROUNDWATER ANALYSIS - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency	Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL MWT-3 TR2105		ASH LANDFILL MWT-7 TR2106DUP		ASH LANDFILL MWT-3 TR2107		ASH LANDFILL MWT-9 TR2108		ASH LANDFILL PT-12A ARD2199DUP	
								Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)		
UG/L	1.6	0%	GA	5	0	0	35	4.36	4.81	4.81	5.33	5.21	5.22	5.21	5.22	5.22	5.22
UG/L	0	6%	GA	5	0	2	35	12.28	13.97	13.97	12.55	14.14	10.35	14.14	10.35	10.35	10.35
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	1	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	4.3	9%	GA	5	0	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0.45	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	0.04	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	0.04	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	0.0008	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	3	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	0.8	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	673	57%	MCL	70	3	20	35	3.6	3.9	3.9	44.8	34.7	34.7	44.8	34.7	34.7	34.7
UG/L	0	0%	GA	1	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0.84	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	3	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	3	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	2 U	0	0	35	2 U	1.6 U	1.1 U	2.1 U	1 U	1 U	1 U	1 U	1 U	1 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0.44	9%	GA	1	0	3	35	0.5 U	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	687	57%	GA	5	16	20	35	3.6	3.9	3.9	44.8	34.7	34.7	44.8	34.7	34.7	34.7
UG/L	0	0%	GA	0.4	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0.38	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	0.5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0.68	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	30.6	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	2	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UG/L	0.54	6%	GA	5	0	2	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

es concentration above action level

1. The first part of the document discusses the importance of maintaining accurate records of all transactions.

2. It is essential to ensure that all entries are supported by appropriate documentation and receipts.

3. Regular audits should be conducted to verify the accuracy of the records and identify any discrepancies.

4. The second part of the document outlines the procedures for handling any irregularities or discrepancies.

5. It is important to investigate any irregularities promptly and take appropriate corrective action.

6. The document also provides guidance on how to prevent future irregularities and ensure compliance with applicable laws and regulations.

7. Finally, the document emphasizes the need for transparency and accountability in all financial reporting.

8. By following these guidelines, organizations can ensure the integrity and accuracy of their financial records.

9. This document is intended to serve as a reference for all personnel involved in financial reporting.

3-3  
RESULTS OF GROUNDWATER ANALYSIS - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency	Type	Action Level	Exceed	Detect	Analyses	ASH LANDFILL TR2105		ASH LANDFILL TR2111		ASH LANDFILL TR2106DUP		ASH LANDFILL TR2106		ASH LANDFILL TR2107		ASH LANDFILL TR2108		ASH LANDFILL TR2109	
								Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
UGL	0	0%	GA	5	0	0	35	4.36	12.28	4.36	4.91	4.81	5.33	5.21	5.22	5.22	5.22	5.22	5.22	5.22	5.22
UGL	0	0%	GA	50	0	0	35	12.28	12.28	12.28	13.97	13.97	12.55	14.14	10.35	10.35	10.35	10.35	10.35	10.35	10.35
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	2.8	3%	GA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	3.4	3%	CA	5	0	1	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	6	9%	GA	5	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	0.4	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	599	40%	GA	5	9	14	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	81.2	9%	GA	2	1	3	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	14	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	0	0%	GA	5	0	0	35	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
UGL	483000	100%	GA	5	0	37	37	47600	47500	47500	125000	122000	8550	48300	241000	241000	241000	241000	241000	241000	241000
UGL	179000	100%	SEC	50	13	37	37	12800	12700	14200	14000	14000	16400	8940	36300	36300	36300	36300	36300	36300	36300
UGL	835	100%	SEC	50	13	37	37	42.7	41.7	7.03	6.63	6.63	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3
UGL	28900	100%	GA	20000	10	37	37	1480 J	1480 J	866 J	881 J	881 J	887	887	887	887	887	887	887	887	887
UGL	186000	100%	GA	250000	10	37	37	19400	19400	16200	15800	15800	9800	9800	9800	9800	9800	9800	9800	9800	9800
MGL	522	100%	GA	250000	0	39	39	15.1	15.3	4.33	4.31	4.31	3.59	4.31	58.2	58.2	58.2	58.2	58.2	58.2	58.2
UGL	26.5	11%	GA	5	0	4	35	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UGL	8.16	11%	GA	5	0	4	35	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UGL	5960	60%	GA	10000	0	21	39	2330	2330	25 U	25 U	25 U	3800	1620	1620	1620	1620	1620	1620	1620	1620
MGL	12.2	77%	GA	250000	0	30	39	0.606	0.554	0.361	0.415	0.415	0.221	0.221	0.554	0.554	0.554	0.554	0.554	0.554	0.554
MGL	1340	100%	GA	250000	0	39	39	80.3	79.6	76.4	77.9	77.9	41.6	36.8	434	434	434	434	434	434	434
MGL	5.78	100%	GA	250000	0	37	37	0.623	0.612	1.51	1.54	1.54	0.598	1.63	2.34	2.34	2.34	2.34	2.34	2.34	2.34

as concentration above action level

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THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
5301 S. LINDSAY DRIVE  
CHICAGO, ILL. 60637  
TEL: 773-936-3700

RESULTS Groundwater Monitoring - Ash Landfill  
 SENECA ARMY DEPOT ACTIVITY

Units	Maximum	Frequency Type	Action Level	Exceed	Detect	Analyses	Value (Q)	ASH LANDFILL PT-12A GROUNDWATER ARD2200	ASH LANDFILL PT-17 GROUNDWATER ARD2194	ASH LANDFILL PT-18 GROUNDWATER ARD2195	ASH LANDFILL PT-19 GROUNDWATER ARD2196	ASH LANDFILL PT-20 GROUNDWATER ARD2197	ASH LANDFILL PT-21A GROUNDWATER ARD2198	ASH LANDFILL PT-24 GROUNDWATER ARD2199
arameter														
UG/L	0	0% GA	5	0	0	35	50 U	2.95	4.23	4.01	1.81	4.17	2.99	3.87
UG/L	0	0% GA	50	0	0	35	50 U	13.38	11.85	11.7	11.7	11.8	19.48	11.88
UG/L	0	0% GA	50	0	0	35	50 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	50 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	50 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	2.8	3% GA	5	0	1	35	10 U	4.33	10 U	0.64 U	1 U	1 U	1 U	0.5
UG/L	0	0% GA	5	0	0	14	50 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	14	50 R	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	3.4	3% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	8	9% GA	5	0	1	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	0.4	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	598	40% GA	5	0	14	35	50 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	81.2	9% GA	2	1	3	35	50 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	0	0% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	483000	100% GA	5	0	0	35	10 U	11.7	11.7	11.7	11.8	19.48	11.88	3.87
UG/L	179000	100% GA	5	0	0	37	242000	115000	118000	188000	101000	139000	153000	75200
UG/L	835	100% SEC	50	13	37	37	38400	11800	11800	28800	13500	14900	40100	9550
UG/L	28800	100% GA	20000	0	37	37	3130	113 J	757 J	4090	2400 J	1190 J	8720	153
UG/L	186000	100% GA	250000	10	37	37	59000	18300	18300	26000	17400	15900	44000	14000
UG/L	522	100% GA	250000	0	39	39	58.3	4.33	4.33	11.9	15	3.72	106	18.7
UG/L	26.5	11%	10000	0	4	4	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UG/L	8.16	11%	10000	0	4	4	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
UG/L	5960	60%	250000	0	21	35	48.8	25 U	25 U	49.5	42.5	24 J	25.4	1720
UG/L	12.2	77% GA	10000	0	30	39	0.487	0.622	0.622	0.254	2.12 J	0.229	0.239	0.1
UG/L	1340	100% GA	250000	0	39	39	433	78.8	78.8	219	59.8	130	202	116
UG/L	5.78	100%	250000	0	37	37	2.13	2.5	2.5	4.35	1.98	1.49	1.09	0.6

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RESULTS OF DETECTED VOCs - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Contaminant	Groundwater Standard <sup>1</sup>	Well ID							
		BN-S	MW-20	MW-30	MW-44A	MW-53	MW-56	MWT-1	M
	Units								
Trichloroethane	5	--	--	--	1.6	--	--	--	--
Chloroethane	5	--	--	--	4.3	--	--	--	--
Chloroethene	5	--	--	--	0.45 J	--	--	--	--
Chloroethene (total)	70 (a)	--	7.8	--	194	13.9	0.42 J	39.6	--
1,1-Dichloroethane	5	0.84	--	--	--	--	--	--	--
1,2-Dichloroethane	1	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	7	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	5	--	7.8	--	194	13.9	0.42 J	39.6	--
1,2-Dichloroethane	5	0.36 J	--	--	--	--	--	--	--
o-Dichlorobenzene	5	0.68	--	--	--	--	--	--	--
p-Dichlorobenzene	5	30.6	--	--	--	--	--	--	--
1,2-Dichloroethane	5	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	5	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	5	2.8	--	--	--	--	--	--	--
1,2-Dichloroethane	5	3.4	--	--	--	--	--	--	--
1,1,2-Trichloroethane	5	--	--	0.43 J	1.7	--	--	--	--
1,1,1-Trichloroethane	5	--	12	--	10.8	1.4	--	13.2	--
1,1,2-Trichloroethane	2	--	--	--	81.2	--	--	--	--

S:

Groundwater criteria source is NY State Class GA Groundwater Standard (TOGS 1.1.1, June 1998), except as noted below.  
MCL - USEPA Maximum Contaminant Level

report value is an estimated concentration  
compound was not detected

indicates concentration above action level

Item	Description	Quantity	Unit Price	Total Price
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94	...	...	...	...
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96	...	...	...	...
97	...	...	...	...
98	...	...	...	...
99	...	...	...	...
100	...	...	...	...



RESULTS OF DETECTED VOCs - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Contaminant	Groundwater Standard <sup>1</sup>	Well ID											
		Units	MWT-3	MWT-4	MWT-5	MWT-6	MWT-6	MWT-6	MWT-7	MWT-8			
Trichloroethane	5	UG/L	--	0.69	--	--	--	--	--	--	--	--	--
Chloroethane	5	UG/L	--	--	0.25 J	--	--	--	--	--	--	--	--
Chloroethene	5	UG/L	--	--	--	--	--	--	--	--	--	--	--
Chloroethene (total)	70 (a)	UG/L	17.2	43.2	5.7	3.6	3.9	22.4	44.8	0.28 J	--	--	--
Trimethylbenzene	5	UG/L	--	--	--	--	--	--	--	--	--	--	--
Form	1	UG/L	--	--	0.44 J	--	--	--	--	--	--	--	--
1,2-Dichloroethene	7	UG/L	--	--	--	--	--	--	--	--	--	--	--
Benzene	5	UG/L	17.2	43.2	5.7	3.6	3.9	22.4	44.8	0.28 J	--	--	--
Para Xylene	5	UG/L	--	--	--	--	--	--	--	--	--	--	--
Tertbutyl Ether		UG/L	--	--	--	--	--	--	--	--	--	--	--
Butyl ketone		UG/L	--	--	--	--	--	--	--	--	--	--	--
Ethyl ketone		UG/L	--	--	0.54 J	--	--	--	--	--	--	0.29 J	--
Xylene	5	UG/L	--	--	--	--	--	--	--	--	--	--	--
Xylenes	5	UG/L	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethene	5	UG/L	--	--	--	--	--	--	--	--	--	--	--
Chloroethene	5	UG/L	3.8	1.7	--	--	--	--	--	--	--	--	--
Chloride	2	UG/L	--	--	--	--	--	391	--	--	--	--	0.51

S:

Groundwater criteria source is NY State Class GA Groundwater Standard (TOGS 1.1.1, June 1998), except as noted below.  
 MCL - USEPA Maximum Contaminant Level

report value is an estimated concentration  
 compound was not detected

indicates concentration above action level

DATE	DESCRIPTION	AMOUNT	CHECK NO.	BALANCE
1/1/20	OPENING BALANCE	100.00		100.00
1/5/20	PAYROLL	25.00	101	75.00
1/10/20	RENT	50.00	102	25.00
1/15/20	SALES	150.00	103	175.00
1/20/20	UTILITIES	30.00	104	145.00
1/25/20	PAYROLL	25.00	105	120.00
1/31/20	CLOSING BALANCE			120.00





RESULTS OF DETECTED VOCs - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Well ID		Groundwater Standard <sup>1</sup>	Units	MWT-10	PT-12A	PT-12A	PT-17	PT-18	PT-19	PT-24
Parameter										
1,1,1-Trichloroethane	5	UG/L	--	--	--	--	--	--	--	0.29 J
1,1-Dichloroethane	5	UG/L	--	--	--	--	--	--	--	--
1,1-Dichloroethene	5	UG/L	--	--	--	--	--	--	--	--
1,2-Dichloroethene (total)	70 (a)	UG/L	5.4	673	510	62.1	3	3	3	35.2
1,3,5-Trimethylbenzene	5	UG/L	--	--	--	--	--	--	--	--
Benzene	1	UG/L	--	--	--	--	--	--	--	--
Chloroform	7	UG/L	--	--	--	--	0.42 J	--	--	--
Cis-1,2-Dichloroethene	5	UG/L	5.4	667	510	61.7	3	3	3	35.2
Ethyl benzene	5	UG/L	--	--	--	--	--	--	--	--
Meta/Para Xylene		UG/L	--	--	--	--	--	--	--	--
Methyl Tertbutyl Ether		UG/L	--	--	--	--	--	--	--	--
Methyl butyl ketone		UG/L	--	--	--	--	--	--	2 J	--
Methyl ethyl ketone		UG/L	--	--	--	--	--	--	--	--
Ortho Xylene	5	UG/L	--	--	--	--	--	--	--	--
Total Xylenes	5	UG/L	--	--	--	--	--	--	--	--
Trans-1,2-Dichloroethene	5	UG/L	--	61	--	0.37 J	--	--	--	--
Trichloroethene	5	UG/L	--	599	550	268	27.3	--	--	2.8
vinyl chloride	2	UG/L	--	--	--	--	--	--	--	--

NOTES:

1. Groundwater criteria source is NY State Class GA Groundwater Standard (TOGS 1.1.1, June 1998), except as noted below.  
(a) MCL - USEPA Maximum Contaminant Level

J = the report value is an estimated concentration

-- = compound was not detected

Shade indicates concentration above action level

Date	Description	Debit	Credit

TABLE 3-5

**Natural Attenuation Parameters Immediately Upgradient, Downgradient, and in the Permeable Reactive Barrier (PRB)  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY**

*Well Grouping I*

Well Location in Relation to PRB	Electron Acceptors				Reaction Endproducts			Physical Parameters						
	Well ID	DO (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	CO <sub>2</sub> (mg/L)	Methane (ug/L)	Ethane (ug/L)	Ethene (ug/L)	Chloride (mg/L)	ORP (mV)	pH	Temp. (deg. C)	Specific Conductivity (uS/cm)	Turbidity (NTU)
Upgradient	MWT-1	6.02	0.293	114	30	25 U	25 U	25 U	13.0	205	6.4	6.20	0.651	37.4
PRB	MWT-2	2.26	ND	106	5	3940	8.12 J	6.4 J	16.0	19	8.7	4.60	0.331	78.2
Downgradient	MWT-3	3.29	0.211	126	30	50	25 U	25 U	14.6	156	6.95	6.79	0.632	62.2

*Well Grouping II*

Well Location in Relation to PRB	Electron Acceptors				Reaction Endproducts			Physical Parameters						
	Well ID	DO (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	CO <sub>2</sub> (mg/L)	Methane (ug/L)	Ethane (ug/L)	Ethene (ug/L)	Chloride (mg/L)	ORP (mV)	pH	Temp. (deg. C)	Specific Conductivity (uS/cm)	Turbidity (NTU)
Upgradient	MWT-4	8.10	0.252	123	25	25 U	25 U	25 U	18.6	199	7.02	5.62	0.686	39.4
PRB	MWT-5	1.75	ND	76.9	10	5960	10.9 J	5.92 J	19.5	117	8.8	5	0.3	37.7
Downgradient	MWT-6	1.48	0.580	80.1	10	2335	25 U	25 U	15.2	109	7.4	5.54	0.440	28.5

*Well Grouping III*

Well Location in Relation to PRB	Electron Acceptors				Reaction Endproducts			Physical Parameters						
	Well ID	DO (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	CO <sub>2</sub> (mg/L)	Methane (ug/L)	Ethane (ug/L)	Ethene (ug/L)	Chloride (mg/L)	ORP (mV)	pH	Temp. (deg. C)	Specific Conductivity (uS/cm)	Turbidity (NTU)
Upgradient	MWT-7	4.73	0.388	78.2	35	25 U	25 U	25 U	4.32	158	6.85	9.35	0.672	18.7
PRB	MWT-8	1.76	ND	41.6	10	3800	9.28 J	8.16 J	3.59	43	8.78	4.15	0.201	5.1
Downgradient	MWT-9	1.68	0.221	38.6	15	1620	25 U	25 U	4.89	122	7.15	9.65	0.380	285

## Note:

PRB - permeable reactive barrier

"Upgradient" refers to a location upgradient of the PRB.

"Downgradient" refers to a location upgradient of the PRB.

U - compound was not detected

J - the report value is an estimated concentration

ND - Non-detect

mg/L - milligrams per liter

ug/L - micrograms per liter

mV - millivolts

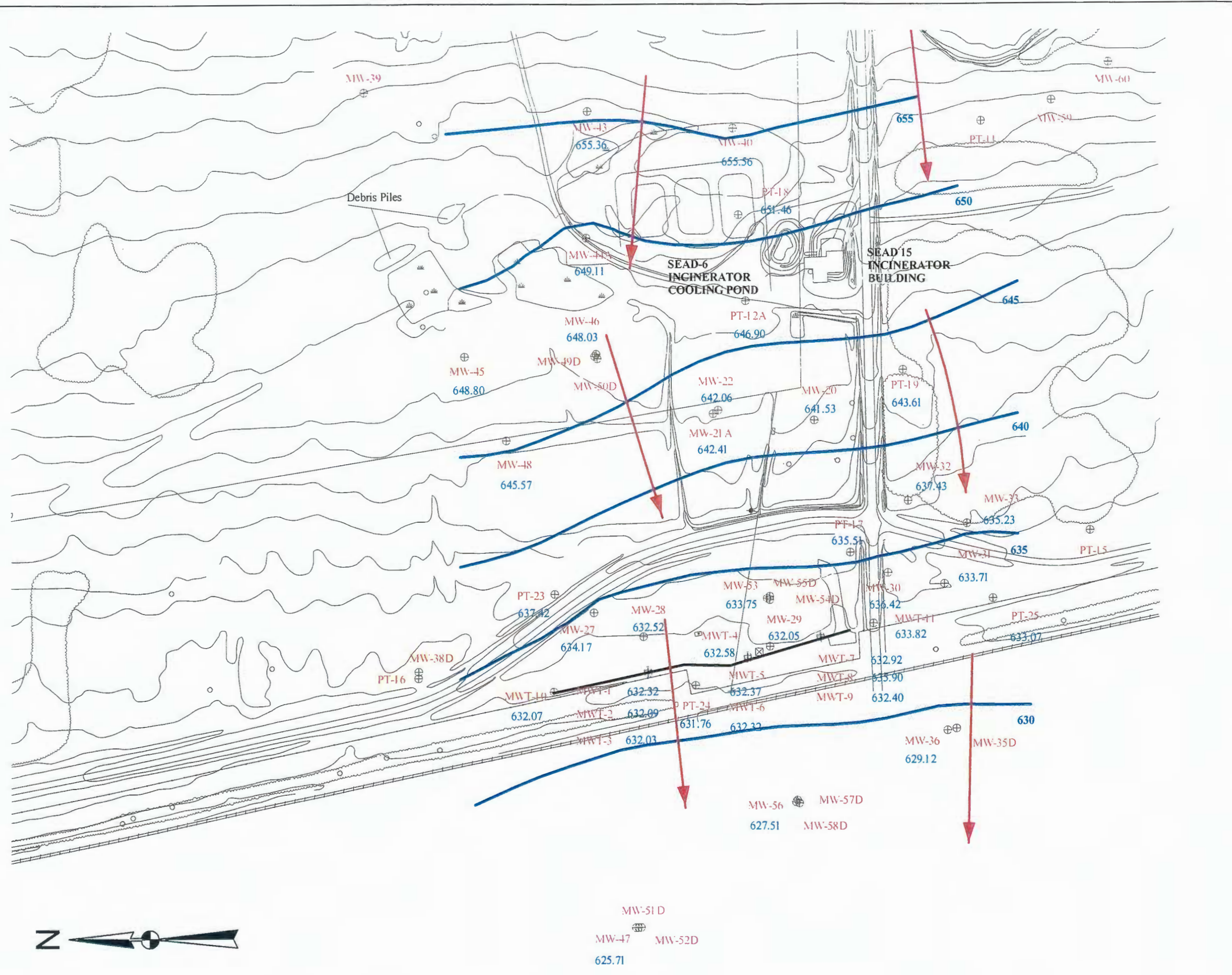
deg. C - degrees centigrade (C°)

uS/cm - microsiemens per centimeter

NTU - Nephelometric Turbidity Unit



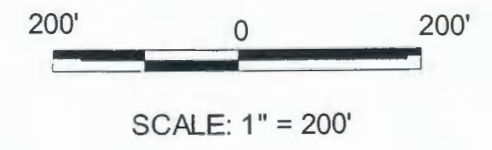
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**LEGEND**

- PAVED ROAD
- GROUND CONTOUR AND ELEVATION
- WETLAND & DESIGNATION
- OUTLINE OF FORMER TRASH PITS (IDENTIFIED FROM AERIAL PHOTO)
- APPROXIMATE EXTENT OF DEBRIS PILE
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- 6" WATER MAIN
- MONITORING WELL WITH LOCATION DESIGNATION
- 637.51 GROUNDWATER ELEVATION (FT MSL)
- 640 GROUNDWATER ELEVATION CONTOUR (FT)

**NOTES:**  
 GROUNDWATER MEASUREMENTS TAKEN IN MARCH 2003  
 GROUNDWATER ELEVATIONS CONTOURS BASED ON CONDITIONS AT THE TIME OF MEASUREMENT. GROUNDWATER CONDITIONS AT OTHER TIMES MAY VARY.  
 WATER LEVEL MEASUREMENTS WERE ONLY COLLECTED AT THOSE WELLS SCHEDULED FOR SAMPLING IN THE 1ST QUARTER OF 2003



**PARSONS**

SENECA ARMY DEPOT ACTIVITY  
 ASH LANDFILL  
 GROUNDWATER MONITORING  
 FIRST QUARTER 2003

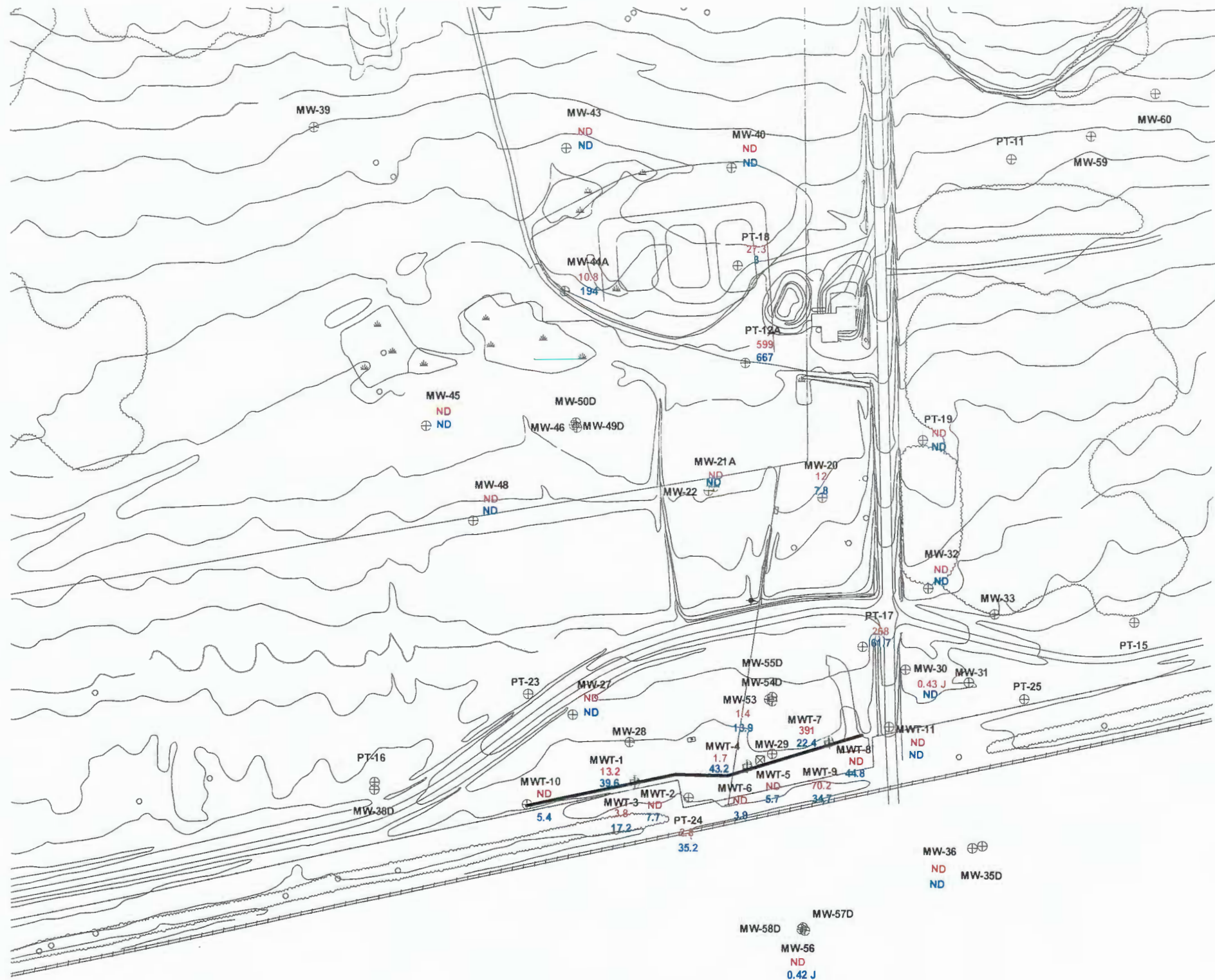
ENVIRONMENTAL ENGINEERING 743155-01300

**FIGURE 3-1**  
 GROUNDWATER ELEVATION CONTOURS  
 (1Q 2003)

SCALE: 1 INCH = 200 FEET AUGUST 2003

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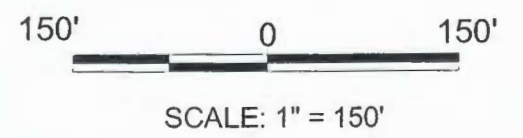


**LEGEND**

- PAVED ROAD
- GROUND CONTOUR AND ELEVATION
- WETLAND & DESIGNATION
- OUTLINE OF FORMER TRASH PITS (IDENTIFIED FROM AERIAL PHOTO)
- APPROXIMATE EXTENT OF DEBRIS PILE
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- 6" WATER MAIN
- MONITORING WELL W/ DESIGNATION
- TRICHLOROETHENE (TCE) - ug/L
- CIS-1,2-DICHLOROETHENE (DCE) - ug/L
- NO DETECTION FOR TRICHLOROETHENE (TCE) - ug/L
- NO DETECTION CIS-1,2-DICHLOROETHENE (DCE) - ug/L
- PERMEABLE REACTIVE BARRIER

NOTES:  
 GROUNDWATER SAMPLES COLLECTED FOLLOWING EPA REGION II LOW-FLOW SAMPLING PROTOCOL SAMPLES FOR GROUND WATER QUALITY ANALYSIS COLLECTED ON MARCH 24 TO APRIL 2, 2003.

GROUNDWATER ANALYTICAL DATA BASED ON CONDITIONS AT THE TIME OF SAMPLING. GROUNDWATER CONDITONS AT OTHER TIMES MAY VARY.



**PARSONS**

SENECA ARMY DEPOT ACTIVITY  
 ASH LANDFILL  
 GROUNDWATER MONITORING  
 FIRST QUARTER 2003

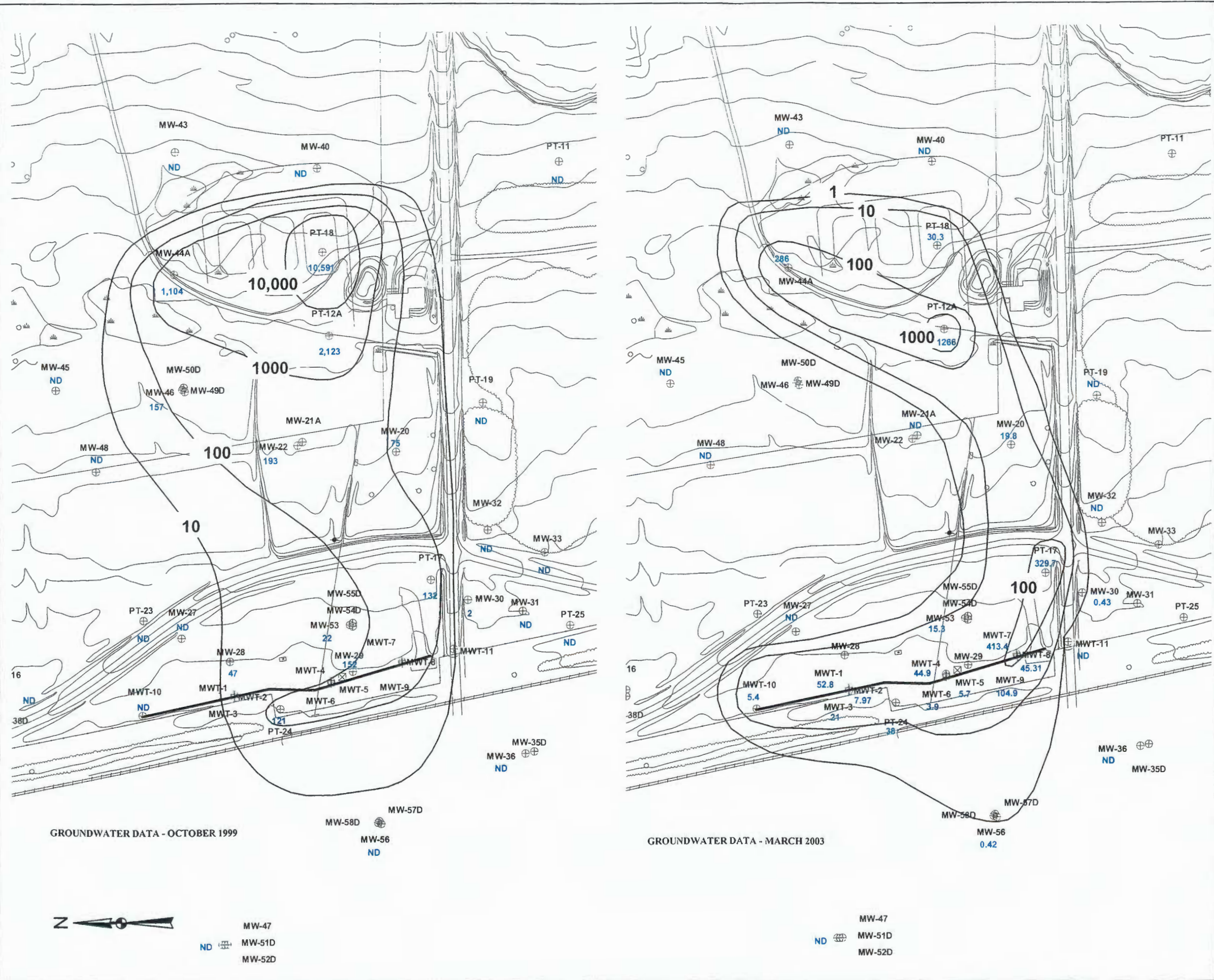
ENVIRONMENTAL ENGINEERING 743155-01300

**FIGURE 3-2**  
 GROUNDWATER ANALYTICAL DATA  
 TCE AND DCE CONCENTRATIONS (1Q 2003)

SCALE: 1 INCH = 150 FEET JULY 2002





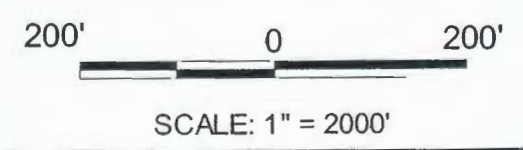


**LEGEND**

- PAVED ROAD
- GROUND CONTOUR AND ELEVATION
- WETLAND & DESIGNATION
- OUTLINE OF FORMER TRASH PITS (IDENTIFIED FROM AERIAL PHOTO)
- APPROXIMATE EXTENT OF DEBRIS PILE
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- 6" WATER MAIN
- PERMEABLE REACTIVE BARRIER
- MONITORING WELL W/ DESIGNATION
- Total** TOTAL CHLORINATED ETHENES (UG/L) (CIS-1,2-DCE, TCE AND VC)
- ND** NO DETECTION
- 1,000 Total Chlorinated Ethene Isocontour (ppb)

NOTES:  
GROUNDWATER SAMPLES COLLECTED FOLLOWING EPA REGION II LOW-FLOW SAMPLING PROTOCOL

GROUNDWATER ANALYTICAL DATA BASED ON CONDITIONS AT THE TIME OF SAMPLING. GROUNDWATER CONDITIONS AT OTHER TIMES MAY VARY.



**PARSONS**

SENECA ARMY DEPOT ACTIVITY  
ASH LANDFILL  
GROUNDWATER MONITORING  
FIRST QUARTER 2003

ENVIRONMENTAL ENGINEERING 734155-01300

**FIGURE 3-3**  
COMPARISON OF TOTAL CHLORINATED ETHENES IN GROUNDWATER  
OCTOBER 1999 vs. MARCH 2003

SCALE: 1 INCH = 200 FEET AUGUST 2003

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GROUNDWATER DATA - OCTOBER 1999

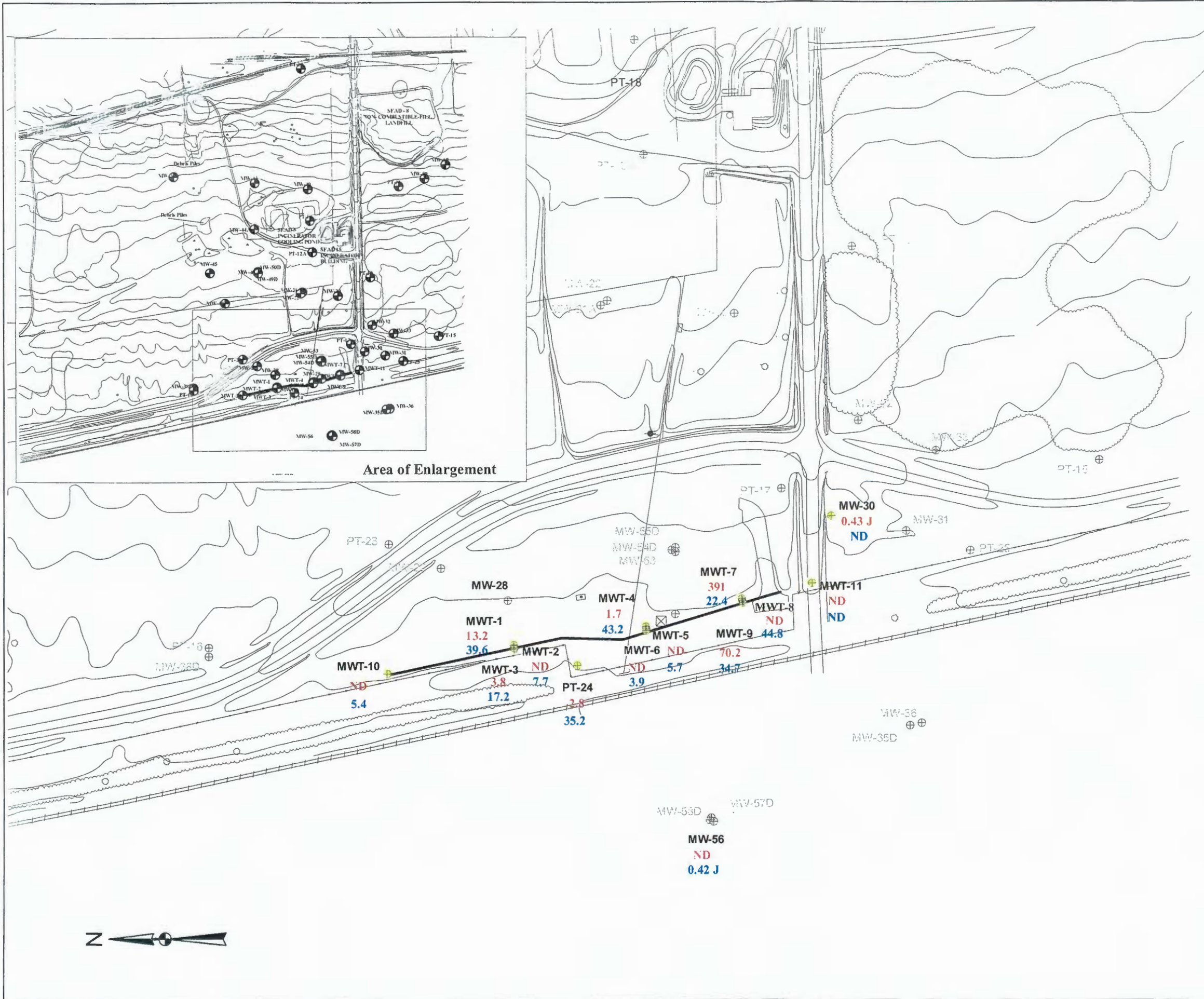
GROUNDWATER DATA - MARCH 2003

- N
- MW-47
- ND MW-51D
- MW-52D

- MW-47
- ND MW-51D
- MW-52D





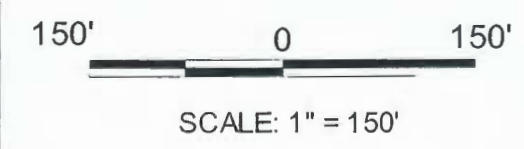


**LEGEND**

- PAVED ROAD
- GROUND CONTOUR AND ELEVATION
- WETLAND & DESIGNATION
- OUTLINE OF FORMER TRASH PITS (IDENTIFIED FROM AERIAL PHOTO)
- APPROXIMATE EXTENT OF DEBRIS PILE
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- 6" WATER MAIN
- MONITORING WELL W/ DESIGNATION
- TRICHLOROETHENE (TCE) - ug/L
- CIS-1,2-DICHLOROETHENE (DCE) - ug/L
- ND NO DETECTION FOR TRICHLOROETHENE (TCE) - ug/L
- ND NO DETECTION CIS-1,2-DICHLOROETHENE (DCE) - ug/L
- PERMEABLE REACTIVE BARRIER

NOTES:  
 GROUNDWATER SAMPLES COLLECTED FOLLOWING EPA REGION II LOW-FLOW SAMPLING PROTOCOL SAMPLES FOR GROUND WATER QUALITY ANALYSIS COLLECTED IN MARCH 2003

GROUNDWATER ANALYTICAL DATA BASED ON CONDITIONS AT THE TIME OF SAMPLING. GROUNDWATER CONDITIONS AT OTHER TIMES MAY VARY.



**PARSONS**

SENECA ARMY DEPOT ACTIVITY  
 ASH LANDFILL  
 GROUNDWATER MONITORING  
 FIRST QUARTER 2003

ENVIRONMENTAL ENGINEERING 743155-01300

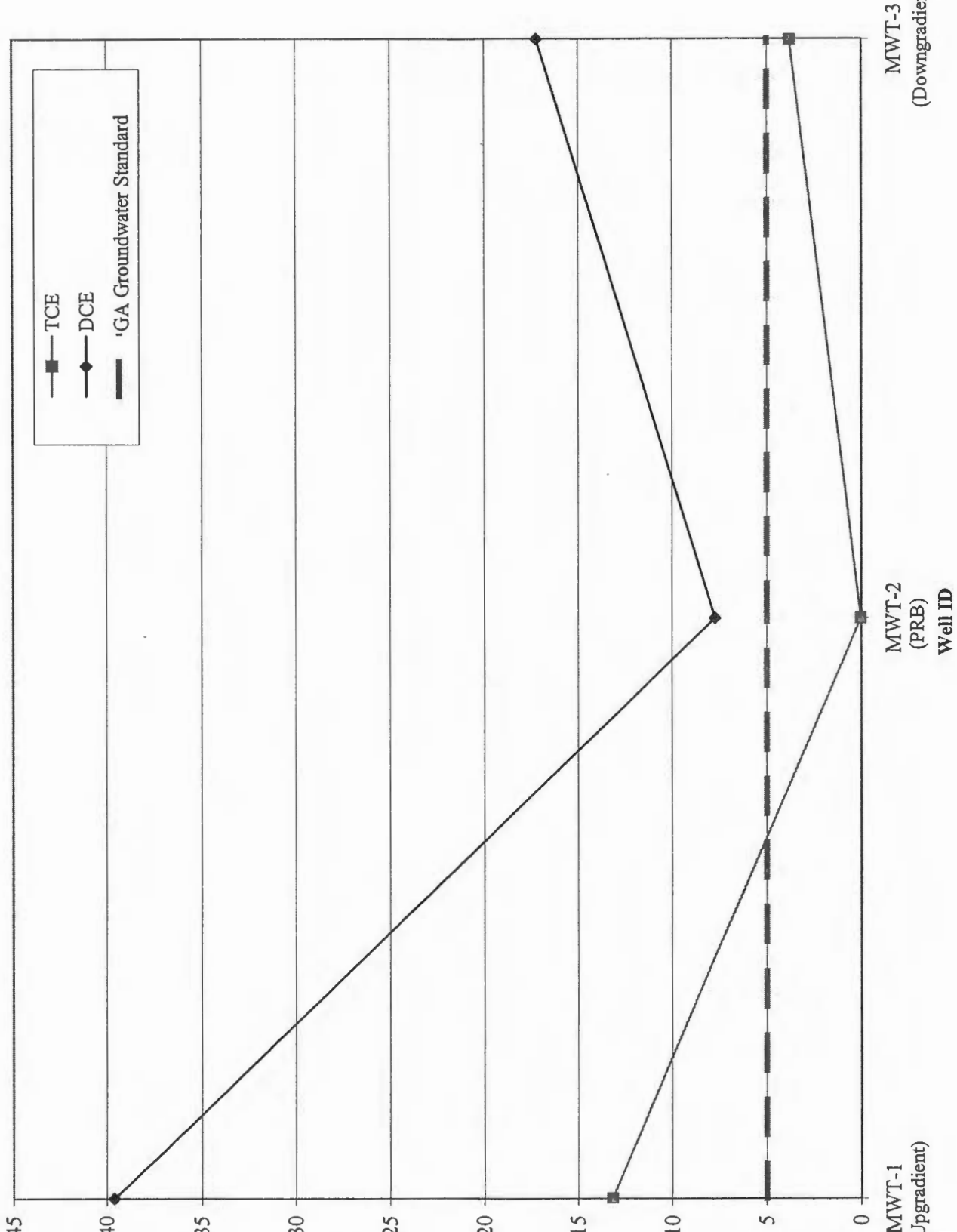
**FIGURE 3-8**  
 GROUNDWATER ANALYTICAL DATA  
 TCE AND DCE CONCENTRATIONS (1Q 2003)  
 IN THE VICINITY OF THE PRB

SCALE: 1 INCH = 150 FEET AUGUST 2003

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**FIGURE 3-9**  
**TCE AND DCE CONCENTRATIONS IN FIRST WELL GROUPING (MWT-1, MWT-2, AND MWT-3) - MARCH 2003**  
**GROUNDWATER MONITORING - ASH LANDFILL**  
**SENECA ARMY DEPOT ACTIVITY**





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FIGURE 3-10  
TCE AND DCE CONCENTRATIONS IN SECOND WELL GROUPING (MWT-4, MWT-5, AND MWT-6) - MARCH 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

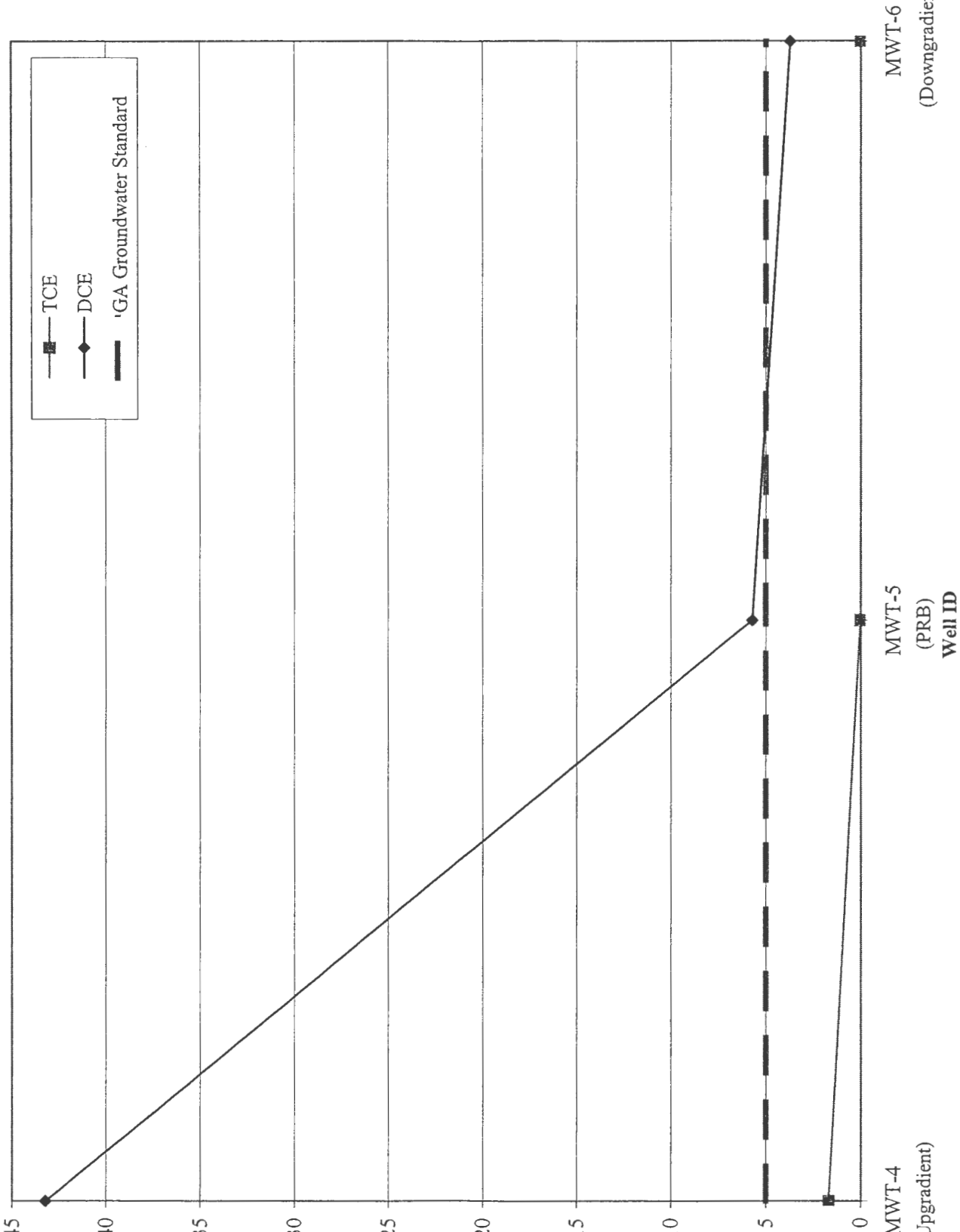
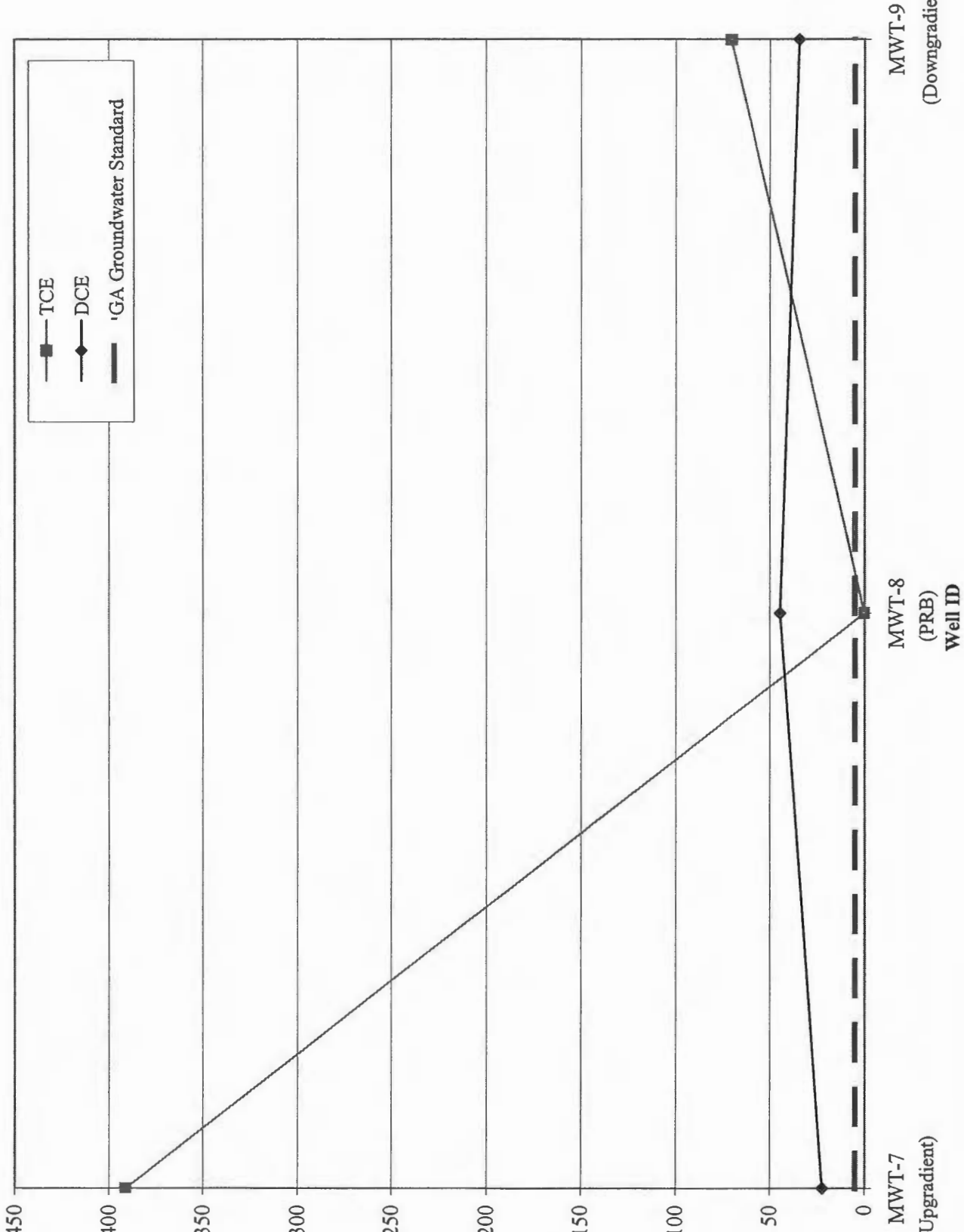






FIGURE 3-11  
 TCE AND DCE CONCENTRATIONS IN THIRD WELL GROUPING (MWT-7, MWT-8, AND MWT-9) - MARCH 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY



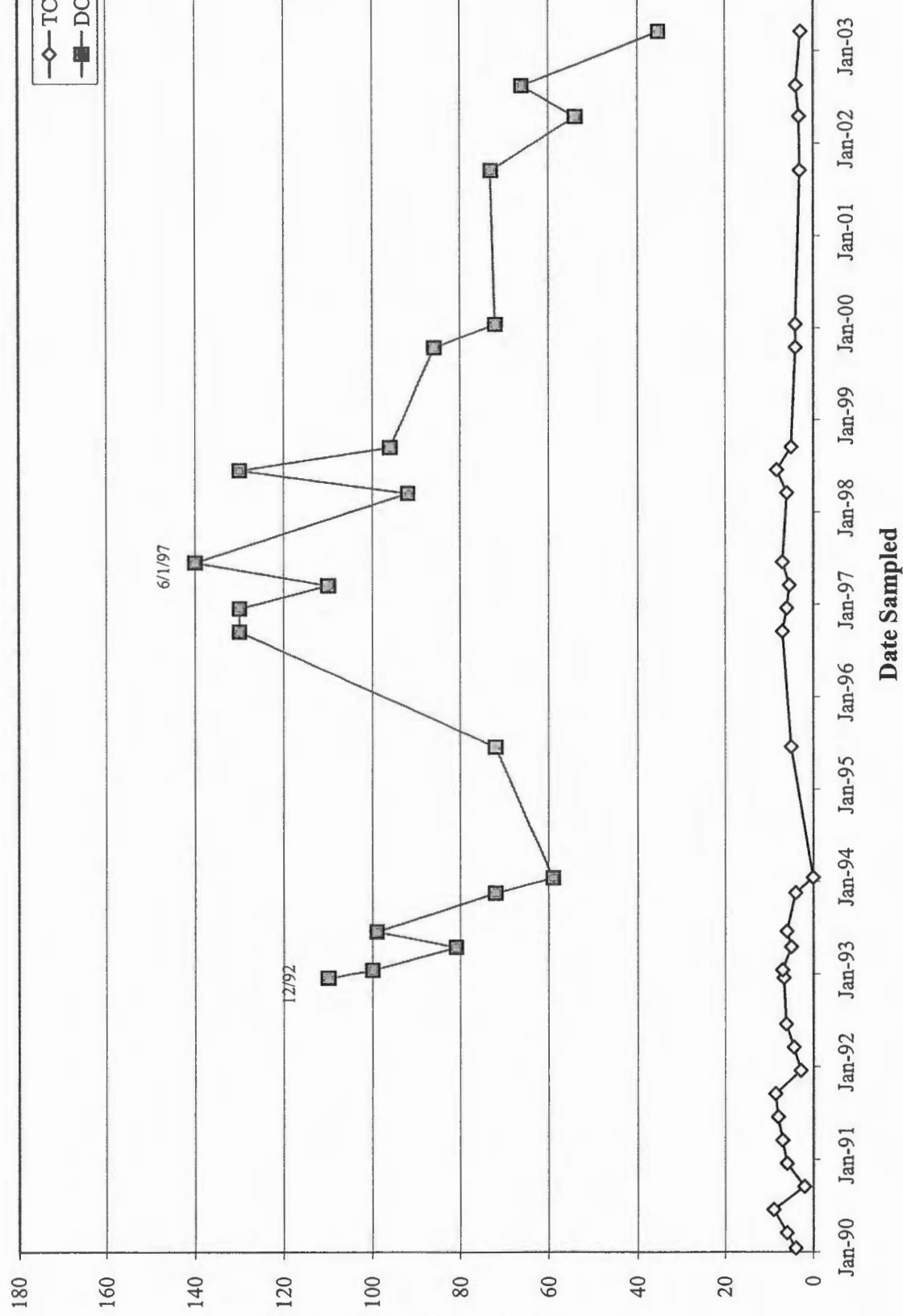
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**FIGURE 3-12**  
**HISTORIC TCE AND DCE CONCENTRATIONS AT PT-24**  
**GROUNDWATER MONITORING - ASH LANDFILL**  
**SENECA ARMY DEPOT ACTIVITY**



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**APPENDIX A**

**GROUNDWATER ELEVATION DATA**

TABLE 3-1  
GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Monitoring Well	First Quarter 1995			Second Quarter 1995			Third Quarter 1995			Fourth Quarter 1995			First Quarter 1996		
	Top of Riser Elevation (ft)	Date	of Riser (ft.) Water Level (ft)	Date	of Riser (ft.) Water Level (ft)	Date	of Riser (ft.) Water Level (ft)	Date	of Riser (ft.) Water Level (ft)	Date	of Riser (ft.) Water Level (ft)	Date	of Riser (ft.) Water Level (ft)	Date	of Riser (ft.) Water Level (ft)
PT-10	681.52			06/05/1995	10.4	671.12	09/12/1995	10.5	671.02	1/11/96	8.22	673.3	03/14/1996	7.26	674.26
PT-11	658.22	03/16/1995	4.28	06/05/1995	7.2	651.02	09/12/1995	8.39	649.83	1/11/96	4.94	653.28	03/14/1996	4.44	653.78
PT-12A	652.15			06/05/1995	Destroyed										
PT-15	637.76			06/05/1995	8.2	629.56	09/12/1995	9.73	628.03	1/11/96	4.94	632.82	03/14/1996	7.94	644.21
PT-16	637.51			06/05/1995	4.68	632.83	09/12/1995	5.36	632.15	1/11/96	3.18	634.33	03/14/1996	5.73	632.03
PT-17	640.14			06/05/1995	7.87	632.27	09/12/1995	8.66	631.48	1/11/96	6.16	633.98	03/14/1996	2.66	634.85
PT-18	656.68			06/05/1995	8.24	648.44	09/12/1995	8.81	647.87	1/11/96	7.22	649.46	03/14/1996	7.08	649.6
PT-19	645.26	03/17/1995	3.1	06/05/1995	6.33	638.93	09/12/1995	7.57	637.69	1/10/96	4.14	641.12	03/14/1996	2.62	642.64
MW-20	647.28			06/05/1995	7.69	639.59	09/12/1995	8.83	638.45	1/11/96	6.89	640.39	03/14/1996	6.64	640.64
MW-21A	647.73			06/05/1995	Destroyed										
MW-22	648.61			06/05/1995	8.92	639.69	09/12/1995	9.74	638.87	1/11/96	8.9	639.71	03/14/1996	8.66	639.95
PT-23	641.58			06/05/1995	6.95	634.63	09/12/1995	7.94	633.64	1/11/96	4.74	636.84	03/14/1996	4.17	637.41
PT-24	636.40			06/05/1995	5.41	630.99	09/12/1995	5.64	630.76	1/11/96	5.08	631.32	03/14/1996	4.48	631.92
PT-25	637.09			06/05/1995	7.2	629.89	09/12/1995	9.84	627.25	1/10/96	5.63	631.46	03/14/1996	4.04	633.05
PT-26	614.64			06/05/1995	7.02	607.62	09/12/1995	Not Measured							
MW-27	639.32	03/16/1995	5.13	06/05/1995	6.85	632.47	09/12/1995	6.74	632.58	1/11/96	6.04	633.28	03/14/1996	5.7	633.62
MW-28	637.21			06/05/1995	5.93	631.28	09/12/1995	6.12	631.09	1/11/96	5.66	631.55	03/14/1996	5.23	631.98
MW-29	637.31			06/05/1995	7.38	629.93	09/12/1995	7.78	629.53	1/11/96	6.68	630.63	03/14/1996	6.2	631.01
MW-30	640.32			06/05/1995	Dry			10.42	629.9	1/11/96	7.65	632.67	03/14/1996	5.88	634.44
MW-31	636.70	03/17/1995	4.1	06/05/1995	6.49	630.21	09/12/1995	8.7	628.00	1/11/96	4.88	631.82	03/14/1996	3.38	633.32
MW-32	641.68			06/05/1995	8	633.68	09/12/1995	8.9	632.78	1/11/96	8.86	634.82	03/14/1996	5.45	636.23
MW-33	639.56			06/05/1995	8.76	630.8	09/12/1995	9.62	629.94	1/11/96	6.24	633.32	03/14/1996	4.96	634.6
MW-34	632.89			06/05/1995	5.93	626.96	09/12/1995	8.9	623.99	1/10/96	4.72	628.17	03/14/1996	3.16	629.73
MW-35D	631.82			06/05/1995	4.15	627.67	09/12/1995	5.43	626.39	1/10/96	2.89	628.93	03/14/1996	2.38	629.44
MW-36	631.79	03/16/1995	2.34	06/05/1995	4.36	627.43	09/12/1995	5.94	625.85	1/10/96	2.97	628.82	03/14/1996	2.32	629.47
MW-37	632.89	09/23/1901		06/05/1995	4.38	628.31	09/12/1995	5.96	626.93	1/11/96	3.32	629.57	03/14/1996	2.24	630.65
MW-38D	637.90	09/28/1901		06/05/1995	5.23	632.67	09/12/1995	8.91	628.99	1/11/96	3.88	634.02	03/14/1996	3.47	634.43
MW-39	659.54	10/20/1901		06/05/1995	3.96	655.58	09/12/1995	5.27	654.27	1/11/96	1.91	657.63	03/14/1996	Frozen	
MW-40	659.30	10/20/1901	3.61	06/05/1995	6.48	652.82	09/12/1995	7.46	651.84	1/11/96	4.44	654.86	03/14/1996	3.81	
MW-41D	694.02	11/24/1901		06/05/1995	8.48	685.54	09/12/1995	8.76	685.26	1/11/96	7.32	686.7	03/14/1996	7	687.02
MW-42D	683.04			06/05/1995	5.97	677.07	09/12/1995	8.34	674.70	1/11/96	4.02	679.02	03/14/1996	3.53	679.51
MW-43	657.73			06/05/1995	4.72	653.01	09/12/1995	5.73	652.00	1/11/96	Frozen	NA	03/14/1996	Frozen	
MW-44A	653.85			06/05/1995	Destroyed										
MW-45	650.90	03/17/1995	3.05	06/05/1995	5.26	645.64	09/12/1995	6.34	644.56	1/11/96	Frozen	NA	03/14/1996	Frozen	
MW-46	650.41			06/05/1995	7.06	643.35	09/12/1995	7.96	642.45	1/11/96	6.16	644.25	03/14/1996	5.72	644.69
MW-47	628.06	03/16/1995	2.84	06/05/1995	6.48	621.58	09/12/1995	5.96	622.10	1/11/96	Frozen	NA	03/14/1996	Frozen	
MW-48	648.32	03/17/1995	3.1	06/05/1995	6.13	642.19	09/12/1995	6.86	641.46	1/11/96	3.7	644.62	03/14/1996	Frozen	
MW-49D	650.50			06/05/1995	7.1	643.4	09/12/1995	7.88	642.62	1/11/96	6.09	644.41	03/14/1996	5.71	644.79
MW-50D	649.88			06/05/1995	6.88	643	09/12/1995	7.69	642.19	1/11/96	6.02	643.86	03/14/1996	5.78	644.1
MW-51D	628.24			06/05/1995	6.63	621.61	09/12/1995	6.12	622.12	1/11/96		628.24	03/14/1996	2.78	625.46
MW-52D	626.35			06/05/1995	6.12	620.23	09/12/1995	5.68	620.67	1/11/96	3	623.35	03/14/1996	Frozen	
MW-53	639.41			06/05/1995	8.45	630.96	09/12/1995	8.94	630.47	1/11/96	7.86	631.55	03/14/1996	6.98	632.43
MW-54D	639.11			06/05/1995	8.3	630.81	09/12/1995	8.76	630.35	1/11/96	7.66	631.45	03/14/1996	6.97	632.14
MW-55D	639.16			06/05/1995	8.18	630.98	09/12/1995	8.62	630.54	1/11/96	7.42	631.74	03/14/1996	6.88	632.28
MW-56	630.51	03/16/1995	2.95	06/05/1995	4.14	626.37	09/12/1995	4.31	626.20	1/11/96	Frozen	NA	03/14/1996	Frozen	
MW-57D	629.82			06/05/1995	3.79	626.03	09/12/1995	3.7	626.12	1/11/96	2.42	627.4	03/14/1996	1.91	627.91
MW-58D	629.69			06/05/1995	3.6	626.09	09/12/1995	3.52	626.17	1/11/96	2.2	627.49	03/14/1996	2.25	627.44
MW-59	656.83	03/17/1995	1.9	06/05/1995	3.26	653.57	09/12/1995	4.58	652.25	1/11/96	2.14	654.69	03/14/1996	Frozen	

T 3-1  
 GROUNDWATER ELEVATION - FIRST QUARTER 2003  
 GROUNDWATER MONITORING RING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Monitoring Well	Top of Riser Elevation (ft)	First Quarter 1995			Second Quarter 1995			Third Quarter 1995			Fourth Quarter 1995			First Quarter 1996		
		Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)
MW-60	660.15	03/17/1995	2.02	658.13	06/05/1995	3.83	656.32	09/12/1995	5.33	654.82	1/11/96	2.34	657.81	03/14/1996		Frozen
MWT-1	637.24															
MWT-2	637.19															
MWT-3	637.31															
MWT-4	637.68															
MWT-5	637.72															
MWT-6	637.59															
MWT-7	638.34															
MWT-8	638.40															
MWT-9	638.08															
MWT-10	636.07															
MWT-11	635.90															

TABLE 3-1  
GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Second Quarter 1996			Third Quarter 1996			Fourth Quarter 1996			First Quarter 1997			Second Quarter 1997			First Quarter 1997		
Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)
06/20/1996	9.65	671.87	09/23/1996	6.62	674.9	01/06/1997	5.31	676.21	03/18/1997	5.3	676.22	06/17/1997	9.03	672.49	03/23/98	4	672.49
06/20/1996	6.54	651.68	09/23/1996	6.15	652.07	01/06/1997	4.19	654.03	03/18/1997	4.41	653.81	06/17/1997	6.23	651.99	03/23/98	4	651.99
06/20/1996	7.88	644.27	09/23/1996	7.31	644.84	01/06/1997	4.25	647.9	03/18/1997	5.85	646.3	06/17/1997	7.53	644.62	03/23/98	3	644.62
06/20/1996	7.7	630.06	09/23/1996	8.04	629.72	01/06/1997	5.05	632.71	03/18/1997	4.59	633.17	06/17/1997	6.48	631.28	03/23/98	4	631.28
06/20/1996	3.2	634.31	09/23/1996	3.62	633.89	01/06/1997	3.02	634.49	03/18/1997	2.93	634.58	06/17/1997	4.05	633.46	03/23/98	2	633.46
06/20/1996	6.36	633.78	09/23/1996	4.99	635.15	01/06/1997	4.7	635.44	03/18/1997	4.75	635.39	06/17/1997	7.4	632.74	03/23/98	4	632.74
06/20/1996	7.4	649.28	09/23/1996	7.44	649.24	01/06/1997	4.97	651.71	03/18/1997	5.55	651.13	06/17/1997	7.09	649.59	03/23/98	4	649.59
06/20/1996	6.27	638.99	09/23/1996	6.34	638.92	01/06/1997	3.18	642.08	03/18/1997	3.34	641.92	06/17/1997	5.34	639.92	03/23/98	4	639.92
06/20/1996	6.89	640.39	09/23/1996	5.92	641.36	01/06/1997	5.74	641.54	03/18/1997	5.72	641.56	06/17/1997	7.21	640.07	03/23/98	4	640.07
06/20/1996	8.47	639.26	09/23/1996	7.02	640.71	01/06/1997	6.09	641.64	03/18/1997	5.19	642.54	06/17/1997	8.21	639.52	03/23/98	3	639.52
06/20/1996	8.97	639.64	09/23/1996	Not Measured	Not Measured	01/06/1997	6.5	642.11	03/18/1997	6.63	641.98	06/17/1997	7.61	641	03/23/98	3	641
06/20/1996	6.15	635.43	09/23/1996	5.11	636.47	01/06/1997	3.44	638.14	03/18/1997	3.94	637.64	06/17/1997	6.37	635.21	03/23/98	3	635.21
06/20/1996	5.07	631.33	09/23/1996	4.8	631.16	01/06/1997	4.64	631.76	03/18/1997	4.69	631.71	06/17/1997	5.04	631.36	03/23/98	3	631.36
06/20/1996	6.54	630.55	09/23/1996	6.16	630.93	01/06/1997	3.96	633.13	03/18/1997	3.92	633.17	06/17/1997	5.96	631.13	03/23/98	3	631.13
06/20/1996	6.72	607.92	09/23/1996	Not Measured	Not Measured	01/06/1997	Not Measured	Not Measured	03/18/1997	Not Measured	Not Measured	06/17/1997	Not Measured	Not Measured	03/23/98	3	Not Measured
06/20/1996	6.58	632.74	09/23/1996	5.54	633.78	01/06/1997	5.21	634.11	03/18/1997	5.25	634.07	06/17/1997	6.48	632.84	03/23/98	4	632.84
06/20/1996	5.76	631.45	09/23/1996	5.35	631.86	01/06/1997	5.22	631.99	03/18/1997	5.18	632.03	06/17/1997	5.61	631.6	03/23/98	4	631.6
06/20/1996	6.96	630.35	09/23/1996	6.34	630.97	01/06/1997	6.14	631.17	03/18/1997	6.09	631.22	06/17/1997	6.65	630.66	03/23/98	6	630.66
06/20/1996	6.9	633.42	09/23/1996	7.17	633.15	01/06/1997	4.2	636.12	03/18/1997	4.33	635.99	06/17/1997	3.35	631.97	03/23/98	2	631.97
06/20/1996	5.86	630.84	09/23/1996	5.26	631.44	01/06/1997	2.92	633.78	03/18/1997	2.96	633.74	06/17/1997	5.3	631.4	03/23/98	3	631.4
06/20/1996	7.02	634.66	09/23/1996	7.42	634.26	01/06/1997	4.53	637.15	03/18/1997	4.95	636.73	06/17/1997	7.93	633.75	03/23/98	3	633.75
06/20/1996	8.05	631.51	09/23/1996	7.4	632.16	01/06/1997	4.29	635.27	03/18/1997	4.44	635.12	06/17/1997	7.45	632.11	03/23/98	2	632.11
06/20/1996	5.33	627.56	09/23/1996	4.99	627.9	01/06/1997	3.07	629.82	03/18/1997	3.22	629.67	06/17/1997	4.63	628.26	03/23/98	2	628.26
06/20/1996	5.33	626.49	09/23/1996	Not Measured	Not Measured	01/06/1997	Not Measured	Not Measured	03/18/1997	Not Measured	Not Measured	06/17/1997	Not Measured	Not Measured	03/23/98	2	Not Measured
06/20/1996	3.00	628.79	09/23/1996	3.30	628.49	01/06/1997	3.30	628.49	03/18/1997	2.46	629.33	06/17/1997	3.58	628.21	03/23/98	2	628.21
06/20/1996	3.4	629.49	09/23/1996	4.34	628.55	01/06/1997	2.48	630.41	03/18/1997	2.59	630.3	06/17/1997	Not Measured	Not Measured	03/23/98	2	Not Measured
06/20/1996	4.09	633.81	09/23/1996	4.26	633.64	01/06/1997	3.7	634.2	03/18/1997	3.61	634.29	06/17/1997	Not Measured	Not Measured	03/23/98	3	Not Measured
06/20/1996	1.82	Frozen	09/23/1996	2.16	657.38	01/06/1997	2.06	657.48	03/18/1997	1.78	657.76	06/17/1997	2.04	657.45	03/23/98	1	657.45
06/20/1996	6.2	653.1	09/23/1996	4.78	654.52	01/06/1997	3.64	655.66	03/18/1997	3.64	655.66	06/17/1997	5.78	653.52	03/23/98	3	653.52
06/20/1996	8.16	685.86	09/23/1996	7.82	686.2	01/06/1997	6.1	687.92	03/18/1997	6.45	687.57	06/17/1997	Not Measured	Not Measured	03/23/98	8	Not Measured
06/20/1996	5.54	677.5	09/23/1996	4.79	678.25	01/06/1997	4.79	678.25	03/18/1997	2.61	680.43	06/17/1997	4.73	678.31	03/23/98	2	678.31
06/20/1996	3.03	654.7	09/23/1996	3.16	654.57	01/06/1997	2.9	654.83	03/18/1997	3.84	653.89	06/17/1997	3.72	654.01	03/23/98	2	654.01
06/20/1996	8.05	645.8	09/23/1996	9.66	644.19	01/06/1997	3.74	650.11	03/18/1997	4.7	649.15	06/17/1997	6.9	646.95	03/23/98	2	646.95
06/20/1996	3.47	647.43	09/23/1996	3.23	647.67	01/06/1997	2.94	647.96	03/18/1997	2.83	648.07	06/17/1997	3.9	647	03/23/98	2	647
06/20/1996	5.75	644.66	09/23/1996	5.94	644.47	01/06/1997	3.72	646.69	03/18/1997	4.51	645.9	06/17/1997	6.06	644.35	03/23/98	2	644.35
06/20/1996	3.6	624.46	09/23/1996	4.34	623.72	01/06/1997	2.88	625.18	03/18/1997	2.88	625.18	06/17/1997	4.72	623.84	03/23/98	2	623.84
06/20/1996	4.77	643.55	09/23/1996	3.72	644.6	01/06/1997	3.26	645.06	03/18/1997	3.31	645.01	06/17/1997	3.3	643.02	03/23/98	2	643.02
06/20/1996	5.87	644.63	09/23/1996	5.9	644.6	01/06/1997	3.6	646.9	03/18/1997	4.32	646.18	06/17/1997	5.91	644.59	03/23/98	2	644.59
06/20/1996	6.2	643.68	09/23/1996	5.71	644.17	01/06/1997	3.6	646.28	03/18/1997	4.09	645.79	06/17/1997	5.88	644	03/23/98	2	644
06/20/1996	3.7	624.54	09/23/1996	4.42	623.82	01/06/1997	2.99	625.25	03/18/1997	3	625.24	06/17/1997	4.35	623.89	03/23/98	2	623.89
06/20/1996	3.66	622.69	09/23/1996	4.03	622.32	01/06/1997	2.38	623.97	03/18/1997	2.6	623.75	06/17/1997	3.62	622.73	03/23/98	2	622.73
06/20/1996	8.28	631.13	09/23/1996	7.02	632.39	01/06/1997	6.6	632.81	03/18/1997	6.6	632.81	06/17/1997	7.7	631.71	03/23/98	5	631.71
06/20/1996	8.08	631.03	09/23/1996	6.92	632.19	01/06/1997	6.55	632.56	03/18/1997	6.56	632.55	06/17/1997	7.69	631.42	03/23/98	5	631.42
06/20/1996	7.91	631.25	09/23/1996	6.78	632.38	01/06/1997	6.34	632.82	03/18/1997	6.36	632.8	06/17/1997	7.47	631.69	03/23/98	5	631.69
06/20/1996	3.01	627.5	09/23/1996	3.2	627.31	01/06/1997	3.09	627.42	03/18/1997	3.05	627.46	06/17/1997	3.48	627.03	03/23/98	5	627.03
06/20/1996	2.2	627.62	09/23/1996	2.29	627.53	01/06/1997	1.82	628	03/18/1997	1.95	627.87	06/17/1997	2.76	627.06	03/23/98	1	627.06
06/20/1996	2.09	627.6	09/23/1996	2.06	627.63	01/06/1997	1.51	628.18	03/18/1997	1.73	627.96	06/17/1997	2.56	627.13	03/23/98	1	627.13
06/20/1996	1.91	654.92	09/23/1996	2.69	654.14	01/06/1997	2.1	654.73	03/18/1997	2.16	654.67	06/17/1997	2.15	654.68	03/23/98	2	654.68



E 3-1  
 GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Top of Riser Elevation (ft)	Second Quarter 1996			Third Quarter 1996			Fourth Quarter 1996			First Quarter 1997			Second Quarter 1997			First Q			
	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date
660.15	06/20/1996	2.58	Frozen	09/23/1996	2.46	657.69	01/06/1997	1.97	658.18	03/18/1997	2.14	658.01	06/17/1997	2.98	657.17	03/23/98			
637.24																			
637.19																			
637.31																			
637.68																			
637.72																			
637.59																			
638.34																			
638.40																			
638.08																			
636.07																			
635.90																			



3.3-1 DATA - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Riser (ft)	Second Quarter 1998			Third Quarter 1998			Measured on 10/7/99			Measured on 10/27/99			Round 2 (1/3/00)			3Q 2000	
	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date	of Riser (ft.)	Water Level (ft)	Date Measured	Saturated Thickness (ft)
5	06/16/98	2.14	658.01	09/18/98	6.9	653.25	10/07/1999	3.32	656.83	10/27/1999	3.86	656.29	01/03/2000	2.16	657.99	08/27/2001	1.58
4																08/27/2001	1.57
9																NA	NA
1																08/27/2001	1.68
8																08/27/2001	2.03
2																NA	NA
9																08/27/2001	1.93
4																08/27/2001	2.21
0																NA	NA
8																08/27/2001	2.10
7																08/27/2001	2.43
0																08/28/2001	0.97

TABLE 3-1  
GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
GROUNDWATER MONITORING - ASH LANDFILL  
SENECA ARMY DEPOT ACTIVITY

Monitoring Well	2Q 2002 Data				3Q 2002 Data				1Q 2003 Data				Historical Data				
	Top of Riser Elevation (ft)	Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Maximum	Minimum	Range	Weighted
WT-10	681.52	04/08/2002	41.09	5.27	676.25	08/15/2002	37.66	8.70	672.82	3/14/03	3.11	4.25	646.9	676.90	671.02	5.88	
WT-11	658.22	04/08/2002	14.77	4.78	653.44	08/15/2002	9.25	10.30	647.92	3/14/03	3.11	4.25	646.9	654.03	647.79	6.24	
WT-12A	652.15	04/08/2002	9.22	4.16	647.99	08/15/2002	3.87	9.51	642.64	3/14/03	3.11	4.25	646.9	649.01	642.26	6.75	
WT-15	637.76	04/08/2002	15.35	4.15	633.61	08/15/2002	9.40	10.10	627.66	3/14/03	3.11	4.25	646.9	633.74	627.38	6.36	
WT-16	637.51	04/08/2002	7.12	3.92	633.59	08/15/2002	3.89	7.15	630.36	3/14/03	3.11	4.25	646.9	634.85	629.83	5.02	
WT-17	640.14	04/08/2002	7.12	4.53	635.61	08/15/2002	0.90	10.75	629.39	3/14/03	3.11	4.25	646.9	635.85	629.05	6.80	
WT-18	656.68	04/08/2002	6.84	4.86	651.82	08/15/2002	3.07	8.63	648.05	3/14/03	3.11	4.25	646.9	652.28	646.30	5.98	
WT-19	645.26	04/08/2002	8.71	2.99	642.27	08/15/2002	1.45	10.25	635.01	3/14/03	3.11	4.25	646.9	643.61	635.01	8.60	
WT-20	647.28	04/08/2002	5.81	5.99	641.29	08/15/2002	NA	Dry		3/14/03	3.11	4.25	646.9	642.34	637.41	4.93	
WT-21A	647.73	04/08/2002	14.02	5.44	642.29	08/15/2002	9.21	10.25	637.48	3/14/03	3.11	4.25	646.9	643.84	637.22	6.62	
WT-22	648.61	04/08/2002	5.88	5.93	642.68	08/15/2002	0.96	10.85	637.76	3/14/03	3.11	4.25	646.9	644.30	637.51	6.79	
WT-23	641.58	04/08/2002	8.20	3.88	637.7	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	638.14	632.35	5.79	
WT-24	636.40	04/08/2002	7.39	4.49	631.91	08/15/2002	4.53	7.35	629.05	3/14/03	3.11	4.25	646.9	632.76	627.99	4.77	
WT-25	637.09	04/08/2002	8.13	3.90	633.19	08/15/2002	0.58	11.45	625.64	3/14/03	3.11	4.25	646.9	633.51	625.64	7.87	
WT-26	614.64	NA	NA	Not Measured		NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	611.60	601.53	10.07	
WT-27	639.32	04/08/2002	5.66	4.88	634.44	08/15/2002	1.69	8.85	630.47	3/14/03	3.11	4.25	646.9	634.88	630.09	4.79	
WT-28	637.21	04/09/2002	5.61	4.78	632.43	08/15/2002	2.79	7.60	629.61	3/14/03	3.11	4.25	646.9	632.57	628.71	3.86	
WT-29	637.31	04/08/2002	5.33	5.21	632.1	08/15/2002	0.99	9.55	627.76	3/14/03	3.11	4.25	646.9	632.10	627.30	4.80	
WT-30	640.32	04/10/2002	5.74	4.78	635.54	08/15/2002	NA	Dry		3/14/03	3.11	4.25	646.9	636.42	629.88	6.54	
WT-31	636.70	04/08/2002	7.41	2.94	633.76	08/15/2002	NA	Dry		3/14/03	3.11	4.25	646.9	634.22	627.02	7.20	
WT-32	641.68	04/08/2002	6.13	4.24	637.44	08/15/2002	NA	Dry		3/14/03	3.11	4.25	646.9	637.84	632.70	5.14	
WT-33	639.56	04/08/2002	6.13	4.26	635.30	08/15/2002	NA	Not Measured		3/14/03	3.11	4.25	646.9	630.15	629.72	5.93	
WT-34	632.89	04/08/2002	14.30	3.85	629.04	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	629.44	624.62	4.82	
WT-35D	631.82	04/08/2002	53.72	2.92	628.9	NA	NA	Removed		3/14/03	3.11	4.25	646.9	629.47	622.26	7.21	
WT-36	631.79	04/08/2002	12.97	3.61	628.18	NA	NA	Removed		3/14/03	3.11	4.25	646.9	629.47	622.26	7.21	
WT-37	632.89	04/08/2002	10.57	3.05	629.84	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	630.65	625.77	4.88	
WT-38D	637.90	04/08/2002	28.63	3.61	634.29	08/15/2002	24.44	7.80	630.1	3/14/03	3.11	4.25	646.9	635.39	628.99	6.40	
WT-39	659.54	04/08/2002	10.02	1.87	657.67	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	657.84	650.47	7.37	
WT-40	659.30	04/08/2002	10.95	3.76	655.54	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	655.82	650.16	5.69	
WT-41D	694.02	NA	NA	Not Measured		NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	687.92	685.21	2.71	
WT-42D	683.04	04/08/2002	44.85	2.53	680.51	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	680.67	671.39	9.28	
WT-43	657.73	04/08/2002	4.55	2.92	654.81	08/15/2002	0.32	6.95	650.78	3/14/03	3.11	4.25	646.9	655.36	650.73	4.63	
WT-44A	653.85	04/08/2002	8.46	4.02	649.83	08/15/2002	1.81	10.67	643.18	3/14/03	3.11	4.25	646.9	650.37	642.42	7.95	
WT-45	650.90	04/08/2002	5.60	2.74	648.16	08/15/2002	0.74	7.60	643.3	3/14/03	3.11	4.25	646.9	648.80	643.12	5.68	
WT-46	650.41	04/08/2002	8.11	3.34	647.07	08/15/2002	2.31	9.14	641.27	3/14/03	3.11	4.25	646.9	648.03	641.12	6.91	
WT-47	628.06	04/08/2002	5.65	2.91	625.15	08/15/2002	0.39	8.17	619.89	3/14/03	3.11	4.25	646.9	625.76	619.88	5.88	
WT-48	648.32	04/08/2002	8.60	2.90	645.42	08/15/2002	3.65	7.85	640.47	3/14/03	3.11	4.25	646.9	645.57	639.94	5.63	
WT-49D	650.50	04/08/2002	34.24	3.30	647.2	08/15/2002	28.59	8.95	641.55	3/14/03	3.11	4.25	646.9	647.62	641.55	6.07	
WT-50D	649.88	04/08/2002	56.36	3.30	646.58	08/15/2002	50.96	8.70	641.18	3/14/03	3.11	4.25	646.9	647.40	633.88	13.52	
WT-51D	628.24	04/08/2002	35.07	3.80	624.44	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	628.24	620.49	7.75	
WT-52D	626.35	04/08/2002	56.79	2.57	623.78	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	624.17	618.67	5.50	
WT-53	639.41	04/08/2002	4.78	5.57	633.84	08/15/2002	0.45	9.90	629.51	3/14/03	3.11	4.25	646.9	633.84	629.46	4.38	
WT-54D	639.11	04/08/2002	29.31	5.68	633.43	08/15/2002	24.54	10.45	628.66	3/14/03	3.11	4.25	646.9	633.43	628.66	4.77	
WT-55D	639.16	04/08/2002	52.43	5.75	633.41	08/15/2002	47.98	10.20	628.96	3/14/03	3.11	4.25	646.9	633.41	627.96	5.45	
WT-56	630.51	04/10/2002	3.13	3.75	626.76	08/15/2002	0.00	Dry		3/14/03	3.11	4.25	646.9	627.56	621.66	5.90	
WT-57D	629.82	04/08/2002	33.13	1.96	627.86	08/15/2002	29.14	5.95	623.87	3/14/03	3.11	4.25	646.9	628.13	621.76	6.37	
WT-58D	629.69	04/08/2002	55.67	1.62	628.07	08/15/2002	51.54	5.75	623.94	3/14/03	3.11	4.25	646.9	628.37	623.94	4.43	
WT-59	656.83	04/08/2002	6.89	2.21	654.62	NA	NA	Not Measured		3/14/03	3.11	4.25	646.9	654.93	649.85	5.08	

7.3-1  
 GROUNDWATER ELEVATION DATA - FIRST QUARTER 2003  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY

Monitoring Well	Top of Riser Elevation (ft)	2Q 2002 Data				3Q 2002 Data				1Q 2003 Data				Historical Data		
		Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Date Measured	Saturated Thickness (ft)	Depth to Groundwater (ft)	Water Level Elevation (ft)	Maximum	Minimum	Range
MW-60	660.15	04/08/2002	7.40	2.10	638.05	08/15/2002	2.30	7.20	652.95	07/06/03	4.83	4.93	658.20	652.23	5.97	
MWT-1	637.24	04/09/2002	4.98	4.77	632.47	08/15/2002	2.55	7.20	630.04	07/06/03	4.83	4.93	632.47	629.06	3.41	
MWT-2	637.19	04/08/2002	4.63	4.92	632.27	08/15/2002	2.30	7.25	629.94	07/06/03	4.83	4.93	632.27	629.94	2.33	
MWT-3	637.31	04/09/2002	4.89	5.11	632.2	08/15/2002	2.65	7.35	629.96	07/06/03	4.83	4.93	632.20	628.99	3.21	
MWT-4	637.68	04/09/2002	7.22	5.21	632.47	08/15/2002	3.68	8.75	628.93	07/06/03	7.33	7.33	632.58	627.28	5.30	
MWT-5	637.72	04/08/2002	6.68	5.27	632.45	08/15/2002	2.90	9.05	628.67	07/06/03	6.69	6.69	632.45	628.67	3.78	
MWT-6	637.59	04/09/2002	7.07	5.21	632.38	08/15/2002	3.28	9.00	628.59	07/06/03	7.01	7.01	632.38	627.24	5.14	
MWT-7	638.34	04/09/2002	8.50	5.47	632.87	08/15/2002	3.72	10.25	628.09	07/06/03	8.65	8.65	632.92	626.58	6.34	
MWT-8	638.40	04/08/2002	6.73	5.82	632.58	08/15/2002	2.10	10.45	627.95	07/06/03	10.08	9.5	635.90	627.95	7.95	
MWT-9	638.08	04/09/2002	8.48	5.66	632.42	NA	NA	Not Measured		07/06/03	8.46	8.46	632.42	626.04	6.38	
MWT-10	638.07	04/09/2002	5.11	3.84	632.23	08/15/2002	3.20	5.75	630.32	07/06/03	4.83	4.83	632.23	629.55	2.68	
MWT-11	635.90	04/10/2002	7.00	2.95	632.95	08/15/2002	1.74	8.21	627.69	07/06/03	7.87	7.87	633.82	626.92	6.90	



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**APPENDIX B**

**FIRST QUARTER 2003 LABORATORY REPORTS**

General Environmental Laboratories (GEL)



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**CASE NARRATIVE**  
for  
**Parsons Engineering Science, Inc.**  
**Seneca Army Depot**  
**SDG#s 77035/77089**

**April 15, 2003**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29414

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC (GEL) Charleston, South Carolina on March 26, 2003, for Environmental Analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
77035001	TR2110
77035002	ARD2183
77035003	ARD2184
77035004	ARD2194
77035005	TR2106
77035006	TR2108
77035007	ARD2196
77035008	ARD2191

GENERAL ENGINEERING LABORATORIES, LLC  
a Member of THE GEL GROUP, INC.

P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)  
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

77089001

ARD2196

77089002

ARD2191

77089003

ARD0032

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

**Internal Chain of Custody:**

Custody was maintained for all samples.

**Data Package:**

The enclosed data package contains the following sections: Case Narrative, Qualifier Flag Definitions, Chain of Custody, Cooler Receipt Checklist, GC/MS Volatile Analysis, FID Analysis, Inorganic Analysis, and General Chemistry Analysis.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis  
Project Manager

CHAIN  
OF  
CUSTODY

CHAIN OF CUSTODY RECORD

PROJECT NO. 743155.01200		PROJECT MGR. Todd Heino Parsons Boston		Send results to: PARSONS 990. Edward Davis Road, Suite 612 Liverpool, NY 14888 617 45 Telephone: (814) 464-8580 Fax: (814) 464-9570 Lab Submitted to GEL Charleston, SC					
PROJECT NAME: Becca Army Depot MSACOE Landfill		PROJECT MGR. Todd Heino Parsons Boston		REMARKS 77089001 77084002 Matrix Spike Matrix Spike					
NOTES - (Reference OAPP and/or analytical protocols to be used):									
FIELD SAMPLE ID	LOCATION DESCRIPTION	DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	ANALYSES REQUIRED	REMARKS
D2110	MWT-11	3/24/03	1030	X		GW	9	VOC S24.2 TCL VOC N:rate/Sulfate/Chloride MFE TOC Metals	
D2183	MW-30	3/24/03	1230	X		GW	9		
D2184	MW-32	3/24/03	1525	X		GW	9		
D2196	PT-19	3/24/03	1720	X		GW	9		
D2194	PT-17	3/25/03	0935	X		GW	9		
D2191	MW-53	3/25/03	1140	X		GW	9		
2106	MWT-7	3/25/03	1250	X		GW	9		
2106 MS	MWT-7	3/25/03	1250	X		GW	9		
2106 MS D	MWT-7	3/25/03	1250	X		GW	9		
2108	MWT-9	3/25/03	1440	X		GW	9		
Date: 3/25/03		Time: 1900		Shipped via: Fedex		Received by (Signature): Fedex		Date: 3-26-03	
Date: 3/25/03		Time: 1900		Shipped via: Fedex		Received by (Signature): Mike Sumbas		Date: 3-26-03	
Date: 3/25/03		Time: 1900		Shipped via: Fedex		Received by (Signature): Mike Sumbas		Date: 3-26-03	

<b>SOLID</b> SD- Sediment SS- Surface Soil SB- Subsurface Soil SW- Monitoring Well Boring	<b>WATER</b> MW- Monitoring Well LC- Leachate SW- Surface Water DW- Drift Water	<b>WATER</b> FD- Fuel Dispenser MH- Manhole CW- On Water Separator PR- Piping Run	<b>MATRIX</b> W- Water S - Soil	<b>QUALITY CONTROL</b> FB - Field Blank (with date) TB- Top Blank (with date) WB- Wash Blank (with date)
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CHAIN OF CUSTODY RECORD

No. :

Send results to:  
**PARSONS**  
 200 Elmwood Drive, Suite 300  
 Charlotte, NC 28204  
 Telephone: (314) 481-9331  
 Fax: (314) 481-9370  
 Lab Submitted to: **GEL**

PROJECT NO.: **743155.01200**  
 PROJECT MGR: **Todd Heiro**  
**Parsons Barton**  
 NOTES - (Reference OAPP and/or analytical protocols to be used):

VENEGA ARMY DEPT  
 USACO E  
 Landfill  
 Dolph - Parsons  
 Douglas - Parsons

FIELD SAMPLE ID  
**DD0032**  
 ANALYSES REQUIRED  
**VOL CLP**  
 NUMBER OF BOTTLES  
**3**  
 MATRIX  
**W**  
 COMP  
**3**  
 GRAB  
**X**

REMARKS  
**Trip Blank**

DATE	TIME	LOCATION DESCRIPTION	DATE	TIME
<b>3/25/03</b>	<b>1900</b>	<b>Trip Blank</b>		

Received by (Signature): *[Signature]*  
 Date: **3/26/03**  
 Received by (Signature): *[Signature]*  
 Date: **04/20**

SHIPMENT NO. **Fedex**  
 SHIPPED ON **3/25/03** AT TIME **1900**  
 DATE **3/25/03** TIME **1900**  
 SHIPPED TO **Fedex**

SHIPMENT NO. **Fedex**  
 SHIPPED ON **3/25/03** AT TIME **1900**  
 DATE **3/25/03** TIME **1900**  
 SHIPPED TO **Fedex**

FIELD SAMPLE ID	LOCATION DESCRIPTION	DATE	TIME	ANALYSES REQUIRED			PROJECT MGR	MATRIX			REMARKS
				COM	MAT	NOB		W	S	FD	
<b>DD0032</b>	<b>Trip Blank</b>				<b>W</b>	<b>3</b>	<b>Todd Heiro</b>				<b>Trip Blank</b>

TP- Test Pit/Tank Pit  
 DR- Drum Waste  
 WA- Solid Waste  
 OS- Other Solid  
 SD- Sediment  
 SS- Surface Soil  
 SB- Subsurface Soil  
 MW- Monitoring Well Boring  
 MW- Monitoring Well  
 LC- Leachate  
 SW- Surface Water  
 DW- Drill Water  
 MW- Monitoring Well  
 FD- Fuel Dispenser  
 MH- Manhole  
 OW- Oil Water Separator  
 PR- Piping Run  
 ST- Storm Water  
 WW- Waste Water  
 OL- Other Liquid (eg. Drum Inlet)  
 W - Water  
 S - Soil  
 MATRIX

QUALITY CONTROL  
 FD- Field Blank (with date)  
 TB- Trip Blank (with date)  
 WB- Wash Blank (with date)

**COOLER  
RECEIPT  
CHECKLIST**

## SAMPLE RECEIPT & REVIEW FORM

Date 3-26-03 Client Seneca Army Depot Received by MLC

SAMPLE REVIEW CRITERIA	YES	NO	N/A	COMMENTS/QUALIFIERS
Were shipping containers received intact and sealed? If no, notify the Project Manager	✓			
Were chain of custody documents included?	✓			
Shipping container temperature(s) checked?	✓			3° 3°
Is temperature documented on Chain of Custody?	✓			
Was shipping container temperature within specifications (4 +/- 2 C)? If no, notify Project Manager	✓			
Are any of the samples identified by the client as radioactive? If yes, complete radioactive receipt form	✓			
Any samples not identified by the client as radioactive must be screened for radioactivity. if screening results indicate > x2 background inform the RSO.	KO			observed background CPM
Were chain of custody documents completed correctly? (Ink, signed, match containers)	✓			Max. observed sample CPM
Were sample containers received intact and sealed? If no, notify the Project Manager	✓			
Were all sample containers properly labeled?	✓			
Were correct sample containers received?	✓			
1 Preserved samples checked for pH?	✓			
2 Were samples preserved correctly? If no, notify Project Manager	✓			
3 Were samples received within holding time? If No, notify Project Manager	✓			
4 Were VOA vials free of headspace?	✓			
5 ARCOC#				
6 SDG#				

PM(A) Review: USD Date Reviewed: 3/26/03

Cooler Air Bill #'s, Associated Temperatures, & Additional Comments:

FED Ex # 8397 4007 7549 (2)

**GC/MS  
VOLATILE  
ANALYSIS**



GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77035

Method/Analysis Information

Procedure: Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometer  
Analytical Method: EPA 524.2  
Prep Method: EPA 524.2  
Analytical Batch Number: 241844

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77035001	TR2110
77035002	ARD2183
77035003	ARD2184
77035004	ARD2194
77035005	TR2106
77035006	TR2108
1200400499	Method Blank (MB)
1200400500	Laboratory Control Sample (LCS)
1200401228	Method Blank (MB)
1200401229	Laboratory Control Sample (LCS)
1200400501	77035005(TR2106) Matrix Spike (MS)
1200400502	77035005(TR2106) Matrix Spike Duplicate (MSD)

77035 -VOA

Page 1 of 4

### Preparation/Analytical Method Verification

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-022 REV.3.

#### **Calibration Information**

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

#### **Initial Calibration**

All the initial calibration requirements were met.

#### **Continuing Calibration Verification Requirements**

All the calibration verification standard (CCV) requirements were met.

### **Quality Control (QC) Information**

#### **Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

#### **Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

#### **Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

#### **QC Sample Designation**

The following sample was designated for spike analysis: 77035005 (TR2106).

#### **Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

#### **Spike Duplicate Recovery Statement**

All target analytes in the matrix spike duplicate sample were within the required acceptance limits, except for the low recovery of trichloroethylene. Trichloroethylene was detected in the native sample at a concentration above the calibration level. 1200400502 (TR2106).

#### **Relative Percent Difference Statement (RPD)**

The RPD between the matrix spike and matrix spike duplicate was above the acceptance limit for Trichloroethylene, possibly due to the high level of trichloroethylene detected in the native sample. 1200400501 (TR2106) and 1200400502 (TR2106).

#### **Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

### **Technical Information**

77035 -VOA

Page 2 of 4

**Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples were diluted because target analyte concentrations exceeded the calibration range:

77035004 (ARD2194) 1:10

77035005 (TR2106) 1:10

**Sample Re-prep/Re-analysis**

Re-analyses were not required for samples in this sample group/work order.

**Miscellaneous Information****Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**Additional Comments**

There were no additional comments.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

77035 -VOA

Page 3 of 4

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

Instrument ID	System Configuration	Chromatographic Column	P & T Trap
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:   *Jim Doh*  

Date:   04-14-2013

## Roadmap for PARS 77035 VOA

This roadmap was analyzed by Crystal Stacey on 04-03-2003, 09:38.

This roadmap was reviewed by Sara Jones on 04-09-2003, 10:27.

This roadmap was packaged by LySandra Gathers on 04-09-2003, 15:30.

Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c513.d	77035001	TR2110	28-MAR-2003	12:14	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c514.d	77035002	ARD2183	28-MAR-2003	12:40	77035.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c515.d	77035003	ARD2184	28-MAR-2003	13:06	PARS.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c516.d	77035004	ARD2194	28-MAR-2003	13:32	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c517.d	77035005	TR2106	28-MAR-2003	13:58	77035.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c520.d	77035006	TR2108	28-MAR-2003	15:16	PARS.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d104.d	77035003	ARD2184	31-MAR-2003	12:34	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d105.d	77035004	ARD2194DL	31-MAR-2003	13:00	77035.sub	10.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d106.d	77035005	TR2106DL	31-MAR-2003	13:26	77035.sub	10.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d107.d	77035006	TR2108	31-MAR-2003	13:52	77035.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/040103v8.b/8p2d205.d	77035005	TR2106	01-APR-2003	08:40	PARS.sub	1.00000	<input type="checkbox"/>

QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c502LCSB.d	1200400500	VBLK01LCS	ics	28-MAR-2003	07:12	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c503B.d	1200400499	VBLK01	mb	28-MAR-2003	07:38	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c518.d	1200400501	TR2106MS	ms	28-MAR-2003	14:24	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c519.d	1200400502	TR2106MSD	msd	28-MAR-2003	14:50	77035.sub	1.00000	<input type="checkbox"/>

<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d102LCSA.d	1200401229	VBLK02LCS	lcs	31-MAR-2003	11:34	77035.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d103A.d	1200401228	VBLK02	mb	31-MAR-2003	12:00	77035.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d109.d	1200400501	TR2106MS	ms	31-MAR-2003	14:44	77035.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d110.d	1200400502	TR2106MSD	msd	31-MAR-2003	15:09	77035.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/040103v8.b/8p2d206.d	1200400501	TR2106MS	ms	01-APR-2003	09:06	PARS.sub	1.00000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/040103v8.b/8p2d207.d	1200400502	TR2106MSD	msd	01-APR-2003	09:32	PARS.sub	1.00000	<input type="checkbox"/>

**SAMPLE  
DATA  
SUMMARY**



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2183

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C514

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.43	J
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2183

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C514

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.8	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2183
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Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C514

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide _____	1.0	U
108-05-4-----	Vinyl acetate _____	1.0	U
74-88-4-----	Iodomethane _____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2184

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77035

Matrix: (soil/water) WATER      Lab Sample ID: 77035003

Sample wt/vol: 10.00 (g/ml) ML      Lab File ID: 8P2D104

Level: (low/med) LOW      Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/31/03

GC Column: DB-624      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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.43	JB
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2184

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D104

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	Q
106-46-7	1,4-Dichlorobenzene	0.50 U
95-50-1	1,2-Dichlorobenzene	0.50 U
95-47-6	o-Xylene	0.50 U
	m,p-Xylenes	0.50 U
1330-20-1	Xylenes (total)	0.50 U
594-20-7	2,2-Dichloropropane	0.50 U
563-58-6	1,1-Dichloropropene	0.50 U
74-95-3	Dibromomethane	0.50 U
106-93-4	1,2-Dibromoethane	0.50 U
142-28-9	1,3-Dichloropropane	0.50 U
630-20-6	1,1,1,2-Tetrachloroethane	0.50 U
98-82-8	Isopropylbenzene	0.50 U
108-86-1	Bromobenzene	0.50 U
96-18-4	1,2,3-Trichloropropane	0.50 U
103-65-1	n-Propylbenzene	0.50 U
95-49-8	2-Chlorotoluene	0.50 U
108-67-8	1,3,5-Trimethylbenzene	0.50 U
106-43-4	4-Chlorotoluene	0.50 U
98-06-6	tert-Butylbenzene	0.50 U
95-63-6	1,2,4-Trimethylbenzene	0.50 U
135-98-8	sec-Butylbenzene	0.50 U
99-87-6	4-Isopropyltoluene	0.50 U
104-51-8	n-Butylbenzene	0.50 U
96-12-8	1,2-Dibromo-3-chloropropane	0.50 U
120-82-1	1,2,4-Trichlorobenzene	0.50 U
87-68-3	Hexachlorobutadiene	0.50 U
91-20-3	Naphthalene	0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.50 U
1634-04-4	tert-Butyl methyl ether	0.50 U
67-64-1	Acetone	1.0
78-93-3	2-Butanone	1.0 U
108-10-1	4-Methyl-2-pentanone	1.0 U
591-78-6	2-Hexanone	1.0 U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2184

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77035

Matrix: (soil/water) WATER      Lab Sample ID: 77035003

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2D104

Level: (low/med)      LOW      Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/31/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide_____	1.0	U
108-05-4-----	Vinyl acetate_____	1.0	U
74-88-4-----	Iodomethane_____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2194

.b Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C516

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.37	J
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	61.7	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	62.1	
79-01-6	Trichloroethylene	215	E
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2194

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C516

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.4	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2194
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ab Name: GENERAL ENGINEERING LABS    Contract: N/A

Lab Code: N/A    Case No.: N/A    SAS No.: N/A    SDG No.: 77035

Matrix: (soil/water) WATER    Lab Sample ID: 77035004

Sample wt/vol: 10.00 (g/ml) ML    Lab File ID: 8P2C516

Level: (low/med) LOW    Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_    Date Analyzed: 03/28/03

GC Column: DB-624    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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2194DL

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77035

Matrix: (soil/water) WATER      Lab Sample ID: 77035004

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2D105

Level: (low/med)      LOW      Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/31/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 10.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-97-5	Bromochloromethane	5.0	U
74-87-3	Chloromethane	5.0	U
74-83-9	Bromomethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
75-00-3	Chloroethane	5.0	U
75-09-2	Methylene chloride	4.2	DJB
75-35-4	1,1-Dichloroethylene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
156-60-5	trans-1,2-Dichloroethylene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
156-59-2	cis-1,2-Dichloroethylene	62.0	D
10061-01-5	cis-1,3-Dichloropropylene	5.0	U
540-59-0	1,2-Dichloroethylene (total)	62.0	D
79-01-6	Trichloroethylene	268	D
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropylene	5.0	U
75-25-2	Bromoform	5.0	U
127-18-4	Tetrachloroethylene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
107-06-2	Dichlorodifluoromethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2194DL

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D105

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
95-47-6	o-Xylene	5.0	U
	m,p-Xylenes	5.0	U
1330-20-1	Xylenes (total)	5.0	U
594-20-7	2,2-Dichloropropane	5.0	U
563-58-6	1,1-Dichloropropane	5.0	U
74-95-3	Dibromomethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
98-82-8	Isopropylbenzene	5.0	U
108-86-1	Bromobenzene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
103-65-1	n-Propylbenzene	5.0	U
95-49-8	2-Chlorotoluene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
106-43-4	4-Chlorotoluene	5.0	U
98-06-6	tert-Butylbenzene	5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
135-98-8	sec-Butylbenzene	5.0	U
99-87-6	4-Isopropyltoluene	5.0	U
104-51-8	n-Butylbenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
91-20-3	Naphthalene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
67-64-1	Acetone	10.0	U
78-93-3	2-Butanone	10.0	U
108-10-1	4-Methyl-2-pentanone	10.0	U
591-78-6	2-Hexanone	10.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2194DL

Lab Name: GENERAL ENGINEERING LABS    Contract: N/A  
 Lab Code: N/A    Case No.: N/A    SAS No.: N/A    SDG No.: 77035  
 Matrix: (soil/water) WATER    Lab Sample ID: 77035004  
 Sample wt/vol: 10.00 (g/ml) ML    Lab File ID: 8P2D105  
 Level: (low/med) LOW    Date Received: 03/26/03  
 % Moisture: not dec. \_\_\_\_\_    Date Analyzed: 03/31/03  
 GC Column: DB-624    ID: 0.25 (mm)    Dilution Factor: 10.0  
 Soil Extract Volume: \_\_\_\_\_ (uL)    Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-15-0-----	Carbon disulfide	10.0	U
108-05-4-----	Vinyl acetate	10.0	U
74-88-4-----	Iodomethane	10.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2106

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C517

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	22.4	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	22.4	
79-01-6	Trichloroethylene	268	E
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2106

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C517

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

106-46-7-----	1,4-Dichlorobenzene	0.50	U
95-50-1-----	1,2-Dichlorobenzene	0.50	U
95-47-6-----	o-Xylene	0.50	U
-----	m,p-Xylenes	0.50	U
1330-20-1-----	Xylenes (total)	0.50	U
594-20-7-----	2,2-Dichloropropane	0.50	U
563-58-6-----	1,1-Dichloropropene	0.50	U
74-95-3-----	Dibromomethane	0.50	U
106-93-4-----	1,2-Dibromoethane	0.50	U
142-28-9-----	1,3-Dichloropropane	0.50	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8-----	Isopropylbenzene	0.50	U
108-86-1-----	Bromobenzene	0.50	U
96-18-4-----	1,2,3-Trichloropropane	0.50	U
103-65-1-----	n-Propylbenzene	0.50	U
95-49-8-----	2-Chlorotoluene	0.50	U
108-67-8-----	1,3,5-Trimethylbenzene	0.50	U
106-43-4-----	4-Chlorotoluene	0.50	U
98-06-6-----	tert-Butylbenzene	0.50	U
95-63-6-----	1,2,4-Trimethylbenzene	0.50	U
135-98-8-----	sec-Butylbenzene	0.50	U
99-87-6-----	4-Isopropyltoluene	0.50	U
104-51-8-----	n-Butylbenzene	0.50	U
96-12-8-----	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1-----	1,2,4-Trichlorobenzene	0.50	U
87-68-3-----	Hexachlorobutadiene	0.50	U
91-20-3-----	Naphthalene	0.50	U
87-61-6-----	1,2,3-Trichlorobenzene	0.50	U
1634-04-4-----	tert-Butyl methyl ether	0.50	U
67-64-1-----	Acetone	1.1	
78-93-3-----	2-Butanone	1.0	U
108-10-1-----	4-Methyl-2-pentanone	1.0	U
591-78-6-----	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2106
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ab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C517

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2106DL

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D106

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-97-5	Bromochloromethane	5.0	U
74-87-3	Chloromethane	5.0	U
74-83-9	Bromomethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
75-00-3	Chloroethane	5.0	U
75-09-2	Methylene chloride	3.9	DJB
75-35-4	1,1-Dichloroethylene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
156-60-5	trans-1,2-Dichloroethylene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
156-59-2	cis-1,2-Dichloroethylene	22.7	D
10061-01-5	cis-1,3-Dichloropropylene	5.0	U
540-59-0	1,2-Dichloroethylene (total)	22.7	D
79-01-6	Trichloroethylene	391	D
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropylene	5.0	U
75-25-2	Bromoform	5.0	U
127-18-4	Tetrachloroethylene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
107-06-2	Dichlorodifluoromethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2106DL

ab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D106

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

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

CAS NO.	COMPOUND	UG/L	Q
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
95-47-6	o-Xylene	5.0	U
	m,p-Xylenes	5.0	U
1330-20-1	Xylenes (total)	5.0	U
594-20-7	2,2-Dichloropropane	5.0	U
563-58-6	1,1-Dichloropropene	5.0	U
74-95-3	Dibromomethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
98-82-8	Isopropylbenzene	5.0	U
108-86-1	Bromobenzene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
103-65-1	n-Propylbenzene	5.0	U
95-49-8	2-Chlorotoluene	5.0	U
108-67-8	1,3,5-Trimethylbenzene	5.0	U
106-43-4	4-Chlorotoluene	5.0	U
98-06-6	tert-Butylbenzene	5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	U
135-98-8	sec-Butylbenzene	5.0	U
99-87-6	4-Isopropyltoluene	5.0	U
104-51-8	n-Butylbenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
91-20-3	Naphthalene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
67-64-1	Acetone	2.8	DJ
78-93-3	2-Butanone	10.0	U
108-10-1	4-Methyl-2-pentanone	10.0	U
591-78-6	2-Hexanone	10.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2106DL

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D106

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

75-15-0-----	Carbon disulfide	10.0	U
108-05-4-----	Vinyl acetate	10.0	U
74-88-4-----	Iodomethane	10.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2108

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D107

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

74-97-5-----	Bromochloromethane	0.50	U
74-87-3-----	Chloromethane	0.50	U
74-83-9-----	Bromomethane	0.50	U
75-01-4-----	Vinyl chloride	0.50	U
75-00-3-----	Chloroethane	0.50	U
75-09-2-----	Methylene chloride	0.41	JB
75-35-4-----	1,1-Dichloroethylene	0.50	U
75-34-3-----	1,1-Dichloroethane	0.50	U
67-66-3-----	Chloroform	0.50	U
107-06-2-----	1,2-Dichloroethane	0.50	U
156-60-5-----	trans-1,2-Dichloroethylene	0.50	U
71-55-6-----	1,1,1-Trichloroethane	0.50	U
56-23-5-----	Carbon tetrachloride	0.50	U
75-27-4-----	Bromodichloromethane	0.50	U
78-87-5-----	1,2-Dichloropropane	0.50	U
156-59-2-----	cis-1,2-Dichloroethylene	34.7	
10061-01-5-----	cis-1,3-Dichloropropylene	0.50	U
540-59-0-----	1,2-Dichloroethylene (total)	34.7	
79-01-6-----	Trichloroethylene	70.2	
124-48-1-----	Dibromochloromethane	0.50	U
79-00-5-----	1,1,2-Trichloroethane	0.50	U
71-43-2-----	Benzene	0.50	U
10061-02-6-----	trans-1,3-Dichloropropylene	0.50	U
75-25-2-----	Bromoform	0.50	U
127-18-4-----	Tetrachloroethylene	0.50	U
79-34-5-----	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3-----	Toluene	0.50	U
108-90-7-----	Chlorobenzene	0.50	U
100-41-4-----	Ethylbenzene	0.50	U
100-42-5-----	Styrene	0.50	U
107-06-2-----	Dichlorodifluoromethane	0.50	U
75-69-4-----	Trichlorofluoromethane	0.50	U
541-73-1-----	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2108

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D107

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.0	U
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2108

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D107

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide_____	1.0	U
108-05-4-----	Vinyl acetate_____	1.0	U
74-88-4-----	Iodomethane_____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2110

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035001

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C513

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2110

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77035

Matrix: (soil/water) WATER      Lab Sample ID: 77035001

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2C513

Level:      (low/med)      LOW      Date Received: 03/26/03

% Moisture: not dec.      \_\_\_\_\_      Date Analyzed: 03/28/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	Q
106-46-7	1,4-Dichlorobenzene	0.50 U
95-50-1	1,2-Dichlorobenzene	0.50 U
95-47-6	o-Xylene	0.50 U
	m,p-Xylenes	0.50 U
1330-20-1	Xylenes (total)	0.50 U
594-20-7	2,2-Dichloropropane	0.50 U
563-58-6	1,1-Dichloropropene	0.50 U
74-95-3	Dibromomethane	0.50 U
106-93-4	1,2-Dibromoethane	0.50 U
142-28-9	1,3-Dichloropropane	0.50 U
630-20-6	1,1,1,2-Tetrachloroethane	0.50 U
98-82-8	Isopropylbenzene	0.50 U
108-86-1	Bromobenzene	0.50 U
96-18-4	1,2,3-Trichloropropane	0.50 U
103-65-1	n-Propylbenzene	0.50 U
95-49-8	2-Chlorotoluene	0.50 U
108-67-8	1,3,5-Trimethylbenzene	0.50 U
106-43-4	4-Chlorotoluene	0.50 U
98-06-6	tert-Butylbenzene	0.50 U
95-63-6	1,2,4-Trimethylbenzene	0.50 U
135-98-8	sec-Butylbenzene	0.50 U
99-87-6	4-Isopropyltoluene	0.50 U
104-51-8	n-Butylbenzene	0.50 U
96-12-8	1,2-Dibromo-3-chloropropane	0.50 U
120-82-1	1,2,4-Trichlorobenzene	0.50 U
87-68-3	Hexachlorobutadiene	0.50 U
91-20-3	Naphthalene	0.50 U
87-61-6	1,2,3-Trichlorobenzene	0.50 U
1634-04-4	tert-Butyl methyl ether	0.50 U
67-64-1	Acetone	2.1
78-93-3	2-Butanone	1.0 U
108-10-1	4-Methyl-2-pentanone	1.0 U
591-78-6	2-Hexanone	1.0 U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2110

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035001

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C513

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U



# QUALITY CONTROL SUMMARY

## WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 #	OTHER	TOT OUT
01	VBLK01LCS	98	93	100		0
02	VBLK01	86	85	92		0
03	TR2110	90	92	100		0
04	ARD2183	93	93	96		0
05	ARD2194	94	95	103		0
06	TR2106	92	92	97		0
07	TR2106MS	90	92	102		0
08	TR2106MSD	92	95	102		0
09	VBLK02LCS	105	99	104		0
10	VBLK02	94	90	97		0
11	ARD2184	91	92	94		0
12	ARD2194DL	90	92	96		0
13	TR2106DL	88	87	91		0
14	TR2108	84	80	98		0
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

## QC LIMITS

SMC1 (TOL) = Toluene-d8 (73-112)  
 SMC2 (BFB) = Bromofluorobenzene (73-123)  
 SMC3 = Dibromofluoromethane (81-126)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	4.7	94	70-130
Chloromethane	5.0	0.0	4.9	98	70-130
Bromomethane	5.0	0.0	4.5	90	70-130
Vinyl chloride	5.0	0.0	4.7	94	70-130
Chloroethane	5.0	0.0	4.8	96	70-130
Methylene chloride	5.0	0.0	4.5	90	70-130
1,1-Dichloroethylene	5.0	0.0	4.8	96	70-130
1,1-Dichloroethane	5.0	0.0	4.9	98	70-130
Chloroform	5.0	0.0	4.9	98	70-130
1,2-Dichloroethane	5.0	0.0	5.0	100	70-130
trans-1,2-Dichloroethyl	5.0	0.0	4.9	98	70-130
1,1,1-Trichloroethane	5.0	0.0	4.8	96	70-130
Carbon tetrachloride	5.0	0.0	4.7	94	70-130
Bromodichloromethane	5.0	0.0	4.8	96	70-130
1,2-Dichloropropane	5.0	0.0	4.8	96	70-130
cis-1,2-Dichloroethylen	5.0	0.0	4.8	96	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.8	96	70-130
1,2-Dichloroethylene (t	10.0	0.0	9.7	97	70-130
Trichloroethylene	5.0	0.0	4.8	96	70-130
Dibromochloromethane	5.0	0.0	4.5	90	70-130
1,1,2-Trichloroethane	5.0	0.0	4.6	92	70-130
Benzene	5.0	0.0	5.0	100	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.7	94	70-130
Bromoform	5.0	0.0	4.2	84	70-130
Tetrachloroethylene	5.0	0.0	4.8	96	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	4.6	92	70-130
Toluene	5.0	0.0	4.9	98	70-130
Chlorobenzene	5.0	0.0	5.0	100	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.1	102	70-130
Styrene	5.0	0.0	5.1	102	70-130
Dichlorodifluoromethane	5.0	0.0	5.3	106	70-130
Trichlorofluoromethane	5.0	0.0	5.0	100	70-130
1,3-Dichlorobenzene	5.0	0.0	4.8	96	70-130
1,4-Dichlorobenzene	5.0	0.0	4.9	98	70-130
1,2-Dichlorobenzene	5.0	0.0	4.9	98	70-130
o-Xylene	5.0	0.0	5.0	100	70-130
m,p-Xylenes	10.0	0.0	10.2	102	70-130
Xylenes (total)	15.0	0.0	15.2	101	70-130
2,2-Dichloropropane	5.0	0.0	4.9	98	70-130
1,1-Dichloropropene	5.0	0.0	4.9	98	70-130
Dibromomethane	5.0	0.0	4.7	94	70-130
1,2-Dibromoethane	5.0	0.0	4.6	92	70-130
1,3-Dichloropropane	5.0	0.0	4.8	96	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Isopropylbenzene	5.0	0.0	5.2	104	70-130
Bromobenzene	5.0	0.0	4.8	96	70-130
1,2,3-Trichloropropane	5.0	0.0	4.6	92	70-130
n-Propylbenzene	5.0	0.0	5.0	100	70-130
2-Chlorotoluene	5.0	0.0	4.8	96	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.1	102	70-130
4-Chlorotoluene	5.0	0.0	5.0	100	70-130
tert-Butylbenzene	5.0	0.0	4.9	98	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.1	102	70-130
sec-Butylbenzene	5.0	0.0	5.1	102	70-130
4-Isopropyltoluene	5.0	0.0	5.1	102	70-130
n-Butylbenzene	5.0	0.0	5.1	102	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	3.9	78	70-130
1,2,4-Trichlorobenzene	5.0	0.0	4.9	98	70-130
Hexachlorobutadiene	5.0	0.0	4.6	92	70-130
Naphthalene	5.0	0.0	4.4	88	70-130
1,2,3-Trichlorobenzene	5.0	0.0	4.8	96	70-130
tert-Butyl methyl ether	5.0	0.0	4.8	96	70-130
Acetone	25.0	0.0	20.0	80	70-130
2-Butanone	25.0	0.0	20.6	82	70-130
4-Methyl-2-pentanone	25.0	0.0	22.6	90	70-130
2-Hexanone	25.0	0.0	21.6	86	70-130
Carbon disulfide	25.0	0.0	24.9	100	70-130
Vinyl acetate	25.0	0.0	27.8	111	70-130
Iodomethane	25.0	0.0	24.6	98	70-130

# 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 69 outside limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	5.0	100	70-130
Chloromethane	5.0	0.0	5.0	100	70-130
Bromomethane	5.0	0.0	4.4	88	70-130
Vinyl chloride	5.0	0.0	5.2	104	70-130
Chloroethane	5.0	0.0	5.3	106	70-130
Methylene chloride	5.0	0.42	4.8	88	70-130
1,1-Dichloroethylene	5.0	0.0	5.1	102	70-130
1,1-Dichloroethane	5.0	0.0	5.2	104	70-130
Chloroform	5.0	0.0	5.2	104	70-130
1,2-Dichloroethane	5.0	0.0	5.4	108	70-130
trans-1,2-Dichloroethyl	5.0	0.0	5.2	104	70-130
1,1,1-Trichloroethane	5.0	0.0	5.2	104	70-130
Carbon tetrachloride	5.0	0.0	5.2	104	70-130
Bromodichloromethane	5.0	0.0	5.1	102	70-130
1,2-Dichloropropane	5.0	0.0	5.1	102	70-130
cis-1,2-Dichloroethylen	5.0	0.0	5.2	104	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.9	98	70-130
1,2-Dichloroethylene (t	10.0	0.0	10.5	105	70-130
Trichloroethylene	5.0	0.0	5.1	102	70-130
Dibromochloromethane	5.0	0.0	4.7	94	70-130
1,1,2-Trichloroethane	5.0	0.0	4.9	98	70-130
Benzene	5.0	0.0	5.3	106	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.8	96	70-130
Bromoform	5.0	0.0	4.5	90	70-130
Tetrachloroethylene	5.0	0.0	5.1	102	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	4.8	96	70-130
Toluene	5.0	0.0	5.2	104	70-130
Chlorobenzene	5.0	0.0	5.2	104	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.5	110	70-130
Styrene	5.0	0.0	5.3	106	70-130
Dichlorodifluoromethane	5.0	0.0	5.4	108	70-130
Trichlorofluoromethane	5.0	0.0	4.7	94	70-130
1,3-Dichlorobenzene	5.0	0.0	5.1	102	70-130
1,4-Dichlorobenzene	5.0	0.0	5.1	102	70-130
1,2-Dichlorobenzene	5.0	0.0	5.0	100	70-130
o-Xylene	5.0	0.0	5.2	104	70-130
m,p-Xylenes	10.0	0.0	11.0	110	70-130
Xylenes (total)	15.0	0.0	16.1	107	70-130
2,2-Dichloropropane	5.0	0.0	5.2	104	70-130
1,1-Dichloropropene	5.0	0.0	5.2	104	70-130
Dibromomethane	5.0	0.0	5.0	100	70-130
1,2-Dibromoethane	5.0	0.0	4.8	96	70-130
1,3-Dichloropropane	5.0	0.0	5.0	100	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Isopropylbenzene	5.0	0.0	5.4	108	70-130
Bromobenzene	5.0	0.0	5.2	104	70-130
1,2,3-Trichloropropane	5.0	0.0	5.0	100	70-130
n-Propylbenzene	5.0	0.0	5.4	108	70-130
2-Chlorotoluene	5.0	0.0	5.3	106	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.4	108	70-130
4-Chlorotoluene	5.0	0.0	5.2	104	70-130
tert-Butylbenzene	5.0	0.0	5.3	106	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.4	108	70-130
sec-Butylbenzene	5.0	0.0	5.5	110	70-130
4-Isopropyltoluene	5.0	0.0	5.4	108	70-130
n-Butylbenzene	5.0	0.0	5.4	108	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	4.4	88	70-130
1,2,4-Trichlorobenzene	5.0	0.0	4.9	98	70-130
Hexachlorobutadiene	5.0	0.0	4.9	98	70-130
Naphthalene	5.0	0.0	4.6	92	70-130
1,2,3-Trichlorobenzene	5.0	0.0	4.8	96	70-130
tert-Butyl methyl ether	5.0	0.0	4.9	98	70-130
Acetone	25.0	0.0	23.2	93	70-130
2-Butanone	25.0	0.0	22.4	90	70-130
4-Methyl-2-pentanone	25.0	0.0	24.8	99	70-130
2-Hexanone	25.0	0.0	23.7	95	70-130
Carbon disulfide	25.0	0.0	26.7	107	70-130
Vinyl acetate	25.0	0.0	29.5	118	70-130
Iodomethane	25.0	0.0	26.3	105	70-130

# 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 69 outside limits

COMMENTS: \_\_\_\_\_



## WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: TR2106

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethylene	5.0	0.0	4.4	88	64-123
Trichloroethylene	5.0	268	273	100	78-122
Benzene	5.0	0.0	5.4	108	80-124
Toluene	5.0	0.0	5.3	106	79-126
Chlorobenzene	5.0	0.0	5.2	104	82-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethylene	5.0	4.4	88	0	13	64-123
Trichloroethylene	5.0	271	60*	50*	15	78-122
Benzene	5.0	5.3	106	2	11	80-124
Toluene	5.0	5.3	106	0	13	79-126
Chlorobenzene	5.0	5.2	104	0	13	82-120

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 1 out of 5 outside limits

Spike Recovery: 1 out of 10 outside limits

COMMENTS:

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID: 8P2C503B Lab Sample ID: 1200400499

Date Analyzed: 03/28/03 Time Analyzed: 0738

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200400500	8P2C502LCSB	0712
02	TR2110	77035001	8P2C513	1214
03	ARD2183	77035002	8P2C514	1240
04	ARD2194	77035004	8P2C516	1332
05	TR2106	77035005	8P2C517	1358
06	TR2106MS	1200400501	8P2C518	1424
07	TR2106MSD	1200400502	8P2C519	1450
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4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK02

ab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID: 8P2D103A Lab Sample ID: 1200401228

Date Analyzed: 03/31/03 Time Analyzed: 1200

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	VBLK02LCS	1200401229	8P2D102LCSA	1134
02	ARD2184	77035003	8P2D104	1234
03	ARD2194DL	77035004	8P2D105	1300
04	TR2106DL	77035005	8P2D106	1326
05	TR2108	77035006	8P2D107	1352
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID: 8C301 BFB Injection Date: 03/26/03

Instrument ID: VOA8 BFB Injection Time: 0654

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.3
75	30.0 - 60.0% of mass 95	46.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.2 ( 0.2)1
174	50.0 - 100.0% of mass 95	77.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.7)1
176	95.0 - 101.0% of mass 174	75.1 ( 97.4)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0002	W8V030326-01	8P2C304A	03/26/03	0810
02	VSTD0005	W8V030326-02	8P2C305A	03/26/03	0836
03	VSTD001	W8V030326-03	8P2C306A	03/26/03	0902
04	VSTD002	W8V030326-04	8P2C307A	03/26/03	0928
05	VSTD005	W8V030326-05	8P2C308A	03/26/03	0954
06	VSTD010	W8V030326-06	8P2C309A	03/26/03	1020
07	VSTD020	W8V030326-07	8P2C310A	03/26/03	1046
08	VSTD050	W8V030326-08	8P2C311A	03/26/03	1112
09	VSTD100	W8V030326-09	8P2C312A	03/26/03	1138
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID: 8C501 BFB Injection Date: 03/28/03

Instrument ID: VOA8 BFB Injection Time: 0701

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.1
75	30.0 - 60.0% of mass 95	46.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 ( 0.0)1
174	50.0 - 100.0% of mass 95	80.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.5)1
176	95.0 - 101.0% of mass 174	78.3 ( 97.7)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.6)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030328-01	8P2C502	03/28/03	0712
02	VBLK01LCS	1200400500	8P2C502LCSB	03/28/03	0712
03	VBLK01	1200400499	8P2C503B	03/28/03	0738
04	TR2110	77035001	8P2C513	03/28/03	1214
05	ARD2183	77035002	8P2C514	03/28/03	1240
06	ARD2194	77035004	8P2C516	03/28/03	1332
07	TR2106	77035005	8P2C517	03/28/03	1358
08	TR2106MS	1200400501	8P2C518	03/28/03	1424
09	TR2106MSD	1200400502	8P2C519	03/28/03	1450
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID: 8D101 BFB Injection Date: 03/31/03

Instrument ID: VOA8 BFB Injection Time: 1120

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.6
75	30.0 - 60.0% of mass 95	44.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.0 ( 0.0)1
174	50.0 - 100.0% of mass 95	73.7
175	5.0 - 9.0% of mass 174	5.4 ( 7.3)1
176	95.0 - 101.0% of mass 174	72.2 ( 97.9)1
177	5.0 - 9.0% of mass 176	5.0 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030331-01	8P2D102	03/31/03	1134
02	VBLK02LCS	1200401229	8P2D102LCSA	03/31/03	1134
03	VBLK02	1200401228	8P2D103A	03/31/03	1200
04	ARD2184	77035003	8P2D104	03/31/03	1234
05	ARD2194DL	77035004	8P2D105	03/31/03	1300
06	TR2106DL	77035005	8P2D106	03/31/03	1326
07	TR2108	77035006	8P2D107	03/31/03	1352
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8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID (Standard): 8P2C502 Date Analyzed: 03/28/03

Instrument ID: VOAB Time Analyzed: 0712

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	607631	4.49	441411	6.76	234517	8.88
UPPER LIMIT	1215262	4.99	882822	7.26	469034	9.38
LOWER LIMIT	303816	3.99	220706	6.26	117258	8.38
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK01LCS	607631	4.49	441411	6.76	234517	8.88
02 VBLK01	594462	4.50	437139	6.77	230340	8.88
03 TR2110	542468	4.50	404738	6.77	204452	8.88
04 ARD2183	550911	4.50	403899	6.77	204873	8.88
05 ARD2194	534499	4.50	395515	6.77	200117	8.88
06 TR2106	543730	4.50	395991	6.77	205662	8.88
07 TR2106MS	528234	4.50	392576	6.78	204173	8.89
08 TR2106MSD	539962	4.50	403482	6.78	209024	8.88
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IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID (Standard): 8P2D102 Date Analyzed: 03/31/03

Instrument ID: VOA8 Time Analyzed: 1134

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	531595	4.50	380407	6.77	198075	8.88
UPPER LIMIT	1063190	5.00	760814	7.27	396150	9.38
LOWER LIMIT	265798	4.00	190204	6.27	99038	8.38
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK02LCS	531595	4.50	380407	6.77	198075	8.88
02 VBLK02	547412	4.49	399857	6.77	206765	8.88
03 ARD2184	539708	4.50	392072	6.77	197420	8.88
04 ARD2194DL	534163	4.50	385876	6.77	197672	8.88
05 TR2106DL	557558	4.49	402697	6.76	210875	8.88
06 TR2108	551149	4.49	451077	6.76	268391	8.88
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IS1 (FLB) = Fluorobenzene  
IS2 (CBZ) = Chlorobenzene-d5  
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
AREA LOWER LIMIT = - 50% of internal standard area  
RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
\* Values outside of QC limits.



GC  
SEMIVOLATILE  
FID  
ANALYSIS

**FID Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG# 77035**

**Method/Analysis Information**

**Procedure:** Dissolved Gases by Flame Ionization Detector  
**Analytical Method:** SW846 8015A/B SVOC  
**Prep Method:** SW846 8015A/B SVOC  
**Analytical Batch Number:** 242473  
**Prep Batch Number:** 242472

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 8015A/B SVOC:

<b>Sample ID</b>	<b>Client ID</b>
77035001	TR2110
77035002	ARD2183
77035003	ARD2184
77035004	ARD2194
77035005	TR2106
77035006	TR2108
77035007	ARD2196
77035008	ARD2191
1200402040	Method Blank (MB)
1200402042	Laboratory Control Sample (LCS)
1200402041	77035005(TR2106) Sample Duplicate (DUP)

**Preparation/Analytical Method Verification**

Procedures for preparation, analysis, and reporting of analytical data are documented by General Engineering Laboratories, Inc. (GEL) as Standard Operating Procedures (SOP).

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**CCV Requirements**

All calibration verification standard(s) (CVS, ICV or CCV) requirements have been met for this SDG.

SDG#77035-FID

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The blank(s) analyzed with this SDG met the established acceptance criteria.

#### **Surrogate Recoveries**

No surrogate was added to any of the samples in this batch.

#### **LCS Recovery Statement**

The LCS spike recoveries for this SDG were within the established acceptance limits.

#### **QC Sample Designation**

An MS/MSD pair was not performed on any samples contained in this batch. A sample duplicate was performed to measure precision and accuracy of the batch.

#### **Duplicate RPD Statement**

The relative percent differences (RPD) between the sample and its duplicate were within the acceptable limits.

### **Technical Information**

#### **Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

#### **Sample Dilutions**

Sample 77035006 (TR2108) was diluted for methane.

#### **Sample Re-prep/Re-analysis**

Sample 77035006(TR2108) was re-analyzed at 1:10 dilution for methane.

### **Miscellaneous Information**

#### **Electronic Package Comment**

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

#### **Nonconformance (NCR) Documentation**

No nonconformance reports (NCRs) has been generated for this SDG.

#### **Manual Integrations**

Certain standards and QC samples may have required manual integrations to correctly position the baseline as set in the calibration standard injections. If manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

#### **Additional Comments**

No additional comments are needed for this sample group.

**System Configuration**

**Chromatographic Columns**

Column ID	Column Description
J&W1	DB-WAX(0.53mm x 0.5u x 30m)
J&W2	DB-624(0.53mm x 3.0u x 30m)
J&W3	DB-1(0.53mm x 1.5u x 30m)
J&W4	DB-608(0.53mm x 0.83u x 30m)
J&W5	GS-Q(0.53mm x 30m)
Phenomenex	ZB-5(0.25mm x 0.25u x 30m)

**Instrument Configuration**

Instrument ID	System Configuration	Chromatographic Column
FIDa	HP 5890 Series II GC/FID	J&W1/J&W3/J&W4
FID2a	HP 5890 Series II GC/FID	J&W2/J&W5
FID3a	HP 5890 Series II GC/FID	Phenomenex
FID4a	HP 5890 Series II GC/FID	Phenomenex

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Jimi Cao Date: 4/15/03

SAMPLE  
DATA  
SUMMARY

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2110
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Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 023B2301

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
74-82-8-----	Methane	25.0	U	
74-84-0-----	Ethane	25.0	U	
74-85-1-----	Ethene	25.0	U	

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2183

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 024B2401

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	25.0	U
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2184

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035  
 Matrix: (soil/water) WATER Lab Sample ID: 77035003  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 025B2501  
 Level: (low/med) LOW Date Received: 03/26/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8-----	Methane	25.0	U	
74-84-0-----	Ethane	25.0	U	
74-85-1-----	Ethene	25.0	U	



FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2194
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Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035  
 Matrix: (soil/water) WATER Lab Sample ID: 77035004  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 026B2601  
 Level: (low/med) LOW Date Received: 03/26/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8-----	Methane	25.0	U	
74-84-0-----	Ethane	25.0	U	
74-85-1-----	Ethene	25.0	U	

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2106

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035  
 Matrix: (soil/water) WATER Lab Sample ID: 77035005  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 028B2801  
 Level: (low/med) LOW Date Received: 03/26/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8-----	Methane	25.0	U	
74-84-0-----	Ethane	25.0	U	
74-85-1-----	Ethene	25.0	U	

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2108

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 029B2901

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	1380	E
74-84-0	Ethane	25.0	U
74-85-1	Ethene	25.0	U

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2108\_RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035  
 Matrix: (soil/water) WATER Lab Sample ID: 77035006  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 033B3301  
 Level: (low/med) LOW Date Received: 03/26/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 10.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	1620	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2196

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035  
 Matrix: (soil/water) WATER Lab Sample ID: 77035007  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 034B3401  
 Level: (low/med) LOW Date Received: 03/26/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	42.5	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2191

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix: (soil/water) WATER Lab Sample ID: 77035008

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 031B3101

Level: (low/med) LOW Date Received: 03/26/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-82-8-----	Methane	25.0	U
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

QUALITY  
CONTROL  
SUMMARY

3C  
WATER FID LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: MBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Methane	100	0.00	92.3	92	70-130
Ethane	100	0.00	97.3	97	56-140
Ethene	100	0.00	86.6	87	56-125

# 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 3 outside limits

COMMENTS: \_\_\_\_\_



FORM 4  
FID METHOD BLANK SUMMARY

CLIENT SAMPLE NO

MBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Lab File ID: 012B1201MB Lab Sample ID: 1200402040

Instrument ID: FID2A Date Extracted: 04/01/03

Matrix: (soil/water) WATER Date Analyzed: 04/02/03

Level: (low/med) LOW Time Analyzed: 1332

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MBLK01LCS	1200402042	013B1301LCS	04/02/03
02	TR2110	77035001	023B2301	04/02/03
03	ARD2183	77035002	024B2401	04/02/03
04	ARD2184	77035003	025B2501	04/02/03
05	ARD2194	77035004	026B2601	04/02/03
06	TR2106DUP	1200402041	027B2701	04/02/03
07	TR2106	77035005	028B2801	04/02/03
08	TR2108	77035006	029B2901	04/02/03
09	ARD2191	77035008	031B3101	04/02/03
10	TR2108 RR	77035006	033B3301	04/02/03
11	ARD2196	77035007	034B3401	04/02/03
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# INORGANIC ANALYSIS

**Metals Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77035**

**Method/Analysis Information**

**Analytical Batch:** 2241750  
**Prep Batch :** 2241748  
**Standard Operating Procedures:** GL-MA-E-013 REV.8, GL-MA-E-006 REV.8  
**Analytical Method:** SSW846 6010B  
**Prep Method :** SSW846 3005A

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
77035001	TR2110
77035002	ARD2183
77035003	ARD2184
77035004	ARD2194
77035005	TR2106
77035006	TR2108
77035007	ARD2196
77035008	ARD2191
1200400299	Method Blank (MB) ICP
1200400300	Laboratory Control Sample (LCS)
1200400303	77035005(TR2106L) Serial Dilution (SD)
1200400301	77035005(TR2106D) Sample Duplicate (DUP)
1200400302	77035005(TR2106S) Matrix Spike (MS)

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The ICP analysis was performed on a Perkin Elmer 4300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

## **Calibration Information**

### **Instrument Calibration**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

### **CRDL Requirements**

All CRDL standard(s) met the referenced advisory control limits.

### **ICSA/ICSAB statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

### **Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria, with the exception of sodium in CCB6. Samples bracketed By CCB6 either did not contain sodium above the RLD, or sodium was present at concentrations more than ten times the amount present in CCB6.

### **Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

## **Quality Control (QC) Information**

### **Method Blank (MB) Acceptance**

The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

### **LCS Recovery Statement**

The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

### **Quality Control (QC) Sample Statement**

The following sample was selected as the quality control (QC) sample for this batch: 77035005 (TR2106).

### **Matrix Spike Recovery Statement**

The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

### **Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

### **Serial Dilution % Difference Statement**

The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

## **Technical Information**

### **Holding Time Specifications**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed

in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines. All samples in this SDG were prepared in accordance with the referenced SW-846 procedures.

**Sample Dilutions**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

**Preparation Information**

The samples in this SDG were prepared exactly according to the sited SOP.

**Miscellaneous Information**

**Nonconformance Documentation**

Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

**Additional Comments**

No additional comments are needed for this sample group.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:     Adelina M. S     Date:     4/9/03

**SAMPLE  
DATA  
SUMMARY**

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77035

Method Type: SW846

Sample ID: 77035001

Client ID: TR2110

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	106000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	12100	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	8.470	µg/L	B		P	0.354	Optimal	040103
7440-09-7	Potassium	2460	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	13300	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77035

Method Type: SW846

Sample ID: 77035002

Client ID: ARD2183

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	98800	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	14700	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	2.890	µg/L	B		P	0.354	Optimal	040103
7440-09-7	Potassium	1700	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	12200	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:



TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77035

Method Type: SW846

Sample ID: 77035003

Client ID: ARD2184

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	111000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	14800	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	67.3	µg/L			P	0.354	Optimal	040103
7440-09-7	Potassium	1730	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	14400	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77035

Method Type: SW846

Sample ID: 77035004

Client ID: ARD2194

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	115000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	11800	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	1.130	µg/L	B		P	0.354	Optimal	040103
7440-09-7	Potassium	757	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	18300	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

LOG No.: 77035

Method Type: SW846

Sample ID: 77035005

Client ID: TR2106

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	122000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	14000	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	6.630	µg/L	B		P	0.354	Optimal	040103
7440-09-7	Potassium	881	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	15900	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**TOTAL METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77035

Method Type: SW846

Sample ID: 77035006

Client ID: TR2108

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	49300	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	9840	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	146	µg/L			P	0.354	Optimal	040103
7440-09-7	Potassium	5960	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	23300	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**TOTAL METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

LOG No.: 77035

Method Type: SW846

Sample ID: 77035007

Client ID: ARD2196

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/26/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	101000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	13500	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	177	µg/L			P	0.354	Optimal	040103
7440-09-7	Potassium	2400	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	17400	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**TOTAL METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77035

Method Type: SW846

**Sample ID:** 77035008

**Client ID:** ARD2191

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 3/26/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	132000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	17500	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	7.090	µg/L	B		P	0.354	Optimal	040103
7440-09-7	Potassium	1160	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	20200	µg/L			P	6.690	Optimal	040103

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

**Comments:**

GENERAL  
CHEMISTRY  
ANALYSIS

**General Chemistry Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77035**

**Method/Analysis Information**

**Procedure:** Ion Chromatography (IC)

**Analytical Method:** EPA 300.0

**Analytical Batch Number:** 241447

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 300.0:

<b>Sample ID</b>	<b>Client ID</b>
77035001	TR2110
77035002	ARD2183
77035003	ARD2184
77035004	ARD2194
77035005	TR2106
77035006	TR2108
77035007	ARD2196
77035008	ARD2191
1200399521	Method Blank (MB)
1200399524	Laboratory Control Sample (LCS)
1200399522	77035001(TR2110) Sample Duplicate (DUP)
1200399929	77035005(TR2106) Sample Duplicate (DUP)
1200399523	77035001(TR2110) Post Spike (PS)
1200399930	77035005(TR2106) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV.8.



### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The instrument used in this analysis was the following: Dionex DX300 Ion Chromatograph equipped with a Dionex AS9-HC general purpose anion column

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

#### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

#### **Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

#### **Quality Control**

The following samples were designated for Quality Control:

77035001 (TR2110)

77035005 (TR2106)

#### **Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

#### **Sample Duplicate Acceptance**

The Relative Percent Differences between the samples and duplicates for this batch were within the required acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

The following samples from this sample group were received with insufficient time to prep and/or analyze the samples within the remaining method-specified holding time for nitrate. The samples were analyzed as soon as possible. See NCR 26399.

77035001 (TR2110)  
77035002 (ARD2183)  
77035003 (ARD2184)  
77035007 (ARD2196)

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples in this sample group were diluted due to high concentration for this analysis. See the Certificates of Analysis and/or raw data for the individual dilution factors.

1200399522 (TR2110)  
1200399523 (TR2110)  
1200399929 (TR2106)  
1200399930 (TR2106)  
77035001 (TR2110)  
77035002 (ARD2183)  
77035003 (ARD2184)  
77035004 (ARD2194)  
77035005 (TR2106)  
77035007 (ARD2196)  
77035008 (ARD2191)

**Miscellaneous Information****Nonconformance Reports**

Nonconformance Report (NCR) 26399 was submitted for samples in this sample group for this analysis.

**Method/Analysis Information**

**Procedure:** Total Organic Carbon (TOC)

**Analytical Method:** SW846 9060

**Analytical Batch Number:** 244246

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 9060:

<b>Sample ID</b>	<b>Client ID</b>
77035001	TR2110
77035002	ARD2183
77035003	ARD2184
77035004	ARD2194
77035005	TR2106
77035006	TR2108
77035007	ARD2196
77035008	ARD2191
1200406420	Method Blank (MB)
1200406425	Laboratory Control Sample (LCS)
1200406421	77035005(TR2106) Sample Duplicate (DUP)
1200406422	77341001(ARD2193) Sample Duplicate (DUP)
1200406423	77035005(TR2106) Post Spike (PS)
1200406424	77341001(ARD2193) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV.3.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The instrument used in this analysis was the following: O-I Analytical Model 1010 Total Organic Carbon Analyzer

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

#### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

#### **Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

#### **Quality Control**

The following samples were designated for Quality Control:

77035005 (TR2106)

77341001 (ARD2193)

#### **Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

#### **Sample Duplicate Acceptance**

The Relative Percent Differences between the samples and duplicates for this batch were within the required acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

#### **Sample Dilutions**

No samples in this sample group required dilutions.

**Miscellaneous Information**

**Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Additional Comments**

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.

**Certification Statement**

\* Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer:  Date: 4/14/03

**COMPANY - WIDE NONCONFORMANCE REPORT**

**Mo. Day Yr.**  
07-APR-03

**Division:**  
Federal

**Type:**  
Process

**Instrument Type:**  
IC

**Quality Criteria:**  
Specifications

**Client Code:**  
PARS001

**Test / Method:**  
EPA 300.0\ICX300\_LF

**Matrix Type:**  
Liquid

**Batch ID:**  
241447

**Sample Numbers:**  
See Below

**Affected Work Order(SDG):** 77035

**Application Issues:**

Sample Analyzed out of Holding

**Specification and Requirements  
Nonconformance Description:**

**NRG Disposition:**

1. The following samples were analyzed out of holding for nitrate:  
77035001  
77035002  
77035003  
77035007

1. Samples 77035001, 77035002, 77035003, & 77035007 were received by the lab with insufficient time to prep and analyze the samples before the hold time expired for nitrate. The samples were analyzed as soon as possible by the analyst.

**Originator's Name:**

Brian Burgess 07-APR-03

**Data Validator/Group Leader:**

Julia Hamilton 08-APR-03

**Quality Review:**

**Corrective Action:**

**Director:**

**Corrective Action ID and Complete Date:**

**SAMPLE  
DATA  
SUMMARY**

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID: TR2110      Project: PARS00103  
 Sample ID: 77035001      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 24-MAR-03 10:30  
 Receive Date: 26-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.01	0.025	0.200	mg/L	1	TSM	04/10/03	1826	244246	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Nitrate in Liquid</i>											
Chloride		9.15	0.0322	0.200	mg/L	1	MAR103/26/03	1513	241447		2
Nitrate	H	0.569	0.0341	0.100	mg/L	1					
Sulfate		59.5	0.386	0.800	mg/L	2	MAR103/31/03	2248	241447		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.



## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

Client Sample ID: TR2110  
Sample ID: 77035001

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID: ARD2183      Project: PARS00103  
 Sample ID: 77035002      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 24-MAR-03 12:20  
 Receive Date: 26-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.29	0.025	0.200	mg/L	1	TSM	04/10/03	1856	244246	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Nitrate in Liquid</i>											
Chloride		14.2	0.0322	0.200	mg/L	1	MAR103/26/03	1609	241447		2
Nitrate	H	0.591	0.0341	0.100	mg/L	1					
Sulfate		71.3	0.386	0.800	mg/L	2	MAR103/31/03	2343	241447		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2


Client Sample ID: ARD2183  
Sample ID: 77035002

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID: ARD2184  
 Sample ID: 77035003  
 Matrix: Water  
 Collect Date: 24-MAR-03 15:25  
 Receive Date: 26-MAR-03  
 Collector: Client  
 Project: PARS00103  
 Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		1.41	0.025	0.200	mg/L	1	TSM 04/10/03	1925	244246	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Nitrate in Liquid</i>										
Chloride		12.0	0.0322	0.200	mg/L	1	MAR103/26/03	1627	241447	2
Nitrate	H	12.2	0.0682	0.200	mg/L	2	MAR103/27/03	0957	241447	3
Sulfate		58.0	0.386	0.800	mg/L	2				

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2


Client Sample ID: ARD2184  
Sample ID: 77035003

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

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Client Sample ID: ARD2194      Project: PARS00103  
 Sample ID: 77035004      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 25-MAR-03 09:35  
 Receive Date: 26-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		2.50	0.025	0.200	mg/L	1	TSM 04/10/03	1954	244246	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Nitrate in Liquid</i>										
Chloride		4.33	0.0322	0.200	mg/L	1	MAR103/26/03	1646	241447	2
Nitrate		0.622	0.0341	0.100	mg/L	1				
Sulfate		78.8	0.965	2.00	mg/L	5	MAR104/01/03	0002	241447	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2


Client Sample ID: ARD2194  
Sample ID: 77035004

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID: TR2106                      Project: PARS00103  
 Sample ID: 77035005                      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 25-MAR-03 12:50  
 Receive Date: 26-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.54	0.025	0.200	mg/L	1	TSM	04/10/03	2024	244246	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Nitrate in Liquid</i>											
Chloride		4.31	0.0322	0.200	mg/L	1	MAR103	03/26/03	1704	241447	2
Nitrate		0.415	0.0341	0.100	mg/L	1					
Sulfate		77.9	0.965	2.00	mg/L	5	MAR104	04/01/03	0020	241447	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.



## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2

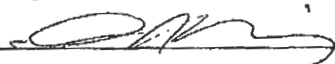
Client Sample ID: TR2106  
Sample ID: 77035005

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID: TR2108      Project: PARS00103  
 Sample ID: 77035006      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 25-MAR-03 14:40  
 Receive Date: 26-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		1.83	0.025	0.200	mg/L	1	TSM 04/10/03	2118	244246	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Nitrate in Liquid</i>										
Chloride		4.89	0.0322	0.200	mg/L	1	MAR103/26/03	1722	241447	2
Nitrate		0.221	0.0341	0.100	mg/L	1				
Sulfate		38.6	0.193	0.400	mg/L	1				

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2

Client Sample ID: TR2108  
Sample ID: 77035006

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## QC Summary

Workorder: 77035

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
>	Actual result is greater than amount reported									
B	Analyte found in the sample as well as the associated blank.									
BD	Flag for results below the MDC or a flag for low tracer recovery.									
E	Concentration exceeds instrument calibration range									
H	Holding time exceeded									
J	Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.									
P	The response between the confirmation column and the primary column is >40%D									
U	Indicates the compound was analyzed for but not detected above the detection limit									
UI	Uncertain identification for gamma spectroscopy.									
X	Lab-specific qualifier - must be fully described in case narrative and data summary package									
Y	QC Samples were not spiked with this compound.									

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.





**CASE NARRATIVE**  
**for**  
**Parsons Engineering Science, Inc.**  
**Seneca Army Depot**  
**SDG#s 77557/77559**

**April 18, 2003**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29414

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC (GEL) Charleston, South Carolina on April 3, 2003, for Environmental Analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
77557001	ARD2195
77557002	ARD2192
77559001	ARD2195
77559002	ARD2192
77559003	ARD2185
77559004	ARD2204
77559005	ARD0032
77559006	ARD2202

GENERAL ENGINEERING LABORATORIES, LLC  
*a Member of THE GEL GROUP, INC.*  
P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)  
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

77559007  
77559008  
77559009

ARD2203  
ARD2201  
TR0042

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

**Internal Chain of Custody:**

Custody was maintained for all samples.

**Data Package:**

The enclosed data package contains the following sections: Case Narrative, Qualifier Flag Definitions, Chain of Custody, Cooler Receipt Checklist, GC/MS Volatile Analysis, FID Analysis, Inorganic Analysis, and General Chemistry Analysis.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis  
Project Manager



CHAIN  
OF  
CUSTODY

1 nge

No:

CHAIN OF CUSTODY RECORD

Send results to:  
 PARSONS Boston  
 290 Elmwood Drive, Road South  
 Liverpool, NY 13088-6711  
 Telephone: (315) 451-4540  
 Fax: (315) 451-4540  
 Lab Submitted to:  
 GEL  
 Charleston

PROJECT NO.  
 743155.01200  
 PROJECT MGR.  
 Todd Heino  
 Parsons Boston

LOCATION DESCRIPTION  
 DATE  
 TIME  
 ANALYSES REQUIRED  
 VOC 524.2  
 VOC TCL  
 Nitrate/Sulfate/Chloride  
 MEF  
 TOC  
 Metals

FIELD SAMPLE ID  
 2195  
 2185  
 2204  
 2185MS  
 2185MSD  
 0031  
 2202  
 2203  
 2201  
 2192

NOTES - (reference QAPP and/or analytical protocols to be used):  
 77557%  
 77559%

LAB SUBMITTED TO:  
 GEL  
 Charleston

REMARKS  
 Matrix Spill  
 Matrix Spill  
 Rinse Blank

FIELD SAMPLE ID	DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	VOC 524.2	VOC TCL	Nitrate/Sulfate/Chloride	MEF	TOC	Metals
PT-18	4/2/03	0940	X		GW	9	X	X	X	X	X	X
MW-36	4/2/03	1340	X		GW	9	X	X	X	X	X	X
MW-36	4/2/03	1340	X		GW	9	X	X	X	X	X	X
MW-36	4/2/03	1340	X		GW	3	X					
Rinse Blank	4/2/03	1420	X		W	3	X					
FH-D	4/2/03	1445	X		GW	3	X					
FH-S	4/2/03	1450	X		GW	3	X					
BN-S	4/2/03	1500	X		GW	3	X					
MW-56	4/2/03	1555	X		GW	9	X	X	X	X	X	X

Received by: (Signature)  
 Date: 4/3/03 0900

Received by: (Signature)  
 Date:

Received by: (Signature)  
 Date:

Shipped via: Fedex 839734548968  
 Shipped via:  
 Shipped via:

TP - Test Pit/Tank Pit  
 DR - Drill Waste  
 WA - Solid Waste  
 OS - Other Solid

FD - Fuel Dispenser  
 MI - Manhole  
 OW - Oil Water Separator  
 PR - Piping Run

ST - Storm Water  
 WW - Waste Water  
 OL - Other Liquid (eg. Drum liquid)

WATER  
 MW - Monitoring Well  
 LC - Leachate  
 SW - Surface Water  
 DW - Drill Water

QUALITY CONTROL  
 FB - Field Blank (with data)  
 TB - Trip Blank (with data)  
 WB - Wash Blank (with data)

MATRIX  
 W - Water  
 S - Soil

SOLID  
 ST - Surface Soil  
 SB - Subsurface Soil  
 MW - Monitoring Well Boring

Signature: R. Dye

CHAIN C STUDY RECORD

1 - y  
No

PROJECT NO. 743155.01200		PROJECT MFR: Todd Heino Boston		ANALYSES REQUIRED		Send results to: PARSONS Boston 200 Ellwood Davis Road Liverpool, NY 14880-6117 Telephone: (315) 467-6300 Fax: (315) 461-4000 Lab Submitted to: GEL Charleston			
LOCATION DESCRIPTION: 77559%		DATE: -	TIME: -	GRAB	COMP	MATRIX	Number of Bottles	REMARKS: Trip Blank	
FIELD SAMPLE ID: 042		Trip Blank				W 2 X	VOC S24.2		
MIECA Army Depot ALICE Landfill Dolph - Parsons Raymond-Parsons									
SOIL ID		Date	Time	Shipped via	Arbit #	Received by (Signature)	Date	Time	Quality Control
TP - Test Pit/Tank Pit	DR - Drift Waste	4/2/03	1900	Fedex	839734548968	J. M. Hanley	4/3/03	0900	FB - Field Blank (with data)
WA - Surface Soil	OS - Other Solid								TB - Trip Blank (with data)
W - Water									WB - Wash Blank (with data)
ST - Storm Water									
WW - Waste Water									
OL - Other Liquid (eg. Drum liquid)									
FD - Fuel Dispenser									
MH - Manhole									
OW - Oil Water Separator									
PR - Piping Run									

SOIL ID  
S1 - Submittal  
S2 - Surface Soil  
S3 - Subsurface Soil  
M1 - Monitoring Well Boring  
TP - Test Pit/Tank Pit  
DR - Drift Waste  
WA - Surface Soil  
OS - Other Solid  
W - Water  
ST - Storm Water  
WW - Waste Water  
OL - Other Liquid (eg. Drum liquid)  
FD - Fuel Dispenser  
MH - Manhole  
OW - Oil Water Separator  
PR - Piping Run  
MATERIAL  
W - Water  
S - Soil  
MATRIX  
ST - Storm Water  
WW - Waste Water  
OL - Other Liquid (eg. Drum liquid)  
QUALITY CONTROL  
FB - Field Blank (with data)  
TB - Trip Blank (with data)  
WB - Wash Blank (with data)

Revised 7/8/2002

**COOLER  
RECEIPT  
CHECKLIST**

SAMPLE RECEIPT & REVIEW FORM

**SAMPLE RECEIPT & REVIEW FORM**

Date: 4/3/03 Client: PARS Received by: GMMH

REVIEW CRITERIA	YES	NO	N/A	COMMENTS/QUALIFIERS
Were shipping containers received intact and sealed? If no, notify the Project Manager.	✓			
Were chain of custody documents included?	✓			
Shipping container temperature(s) checked?	✓			4°C
Temperature documented on Chain of Custody?	✓			
Was shipping container temperature within specifications (4 +/- 2 C)? If no, notify Project Manager	✓			
Was any of the samples identified by the client as radioactive? If yes, complete radioactive receipt form	✓			
Were samples not identified by the client as radioactive must be screened for radioactivity.	SO			observed background CPM
Screening results indicate > x2 background inform the RSO.	SO			Max. observed sample CPM
Were chain of custody documents completed correctly? (Ink, signed, match containers)	✓			
Were sample containers received intact and sealed? If no, notify the Project Manager	✓			
Were all sample containers properly labeled?	✓			
Were correct sample containers received?	✓			
Were samples checked for pH?	✓			
Were samples preserved correctly? If no, notify Project Manager	✓			
Were samples received within holding time? If No, notify Project Manager	✓			
Were VOA vials free of headspace?	✓			
FOCUS #				✓
DATE				✓

MR(A) INITIALS: USO Date Reviewed: 4/3/03

Lab: 439734548968 Associated Temperature, & Additional Comments:

439734548968

**Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples were within the acceptance limits.

**Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

**QC Sample Designation**

Matrix spikes were analyzed on a sample of similar matrix in another Parsons sample delivery group, sample number 77469001 (ARD2188) in SDG 77469.

**Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Spike Duplicate Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Relative Percent Difference Statement (RPD)**

The RPD between spike recoveries were within the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

**Technical Information****Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this sample delivery group/work order did not require dilutions.

**Miscellaneous Information****Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

Instrument ID	System Configuration	Chromatographic Column	P & T Trap
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:           Pot-stale          

Date:           04-21-03



## Roadmap for PARS 77557 VOA

This roadmap was analyzed by Sara Jones on 04-11-2003, 08:42.

This roadmap was reviewed by Debbie Smith on 04-14-2003, 14:16.

This roadmap was packaged by LySandra Gathers on 04-17-2003, 08:26.

### Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e410.d	77557001	ARD2195	10-APR-2003	12:46	77557.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e411.d	77557002	ARD2192	10-APR-2003	13:14	77557.sub	1.00000	<input type="checkbox"/>

### QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e402PARSlcsB.d	1200407011	VBLK01LCS	lcs	10-APR-2003	08:52	77557.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e406B.d	1200407010	VBLK01	mb	10-APR-2003	10:42	77557.sub	1.00000	<input type="checkbox"/>

**SAMPLE  
DATA  
SUMMARY**

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2192

Lab Name: GENERAL ENGINEERING LABS Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557  
 Matrix: (soil/water) WATER Lab Sample ID: 77557002  
 Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E411  
 Level: (low/med) LOW Date Received: 04/03/03  
 % Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03  
 GC Column: DB-624 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
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	0.42	J
540-59-0	1,2-Dichloroethylene (total)	0.42	J
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2192

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Matrix: (soil/water) WATER Lab Sample ID: 77557002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E411

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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
107-06-2	1,2-Dichloroethane	1.0	U
71-43-2	Benzene	1.0	U
79-01-6	Trichloroethylene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
80-62-6	Methyl methacrylate	5.0	U
74-95-3	Dibromomethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
79-46-9	2-Nitropropane	5.0	U
110-75-8	2-Chloroethylvinyl ether	5.0	U
10061-01-5	cis-1,3-Dichloropropylene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropylene	1.0	U
97-63-2	Ethyl methacrylate	5.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
591-78-6	2-Hexanone	5.0	U
127-18-4	Tetrachloroethylene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene	1.0	U
95-47-6	o-Xylene	1.0	U
	m,p-Xylenes	2.0	U
10061-01-5	Xylenes (total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
1476-11-5	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1	Cyclohexanone	50.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2192

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Matrix: (soil/water) WATER Lab Sample ID: 77557002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E411

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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
96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2195

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Matrix: (soil/water) WATER Lab Sample ID: 77557001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E410

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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

75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	3.0	
540-59-0	1,2-Dichloroethylene (total)	3.0	
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	0.42	J
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2195

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Matrix: (soil/water) WATER Lab Sample ID: 77557001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E410

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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
107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	27.3	
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m, p-Xylenes	2.0	U
10061-01-5-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

	EPA SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	VBLK01LCS	89	82	78		0
02	VBLK01	90	83	82		0
03	ARD2195	91	81	81		0
04	ARD2192	91	82	81		0
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QC LIMITS

- SMC1 = Dibromofluoromethane (74-144)
- SMC2 (TOL) = Toluene-d8 (76-129)
- SMC3 (BFB) = Bromofluorobenzene (69-137)

# Column to be used to flag recovery values  
 \* Values outside of contract required QC limits



3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.0	0.0	40.7	81	68-141
Chloromethane	50.0	0.0	39.2	78	72-142
Vinyl chloride	50.0	0.0	49.8	100	67-141
Bromomethane	50.0	0.0	44.4	89	61-144
Chloroethane	50.0	0.0	49.3	99	68-132
Trichlorofluoromethane	50.0	0.0	41.9	84	65-142
1,1-Dichloroethylene	50.0	0.0	47.8	96	66-132
Acetone	250	0.0	237	95	71-139
Iodomethane	250	0.0	282	113	68-126
Carbon disulfide	250	0.0	256	102	68-120
Acetonitrile	1250	0.0	1140	91	70-135
Methylene chloride	50.0	0.0	45.9	92	73-112
tert-Butyl methyl ether	50.0	0.0	53.4	107	70-130
trans-1,2-Dichloroethyl	50.0	0.0	53.9	108	78-125
1,1-Dichloroethane	50.0	0.0	53.8	108	80-119
Vinyl acetate	250	0.0	255	102	67-136
2-Butanone	250	0.0	251	100	64-134
cis-1,2-Dichloroethylen	50.0	0.0	55.8	112	80-117
1,2-Dichloroethylene (t	100	0.0	110	110	70-130
2,2-Dichloropropane	50.0	0.0	59.1	118	74-142
Bromochloromethane	50.0	0.0	51.9	104	75-125
Chloroform	50.0	0.0	53.9	108	80-124
1,1,1-Trichloroethane	50.0	0.0	55.2	110	72-136
1,1-Dichloropropene	50.0	0.0	55.0	110	84-126
Carbon tetrachloride	50.0	0.0	58.8	118	66-141
1,2-Dichloroethane	50.0	0.0	49.2	98	67-131
Benzene	50.0	0.0	52.5	105	78-116
Trichloroethylene	50.0	0.0	53.3	107	83-122

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,2-Dichloropropane	50.0	0.0	51.2	102	75-119
Dibromomethane	50.0	0.0	54.1	108	80-126
Bromodichloromethane	50.0	0.0	52.7	105	78-127
2-Chloroethylvinyl ethe	250	0.0	191	76	63-131
cis-1,3-Dichloropropyle	50.0	0.0	54.1	108	77-129
4-Methyl-2-pentanone	250	0.0	260	104	69-127
Toluene	50.0	0.0	53.8	108	79-118
trans-1,3-Dichloropropy	50.0	0.0	54.6	109	67-132
1,1,2-Trichloroethane	50.0	0.0	51.0	102	76-119
1,3-Dichloropropane	50.0	0.0	49.8	100	83-114
2-Hexanone	250	0.0	262	105	60-136
Tetrachloroethylene	50.0	0.0	53.7	107	78-126
Dibromochloromethane	50.0	0.0	56.4	113	81-129
1,2-Dibromoethane	50.0	0.0	53.0	106	75-130
Chlorobenzene	50.0	0.0	53.8	108	82-118
1,1,1,2-Tetrachloroetha	50.0	0.0	53.1	106	82-119
Ethylbenzene	50.0	0.0	55.3	111	80-120
o-Xylene	50.0	0.0	58.2	116	81-118
m,p-Xylenes	100	0.0	112	112	79-119
Xylenes (total)	150	0.0	170	113	70-130
Styrene	50.0	0.0	59.3	119	82-121
Bromoform	50.0	0.0	56.6	113	79-141
Isopropylbenzene	50.0	0.0	48.8	98	73-115
1,1,2,2-Tetrachloroetha	50.0	0.0	47.0	94	66-127
1,2,3-Trichloropropane	50.0	0.0	48.6	97	76-120
Bromobenzene	50.0	0.0	50.7	101	78-118
n-Propylbenzene	50.0	0.0	54.4	109	78-126
2-Chlorotoluene	50.0	0.0	53.8	108	78-121

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557  
 Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	50.0	0.0	53.5	107	82-121
1,2,4-Trimethylbenzene	50.0	0.0	52.6	105	82-122
4-Chlorotoluene	50.0	0.0	51.5	103	78-122
tert-Butylbenzene	50.0	0.0	53.1	106	79-124
sec-Butylbenzene	50.0	0.0	54.6	109	83-123
4-Isopropyltoluene	50.0	0.0	56.1	112	83-125
1,3-Dichlorobenzene	50.0	0.0	54.4	109	80-122
1,4-Dichlorobenzene	50.0	0.0	52.8	106	70-130
n-Butylbenzene	50.0	0.0	56.5	113	79-127
1,2-Dichlorobenzene	50.0	0.0	51.9	104	80-116
1,2-Dibromo-3-chloropro	50.0	0.0	46.9	94	68-129
1,2,4-Trichlorobenzene	50.0	0.0	55.4	111	71-136
Hexachlorobutadiene	50.0	0.0	50.8	102	73-124
Naphthalene	50.0	0.0	49.4	99	64-143
1,2,3-Trichlorobenzene	50.0	0.0	53.3	107	71-134

# 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 71 outside limits

COMMENTS:

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4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Lab File ID: 9E406B Lab Sample ID: 1200407010

Date Analyzed: 04/10/03 Time Analyzed: 1042

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200407011	9E402PARSLCS	0852
02	ARD2195	77557001	9E410	1246
03	ARD2192	77557002	9E411	1314
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Lab File ID: 9D307 BFB Injection Date: 04/02/03

Instrument ID: VOA9 BFB Injection Time: 1413

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.4
75	30.0 - 60.0% of mass 95	53.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.1 ( 0.1)1
174	50.0 - 100.0% of mass 95	69.6
175	5.0 - 9.0% of mass 174	5.2 ( 7.5)1
176	95.0 - 101.0% of mass 174	67.9 ( 97.6)1
177	5.0 - 9.0% of mass 176	4.4 ( 6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0005	W9V030402-01	9D309	04/02/03	1452
02	VSTD001	W9V030402-02	9D310	04/02/03	1519
03	VSTD002	W9V030402-03	9D312	04/02/03	1615
04	VSTD005	W9V030402-04	9D313	04/02/03	1642
05	VSTD010	W9V030402-05	9D314	04/02/03	1710
06	VSTD020	W9V030402-06	9D315	04/02/03	1737
07	VSTD050	W9V030402-07	9D316	04/02/03	1805
08	VSTD100	W9V030402-08	9D317	04/02/03	1832
09	VSTD005S	UVM030221-10A	9D318	04/02/03	1900
10	VSTD010S	UVM030221-11A	9D319	04/02/03	1927
11	VSTD025S	UVM030221-12A	9D320	04/02/03	1955
12	VSTD050S	UVM030221-13A	9D321	04/02/03	2022
13	VSTD100S	UVM030221-14A	9D322	04/02/03	2049
14	VSTD250S	UVM030221-15A	9D323	04/02/03	2116
15	VSTD500S	UVM030221-16A	9D324	04/02/03	2144
16					
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557

Lab File ID: 9E401 BFB Injection Date: 04/10/03

Instrument ID: VOA9 BFB Injection Time: 0842

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.9
75	30.0 - 60.0% of mass 95	53.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.2 ( 0.3)1
174	50.0 - 100.0% of mass 95	72.7
175	5.0 - 9.0% of mass 174	4.9 ( 6.7)1
176	95.0 - 101.0% of mass 174	70.5 ( 97.0)1
177	5.0 - 9.0% of mass 176	4.5 ( 6.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	UVM030404-01A	9E402	04/10/03	0852
02	VBLK01LCS	1200407011	9E402PARSLCSB	04/10/03	0852
03	VSTD250S	UVM030212-01B	9E403	04/10/03	0920
04	VBLK01	1200407010	9E406B	04/10/03	1042
05	ARD2195	77557001	9E410	04/10/03	1246
06	ARD2192	77557002	9E411	04/10/03	1314
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8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77557  
 Lab File ID (Standard): 9E402 Date Analyzed: 04/10/03  
 Instrument ID: VOA9 Time Analyzed: 0852  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	1055837	4.94	739866	7.94	381269	10.65
UPPER LIMIT	2111674	5.44	1479732	8.44	762538	11.15
LOWER LIMIT	527918	4.44	369933	7.44	190634	10.15
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK01LCS	1055837	4.94	739105	7.94	381269	10.65
02 VBLK01	977656	4.94	684922	7.94	317851	10.65
03 ARD2195	1004238	4.94	717419	7.94	334522	10.65
04 ARD2192	990302	4.95	703307	7.94	318468	10.65
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IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**GC/MS  
VOLATILE  
ANALYSIS**



GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77559

Method/Analysis Information

Procedure: Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometer  
Analytical Method: EPA 524.2  
Prep Method: EPA 524.2  
Analytical Batch Number: 243842

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77559003	ARD2185
77559004	ARD2204
77559005	ARD0032
77559006	ARD2202
77559007	ARD2203
77559008	ARD2201
77559009	TR0042
1200405473	Method Blank (MB)
1200405474	Laboratory Control Sample (LCS)
1200406099	Method Blank (MB)
1200406100	Laboratory Control Sample (LCS)
1200405475	77559003(ARD2185) Matrix Spike (MS)
1200405476	77559003(ARD2185) Matrix Spike Duplicate (MSD)

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Page 1 of 4

### Preparation/Analytical Method Verification

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-022 REV.3.

#### **Calibration Information**

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

#### **Initial Calibration**

All the initial calibration requirements were met.

#### **Continuing Calibration Verification Requirements**

All the calibration verification standard (CCV) requirements were met.

### Quality Control (QC) Information

#### **Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

#### **Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples were within the acceptance limits.

#### **Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

#### **QC Sample Designation**

The following sample was designated for spike analysis: 77559003 (ARD2185).

#### **Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

#### **Spike Duplicate Recovery Statement**

All the required spike recoveries were within the acceptance limits.

#### **Relative Per cent Difference Statement (RPD)**

The RPD between spike recoveries were within the acceptance limits.

#### **Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

### Technical Information

#### **Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

#### **Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

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Page 2 of 4

**Preparation/Analytical Method Verification**  
All procedures were performed as stated in the SOP.

**Sample Dilutions**  
The samples in this sample delivery group/work order did not require dilutions.

**Sample Re-prep/Re-analysis**  
Re-analyses were not required for samples in this sample group/work order.

**Miscellaneous Information**

**Electronic Package Comment**  
The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**  
A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**  
Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**  
Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**Additional Comments**  
There were no additional comments.

**System Configuration**  
The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**  
Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

77559 -VOA

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**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

Instrument ID	System Configuration	Chromatographic Column	P & T Trap
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.



## Roadmap for PARS 77559 VOA

This roadmap was analyzed by Debbie Smith on 04-11-2003, 14:39.

This roadmap was reviewed by Sara Jones on 04-14-2003, 15:53.

This roadmap was packaged by LySandra Gathers on 04-18-2003, 13:30.

Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e215.d	77559003	ARD2185	08-APR-2003	14:30	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e218.d	77559004	ARD2204	08-APR-2003	15:47	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e219.d	77559005	ARD0032	08-APR-2003	16:14	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e220.d	77559006	ARD2202	08-APR-2003	16:40	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e221.d	77559007	ARD2203	08-APR-2003	17:05	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e222.d	77559008	ARD2201	08-APR-2003	17:31	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040903v8.b/8p2e304.d	77559009	TR0042	09-APR-2003	08:09	77559.sub	1.00000	<input type="checkbox"/>

QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e202LCSE.d	1200405474	VBLK01LCS	lcs	08-APR-2003	08:32	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e203E.d	1200405473	VBLK01	mb	08-APR-2003	09:04	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e216.d	1200405475	ARD2185MS	ms	08-APR-2003	14:56	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e217.d	1200405476	ARD2185MSD	msd	08-APR-2003	15:21	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040903v8.b/8p2e302LCSA.d	1200406100	VBLK02LCS	lcs	09-APR-2003	07:13	77559.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040903v8.b/8p2e303A.d	1200406099	VBLK02	mb	09-APR-2003	07:39	77559.sub	1.00000	<input type="checkbox"/>

# SAMPLE DATA SUMMARY

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0032

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E219

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO. COMPOUND Q

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.48	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	38.1	
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0032

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E219

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/L	Q
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	28.0	
78-93-3	2-Butanone	1.6	
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0032

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E219

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
75-15-0	Carbon disulfide	1.0	U
108-05-4	Vinyl acetate	1.0	U
74-88-4	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2185

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E215

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.39	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2185

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E215

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.3	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2185

Lab Name: GENERAL ENGINEERING LABS    Contract: N/A

Lab Code: N/A    Case No.: N/A    SAS No.: N/A    SDG No.: 77559

Matrix: (soil/water) WATER    Lab Sample ID: 77559003

Sample wt/vol:    10.00 (g/ml) ML    Lab File ID:    8P2E215

Level: (low/med)    LOW    Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_    Date Analyzed: 04/08/03

GC Column: DB-624    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
75-15-0-----	Carbon disulfide_____	1.0	U
108-05-4-----	Vinyl acetate_____	1.0	U
74-88-4-----	Iodomethane_____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2201

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559008

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E222

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.35	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	1.1	
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.36	J
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2201

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559008

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E222

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	2.8	
	m,p-Xylenes	0.68	
1330-20-1	Xylenes (total)	3.4	
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.84	
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	30.6	
67-64-1	Acetone	1.3	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2201

Lab Name: GENERAL ENGINEERING LABS    Contract: N/A

Lab Code: N/A    Case No.: N/A    SAS No.: N/A    SDG No.: 77559

Matrix: (soil/water) WATER    Lab Sample ID: 77559008

Sample wt/vol: 10.00 (g/ml) ML    Lab File ID: 8P2E222

Level: (low/med) LOW    Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_    Date Analyzed: 04/08/03

GC Column: DB-624    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
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75-15-0-----	Carbon disulfide	1.0 U	
108-05-4-----	Vinyl acetate	1.0 U	
74-88-4-----	Iodomethane	1.0 U	



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2202

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E220

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.28	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2202

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E220

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.3	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2202

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E220

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide	1.0	U	
108-05-4-----	Vinyl acetate	1.0	U	
74-88-4-----	Iodomethane	1.0	U	

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2203

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E221

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.30	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2203

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E221

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.4	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2203

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E221

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2204

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E218

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.38	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2204

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77559

Matrix: (soil/water) WATER      Lab Sample ID: 77559004

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2E218

Level: (low/med) LOW      Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	2.3	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2204
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Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E218

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide _____	1.0	U
108-05-4-----	Vinyl acetate _____	1.0	U
74-88-4-----	Iodomethane _____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0042

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559009

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E304

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/09/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.33	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0042

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559009

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E304

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/09/03

GC Column: DB-624 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

106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.3	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0042

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559009

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E304

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/09/03

GC Column: DB-624 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

75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

QUALITY  
CONTROL  
SUMMARY

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 #	OTHER	TOT OUT
	-----	-----	-----	-----	-----	-----
01	VBLK01LCS	104	94	96		0
02	VBLK01	96	94	101		0
03	ARD2185	102	98	107		0
04	ARD2185MS	96	90	105		0
05	ARD2185MSD	99	112	112		0
06	ARD2204	97	94	105		0
07	ARD0032	100	90	104		0
08	ARD2202	90	90	101		0
09	ARD2203	96	92	111		0
10	ARD2201	103	101	108		0
11	VBLK02LCS	104	89	100		0
12	VBLK02	96	92	98		0
13	TR0042	104	98	105		0
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QC LIMITS

SMC1 (TOL) = Toluene-d8 (73-112)  
 SMC2 (BFB) = Bromofluorobenzene (73-123)  
 SMC3 = Dibromofluoromethane (81-126)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	4.9	98	70-130
Chloromethane	5.0	0.0	4.4	88	70-130
Bromomethane	5.0	0.0	4.1	82	70-130
Vinyl chloride	5.0	0.0	4.5	90	70-130
Chloroethane	5.0	0.0	4.9	98	70-130
Methylene chloride	5.0	0.0	5.1	102	70-130
1,1-Dichloroethylene	5.0	0.0	4.8	96	70-130
1,1-Dichloroethane	5.0	0.0	4.8	96	70-130
Chloroform	5.0	0.0	5.0	100	70-130
1,2-Dichloroethane	5.0	0.0	5.1	102	70-130
trans-1,2-Dichloroethyl	5.0	0.0	4.9	98	70-130
1,1,1-Trichloroethane	5.0	0.0	5.0	100	70-130
Carbon tetrachloride	5.0	0.0	4.8	96	70-130
Bromodichloromethane	5.0	0.0	4.7	94	70-130
1,2-Dichloropropane	5.0	0.0	4.7	94	70-130
cis-1,2-Dichloroethylen	5.0	0.0	4.8	96	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.8	96	70-130
1,2-Dichloroethylene (t	10.0	0.0	9.7	97	70-130
Trichloroethylene	5.0	0.0	4.9	98	70-130
Dibromochloromethane	5.0	0.0	4.6	92	70-130
1,1,2-Trichloroethane	5.0	0.0	4.8	96	70-130
Benzene	5.0	0.0	5.0	100	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.8	96	70-130
Bromoform	5.0	0.0	4.3	86	70-130
Tetrachloroethylene	5.0	0.0	5.4	108	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Toluene	5.0	0.0	5.0	100	70-130
Chlorobenzene	5.0	0.0	5.0	100	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.3	106	70-130
Styrene	5.0	0.0	5.2	104	70-130
Dichlorodifluoromethane	5.0	0.0	5.0	100	70-130
Trichlorofluoromethane	5.0	0.0	4.4	88	70-130
1,3-Dichlorobenzene	5.0	0.0	5.0	100	70-130
1,4-Dichlorobenzene	5.0	0.0	5.0	100	70-130
1,2-Dichlorobenzene	5.0	0.0	5.0	100	70-130
o-Xylene	5.0	0.0	5.1	102	70-130
m,p-Xylenes	10.0	0.0	10.4	104	70-130
Xylenes (total)	15.0	0.0	15.5	103	70-130
2,2-Dichloropropane	5.0	0.0	4.8	96	70-130
1,1-Dichloropropane	5.0	0.0	5.0	100	70-130
Dibromomethane	5.0	0.0	4.9	98	70-130
1,2-Dibromoethane	5.0	0.0	4.8	96	70-130
1,3-Dichloropropane	5.0	0.0	4.9	98	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	4.8	96	70-130
Isopropylbenzene	5.0	0.0	5.1	102	70-130
Bromobenzene	5.0	0.0	5.0	100	70-130
1,2,3-Trichloropropane	5.0	0.0	4.9	98	70-130
n-Propylbenzene	5.0	0.0	5.1	102	70-130
2-Chlorotoluene	5.0	0.0	5.2	104	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.1	102	70-130
4-Chlorotoluene	5.0	0.0	5.2	104	70-130
tert-Butylbenzene	5.0	0.0	4.9	98	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.2	104	70-130
sec-Butylbenzene	5.0	0.0	5.1	102	70-130
4-Isopropyltoluene	5.0	0.0	5.2	104	70-130
n-Butylbenzene	5.0	0.0	5.2	104	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

ab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	3.8	76	70-130
1,2,4-Trichlorobenzene	5.0	0.0	5.2	104	70-130
Hexachlorobutadiene	5.0	0.0	5.3	106	70-130
Naphthalene	5.0	0.0	4.8	96	70-130
1,2,3-Trichlorobenzene	5.0	0.0	5.3	106	70-130
tert-Butyl methyl ether	5.0	0.0	4.8	96	70-130
Acetone	25.0	0.0	23.8	95	70-130
2-Butanone	25.0	0.0	22.7	91	70-130
4-Methyl-2-pentanone	25.0	0.0	25.7	103	70-130
2-Hexanone	25.0	0.0	25.3	101	70-130
Carbon disulfide	25.0	0.0	24.6	98	70-130
Vinyl acetate	25.0	0.0	26.8	107	70-130
Iodomethane	25.0	0.0	25.5	102	70-130

# 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 69 outside limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	5.0	100	70-130
Chloromethane	5.0	0.0	4.4	88	70-130
Bromomethane	5.0	0.0	4.2	84	70-130
Vinyl chloride	5.0	0.0	4.7	94	70-130
Chloroethane	5.0	0.0	4.9	98	70-130
Methylene chloride	5.0	0.0	5.0	100	70-130
1,1-Dichloroethylene	5.0	0.0	4.9	98	70-130
1,1-Dichloroethane	5.0	0.0	4.9	98	70-130
Chloroform	5.0	0.0	5.1	102	70-130
1,2-Dichloroethane	5.0	0.0	5.2	104	70-130
trans-1,2-Dichloroethyl	5.0	0.0	4.9	98	70-130
1,1,1-Trichloroethane	5.0	0.0	5.0	100	70-130
Carbon tetrachloride	5.0	0.0	4.8	96	70-130
Bromodichloromethane	5.0	0.0	4.9	98	70-130
1,2-Dichloropropane	5.0	0.0	4.8	96	70-130
cis-1,2-Dichloroethylen	5.0	0.0	5.0	100	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.8	96	70-130
1,2-Dichloroethylene (t	10.0	0.0	9.8	98	70-130
Trichloroethylene	5.0	0.0	4.9	98	70-130
Dibromochloromethane	5.0	0.0	4.6	92	70-130
1,1,2-Trichloroethane	5.0	0.0	4.8	96	70-130
Benzene	5.0	0.0	5.0	100	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.8	96	70-130
Bromoform	5.0	0.0	4.5	90	70-130
Tetrachloroethylene	5.0	0.0	5.3	106	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	4.8	96	70-130
Toluene	5.0	0.0	4.8	96	70-130
Chlorobenzene	5.0	0.0	4.9	98	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.1	102	70-130
Styrene	5.0	0.0	5.0	100	70-130
Dichlorodifluoromethane	5.0	0.0	4.6	92	70-130
Trichlorofluoromethane	5.0	0.0	4.6	92	70-130
1,3-Dichlorobenzene	5.0	0.0	4.8	96	70-130
1,4-Dichlorobenzene	5.0	0.0	4.8	96	70-130
1,2-Dichlorobenzene	5.0	0.0	4.8	96	70-130
o-Xylene	5.0	0.0	4.9	98	70-130
m,p-Xylenes	10.0	0.0	10.1	101	70-130
Xylenes (total)	15.0	0.0	15.1	101	70-130
2,2-Dichloropropane	5.0	0.0	5.0	100	70-130
1,1-Dichloropropane	5.0	0.0	4.9	98	70-130
Dibromomethane	5.0	0.0	4.9	98	70-130
1,2-Dibromoethane	5.0	0.0	4.7	94	70-130
1,3-Dichloropropane	5.0	0.0	4.9	98	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	4.9	98	70-130
Isopropylbenzene	5.0	0.0	5.1	102	70-130
Bromobenzene	5.0	0.0	4.9	98	70-130
1,2,3-Trichloropropane	5.0	0.0	4.5	90	70-130
n-Propylbenzene	5.0	0.0	4.9	98	70-130
2-Chlorotoluene	5.0	0.0	4.8	96	70-130
1,3,5-Trimethylbenzene	5.0	0.0	4.9	98	70-130
4-Chlorotoluene	5.0	0.0	4.8	96	70-130
tert-Butylbenzene	5.0	0.0	4.8	96	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.0	100	70-130
sec-Butylbenzene	5.0	0.0	4.9	98	70-130
4-Isopropyltoluene	5.0	0.0	5.0	100	70-130
n-Butylbenzene	5.0	0.0	4.9	98	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	4.0	80	70-130
1,2,4-Trichlorobenzene	5.0	0.0	4.6	92	70-130
Hexachlorobutadiene	5.0	0.0	5.0	100	70-130
Naphthalene	5.0	0.0	4.1	82	70-130
1,2,3-Trichlorobenzene	5.0	0.0	4.5	90	70-130
tert-Butyl methyl ether	5.0	0.0	5.0	100	70-130
Acetone	25.0	0.0	23.2	93	70-130
2-Butanone	25.0	0.0	22.4	90	70-130
4-Methyl-2-pentanone	25.0	0.0	24.3	97	70-130
2-Hexanone	25.0	0.0	23.6	94	70-130
Carbon disulfide	25.0	0.0	25.5	102	70-130
Vinyl acetate	25.0	0.0	26.0	104	70-130
Iodomethane	25.0	0.0	26.1	104	70-130

# 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 69 outside limits

COMMENTS: \_\_\_\_\_

## WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: ARD2185

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethylene	5.0	0.0	4.2	84	64-123
Trichloroethylene	5.0	0.0	4.7	94	78-122
Benzene	5.0	0.0	5.1	102	80-124
Toluene	5.0	0.0	4.9	98	79-126
Chlorobenzene	5.0	0.0	4.9	98	82-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethylene	5.0	4.2	84	0	13	64-123
Trichloroethylene	5.0	4.6	92	2	15	78-122
Benzene	5.0	5.1	102	0	11	80-124
Toluene	5.0	5.0	100	2	13	79-126
Chlorobenzene	5.0	5.0	100	2	13	82-120

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS:

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID: 8P2E203E Lab Sample ID: 1200405473

Date Analyzed: 04/08/03 Time Analyzed: 0904

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200405474	8P2E202LCSE	0832
02	ARD2185	77559003	8P2E215	1430
03	ARD2185MS	1200405475	8P2E216	1456
04	ARD2185MSD	1200405476	8P2E217	1521
05	ARD2204	77559004	8P2E218	1547
06	ARD0032	77559005	8P2E219	1614
07	ARD2202	77559006	8P2E220	1640
08	ARD2203	77559007	8P2E221	1705
09	ARD2201	77559008	8P2E222	1731
10				
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4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK02

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID: 8P2E303A Lab Sample ID: 1200406099

Date Analyzed: 04/09/03 Time Analyzed: 0739

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK02LCS	1200406100	8P2E302LCSA	0713
02	TR0042	77559009	8P2E304	0809
03				
04				
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID: 8C301 BFB Injection Date: 03/26/03

Instrument ID: VOA8 BFB Injection Time: 0654

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.3
75	30.0 - 60.0% of mass 95	46.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.2 ( 0.2)1
174	50.0 - 100.0% of mass 95	77.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.7)1
176	95.0 - 101.0% of mass 174	75.1 ( 97.4)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0002	W8V030326-01	8P2C304A	03/26/03	0810
02	VSTD0005	W8V030326-02	8P2C305A	03/26/03	0836
03	VSTD001	W8V030326-03	8P2C306A	03/26/03	0902
04	VSTD002	W8V030326-04	8P2C307A	03/26/03	0928
05	VSTD005	W8V030326-05	8P2C308A	03/26/03	0954
06	VSTD010	W8V030326-06	8P2C309A	03/26/03	1020
07	VSTD020	W8V030326-07	8P2C310A	03/26/03	1046
08	VSTD050	W8V030326-08	8P2C311A	03/26/03	1112
09	VSTD100	W8V030326-09	8P2C312A	03/26/03	1138
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID: 8E201 BFB Injection Date: 04/08/03

Instrument ID: VOA8 BFB Injection Time: 0817

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	46.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.4 ( 0.5)1
174	50.0 - 100.0% of mass 95	80.8
175	5.0 - 9.0% of mass 174	6.0 ( 7.4)1
176	95.0 - 101.0% of mass 174	78.9 ( 97.6)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030408-01	8P2E202	04/08/03	0832
02	VBLK01LCS	1200405474	8P2E202LCSE	04/08/03	0832
03	VBLK01	1200405473	8P2E203E	04/08/03	0904
04	ARD2185	77559003	8P2E215	04/08/03	1430
05	ARD2185MS	1200405475	8P2E216	04/08/03	1456
06	ARD2185MSD	1200405476	8P2E217	04/08/03	1521
07	ARD2204	77559004	8P2E218	04/08/03	1547
08	ARD0032	77559005	8P2E219	04/08/03	1614
09	ARD2202	77559006	8P2E220	04/08/03	1640
10	ARD2203	77559007	8P2E221	04/08/03	1705
11	ARD2201	77559008	8P2E222	04/08/03	1731
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID: 8E301 BFB Injection Date: 04/09/03

Instrument ID: VOA8 BFB Injection Time: 0657

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.0
75	30.0 - 60.0% of mass 95	45.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 ( 0.2)1
174	50.0 - 100.0% of mass 95	83.2
175	5.0 - 9.0% of mass 174	6.1 ( 7.4)1
176	95.0 - 101.0% of mass 174	82.0 ( 98.5)1
177	5.0 - 9.0% of mass 176	5.3 ( 6.4)2

1-Value is % mass 174                          2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030409-01	8P2E302	04/09/03	0713
02	VBLK02LCS	1200406100	8P2E302LCSA	04/09/03	0713
03	VBLK02	1200406099	8P2E303A	04/09/03	0739
04	TR0042	77559009	8P2E304	04/09/03	0809
05					
06					
07					
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20					
21					
22					

8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559  
 Lab File ID (Standard): 8P2E202 Date Analyzed: 04/08/03  
 Instrument ID: VOA8 Time Analyzed: 0832  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
12 HOUR STD	594714	4.50	420450	6.78	226752	8.88
UPPER LIMIT	1189428	5.00	840900	7.28	453504	9.38
LOWER LIMIT	297357	4.00	210225	6.28	113376	8.38
EPA SAMPLE NO.						
01 VBLK01LCS	594714	4.50	420450	6.78	226752	8.88
02 VBLK01	535312	4.50	397414	6.78	209728	8.89
03 ARD2185	512339	4.50	374340	6.77	195010	8.88
04 ARD2185MS	535690	4.50	393334	6.77	218193	8.88
05 ARD2185MSD	542243	4.50	403109	6.77	243500	8.88
06 ARD2204	530624	4.50	385081	6.77	202252	8.88
07 ARD0032	500868	4.50	365159	6.77	200500	8.88
08 ARD2202	544044	4.50	398691	6.77	204869	8.88
09 ARD2203	503626	4.50	379134	6.77	207078	8.88
10 ARD2201	504605	4.50	371154	6.77	192305	8.88
11						
12						
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22						

IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

## VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID (Standard): 8P2E302 Date Analyzed: 04/09/03

Instrument ID: VOA8 Time Analyzed: 0713

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB)		IS2 (CBZ)		IS3 (DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	587424	4.50	427464	6.77	230286	8.88
UPPER LIMIT	1174848	5.00	854928	7.27	460572	9.38
LOWER LIMIT	293712	4.00	213732	6.27	115143	8.38
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK02LCS	587424	4.50	427464	6.77	230286	8.88
02 VBLK02	545585	4.50	388903	6.77	205228	8.88
03 TR0042	556047	4.50	393226	6.77	213135	8.88
04						
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18						
19						
20						
21						
22						

IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**GC  
SEMIVOLATILE  
FID  
ANALYSIS**

**FID Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77559**

**Method/Analysis Information**

**Procedure:** Dissolved Gases by Flame Ionization Detector  
**Analytical Method:** SW846 8015A/B SVOC  
**Prep Method:** SW846 8015A/B SVOC  
**Analytical Batch Number:** 242857  
**Prep Batch Number:** 242856

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 8015A/B SVOC:

<b>Sample ID</b>	<b>Client ID</b>
77559001	ARD2195
77559002	ARD2192
77559003	ARD2185
77559004	ARD2204
1200403144	Method Blank (MB)
1200403146	Laboratory Control Sample (LCS)
1200403145	77559002(ARD2192) Sample Duplicate (DUP)

**Preparation/Analytical Method Verification**

Procedures for preparation, analysis, and reporting of analytical data are documented by General Engineering Laboratories, Inc. (GEL) as Standard Operating Procedures (SOP).

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**CCV Requirements**

All calibration verification standard(s) (CVS, ICV or CCV) requirements have been met for this SDG.

**Quality Control (QC) Information**

**Blank Acceptance**

The blank(s) analyzed with this SDG met the established acceptance criteria.

**Surrogate Recoveries**

No surrogate was added to any of the samples in this batch.

**LCS Recovery Statement**

The Laboratory Control Sample (LCS) spike recoveries for this SDG were within the established acceptance limits.

**QC Sample Designation**

No matrix spike (MS) or matrix spike duplicate (MSD) were analyzed with this SDG. A sample duplicate was analyzed to measure the precision for this batch.

**Duplicate RPD Statement**

The relative percent differences (RPD) between the sample and its duplicate were within the acceptable limits.

**Technical Information**

**Holding Time Specifications**

All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

None of the samples in this SDG required dilutions.

**Sample Re-prep/Re-analysis**

None of the samples in this sample group were re-prepped or reanalyzed.

**Miscellaneous Information**

**Nonconformance (NCR) Documentation**

No nonconformance reports (NCRs) have been generated for this SDG.

**Manual Integrations**

Certain standards and QC samples may have required manual integrations to correctly position the baseline as set in the calibration standard injections. If manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Samples 77559001 (ARD2195), 77559002 (ARD2192) and 77559003 (ARD2185) required manual integrations.

**Additional Comments**

No additional comments are needed for this sample group.

**System Configuration**

**Chromatographic Columns**

Column ID	Column Description
J&W1	DB-WAX(0.53mm x 0.5u x 30m)
J&W2	DB-624(0.53mm x 3.0u x 30m)
J&W3	DB-1(0.53mm x 1.5u x 30m)
J&W4	DB-608(0.53mm x 0.83u x 30m)
J&W5	GS-Q(0.53mm x 30m)
Phenomenex	ZB-5(0.25mm x 0.25u x 30m)

**Instrument Configuration**

<b>Instrument ID</b>	<b>System Configuration</b>	<b>Chromatographic Column</b>
FIDa	HP 5890 Series II GC/FID	J&W1/J&W3/J&W4
FID2a	HP 5890 Series II GC/FID	J&W2/J&W5
FID3a	HP 5890 Series II GC/FID	Phenomenex
FID4a	HP 5890 Series II GC/FID	Phenomenex

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Jim Cas Date: 4/21/03



**SAMPLE  
DATA  
SUMMARY**

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2195

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 005B0501

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-82-8	Methane	49.5	
74-84-0	Ethane	25.0	U
74-85-1	Ethene	25.0	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2192
---------

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 006B0601

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/L
74-82-8-----	Methane	61.3	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2185

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 007B0701

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	134	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2204

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix: (soil/water) WATER Lab Sample ID: 77559004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 009B0901

Level: (low/med) LOW Date Received: 04/03/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8	Methane	25.0	U	
74-84-0	Ethane	25.0	U	
74-85-1	Ethene	25.0	U	

QUALITY  
CONTROL  
SUMMARY

3C  
WATER FID LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Matrix Spike - EPA Sample No.: MBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Methane	100	0.00	90.4	90	70-130
Ethane	100	0.00	89.5	90	56-140
Ethene	100	0.00	91.7	92	56-125

# 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 3 outside limits

COMMENTS: \_\_\_\_\_

4B  
FID METHOD BLANK SUMMARY

EPA SAMPLE NO.

MBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77559

Lab File ID: 003B0301MB Lab Sample ID: 1200403144

Instrument ID: FID2A Date Extracted: 04/02/03

Matrix: (soil/water) WATER Date Analyzed: 04/04/03

Level: (low/med) LOW Time Analyzed: 0952

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MBLK01	1200403144	003B0301MB	04/04/03
02	MBLK01LCS	1200403146	004B0401LCS	04/04/03
03	ARD2195	77559001	005B0501	04/04/03
04	ARD2192	77559002	006B0601	04/04/03
05	ARD2185	77559003	007B0701	04/04/03
06	ARD2192DUP	1200403145	008B0801	04/04/03
07	ARD2204	77559004	009B0901	04/04/03
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30				



**Metals Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77559**

**Method/Analysis Information**

**Analytical Batch:** 2243170  
**Prep Batch :** 2243169  
**Standard Operating Procedures:** GL-MA-E-013 REV.8, GL-MA-E-006 REV.8  
**Analytical Method:** SSW846 6010B  
**Prep Method :** SSW846 3005A

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
77559001	ARD2195
77559002	ARD2192
77559003	ARD2185
77559004	ARD2204
1200403917	Method Blank (MB) ICP
1200403924	Laboratory Control Sample (LCS)
1200403920	77559003(ARD2185L) Serial Dilution (SD)
1200403918	77559003(ARD2185D) Sample Duplicate (DUP)
1200403922	77559003(ARD2185S) Matrix Spike (MS)

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

**Calibration Information**

**Instrument Calibration**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

**CRDL Requirements**

All CRDL standard(s) met the referenced advisory control limits.

**ICSA/ICSAB statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

**Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

**Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

**Quality Control (QC) Information**

**Method Blank (MB) Acceptance**

The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

**LCS Recovery Statement**

The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

**Quality Control (QC) Sample Statement**

The following sample was selected as the quality control (QC) sample for this SDG: 77559003 (ARD2185).

**Matrix Spike Recovery Statement**

The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

**Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

**Serial Dilution % Difference Statement**

The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

**Technical Information**

**Holding Time Specifications**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP)

guidelines.

**Sample Dilutions**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

**Preparation Information**

The samples in this SDG were prepared exactly according to the sited SOP.

**Miscellaneous Information**

**Nonconformance Documentation**

Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

**Additional Comments**

No additional comments are needed for this sample group.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer:                     Dellisnola                     Date:                     4/17/03

**SAMPLE  
DATA  
SUMMARY**

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77559

Method Type: SW846

Sample ID: 77559001

Client ID: ARD2195

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/3/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	188000	µg/L			P	7.760	TJA61 Trace ICP2	41003
7439-95-4	Magnesium	29800	µg/L			P	14.2	TJA61 Trace ICP2	41003
7439-96-5	Manganese	19.1	µg/L			P	0.421	TJA61 Trace ICP2	41003
7440-09-7	Potassium	4090	µg/L			P	48.7	TJA61 Trace ICP2	41003
7440-23-5	Sodium	26500	µg/L			P	33.9	TJA61 Trace ICP2	41003

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77559

Method Type: SW846

Sample ID: 77559002

Client ID: ARD2192

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/3/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	80200	µg/L			P	7.760	TJA61 Trace ICP2	41003
7439-95-4	Magnesium	9720	µg/L			P	14.2	TJA61 Trace ICP2	41003
7439-96-5	Manganese	6.740	µg/L	B		P	0.421	TJA61 Trace ICP2	41003
7440-09-7	Potassium	2250	µg/L			P	48.7	TJA61 Trace ICP2	41003
7440-23-5	Sodium	10600	µg/L			P	33.9	TJA61 Trace ICP2	41003

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77559

Method Type: SW846

Sample ID: 77559003

Client ID: ARD2185

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/3/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	113000	µg/L			P	7.760	TJA61 Trace ICP2	41003
7439-95-4	Magnesium	17400	µg/L			P	14.2	TJA61 Trace ICP2	41003
7439-96-5	Manganese	121	µg/L			P	0.421	TJA61 Trace ICP2	41003
7440-09-7	Potassium	2230	µg/L			P	48.7	TJA61 Trace ICP2	41003
7440-23-5	Sodium	12400	µg/L			P	33.9	TJA61 Trace ICP2	41003

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**TOTAL METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77559

Method Type: SW846

**Sample ID:** 77559004

**Client ID:** ARD2204

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 4/3/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	112000	µg/L			P	7.760	TJA61 Trace ICP2	41003
7439-95-4	Magnesium	17300	µg/L			P	14.2	TJA61 Trace ICP2	41003
7439-96-5	Manganese	127	µg/L			P	0.421	TJA61 Trace ICP2	41003
7440-09-7	Potassium	2280	µg/L			P	48.7	TJA61 Trace ICP2	41003
7440-23-5	Sodium	12300	µg/L			P	33.9	TJA61 Trace ICP2	41003

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

**Comments:**



**GENERAL  
CHEMISTRY  
ANALYSIS**

**General Chemistry Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77559**

**Method/Analysis Information**

**Procedure:** Ion Chromatography (IC)  
**Analytical Method:** EPA 300.0  
**Analytical Batch Number:** 243193

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 300.0:

<b>Sample ID</b>	<b>Client ID</b>
77559001	ARD2195
77559002	ARD2192
77559003	ARD2185
77559004	ARD2204
1200403966	Method Blank (MB)
1200403971	Laboratory Control Sample (LCS)
1200403967	77559003(ARD2185) Sample Duplicate (DUP)
1200403969	77559003(ARD2185) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV.8.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**Calibration Information**

The instrument used in this analysis was the following: Dionex DX300 Ion Chromatograph equipped with a Dionex AS9-HC general purpose anion column

**Initial Calibration**

The instrument was properly calibrated.

**Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Quality Control (QC) Information****Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The recoveries for the laboratory control sample were within the required acceptance limits.

**Quality Control**

The following sample was designated for Quality Control:  
77559003 (ARD2185)

**Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

**Sample Duplicate Acceptance**

The Relative Percent Differences between the sample and duplicate for this batch were within the required acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples in this sample group were diluted due to high concentration for sulfate. See the Certificates of Analysis for the individual dilution factors.

1200403967 (ARD2185)

1200403969 (ARD2185)

77559001 (ARD2195)

77559002 (ARD2192)

77559003 (ARD2185)

77559004 (ARD2204)

**Miscellaneous Information**

**Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Method/Analysis Information**

**Procedure:** Total Organic Carbon (TOC)  
**Analytical Method:** SW846 9060  
**Analytical Batch Number:** 244647

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 9060:

<b>Sample ID</b>	<b>Client ID</b>
77559001	ARD2195
77559002	ARD2192
77559003	ARD2185
77559004	ARD2204
1200407396	Method Blank (MB)
1200407401	Laboratory Control Sample (LCS)
1200407398	77559003(ARD2185) Sample Duplicate (DUP)
1200407400	77559003(ARD2185) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV.3.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**Calibration Information**

The instrument used in this analysis was the following: O-I Analytical Model 1010 Total Organic Carbon Analyzer

**Initial Calibration**

The instrument was properly calibrated.

**Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Quality Control (QC) Information****Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

**Quality Control**

The following sample was designated for Quality Control:  
77559003 (ARD2185)

**Sample Spike Recovery**

The spike recovery for this sample set was within the required acceptance limits.

**Sample Duplicate Acceptance**

The Relative Percent Difference between the sample and duplicate for this batch was within the required acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

No samples in this sample group required dilutions.

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Additional Comments**

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.


**Certification Statement**

\* Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  Date: 4/17/03

**SAMPLE  
DATA  
SUMMARY**



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID:	ARD2195	Project:	PARS00103
Sample ID:	77559001	Client ID:	PARS001
Matrix:	Water		
Collect Date:	02-APR-03 09:40		
Receive Date:	03-APR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		4.35	0.025	0.200	mg/L	1	TSM 04/15/03	1540	244647	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Chloride		11.9	0.0322	0.200	mg/L	1	MAR104/04/03	0525	243193	2
Nitrate		0.254	0.0341	0.100	mg/L	1				
Sulfate		219	1.93	4.00	mg/L	10	MAR104/04/03	1415	243193	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/04/03	1000	243169
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/04/03	0756	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page . 2 of 2

Client Sample ID: ARD2195  
Sample ID: 77559001

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	-------------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: ARD2192                      Project: PARS00103  
 Sample ID: 77559002                      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 02-APR-03 15:55  
 Receive Date: 03-APR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		2.20	0.025	0.200	mg/L	1	TSM	04/15/03	1609	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		11.6	0.0322	0.200	mg/L	1	MAR104/04/03	0639	243193		2
Nitrate		2.18	0.0341	0.100	mg/L	1					
Sulfate		62.4	0.386	0.800	mg/L	2	MAR104/04/03	1433	243193		3

**the following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/04/03	1000	243169
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/04/03	0756	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

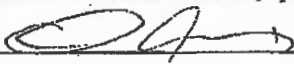
Client Sample ID: ARD2192  
Sample ID: 77559002

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: ARD2185  
 Sample ID: 77559003  
 Matrix: Water  
 Collect Date: 02-APR-03 13:40  
 Receive Date: 03-APR-03  
 Collector: Client

Project: PARS00103  
 Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		3.29	0.025	0.200	mg/L	1	TSM 04/15/03	1639	244647	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Chloride		6.73	0.0322	0.200	mg/L	1	MAR104/04/03	0657	243193	2
Nitrate		0.300	0.0341	0.100	mg/L	1				
Sulfate		56.5	0.386	0.800	mg/L	2	MAR104/04/03	1452	243193	3

**he following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/04/03	1000	243169
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/04/03	0756	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

Notes:

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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

Client Sample ID: ARD2185  
Sample ID: 77559003

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: ARD2204      Project: PARS00103  
 Sample ID: 77559004      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 02-APR-03 13:40  
 Receive Date: 03-APR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		3.42	0.025	0.200	mg/L	1	TSM	04/15/03	1734	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		6.61	0.0322	0.200	mg/L	1	MAR104/04/03	0829	243193		2
Nitrate		0.318	0.0341	0.100	mg/L	1					
Sulfate		56.2	0.386	0.800	mg/L	2	MAR104/04/03	1547	243193		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/04/03	1000	243169
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/04/03	0756	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

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- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

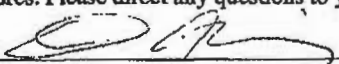
Client Sample ID: ARD2204  
Sample ID: 77559004

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	-------------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  




QUALITY  
CONTROL  
SUMMARY

## QC Summary

Report Date: April 17, 2003

Page 1 of 2

Client: **Parsons**  
**100 Summer Street**  
**Suite 800**  
**Boston, Massachusetts**

Contact: **Todd Heino**

Workorder: **77559**

Paruname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis Federal</b>											
Batch	244647										
QC1200407398	77559003	DUP									
Total Organic Carbon		3.29		3.10	mg/L	6		(0%-20%)	TSM	04/15/03	17:08
QC1200407401	LCS										
Total Organic Carbon	10.0			10.4	mg/L		104	(85%-115%)		04/15/03	11:39
QC1200407396	MB										
Total Organic Carbon			U	-0.34	mg/L					04/15/03	11:31
QC1200407400	77559003	PS									
Total Organic Carbon	10.0	3.29		13.3	mg/L		101	(80%-120%)		04/15/03	17:26
<b>Ion Chromatography Federal</b>											
Batch	243193										
QC1200403967	77559003	DUP									
Nitrate-N		0.300		0.298	mg/L	1 ^		(+/-0.100)	VAR1	04/04/03	07:15
Sulfate		56.5		56.0	mg/L	1		(0%-20%)		04/04/03	15:10
Chloride		6.73		6.71	mg/L	0		(0%-20%)		04/04/03	07:15
QC1200403971	LCS										
Nitrate-N	5.00			4.77	mg/L		95	(90%-110%)		04/04/03	05:07
Sulfate	20.0			19.3	mg/L		97	(90%-110%)			
Chloride	10.0			9.36	mg/L		94	(90%-110%)			
QC1200403966	MB										
Nitrate-N			U	0.00	mg/L					04/04/03	04:48
Sulfate			U	0.00	mg/L						
Chloride			U	0.00	mg/L						
QC1200403969	77559003	PS									
Nitrate-N	5.00	0.300		4.89	mg/L		92	(77%-115%)		04/04/03	07:34
Sulfate	20.0	28.3		50.0	mg/L		109	(75%-130%)		04/04/03	15:29
Chloride	10.0	6.73		17.1	mg/L		103	(80%-125%)		04/04/03	07:34

**Notes:**

The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package

## QC Summary

Workorder: 77559

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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Y QC Samples were not spiked with this compound.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



*[Faint, illegible text at the top of the page, possibly a header or title area.]*

*[The main body of the page contains several paragraphs of extremely faint, illegible text, which appears to be bleed-through from the reverse side of the paper.]*





**CASE NARRATIVE**  
for  
**Parsons Engineering Science, Inc.**  
**Seneca Army Depot**  
**SDG# 77111**

**April 15, 2003**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29414

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC (GEL) Charleston, South Carolina on March 27, 2003, for Environmental Analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
77111001	TR2103
77111002	TR2105
77111003	TR2111
77111004	ARD2199
77111005	TR0038
77111006	TR0039
77111007	TR2110

## **Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

## **Internal Chain of Custody:**

Custody was maintained for all samples.

## **Data Package:**

The enclosed data package contains the following sections: Case Narrative, Qualifier Flag Definitions, Chain of Custody, Cooler Receipt Checklist, GC/MS Volatile Analysis, FID Analysis, Inorganic Analysis, and General Chemistry Analysis.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis  
Project Manager



## SAMPLE RECEIPT & REVIEW FORM

Date 3/27/03 Client Parsons Received by g.mh

SAMPLE REVIEW CRITERIA	YES	NO	N/A	COMMENTS/QUALIFIERS
Were shipping containers received intact and sealed? If no, notify the Project Manager	✓			
Were chain of custody documents included?	✓			
Shipping container temperature(s) checked?	✓			4°C
Is temperature documented on Chain of Custody?	✓			
Was shipping container temperature within specifications (4 +/- 2 C)? If no, notify Project Manager	✓			
Are any of the samples identified by the client as radioactive? If yes, complete radioactive receipt form		✓		
Any samples not identified by the client as radioactive must be screened for radioactivity.		50		observed background CPM
If screening results indicate > x2 background inform the RSO.		50		Max. observed sample CPM
Were chain of custody documents completed correctly? (Ink, signed, match containers)	✓			
Were sample containers received intact and sealed? If no, notify the Project Manager	✓			
Were all sample containers properly labeled?	✓			
Were correct sample containers received?	✓			
Preserved samples checked for pH?	✓			
Were samples preserved correctly? If no, notify Project Manager	✓			
Were samples received within holding time? If No, notify Project Manager	✓			
Were VOA vials free of headspace?	✓			
ARCOC#				✓
SDG#				✓

PM(A) Review: \_\_\_\_\_ Date Reviewed: \_\_\_\_\_

Cooler Air Bill #'s, Associated Temperatures, & Additional Comments:

839326228903

**GC/MS  
VOLATILE  
ANALYSIS**

GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77111

Method/Analysis Information

Procedure: Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometer  
Analytical Method: EPA 524.2  
Prep Method: EPA 524.2  
Analytical Batch Number: 241844

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77111001	TR2103
77111002	TR2105
77111003	TR2111
77111004	ARD2199
77111005	TR0038
77111006	TR0039
1200400499	Method Blank (MB)
1200400500	Laboratory Control Sample (LCS)
1200401228	Method Blank (MB)
1200401229	Laboratory Control Sample (LCS)

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-022 REV.3.

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**Calibration Information**

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

**Initial Calibration**

All the initial calibration requirements were met.

**Continuing Calibration Verification Requirements**

All the calibration verification standard (CCV) requirements were met.

**Quality Control (QC) Information**

**Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

**Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

**Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

**QC Sample Designation**

Matrix spike analyses were analyzed on a sample of similar matrix in PARS sample delivery group order, # 77035.

**Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Spike Duplicate Recovery Statement**

The matrix spike duplicate recovery was below the acceptance limit for trichloroethylene, possibly due to the high level of trichloroethylene detected in the sample. 1200400502 (TR2106).

**Relative Percent Difference Statement (RPD)**

The RPD between the matrix spike and matrix spike duplicate was above the acceptance limit for trichloroethylene, possibly due to the high level of trichloroethylene detected in the sample. 1200400501 (TR2106) and 1200400502 (TR2106).

**Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

**Technical Information**

**Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this sample delivery group/work order did not require dilutions.

**Sample Re-prep/Re-analysis**

Re-analyses were not required for samples in this sample group/work order.

**Miscellaneous Information****Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**Additional Comments**

There were no additional comments.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

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<b>Instrument ID</b>	<b>System Configuration</b>	<b>Chromatographic Column</b>	<b>P &amp; T Trap</b>
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:                     *Jim Onda*                    

Date:                     4-15-03

## Roadmap for PARS 77111 VOA

This roadmap was analyzed by Debbie Smith on 04-08-2003, 13:54.

This roadmap was reviewed by Sara Jones on 04-09-2003, 10:28.

This roadmap was packaged by LySandra Gathers on 04-10-2003, 10:42.

Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input checked="" type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c521.d	77111001	TR2103	28-MAR-2003	15:43	PARS.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c522.d	77111002	TR2105	28-MAR-2003	16:09	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c523.d	77111003	TR2111	28-MAR-2003	16:34	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c524.d	77111004	ARD2199	28-MAR-2003	17:00	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c525.d	77111005	TR0038	28-MAR-2003	17:26	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c526.d	77111006	TR0039	28-MAR-2003	17:52	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d108.d	77111001	TR2103	31-MAR-2003	14:18	77111.sub	1.00000	<input type="checkbox"/>

QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c502LCSC.d	1200400500	VBLK01LCS	ics	28-MAR-2003	07:12	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/032803v8.b/8p2c503C.d	1200400499	VBLK01	mb	28-MAR-2003	07:38	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d102LCSB.d	1200401229	VBLK02LCS	ics	31-MAR-2003	11:34	77111.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/033103v8.b/8p2d103B.d	1200401228	VBLK02	mb	31-MAR-2003	12:00	77111.sub	1.00000	<input type="checkbox"/>



# SAMPLE DATA SUMMARY

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2199

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C524

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.29	J
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	35.2	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	35.2	
79-01-6	Trichloroethylene	2.8	
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2199

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77111

Matrix: (soil/water) WATER      Lab Sample ID: 77111004

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2C524

Level: (low/med) LOW      Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/28/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

106-46-7-----1,4-Dichlorobenzene	0.50	U
95-50-1-----1,2-Dichlorobenzene	0.50	U
95-47-6-----o-Xylene	0.50	U
-----m,p-Xylenes	0.50	U
1330-20-1-----Xylenes (total)	0.50	U
594-20-7-----2,2-Dichloropropane	0.50	U
563-58-6-----1,1-Dichloropropene	0.50	U
74-95-3-----Dibromomethane	0.50	U
106-93-4-----1,2-Dibromoethane	0.50	U
142-28-9-----1,3-Dichloropropane	0.50	U
630-20-6-----1,1,1,2-Tetrachloroethane	0.50	U
98-82-8-----Isopropylbenzene	0.50	U
108-86-1-----Bromobenzene	0.50	U
96-18-4-----1,2,3-Trichloropropane	0.50	U
103-65-1-----n-Propylbenzene	0.50	U
95-49-8-----2-Chlorotoluene	0.50	U
108-67-8-----1,3,5-Trimethylbenzene	0.50	U
106-43-4-----4-Chlorotoluene	0.50	U
98-06-6-----tert-Butylbenzene	0.50	U
95-63-6-----1,2,4-Trimethylbenzene	0.50	U
135-98-8-----sec-Butylbenzene	0.50	U
99-87-6-----4-Isopropyltoluene	0.50	U
104-51-8-----n-Butylbenzene	0.50	U
96-12-8-----1,2-Dibromo-3-chloropropane	0.50	U
120-82-1-----1,2,4-Trichlorobenzene	0.50	U
87-68-3-----Hexachlorobutadiene	0.50	U
91-20-3-----Naphthalene	0.50	U
87-61-6-----1,2,3-Trichlorobenzene	0.50	U
1634-04-4-----tert-Butyl methyl ether	0.50	U
67-64-1-----Acetone	1.2	
78-93-3-----2-Butanone	1.0	U
108-10-1-----4-Methyl-2-pentanone	1.0	U
591-78-6-----2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2199

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C524

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
75-15-0	Carbon disulfide	1.0	U
108-05-4	Vinyl acetate	1.0	U
74-88-4	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0038

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C525

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.47	J
75-35-4	1,1-Dichloroethylene	0.42	J
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	77.5	
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0038

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77111

Matrix: (soil/water) WATER      Lab Sample ID: 77111005

Sample wt/vol: 10.00 (g/ml) ML      Lab File ID: 8P2C525

Level: (low/med) LOW      Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/28/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

106-46-7-----	1,4-Dichlorobenzene	0.50	U
95-50-1-----	1,2-Dichlorobenzene	0.50	U
95-47-6-----	o-Xylene	0.50	U
-----	m,p-Xylenes	0.50	U
1330-20-1-----	Xylenes (total)	0.50	U
594-20-7-----	2,2-Dichloropropane	0.50	U
563-58-6-----	1,1-Dichloropropene	0.50	U
74-95-3-----	Dibromomethane	0.50	U
106-93-4-----	1,2-Dibromoethane	0.50	U
142-28-9-----	1,3-Dichloropropane	0.50	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8-----	Isopropylbenzene	0.50	U
108-86-1-----	Bromobenzene	0.50	U
96-18-4-----	1,2,3-Trichloropropane	0.50	U
103-65-1-----	n-Propylbenzene	0.50	U
95-49-8-----	2-Chlorotoluene	0.50	U
108-67-8-----	1,3,5-Trimethylbenzene	0.50	U
106-43-4-----	4-Chlorotoluene	0.50	U
98-06-6-----	tert-Butylbenzene	0.50	U
95-63-6-----	1,2,4-Trimethylbenzene	0.50	U
135-98-8-----	sec-Butylbenzene	0.50	U
99-87-6-----	4-Isopropyltoluene	0.50	U
104-51-8-----	n-Butylbenzene	0.50	U
96-12-8-----	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1-----	1,2,4-Trichlorobenzene	0.50	U
87-68-3-----	Hexachlorobutadiene	0.50	U
91-20-3-----	Naphthalene	0.50	U
87-61-6-----	1,2,3-Trichlorobenzene	0.50	U
1634-04-4-----	tert-Butyl methyl ether	0.50	U
67-64-1-----	Acetone	24.6	
78-93-3-----	2-Butanone	1.2	
108-10-1-----	4-Methyl-2-pentanone	1.0	U
591-78-6-----	2-Hexanone	1.0	U

FORM I VOA

OIM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0038
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Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77111

Matrix: (soil/water) WATER      Lab Sample ID: 77111005

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2C525

Level: (low/med) LOW      Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/28/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide_____	1.0	U
108-05-4-----	Vinyl acetate_____	1.0	U
74-88-4-----	Iodomethane_____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0039

Lab Name: GENERAL ENGINEERING LABS Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111  
 Matrix: (soil/water) WATER Lab Sample ID: 77111006  
 Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C526  
 Level: (low/med) LOW Date Received: 03/27/03  
 % Moisture: not dec. Date Analyzed: 03/28/03  
 GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0039

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77111

Matrix: (soil/water) WATER      Lab Sample ID: 77111006

Sample wt/vol: 10.00 (g/ml) ML      Lab File ID: 8P2C526

Level: (low/med) LOW      Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/28/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/L	Q
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	0.99	J
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0039

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C526

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2103

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111001

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2D108

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/L	Q
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.42	JB
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.69	
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	43.2	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	43.2	
79-01-6	Trichloroethylene	1.7	
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2103

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77111

Matrix: (soil/water) WATER      Lab Sample ID: 77111001

Sample wt/vol: 10.00 (g/ml) ML      Lab File ID: 8P2D108

Level: (low/med) LOW      Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/31/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/L	Q
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	0.79	J
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2103

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77111

Matrix: (soil/water) WATER      Lab Sample ID: 77111001

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2D108

Level:      (low/med)      LOW      Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 03/31/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2105

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C522

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.50	U
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	3.6	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	3.6	
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2105

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C522

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	2.0	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2105

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C522

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide	1.0	U	
108-05-4-----	Vinyl acetate	1.0	U	
74-88-4-----	Iodomethane	1.0	U	



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2111

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C523

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.27	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	3.9	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	3.9	
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2111

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C523

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.6	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2111

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2C523

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/28/03

GC Column: DB-624 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

75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

# QUALITY CONTROL SUMMARY

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 #	OTHER	TOT OUT
	=====	=====	=====	=====	=====	=====
01	VBLK01LCS	98	93	100		0
02	VBLK01	86	85	92		0
03	TR2105	93	97	99		0
04	TR2111	92	95	104		0
05	ARD2199	93	95	105		0
06	TR0038	95	96	98		0
07	TR0039	90	95	100		0
08	VBLK02LCS	105	99	104		0
09	VBLK02	94	90	97		0
10	TR2103	93	90	99		0
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QC LIMITS

SMC1 (TOL) = Toluene-d8 (73-112)  
 SMC2 (BFB) = Bromofluorobenzene (73-123)  
 SMC3 = Dibromofluoromethane (81-126)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	4.7	94	70-130
Chloromethane	5.0	0.0	4.9	98	70-130
Bromomethane	5.0	0.0	4.5	90	70-130
Vinyl chloride	5.0	0.0	4.7	94	70-130
Chloroethane	5.0	0.0	4.8	96	70-130
Methylene chloride	5.0	0.0	4.5	90	70-130
1,1-Dichloroethylene	5.0	0.0	4.8	96	70-130
1,1-Dichloroethane	5.0	0.0	4.9	98	70-130
Chloroform	5.0	0.0	4.9	98	70-130
1,2-Dichloroethane	5.0	0.0	5.0	100	70-130
trans-1,2-Dichloroethyl	5.0	0.0	4.9	98	70-130
1,1,1-Trichloroethane	5.0	0.0	4.8	96	70-130
Carbon tetrachloride	5.0	0.0	4.7	94	70-130
Bromodichloromethane	5.0	0.0	4.8	96	70-130
1,2-Dichloropropane	5.0	0.0	4.8	96	70-130
cis-1,2-Dichloroethylen	5.0	0.0	4.8	96	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.8	96	70-130
1,2-Dichloroethylene (t	10.0	0.0	9.7	97	70-130
Trichloroethylene	5.0	0.0	4.8	96	70-130
Dibromochloromethane	5.0	0.0	4.5	90	70-130
1,1,2-Trichloroethane	5.0	0.0	4.6	92	70-130
Benzene	5.0	0.0	5.0	100	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.7	94	70-130
Bromoform	5.0	0.0	4.2	84	70-130
Tetrachloroethylene	5.0	0.0	4.8	96	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	4.6	92	70-130
Toluene	5.0	0.0	4.9	98	70-130
Chlorobenzene	5.0	0.0	5.0	100	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.1	102	70-130
Styrene	5.0	0.0	5.1	102	70-130
Dichlorodifluoromethane	5.0	0.0	5.3	106	70-130
Trichlorofluoromethane	5.0	0.0	5.0	100	70-130
1,3-Dichlorobenzene	5.0	0.0	4.8	96	70-130
1,4-Dichlorobenzene	5.0	0.0	4.9	98	70-130
1,2-Dichlorobenzene	5.0	0.0	4.9	98	70-130
o-Xylene	5.0	0.0	5.0	100	70-130
m,p-Xylenes	10.0	0.0	10.2	102	70-130
Xylenes (total)	15.0	0.0	15.2	101	70-130
2,2-Dichloropropane	5.0	0.0	4.9	98	70-130
1,1-Dichloropropene	5.0	0.0	4.9	98	70-130
Dibromomethane	5.0	0.0	4.7	94	70-130
1,2-Dibromoethane	5.0	0.0	4.6	92	70-130
1,3-Dichloropropane	5.0	0.0	4.8	96	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Isopropylbenzene	5.0	0.0	5.2	104	70-130
Bromobenzene	5.0	0.0	4.8	96	70-130
1,2,3-Trichloropropane	5.0	0.0	4.6	92	70-130
n-Propylbenzene	5.0	0.0	5.0	100	70-130
2-Chlorotoluene	5.0	0.0	4.8	96	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.1	102	70-130
4-Chlorotoluene	5.0	0.0	5.0	100	70-130
tert-Butylbenzene	5.0	0.0	4.9	98	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.1	102	70-130
sec-Butylbenzene	5.0	0.0	5.1	102	70-130
4-Isopropyltoluene	5.0	0.0	5.1	102	70-130
n-Butylbenzene	5.0	0.0	5.1	102	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	3.9	78	70-130
1,2,4-Trichlorobenzene	5.0	0.0	4.9	98	70-130
Hexachlorobutadiene	5.0	0.0	4.6	92	70-130
Naphthalene	5.0	0.0	4.4	88	70-130
1,2,3-Trichlorobenzene	5.0	0.0	4.8	96	70-130
tert-Butyl methyl ether	5.0	0.0	4.8	96	70-130
Acetone	25.0	0.0	20.0	80	70-130
2-Butanone	25.0	0.0	20.6	82	70-130
4-Methyl-2-pentanone	25.0	0.0	22.6	90	70-130
2-Hexanone	25.0	0.0	21.6	86	70-130
Carbon disulfide	25.0	0.0	24.9	100	70-130
Vinyl acetate	25.0	0.0	27.8	111	70-130
Iodomethane	25.0	0.0	24.6	98	70-130

# 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 69 outside limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	5.0	100	70-130
Chloromethane	5.0	0.0	5.0	100	70-130
Bromomethane	5.0	0.0	4.4	88	70-130
Vinyl chloride	5.0	0.0	5.2	104	70-130
Chloroethane	5.0	0.0	5.3	106	70-130
Methylene chloride	5.0	0.42	4.8	88	70-130
1,1-Dichloroethylene	5.0	0.0	5.1	102	70-130
1,1-Dichloroethane	5.0	0.0	5.2	104	70-130
Chloroform	5.0	0.0	5.2	104	70-130
1,2-Dichloroethane	5.0	0.0	5.4	108	70-130
trans-1,2-Dichloroethyl	5.0	0.0	5.2	104	70-130
1,1,1-Trichloroethane	5.0	0.0	5.2	104	70-130
Carbon tetrachloride	5.0	0.0	5.2	104	70-130
Bromodichloromethane	5.0	0.0	5.1	102	70-130
1,2-Dichloropropane	5.0	0.0	5.1	102	70-130
cis-1,2-Dichloroethylen	5.0	0.0	5.2	104	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.9	98	70-130
1,2-Dichloroethylene (t	10.0	0.0	10.5	105	70-130
Trichloroethylene	5.0	0.0	5.1	102	70-130
Dibromochloromethane	5.0	0.0	4.7	94	70-130
1,1,2-Trichloroethane	5.0	0.0	4.9	98	70-130
Benzene	5.0	0.0	5.3	106	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.8	96	70-130
Bromoform	5.0	0.0	4.5	90	70-130
Tetrachloroethylene	5.0	0.0	5.1	102	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	4.8	96	70-130
Toluene	5.0	0.0	5.2	104	70-130
Chlorobenzene	5.0	0.0	5.2	104	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.5	110	70-130
Styrene	5.0	0.0	5.3	106	70-130
Dichlorodifluoromethane	5.0	0.0	5.4	108	70-130
Trichlorofluoromethane	5.0	0.0	4.7	94	70-130
1,3-Dichlorobenzene	5.0	0.0	5.1	102	70-130
1,4-Dichlorobenzene	5.0	0.0	5.1	102	70-130
1,2-Dichlorobenzene	5.0	0.0	5.0	100	70-130
o-Xylene	5.0	0.0	5.2	104	70-130
m,p-Xylenes	10.0	0.0	11.0	110	70-130
Xylenes (total)	15.0	0.0	16.1	107	70-130
2,2-Dichloropropane	5.0	0.0	5.2	104	70-130
1,1-Dichloropropene	5.0	0.0	5.2	104	70-130
Dibromomethane	5.0	0.0	5.0	100	70-130
1,2-Dibromoethane	5.0	0.0	4.8	96	70-130
1,3-Dichloropropane	5.0	0.0	5.0	100	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Isopropylbenzene	5.0	0.0	5.4	108	70-130
Bromobenzene	5.0	0.0	5.2	104	70-130
1,2,3-Trichloropropane	5.0	0.0	5.0	100	70-130
n-Propylbenzene	5.0	0.0	5.4	108	70-130
2-Chlorotoluene	5.0	0.0	5.3	106	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.4	108	70-130
4-Chlorotoluene	5.0	0.0	5.2	104	70-130
tert-Butylbenzene	5.0	0.0	5.3	106	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.4	108	70-130
sec-Butylbenzene	5.0	0.0	5.5	110	70-130
4-Isopropyltoluene	5.0	0.0	5.4	108	70-130
n-Butylbenzene	5.0	0.0	5.4	108	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - EPA Sample No.: VBLK02

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	4.4	88	70-130
1,2,4-Trichlorobenzene	5.0	0.0	4.9	98	70-130
Hexachlorobutadiene	5.0	0.0	4.9	98	70-130
Naphthalene	5.0	0.0	4.6	92	70-130
1,2,3-Trichlorobenzene	5.0	0.0	4.8	96	70-130
tert-Butyl methyl ether	5.0	0.0	4.9	98	70-130
Acetone	25.0	0.0	23.2	93	70-130
2-Butanone	25.0	0.0	22.4	90	70-130
4-Methyl-2-pentanone	25.0	0.0	24.8	99	70-130
2-Hexanone	25.0	0.0	23.7	95	70-130
Carbon disulfide	25.0	0.0	26.7	107	70-130
Vinyl acetate	25.0	0.0	29.5	118	70-130
Iodomethane	25.0	0.0	26.3	105	70-130

# 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 69 outside limits

COMMENTS:

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## WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77035

Matrix Spike - EPA Sample No.: TR2106

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethylene	5.0	0.0	4.4	88	64-123
Trichloroethylene	5.0	268	273	100	78-122
Benzene	5.0	0.0	5.4	108	80-124
Toluene	5.0	0.0	5.3	106	79-126
Chlorobenzene	5.0	0.0	5.2	104	82-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethylene	5.0	4.4	88	0	13	64-123
Trichloroethylene	5.0	271	60*	50*	15	78-122
Benzene	5.0	5.3	106	2	11	80-124
Toluene	5.0	5.3	106	0	13	79-126
Chlorobenzene	5.0	5.2	104	0	13	82-120

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 1 out of 5 outside limits

Spike Recovery: 1 out of 10 outside limits

COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Lab File ID: 8P2C503C Lab Sample ID: 1200400499

Date Analyzed: 03/28/03 Time Analyzed: 0738

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200400500	8P2C502LCSC	0712
02	TR2105	77111002	8P2C522	1609
03	TR2111	77111003	8P2C523	1634
04	ARD2199	77111004	8P2C524	1700
05	TR0038	77111005	8P2C525	1726
06	TR0039	77111006	8P2C526	1752
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4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK02
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Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Lab File ID: 8P2D103B Lab Sample ID: 1200401228

Date Analyzed: 03/31/03 Time Analyzed: 1200

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK02LCS	1200401229	8P2D102LCSB	1134
02	TR2103	77111001	8P2D108	1418
03				
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Lab File ID: 8C301 BFB Injection Date: 03/26/03

Instrument ID: VOA8 BFB Injection Time: 0654

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.3
75	30.0 - 60.0% of mass 95	46.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.2 ( 0.2)1
174	50.0 - 100.0% of mass 95	77.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.7)1
176	95.0 - 101.0% of mass 174	75.1 ( 97.4)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0002	W8V030326-01	8P2C304A	03/26/03	0810
02	VSTD0005	W8V030326-02	8P2C305A	03/26/03	0836
03	VSTD001	W8V030326-03	8P2C306A	03/26/03	0902
04	VSTD002	W8V030326-04	8P2C307A	03/26/03	0928
05	VSTD005	W8V030326-05	8P2C308A	03/26/03	0954
06	VSTD010	W8V030326-06	8P2C309A	03/26/03	1020
07	VSTD020	W8V030326-07	8P2C310A	03/26/03	1046
08	VSTD050	W8V030326-08	8P2C311A	03/26/03	1112
09	VSTD100	W8V030326-09	8P2C312A	03/26/03	1138
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Lab File ID: 8C501 BFB Injection Date: 03/28/03

Instrument ID: VOA8 BFB Injection Time: 0701

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.1
75	30.0 - 60.0% of mass 95	46.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 ( 0.0)1
174	50.0 - 100.0% of mass 95	80.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.5)1
176	95.0 - 101.0% of mass 174	78.3 ( 97.7)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.6)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030328-01	8P2C502	03/28/03	0712
02	VBLK01LCS	1200400500	8P2C502LCSC	03/28/03	0712
03	VBLK01	1200400499	8P2C503C	03/28/03	0738
04	TR2105	77111002	8P2C522	03/28/03	1609
05	TR2111	77111003	8P2C523	03/28/03	1634
06	ARD2199	77111004	8P2C524	03/28/03	1700
07	TR0038	77111005	8P2C525	03/28/03	1726
08	TR0039	77111006	8P2C526	03/28/03	1752
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Lab File ID: 8D101 BFB Injection Date: 03/31/03

Instrument ID: VOA8 BFB Injection Time: 1120

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.6
75	30.0 - 60.0% of mass 95	44.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.0 ( 0.0)1
174	50.0 - 100.0% of mass 95	73.7
175	5.0 - 9.0% of mass 174	5.4 ( 7.3)1
176	95.0 - 101.0% of mass 174	72.2 ( 97.9)1
177	5.0 - 9.0% of mass 176	5.0 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030331-01	8P2D102	03/31/03	1134
02	VBLK02LCS	1200401229	8P2D102LCSB	03/31/03	1134
03	VBLK02	1200401228	8P2D103B	03/31/03	1200
04	TR2103	77111001	8P2D108	03/31/03	1418
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8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111  
 Lab File ID (Standard): 8P2C502 Date Analyzed: 03/28/03  
 Instrument ID: VOA8 Time Analyzed: 0712  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
12 HOUR STD	607631	4.49	441411	6.76	234517	8.88
UPPER LIMIT	1215262	4.99	882822	7.26	469034	9.38
LOWER LIMIT	303816	3.99	220706	6.26	117258	8.38
=====						
EPA SAMPLE NO.						
=====						
01 VBLK01LCS	607631	4.49	441411	6.76	234517	8.88
02 VBLK01	594462	4.50	437139	6.77	230340	8.88
03 TR2105	527415	4.50	381283	6.77	194470	8.88
04 TR2111	508951	4.50	380210	6.77	188355	8.88
05 ARD2199	522409	4.49	384065	6.77	194388	8.88
06 TR0038	505006	4.50	367243	6.77	183148	8.87
07 TR0039	516279	4.50	382474	6.77	181653	8.88
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IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111  
 Lab File ID (Standard): 8P2D102 Date Analyzed: 03/31/03  
 Instrument ID: VOA8 Time Analyzed: 1134  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
12 HOUR STD	531595	4.50	380407	6.77	198075	8.88
UPPER LIMIT	1063190	5.00	760814	7.27	396150	9.38
LOWER LIMIT	265798	4.00	190204	6.27	99038	8.38
EPA SAMPLE NO.						
01 VBLK02LCS	531595	4.50	380407	6.77	198075	8.88
02 VBLK02	547412	4.49	399857	6.77	206765	8.88
03 TR2103	528776	4.49	389575	6.76	208985	8.88
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IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**GC  
SEMIVOLATILE  
FID  
ANALYSIS**

**FID Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77111**

**Method/Analysis Information**

**Procedure:** Dissolved Gases by Flame Ionization Detector  
**Analytical Method:** SW846 8015A/B SVOC  
**Prep Method:** SW846 8015A/B SVOC  
**Analytical Batch Number:** 242473  
**Prep Batch Number:** 242472

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 8015A/B SVOC:

<b>Sample ID</b>	<b>Client ID</b>
77111001	TR2103
77111002	TR2105
77111003	TR2111
77111004	ARD2199
1200402040	Method Blank (MB)
1200402042	Laboratory Control Sample (LCS)

**Preparation/Analytical Method Verification**

Procedures for preparation, analysis, and reporting of analytical data are documented by General Engineering Laboratories, Inc. (GEL) as Standard Operating Procedures (SOP).

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**CCV Requirements**

All calibration verification standard(s) (CVS, ICV or CCV) requirements have been met for this SDG.

**Quality Control (QC) Information**

**Blank Acceptance**

The blank(s) analyzed with this SDG met the established acceptance criteria.

**Surrogate Recoveries**

No surrogate was added to any of the samples in this batch.

**LCS Recovery Statement**

The LCS spike recoveries for this SDG were within the established acceptance limits.

**QC Sample Designation**

An MS/MSD pair was not performed on any samples contained in this batch. A duplicate of a sample from another SDG was performed to measure precision and accuracy of the batch.

**Duplicate RPD Statement**

The relative percent differences (RPD) between the sample and its duplicate were within the acceptable limits.

**Technical Information****Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

Samples 77111002 (TR2105), 77111003 (TR2111) and 77111004 (ARD2199) were diluted for methane analysis.

**Sample Re-prep/Re-analysis**

Samples 77111002 (TR2105), 77111003 (TR2111) and 77111004 (ARD2199) were re-analyzed at 1:10 dilution for methane.

**Miscellaneous Information****Electronic Package Comment**

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

**Nonconformance (NCR) Documentation**

No nonconformance reports (NCRs) have been generated for this SDG.

**Manual Integrations**

Certain standards and QC samples may have required manual integrations to correctly position the baseline as set in the calibration standard injections. If manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

**Additional Comments**

No additional comments are needed for this sample group.

**System Configuration**

**Chromatographic Columns**

Column ID	Column Description
J&W1	DB-WAX(0.53mm x 0.5u x 30m)
J&W2	DB-624(0.53mm x 3.0u x 30m)
J&W3	DB-1(0.53mm x 1.5u x 30m)
J&W4	DB-608(0.53mm x 0.83u x 30m)
J&W5	GS-Q(0.53mm x 30m)
Phenomenex	ZB-5(0.25mm x 0.25u x 30m)

**Instrument Configuration**

Instrument ID	System Configuration	Chromatographic Column
FIDa	HP 5890 Series II GC/FID	J&W1/J&W3/J&W4
FID2a	HP 5890 Series II GC/FID	J&W2/J&W5
FID3a	HP 5890 Series II GC/FID	Phenomenex
FID4a	HP 5890 Series II GC/FID	Phenomenex

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer: Jimmy Cao Date: 4/15/03

**SAMPLE  
DATA  
SUMMARY**



FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2103

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 014B1401

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8	Methane	25.0	U
74-84-0	Ethane	25.0	U
74-85-1	Ethene	25.0	U

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2105

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111  
 Matrix: (soil/water) WATER Lab Sample ID: 77111002  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 015B1501  
 Level: (low/med) LOW Date Received: 03/27/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8	Methane	1940	E	
74-84-0	Ethane	25.0	U	
74-85-1	Ethene	25.0	U	

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2105\_RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 019B1901

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	2340	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2111

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 016B1601

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-82-8	Methane	1900	E
74-84-0	Ethane	25.0	U
74-85-1	Ethene	25.0	U

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TR2111\_RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 020B2001

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-82-8-----	Methane	2330	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

FORM I FID

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2199

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111  
 Matrix: (soil/water) WATER Lab Sample ID: 77111004  
 Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 017B1701  
 Level: (low/med) LOW Date Received: 03/27/03  
 % Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03  
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03  
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0  
 GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8	Methane	1210	E	
74-84-0	Ethane	25.0	U	
74-85-1	Ethene	25.0	U	

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2199\_RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix: (soil/water) WATER Lab Sample ID: 77111004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 021B2101

Level: (low/med) LOW Date Received: 03/27/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/02/03

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	1720	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

FORM I FID

**QUALITY  
CONTROL  
SUMMARY**



FORM 3  
WATER FID LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Matrix Spike - Sample No.: MBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Methane	100	0.00	92.3	92	70-130
Ethane	100	0.00	97.3	97	56-140
Ethene	100	0.00	86.6	87	56-125

# 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 3 outside limits

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

FORM 4  
FID METHOD BLANK SUMMARY

CLIENT SAMPLE NO

MBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77111

Lab File ID: 012B1201 Lab Sample ID: 1200402040

Instrument ID: FID2A Date Extracted: 04/01/03

Matrix: (soil/water) WATER Date Analyzed: 04/02/03

Level: (low/med) LOW Time Analyzed: 1332

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MBLK01LCS	1200402042	013B1301LCS	04/02/03
02	TR2103	77111001	014B1401	04/02/03
03	TR2105	77111002	015B1501	04/02/03
04	TR2111	77111003	016B1601	04/02/03
05	ARD2199	77111004	017B1701	04/02/03
06	TR2105_RR	77111002	019B1901	04/02/03
07	TR2111_RR	77111003	020B2001	04/02/03
08	ARD2199_RR	77111004	021B2101	04/02/03
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# INORGANIC ANALYSIS

**Metals Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77111**

**Method/Analysis Information**

**Analytical Batch:** 2241750  
**Prep Batch :** 2241748  
**Standard Operating Procedures:** GL-MA-E-013 REV.8, GL-MA-E-006 REV.8  
**Analytical Method:** SSW846 6010B  
**Prep Method :** SSW846 3005A

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
77111001	TR2103
77111002	TR2105
77111003	TR2111
77111004	ARD2199
1200400299	Method Blank (MB) ICP
1200400300	Laboratory Control Sample (LCS)
1200400303	77035005(TR2106L) Serial Dilution (SD)
1200400301	77035005(TR2106D) Sample Duplicate (DUP)
1200400302	77035005(TR2106S) Matrix Spike (MS)

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The ICP analysis was performed on a Perkin Elmer 4300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

**Calibration Information**

**Instrument Calibration**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications.

All initial calibration requirements have been met for this SDG.

**CRDL Requirements**

All CRDL standard(s) met the referenced advisory control limits.

**ICSA/ICSAB statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

**Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

**Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria, with the exception of sodium in CCB6. Samples bracketed By CCB6 either did not contain sodium above the RLD, or sodium was present at concentrations more than ten times the amount present in CCB6.

**Quality Control (QC) Information**

**Method Blank (MB) Acceptance**

The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

**LCS Recovery Statement**

The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

**Quality Control (QC) Sample Statement**

The following sample was selected as the quality control (QC) sample for this batch: 77035005 (TR2106) from PARS SDG 77111.

**Matrix Spike Recovery Statement**

The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

**Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit(RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

**Serial Dilution % Difference Statement**

The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

**Technical Information**

**Holding Time Specifications**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines. All samples in this SDG were prepared in accordance with the referenced SW-846 procedures.

**Sample Dilutions**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

**Preparation Information**

The samples in this SDG were prepared exactly according to the sited SOP.

**Miscellaneous Information**

**Nonconformance Documentation**

Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

**Additional Comments**

No additional comments are needed for this sample group.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Abhishek E Date: 4/9/03

**SAMPLE  
DATA  
SUMMARY**

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77111

Method Type: SW846

Sample ID: 77111001

Client ID: TR2103

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/27/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	132000	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	15800	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	4.090	µg/L	B		P	0.354	Optimal	040103
7440-09-7	Potassium	969	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	18100	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:



TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77111

Method Type: SW846

Sample ID: 77111002

Client ID: TR2105

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/27/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	47600	µg/L			P	11.0	Optima1	040103
7439-95-4	Magnesium	12800	µg/L			P	33.2	Optima1	040103
7439-96-5	Manganese	42.7	µg/L			P	0.354	Optima1	040103
7440-09-7	Potassium	1480	µg/L			P	27.5	Optima1	040103
7440-23-5	Sodium	19400	µg/L			P	6.690	Optima1	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77111

Method Type: SW846

Sample ID: 77111003

Client ID: TR2111

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/27/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	47500	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	12700	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	41.7	µg/L			P	0.354	Optimal	040103
7440-09-7	Potassium	1460	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	19400	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77111

Method Type: SW846

Sample ID: 77111004

Client ID: ARD2199

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/27/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	75200	µg/L			P	11.0	Optimal	040103
7439-95-4	Magnesium	9550	µg/L			P	33.2	Optimal	040103
7439-96-5	Manganese	15.3	µg/L			P	0.354	Optimal	040103
7440-09-7	Potassium	876	µg/L			P	27.5	Optimal	040103
7440-23-5	Sodium	14000	µg/L			P	6.690	Optimal	040103

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**GENERAL  
CHEMISTRY  
ANALYSIS**

**General Chemistry Narrative  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77111**

**Method/Analysis Information**

**Procedure:** Ion Chromatography (IC)  
**Analytical Method:** EPA 300.0  
**Analytical Batch Number:** 241820

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 300.0:

<b>Sample ID</b>	<b>Client ID</b>
77111001	TR2103
77111002	TR2105
77111003	TR2111
77111004	ARD2199
77111007	TR2110
1200400469	Method Blank (MB)
1200400472	Laboratory Control Sample (LCS)
1200400470	77111001(TR2103) Sample Duplicate (DUP)
1200400471	77111001(TR2103) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV.8.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The instrument used in this analysis was the following: Dionex DX300 Ion Chromatograph equipped with a Dionex AS9-HC general purpose anion column

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

#### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

#### **Laboratory Control Sample (LCS) Recovery**

The recoveries for the laboratory control sample were within the required acceptance limits.

#### **Quality Control**

The following sample was designated for Quality Control:  
77111001 (TR2103)

#### **Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

#### **Sample Duplicate Acceptance**

The Relative Percent Differences between the sample and duplicate for this batch were within the required acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples in this sample group were diluted 1:5 due to high concentration for chloride and/or sulfate. See the Certificates of Analysis for the individual dilution factors.

1200400470 (TR2103)

1200400471 (TR2103)

77111001 (TR2103)

77111002 (TR2105)

77111003 (TR2111)

77111004 (ARD2199)

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

### Method/Analysis Information

**Procedure:** Total Organic Carbon (TOC)  
**Analytical Method:** SW846 9060  
**Analytical Batch Number:** 243425

### Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060:

Sample ID	Client ID
77111001	TR2103
77111002	TR2105
77111003	TR2111
77111004	ARD2199
1200404509	Method Blank (MB)
1200404514	Laboratory Control Sample (LCS)
1200404511	77111001(TR2103) Sample Duplicate (DUP)
1200404513	77111001(TR2103) Post Spike (PS)

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV.3.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### Calibration Information

The instrument used in this analysis was the following: O-I Analytical Model 1010 Total Organic Carbon Analyzer

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.



**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Quality Control (QC) Information****Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

**Quality Control**

The following sample was designated for Quality Control:

77111001 (TR2103)

**Sample Spike Recovery**

The spike recovery for this sample set was within the required acceptance limits.

**Sample Duplicate Acceptance**

The Relative Percent Difference between the sample and duplicate for this batch was within the required acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

No samples in this sample group required dilutions.

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Additional Comments**

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.

**Certification Statement**

\* Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer:         *D. King*         Date:         4/11/03

**SAMPLE  
DATA  
SUMMARY**

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Dan Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 1 of 2

Client Sample ID:	TR2103	Project:	PARS00103
Sample ID:	77111001	Client ID:	PARS001
Matrix:	Water		
Collect Date:	26-MAR-03 09:10		
Receive Date:	27-MAR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.898	0.025	0.200	mg/L	1	TSM	04/08/03	1941	243425	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Nitrate		0.246	0.0341	0.100	mg/L	1	MAR103	03/27/03	2134	241820	2
Chloride		18.5	0.161	1.00	mg/L	5	MAR104	04/01/03	0229	241820	3
Sulfate		123	0.965	2.00	mg/L	5					

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Dan Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 2 of 2

Client Sample ID: TR2103  
Sample ID: 77111001

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Dan Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 1 of 2

Client Sample ID: TR2105      Project: PARS00103  
 Sample ID: 77111002      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 26-MAR-03 10:10  
 Receive Date: 27-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.623	0.025	0.200	mg/L	1	TSM	04/08/03	2051	243425	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		15.1	0.0322	0.200	mg/L	1	MAR103	03/27/03	2229	241820	2
Nitrate		0.606	0.0341	0.100	mg/L	1					
Sulfate		80.3	0.965	2.00	mg/L	5	MAR104	01/03	0324	241820	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
          Suite 800  
          Boston, Massachusetts 02110  
Contact : Dan Heino  
Project : Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 2 of 2

Client Sample ID: TR2105  
Sample ID: 77111002

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Dan Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 1 of 2

Client Sample ID: TR2111  
 Sample ID: 77111003  
 Matrix: Water  
 Collect Date: 26-MAR-03 10:10  
 Receive Date: 27-MAR-03  
 Collector: Client

Project: PARS00103  
 Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.612	0.025	0.200	mg/L	1	TSM	04/08/03	2121	243425	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		15.3	0.0322	0.200	mg/L	1	MAR103	03/27/03	2248	241820	2
Nitrate		0.554	0.0341	0.100	mg/L	1					
Sulfate		79.8	0.965	2.00	mg/L	5	MAR104	04/01/03	0342	241820	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.



## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Dan Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 2 of 2

Client Sample ID: TR2111  
Sample ID: 77111003

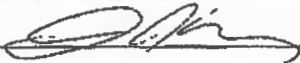
Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Dan Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 1 of 2

Client Sample ID: ARD2199                      Project: PARS00103  
 Sample ID: 77111004                              Client ID: PARS001  
 Matrix: Water  
 Collect Date: 26-MAR-03 11:40  
 Receive Date: 27-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.600	0.025	0.200	mg/L	1	TSM	04/08/03	2150	243425	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Nitrate	U	0.00	0.0341	0.100	mg/L	1	MAR103/27/03	2306	241820		2
Chloride		18.7	0.161	1.00	mg/L	5	MAR104/01/03	0401	241820		3
Sulfate		116	0.965	2.00	mg/L	5					

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	03/28/03	1000	241748
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0820	242472

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Dan Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 2 of 2

Client Sample ID: ARD2199  
Sample ID: 77111004

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	-------------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Dan Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 10, 2003

Page 1 of 1

Client Sample ID: TR2110      Project: PARS00103  
 Sample ID: 77111007      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 26-MAR-03 13:05  
 Receive Date: 27-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Ion Chromatography Federal</b>										
EPA 300.0 Nitrate in Liquid										
Nitrate		0.496	0.0341	0.100	mg/L	1	MAR103/27/03	2325	241820	1

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_

**QUALITY  
CONTROL  
SUMMARY**

## QC Summary

Report Date: April 10, 2003

Page 1 of 2

Client : Parsons  
 100 Summer Street  
 Suite 800  
 Boston, Massachusetts

Contact: Dan Heino

Workorder: 77111

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis Federal</b>											
Batch	243425										
QC1200404511	77111001 DUP										
Total Organic Carbon		0.898		0.802	mg/L	11 ^		(+/-0.200)	TSM	04/08/03	20:10
QC1200404514	LCS										
Total Organic Carbon	10.0			10.2	mg/L		102	(85%-115%)		04/08/03	18:20
QC1200404509	MB										
Total Organic Carbon			U	-0.107	mg/L					04/08/03	18:12
QC1200404513	77111001 PS										
Total Organic Carbon	10.0	0.898		11.0	mg/L		101	(80%-120%)		04/08/03	20:28
<b>Ion Chromatography</b>											
Batch	241820										
QC1200400472	LCS										
Sulfate	20.0			19.6	mg/L		98	(90%-110%)	MAR1	03/27/03	21:16
Chloride	10.0			9.72	mg/L		97	(90%-110%)			
Nitrate-N	5.00			4.89	mg/L		98	(90%-110%)			
QC1200400469	MB										
Sulfate			U	0.00	mg/L					03/27/03	20:57
Chloride			U	0.00	mg/L						
Nitrate-N			U	0.00	mg/L						
<b>Ion Chromatography Federal</b>											
Batch	241820										
QC1200400470	77111001 DUP										
Sulfate		123		122	mg/L	0		(0%-20%)	MAR1	04/01/03	02:47
Chloride		18.5		18.6	mg/L	1		(0%-20%)			
Nitrate-N		0.246		0.257	mg/L	4 ^		(+/-0.100)		03/27/03	21:53
QC1200400471	77111001 PS										
Sulfate	20.0	24.5		46.3	mg/L		109	(75%-130%)		04/01/03	03:05
Chloride	10.0	3.70		13.5	mg/L		98	(80%-125%)			
Nitrate-N	5.00	0.246		4.94	mg/L		94	(71%-130%)		03/27/03	22:11

**Notes:**

The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit

## QC Summary

Workorder: 77111

Page 2 of 2

Paramname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
UI	Uncertain identification for gamma spectroscopy.									
X	Lab-specific qualifier - must be fully described in case narrative and data summary package									
Y	QC Samples were not spiked with this compound.									

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Debit

1917

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1917

1917







**CASE NARRATIVE**  
**for**  
**Parsons Engineering Science, Inc.**  
**Seneca Army Depot**  
**SDG# 77341**

**April 15, 2003**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29414

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC (GEL) Charleston, South Carolina on March 29, 2003, for Environmental Analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
77341001	ARD2193
77341002	ARD0031
77341003	ARD0033
77341004	ARD2190
77341005	ARD2189
77341006	ARD2200

77230001  
77230002  
77230003

TR2100  
ARD2197  
ARD2198

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

**Internal Chain of Custody:**

Custody was maintained for all samples.

**Data Package:**

The enclosed data package contains the following sections: Case Narrative, Qualifier Flag Definitions, Chain of Custody, Cooler Receipt Checklist, GC/MS Volatile Analysis, FID Analysis, Inorganic Analysis, and General Chemistry Analysis.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis  
Project Manager

**DATA REVIEW  
QUALIFIER FLAG  
DEFINITIONS**

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT WGS	DATE	TIME	LOCATION DESCRIPTION	FIELD SAMPLE ID	ANALYSES REQUIRED								
						Grab	Comp	Matrix	Number of Bottles	VOC TCL	N: nitrate/sulfate/chloride	MEF	TOC	Metals
743155.01200	Todd Heino Parsons Boston	3/28/03	0915	MW-12A	2193	X	X	6W9	X	X	X	X	X	X
			0915	MW-12A	2193MS	X		6W3	X					
			0915	MW-12A	2193MSD	X		6W3	X					
			1030	Rinse Blank	00031	X		W3	X					
			1145	MW-48	2190	X	X	6W9	X	X	X	X	X	
			1305	MW-45	2189	X	X	6W9	X	X	X	X	X	
			0915	Trip Blank	00033	X		W2	X					

DATE	TIME	INITIALS	REMARKS
3/28/03	1600	[Signature]	

PROJECT NO.	PROJECT WGS	DATE	TIME	LOCATION DESCRIPTION	FIELD SAMPLE ID	GRAB	COMP	MATRIX	Number of Bottles	VOC TCL	N: nitrate/sulfate/chloride	MEF	TOC	Metals
743155.01200	Todd Heino Parsons Boston	3/28/03	0915	MW-12A	2193	X	X	6W9	9	X	X	X	X	X
			0915	MW-12A	2193MS	X		6W3	3	X				
			0915	MW-12A	2193MSD	X		6W3	3	X				
			1030	Rinse Blank	00031	X		W3	3	X				
			1145	MW-48	2190	X	X	6W9	9	X	X	X	X	X
			1305	MW-45	2189	X	X	6W9	9	X	X	X	X	X
			0915	Trip Blank	00033	X		W2	2	X				

DATE	TIME	INITIALS	REMARKS
3/28/03	1600	[Signature]	

Send results to:  
 PARSONS Boston  
 300 Elmwood Drive, Roseton Station ST2  
 Lusterwood, NY 14886-6174  
 Telephone: (444) 451-9900  
 Fax: (315) 451-9570  
 Lab Submitted to:  
 GEL  
 Charleston  
 REMARKS:  
 Matrix Spike  
 Matrix Spike  
 Rinse Blank

Revised: 7/31/2002

**GC/MS  
VOLATILE  
ANALYSIS**

**GC/MS Volatile Organics**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77341**

**Method/Analysis Information**

**Procedure:** Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer  
**Analytical Method:** SW846 8260B  
**Prep Method:** SW846 5030B  
**Analytical Batch Number:** 242254

**Sample Analysis**

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

<b>Sample ID</b>	<b>Client ID</b>
77341001	ARD2193
77341002	ARD0031
77341003	ARD0033
77341004	ARD2190
77341005	ARD2189
77341006	ARD2200
1200401500	Method Blank (MB)
1200401503	Laboratory Control Sample (LCS)
1200403129	Laboratory Control Sample (LCS)
1200401501	77341001(ARD2193) Matrix Spike (MS)
1200401502	77341001(ARD2193) Matrix Spike Duplicate (MSD)

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### Preparation/Analytical Method Verification

#### SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV.7.

#### Calibration Information

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

#### Initial Calibration

All the initial calibration requirements were met.

#### Continuing Calibration Verification Requirements

The instrument was calibrated to meet the 8260B initial calibration criteria. Although sample analyses are quantitated using the average response factor generated from the initial calibration, a daily continuing calibration verification (CCV) standard was analyzed to verify the accuracy and acceptability of the multi-point initial calibration. The criteria adopted by the laboratory to determine the acceptability and accuracy of the initial calibration is a  $\pm 40\%$  response factor difference for all non-CCC analytes of interest. In the following CCV(s), the following target analyte(s) did not meet the criteria:

<u>Date of CCV</u>	<u>Target Analyte(s)</u>
03/31/03	Acetone Cyclohexanone

The response factor for these target analytes in the CCV was less than the average response factor in the initial calibration. Detection and quantitation of these analytes in samples would be considered biased low. However, the response for each target analyte was sufficient for detection above the required reporting limit.

#### Quality Control (QC) Information

##### Method Blank Acceptance

Target analytes were not detected above the reporting limit in the blank.

##### Surrogate Recoveries

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

##### Laboratory Control Sample Recovery Statement (LCS)

All the required analyte recoveries in the laboratory control sample were within the acceptance limits, except for the low recoveries for dichlorodifluoromethane, 2-chloroethylvinyl ether, and cyclohexanone. The LCS requirements were still met, since the 5% failure rate permitted by the client was not exceeded.

##### QC Sample Designation

The following sample was designated for spike analysis: 77341001 (ARD2193).

##### Spike Recovery Statement

All the required spike recoveries were within the acceptance limits.

##### Spike Duplicate Recovery Statement

All the required spike recoveries were within the acceptance limits.

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**Relative Percent Difference Statement (RPD)**

The RPD between spike recoveries were within the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

**Technical Information**

**Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples were diluted because target analyte concentrations exceeded the calibration range:

1200401501 (ARD2193) Matrix Spike	1:10
1200401502 (ARD2193) Matrix Spike Duplicate	1:10
77341001 (ARD2193)	1:10
77341006 (ARD2200)	1:10

**Sample Re-prep/Re-analysis**

Re-analyses were not required for samples in this sample group/work order for any reason other than dilutions.

**Miscellaneous Information**

**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

77341 -VOA

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**Additional Comments**

There were no additional comments.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

Instrument ID	System Configuration	Chromatographic Column	P & T Trap
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:                     *Jean Ande*                    

Date:                     04-19-03

## Roadmap for PARS 77341 VOA

This roadmap was analyzed by Anson Walsh on 04-02-2003, 15:30.

This roadmap was reviewed by Crystal Stacey on 04-04-2003, 12:10.

This roadmap was packaged by LySandra Gathers on 04-10-2003, 17:09.

Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d132.d	77341001	ARD2193	31-MAR-2003	22:40	77341.sub	10.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d133.d	77341002	ARD0031	31-MAR-2003	23:06	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d134.d	77341003	ARD0033	31-MAR-2003	23:31	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d135.d	77341004	ARD2190	31-MAR-2003	23:57	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d136.d	77341005	ARD2189	01-APR-2003	00:22	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d137.d	77341006	ARD2200	01-APR-2003	00:48	77341.sub	10.00000	<input type="checkbox"/>

QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d115Lc.d	1200401503	VBLK01LCS	lcs	31-MAR-2003	14:51	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d117SLCSc.d	1200403129	VBLK01SLCS	lcs	31-MAR-2003	15:59	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d122c.d	1200401500	VBLK01	mb	31-MAR-2003	18:26	77341.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d138.d	1200401501	ARD2193MS	ms	01-APR-2003	01:13	77341.sub	10.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d139.d	1200401502	ARD2193MSD	msd	01-APR-2003	01:38	77341.sub	10.00000	<input type="checkbox"/>

# SAMPLE DATA SUMMARY

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0031

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D133

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	23.9	
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	464	
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	2.2	
540-59-0	1,2-Dichloroethylene (total)	2.2	
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0031

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D133

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
107-06-2	1,2-Dichloroethane	1.0	U
71-43-2	Benzene	1.0	U
79-01-6	Trichloroethylene	7.7	
78-87-5	1,2-Dichloropropane	1.0	U
80-62-6	Methyl methacrylate	2.4	J
74-95-3	Dibromomethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
79-46-9	2-Nitropropane	5.0	U
110-75-8	2-Chloroethylvinyl ether	5.0	U
10061-01-5	cis-1,3-Dichloropropylene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	78.9	
10061-02-6	trans-1,3-Dichloropropylene	1.0	U
97-63-2	Ethyl methacrylate	5.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
591-78-6	2-Hexanone	5.0	U
127-18-4	Tetrachloroethylene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene	1.0	U
95-47-6	o-Xylene	1.0	U
	m,p-Xylenes	2.0	U
1330-20-7	Xylenes (total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
1476-11-5	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1	Cyclohexanone	50.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0031

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D133

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

96-18-4-----	1,2,3-Trichloropropane	1.0	U
108-86-1-----	Bromobenzene	1.0	U
103-65-1-----	n-Propylbenzene	1.0	U
95-49-8-----	2-Chlorotoluene	1.0	U
108-67-8-----	1,3,5-Trimethylbenzene	1.0	U
95-63-6-----	1,2,4-Trimethylbenzene	1.0	U
106-43-4-----	4-Chlorotoluene	1.0	U
98-06-6-----	tert-Butylbenzene	1.0	U
135-98-8-----	sec-Butylbenzene	1.0	U
76-01-7-----	Pentachloroethane	5.0	U
99-87-6-----	4-Isopropyltoluene	1.0	U
541-73-1-----	1,3-Dichlorobenzene	1.0	U
106-46-7-----	1,4-Dichlorobenzene	1.0	U
100-44-7-----	Benzyl chloride	5.0	U
104-51-8-----	n-Butylbenzene	1.0	U
95-50-1-----	1,2-Dichlorobenzene	1.0	U
108-60-1-----	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8-----	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1-----	1,2,4-Trichlorobenzene	1.0	U
87-68-3-----	Hexachlorobutadiene	1.0	U
91-20-3-----	Naphthalene	1.0	U
87-61-6-----	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0033

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D134

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	1.0	U
540-59-0	1,2-Dichloroethylene (total)	1.0	U
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0033

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D134

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	1.0	U
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
1330-20-7-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD0033

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D134

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2189

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D136

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/01/03

GC Column: DB-624 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

75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	1.0	U
540-59-0	1,2-Dichloroethylene (total)	1.0	U
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2189

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D136

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/01/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	1.0	U
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
1330-20-7-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2189

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D136

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/01/03

GC Column: DB-624 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

96-18-4-----	1,2,3-Trichloropropane	1.0	U
108-86-1-----	Bromobenzene	1.0	U
103-65-1-----	n-Propylbenzene	1.0	U
95-49-8-----	2-Chlorotoluene	1.0	U
108-67-8-----	1,3,5-Trimethylbenzene	1.0	U
95-63-6-----	1,2,4-Trimethylbenzene	1.0	U
106-43-4-----	4-Chlorotoluene	1.0	U
98-06-6-----	tert-Butylbenzene	1.0	U
135-98-8-----	sec-Butylbenzene	1.0	U
76-01-7-----	Pentachloroethane	5.0	U
99-87-6-----	4-Isopropyltoluene	1.0	U
541-73-1-----	1,3-Dichlorobenzene	1.0	U
106-46-7-----	1,4-Dichlorobenzene	1.0	U
100-44-7-----	Benzyl chloride	5.0	U
104-51-8-----	n-Butylbenzene	1.0	U
95-50-1-----	1,2-Dichlorobenzene	1.0	U
108-60-1-----	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8-----	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1-----	1,2,4-Trichlorobenzene	1.0	U
87-68-3-----	Hexachlorobutadiene	1.0	U
91-20-3-----	Naphthalene	1.0	U
87-61-6-----	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2190

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D135

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	1.0	U
540-59-0	1,2-Dichloroethylene (total)	1.0	U
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2190

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D135

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	1.0	U
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
1330-20-7-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2190

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D135

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2193

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D132

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	10.0	U
74-87-3	Chloromethane	10.0	U
75-01-4	Vinyl chloride	10.0	U
74-83-9	Bromomethane	10.0	U
75-00-3	Chloroethane	10.0	U
75-69-4	Trichlorofluoromethane	10.0	U
107-02-8	Acrolein	50.0	U
75-35-4	1,1-Dichloroethylene	10.0	U
67-64-1	Acetone	50.0	U
76-13-1	Trichlorotrifluoroethane	50.0	U
74-88-4	Iodomethane	50.0	U
75-15-0	Carbon disulfide	50.0	U
75-05-8	Acetonitrile	250	U
78-83-1	Isobutyl alcohol	500	U
107-05-1	Allyl chloride	50.0	U
75-09-2	Methylene chloride	50.0	U
107-13-1	Acrylonitrile	50.0	U
1634-04-4	tert-Butyl methyl ether	50.0	U
156-60-5	trans-1,2-Dichloroethylene	6.0	J
75-34-3	1,1-Dichloroethane	10.0	U
108-05-4	Vinyl acetate	50.0	U
126-99-8	2-Chloro-1,3-butadiene	10.0	U
78-93-3	2-Butanone	50.0	U
156-59-2	cis-1,2-Dichloroethylene	667	
540-59-0	1,2-Dichloroethylene (total)	673	
594-20-7	2,2-Dichloropropane	10.0	U
126-98-7	Methacrylonitrile	50.0	U
107-12-0	Propionitrile	50.0	U
74-97-5	Bromochloromethane	10.0	U
67-66-3	Chloroform	10.0	U
71-55-6	1,1,1-Trichloroethane	10.0	U
563-58-6	1,1-Dichloropropene	10.0	U
56-23-5	Carbon tetrachloride	10.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2193

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D132

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

107-06-2-----	1,2-Dichloroethane	10.0	U
71-43-2-----	Benzene	10.0	U
79-01-6-----	Trichloroethylene	599	
78-87-5-----	1,2-Dichloropropane	10.0	U
80-62-6-----	Methyl methacrylate	50.0	U
74-95-3-----	Dibromomethane	10.0	U
75-27-4-----	Bromodichloromethane	10.0	U
79-46-9-----	2-Nitropropane	50.0	U
110-75-8-----	2-Chloroethylvinyl ether	50.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	10.0	U
108-10-1-----	4-Methyl-2-pentanone	50.0	U
108-88-3-----	Toluene	10.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	10.0	U
97-63-2-----	Ethyl methacrylate	50.0	U
79-00-5-----	1,1,2-Trichloroethane	10.0	U
142-28-9-----	1,3-Dichloropropane	10.0	U
591-78-6-----	2-Hexanone	50.0	U
127-18-4-----	Tetrachloroethylene	10.0	U
124-48-1-----	Dibromochloromethane	10.0	U
106-93-4-----	1,2-Dibromoethane	10.0	U
108-90-7-----	Chlorobenzene	10.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	10.0	U
100-41-4-----	Ethylbenzene	10.0	U
95-47-6-----	o-Xylene	10.0	U
-----	m,p-Xylenes	20.0	U
1330-20-7-----	Xylenes (total)	10.0	U
100-42-5-----	Styrene	10.0	U
75-25-2-----	Bromoform	10.0	U
98-82-8-----	Isopropylbenzene	10.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	50.0	U
108-94-1-----	Cyclohexanone	500	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	50.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2193

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D132

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

96-18-4-----	1,2,3-Trichloropropane	10.0	U
108-86-1-----	Bromobenzene	10.0	U
103-65-1-----	n-Propylbenzene	10.0	U
95-49-8-----	2-Chlorotoluene	10.0	U
108-67-8-----	1,3,5-Trimethylbenzene	10.0	U
95-63-6-----	1,2,4-Trimethylbenzene	10.0	U
106-43-4-----	4-Chlorotoluene	10.0	U
98-06-6-----	tert-Butylbenzene	10.0	U
135-98-8-----	sec-Butylbenzene	10.0	U
76-01-7-----	Pentachloroethane	50.0	U
99-87-6-----	4-Isopropyltoluene	10.0	U
541-73-1-----	1,3-Dichlorobenzene	10.0	U
106-46-7-----	1,4-Dichlorobenzene	10.0	U
100-44-7-----	Benzyl chloride	50.0	U
104-51-8-----	n-Butylbenzene	10.0	U
95-50-1-----	1,2-Dichlorobenzene	10.0	U
108-60-1-----	bis(2-Chloroisopropyl) ether	50.0	U
96-12-8-----	1,2-Dibromo-3-chloropropane	10.0	U
120-82-1-----	1,2,4-Trichlorobenzene	10.0	U
87-68-3-----	Hexachlorobutadiene	10.0	U
91-20-3-----	Naphthalene	10.0	U
87-61-6-----	1,2,3-Trichlorobenzene	10.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2200

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D137

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/01/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	10.0	U
74-87-3	Chloromethane	10.0	U
75-01-4	Vinyl chloride	10.0	U
74-83-9	Bromomethane	10.0	U
75-00-3	Chloroethane	10.0	U
75-69-4	Trichlorofluoromethane	10.0	U
107-02-8	Acrolein	50.0	U
75-35-4	1,1-Dichloroethylene	10.0	U
67-64-1	Acetone	50.0	U
76-13-1	Trichlorotrifluoroethane	50.0	U
74-88-4	Iodomethane	50.0	U
75-15-0	Carbon disulfide	50.0	U
75-05-8	Acetonitrile	250	U
78-83-1	Isobutyl alcohol	500	U
107-05-1	Allyl chloride	50.0	U
75-09-2	Methylene chloride	50.0	U
107-13-1	Acrylonitrile	50.0	U
1634-04-4	tert-Butyl methyl ether	50.0	U
156-60-5	trans-1,2-Dichloroethylene	10.0	U
75-34-3	1,1-Dichloroethane	10.0	U
108-05-4	Vinyl acetate	50.0	U
126-99-8	2-Chloro-1,3-butadiene	10.0	U
78-93-3	2-Butanone	50.0	U
156-59-2	cis-1,2-Dichloroethylene	510	
540-59-0	1,2-Dichloroethylene (total)	510	
594-20-7	2,2-Dichloropropane	10.0	U
126-98-7	Methacrylonitrile	50.0	U
107-12-0	Propionitrile	50.0	U
74-97-5	Bromochloromethane	10.0	U
67-66-3	Chloroform	10.0	U
71-55-6	1,1,1-Trichloroethane	10.0	U
563-58-6	1,1-Dichloropropene	10.0	U
56-23-5	Carbon tetrachloride	10.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2200

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D137

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/01/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-06-2	1,2-Dichloroethane	10.0	U
71-43-2	Benzene	10.0	U
79-01-6	Trichloroethylene	550	
78-87-5	1,2-Dichloropropane	10.0	U
80-62-6	Methyl methacrylate	50.0	U
74-95-3	Dibromomethane	10.0	U
75-27-4	Bromodichloromethane	10.0	U
79-46-9	2-Nitropropane	50.0	U
110-75-8	2-Chloroethylvinyl ether	50.0	U
10061-01-5	cis-1,3-Dichloropropylene	10.0	U
108-10-1	4-Methyl-2-pentanone	50.0	U
108-88-3	Toluene	10.0	U
10061-02-6	trans-1,3-Dichloropropylene	10.0	U
97-63-2	Ethyl methacrylate	50.0	U
79-00-5	1,1,2-Trichloroethane	10.0	U
142-28-9	1,3-Dichloropropane	10.0	U
591-78-6	2-Hexanone	50.0	U
127-18-4	Tetrachloroethylene	10.0	U
124-48-1	Dibromochloromethane	10.0	U
106-93-4	1,2-Dibromoethane	10.0	U
108-90-7	Chlorobenzene	10.0	U
630-20-6	1,1,1,2-Tetrachloroethane	10.0	U
100-41-4	Ethylbenzene	10.0	U
95-47-6	o-Xylene	10.0	U
	m,p-Xylenes	20.0	U
1330-20-7	Xylenes (total)	10.0	U
100-42-5	Styrene	10.0	U
75-25-2	Bromoform	10.0	U
98-82-8	Isopropylbenzene	10.0	U
1476-11-5	cis-1,4-Dichloro-2-butene	50.0	U
108-94-1	Cyclohexanone	500	U
79-34-5	1,1,2,2-Tetrachloroethane	10.0	U
110-57-6	trans-1,4-Dichloro-2-butene	50.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2200

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) WATER Lab Sample ID: 77341006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D137

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/01/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

96-18-4-----	1,2,3-Trichloropropane	10.0	U
108-86-1-----	Bromobenzene	10.0	U
103-65-1-----	n-Propylbenzene	10.0	U
95-49-8-----	2-Chlorotoluene	10.0	U
108-67-8-----	1,3,5-Trimethylbenzene	10.0	U
95-63-6-----	1,2,4-Trimethylbenzene	10.0	U
106-43-4-----	4-Chlorotoluene	10.0	U
98-06-6-----	tert-Butylbenzene	10.0	U
135-98-8-----	sec-Butylbenzene	10.0	U
76-01-7-----	Pentachloroethane	50.0	U
99-87-6-----	4-Isopropyltoluene	10.0	U
541-73-1-----	1,3-Dichlorobenzene	10.0	U
106-46-7-----	1,4-Dichlorobenzene	10.0	U
100-44-7-----	Benzyl chloride	50.0	U
104-51-8-----	n-Butylbenzene	10.0	U
95-50-1-----	1,2-Dichlorobenzene	10.0	U
108-60-1-----	bis(2-Chloroisopropyl) ether	50.0	U
96-12-8-----	1,2-Dibromo-3-chloropropane	10.0	U
120-82-1-----	1,2,4-Trichlorobenzene	10.0	U
87-68-3-----	Hexachlorobutadiene	10.0	U
91-20-3-----	Naphthalene	10.0	U
87-61-6-----	1,2,3-Trichlorobenzene	10.0	U

FORM I VOA

OLM03.0



**QUALITY  
CONTROL  
SUMMARY**

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

	EPA SAMPLE NO.	SMC1 #	SMC2 (TOL)#	SMC3 (BFB)#	OTHER	TOT OUT
01	VBLK01LCS	87	89	94		0
02	VBLK01SLCS	87	89	96		0
03	VBLK01	88	90	100		0
04	ARD2193	89	92	97		0
05	ARD0031	87	90	96		0
06	ARD0033	89	90	100		0
07	ARD2190	89	91	95		0
08	ARD2189	88	90	96		0
09	ARD2200	91	91	95		0
10	ARD2193MS	90	91	89		0
11	ARD2193MSD	91	87	91		0
12						
13						
14						
15						
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23						
24						
25						
26						
27						
28						
29						
30						

QC LIMITS

SMC1 = Dibromofluoromethane (74-144)  
 SMC2 (TOL) = Toluene-d8 (76-129)  
 SMC3 (BFB) = Bromofluorobenzene (69-137)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.0	0.0	32.6	65*	68-136
Chloromethane	50.0	0.0	42.3	85	68-129
Vinyl chloride	50.0	0.0	53.6	107	69-136
Bromomethane	50.0	0.0	36.8	74	62-136
Chloroethane	50.0	0.0	47.4	95	62-132
Trichlorofluoromethane	50.0	0.0	33.4	67	62-149
1,1-Dichloroethylene	50.0	0.0	48.2	96	78-140
Acetone	250	0.0	224	90	72-127
Iodomethane	250	0.0	221	88	78-130
Carbon disulfide	250	0.0	227	91	68-136
Acetonitrile	1250	0.0	1180	94	70-130
Methylene chloride	50.0	0.0	46.2	92	61-138
tert-Butyl methyl ether	50.0	0.0	48.3	97	70-130
trans-1,2-Dichloroethyl	50.0	0.0	50.7	101	78-126
1,1-Dichloroethane	50.0	0.0	50.6	101	78-121
Vinyl acetate	250	0.0	241	96	69-130
2-Butanone	250	0.0	240	96	71-127
cis-1,2-Dichloroethylen	50.0	0.0	52.1	104	82-120
1,2-Dichloroethylene (t	100	0.0	103	103	70-130
2,2-Dichloropropane	50.0	0.0	55.4	111	71-138
Bromochloromethane	50.0	0.0	46.6	93	82-126
Chloroform	50.0	0.0	50.2	100	82-119
1,1,1-Trichloroethane	50.0	0.0	51.0	102	80-131
1,1-Dichloropropene	50.0	0.0	48.2	96	79-124
Carbon tetrachloride	50.0	0.0	53.9	108	78-133
1,2-Dichloroethane	50.0	0.0	49.4	99	71-125
Benzene	50.0	0.0	49.0	98	78-119
Trichloroethylene	50.0	0.0	49.4	99	80-123

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,2-Dichloropropane	50.0	0.0	46.8	94	77-114
Dibromomethane	50.0	0.0	49.2	98	83-121
Bromodichloromethane	50.0	0.0	49.4	99	67-135
2-Chloroethylvinyl ethe	250	0.0	113	45*	70-130
cis-1,3-Dichloropropyle	50.0	0.0	48.2	96	85-128
4-Methyl-2-pentanone	250	0.0	243	97	76-132
Toluene	50.0	0.0	49.6	99	68-133
trans-1,3-Dichloropropy	50.0	0.0	49.8	100	65-130
1,1,2-Trichloroethane	50.0	0.0	45.6	91	68-127
1,3-Dichloropropane	50.0	0.0	45.4	91	83-110
2-Hexanone	250	0.0	243	97	74-132
Tetrachloroethylene	50.0	0.0	46.2	92	78-128
Dibromochloromethane	50.0	0.0	50.3	101	83-125
1,2-Dibromoethane	50.0	0.0	46.0	92	86-119
Chlorobenzene	50.0	0.0	48.4	97	82-120
1,1,1,2-Tetrachloroetha	50.0	0.0	47.1	94	83-127
Ethylbenzene	50.0	0.0	52.2	104	79-117
o-Xylene	50.0	0.0	50.0	100	78-122
m,p-Xylenes	100	0.0	100	100	79-120
Xylenes (total)	150	0.0	150	100	78-122
Styrene	50.0	0.0	49.1	98	79-128
Bromoform	50.0	0.0	42.8	86	71-138
Isopropylbenzene	50.0	0.0	47.7	95	77-132
1,1,2,2-Tetrachloroetha	50.0	0.0	45.3	91	72-124
1,2,3-Trichloropropane	50.0	0.0	44.5	89	81-116
Bromobenzene	50.0	0.0	46.9	94	82-125
n-Propylbenzene	50.0	0.0	54.0	108	81-124
2-Chlorotoluene	50.0	0.0	53.9	108	77-129

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	50.0	0.0	51.5	103	82-129
1,2,4-Trimethylbenzene	50.0	0.0	49.4	99	85-133
4-Chlorotoluene	50.0	0.0	52.3	105	78-127
tert-Butylbenzene	50.0	0.0	50.8	102	82-126
sec-Butylbenzene	50.0	0.0	52.4	105	82-127
4-Isopropyltoluene	50.0	0.0	52.9	106	82-131
1,3-Dichlorobenzene	50.0	0.0	50.4	101	77-126
1,4-Dichlorobenzene	50.0	0.0	48.5	97	70-130
n-Butylbenzene	50.0	0.0	54.6	109	79-140
1,2-Dichlorobenzene	50.0	0.0	47.0	94	78-122
1,2-Dibromo-3-chloropro	50.0	0.0	33.6	67	65-137
1,2,4-Trichlorobenzene	50.0	0.0	48.9	98	73-141
Hexachlorobutadiene	50.0	0.0	47.2	94	71-142
Naphthalene	50.0	0.34	43.4	86	69-132
1,2,3-Trichlorobenzene	50.0	0.0	47.3	95	64-151

# 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: 2 out of 71 outside limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341  
 Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
Acrolein	250	0.0	275	110	70-130
Trichlorotrifluoroethan	250	0.0	258	103	70-130
Isobutyl alcohol	2500	0.0	2140	86	70-130
Allyl chloride	250	0.0	247	99	70-130
Acrylonitrile	250	0.0	244	98	70-130
2-Chloro-1,3-butadiene	50.0	0.0	56.7	113	70-130
Methacrylonitrile	250	0.0	247	99	70-130
Propionitrile	250	0.0	235	94	70-130
Methyl methacrylate	250	0.0	221	88	70-130
2-Nitropropane	250	0.0	186	74	70-130
Ethyl methacrylate	250	0.0	235	94	70-130
cis-1,4-Dichloro-2-bute	250	0.0	248	99	70-130
Cyclohexanone	2500	0.0	983	39*	70-130
trans-1,4-Dichloro-2-bu	250	0.0	308	123	70-130
Pentachloroethane	250	0.0	296	118	70-130
Benzyl chloride	250	0.0	249	100	70-130
bis(2-Chloroisopropyl)e	250	0.0	203	81	70-130

# 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 17 outside limits

COMMENTS: \_\_\_\_\_

## WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix Spike - EPA Sample No.: ARD2193

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	MS CONCENTRATION (ug/l)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethylene	500	0.0	405	81	67-129
Benzene	500	0.0	428	86	74-112
Trichloroethylene	500	599	960	72	71-118
Toluene	500	0.0	421	84	74-109
Chlorobenzene	500	0.0	429	86	77-113

COMPOUND	SPIKE ADDED (ug/l)	MSD CONCENTRATION (ug/l)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethylene	500	406	81	0	11	67-129
Benzene	500	444	89	3	8	74-112
Trichloroethylene	500	994	79	9	9	71-118
Toluene	500	436	87	4	12	74-109
Chlorobenzene	500	437	87	1	11	77-113

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Lab File ID: 1D122C Lab Sample ID: 1200401500

Date Analyzed: 03/31/03 Time Analyzed: 1826

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200401503	1D115LC	1451
02	VBLK01SLCS	1200403129	1D117SLCSC	1559
03	ARD2193	77341001	1D132	2240
04	ARD0031	77341002	1D133	2306
05	ARD0033	77341003	1D134	2331
06	ARD2190	77341004	1D135	2357
07	ARD2189	77341005	1D136	0022
08	ARD2200	77341006	1D137	0048
09	ARD2193MS	1200401501	1D138	0113
10	ARD2193MSD	1200401502	1D139	0138
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Lab File ID: 1Y201 BFB Injection Date: 02/25/03

Instrument ID: VOA1 BFB Injection Time: 0728

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.5
75	30.0 - 60.0% of mass 95	43.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.5 ( 0.6)1
174	50.0 - 100.0% of mass 95	75.1
175	5.0 - 9.0% of mass 174	5.3 ( 7.1)1
176	95.0 - 101.0% of mass 174	74.5 ( 99.1)1
177	5.0 - 9.0% of mass 176	4.8 ( 6.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD001	W1V030225-01	1Y204	02/25/03	0833
02	VSTD002	W1V030225-02	1Y206	02/25/03	0925
03	VSTD005	W1V030225-03	1Y207	02/25/03	0951
04	VSTD010	W1V030225-04	1Y208	02/25/03	1017
05	VSTD020	W1V030225-05	1Y209	02/25/03	1043
06	VSTD050	W1V030225-06	1Y210	02/25/03	1109
07	VSTD100	W1V030225-07	1Y211	02/25/03	1135
08	VSTD005S	UVM021119-01D	1Y213	02/25/03	1228
09	VSTD010S	UVM021119-02D	1Y214	02/25/03	1254
10	VSTD025S	UVM021119-03D	1Y215	02/25/03	1320
11	VSTD050S	UVM021119-04D	1Y216	02/25/03	1346
12	VSTD100S	UVM021119-05D	1Y217	02/25/03	1412
13	VSTD250S	UVM021119-06D	1Y218	02/25/03	1438
14	VSTD500S	UVM021119-07D	1Y219	02/25/03	1505
15					
16					
17					
18					
19					
20					
21					
22					

5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Lab File ID: 1D115TUNE BFB Injection Date: 03/31/03

Instrument ID: VOA1 BFB Injection Time: 1451

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	47.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.4 ( 0.5)1
174	50.0 - 100.0% of mass 95	71.3
175	5.0 - 9.0% of mass 174	4.5 ( 6.3)1
176	95.0 - 101.0% of mass 174	69.1 ( 97.0)1
177	5.0 - 9.0% of mass 176	4.2 ( 6.1)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	UVM030307-01D	1D115	03/31/03	1451
02	VBLK01LCS	1200401503	1D115LC	03/31/03	1451
03	VSTD250S	UVM030212-01B	1D117	03/31/03	1559
04	VBLK01SLCS	1200403129	1D117SLCSC	03/31/03	1559
05	VBLK01	1200401500	1D122C	03/31/03	1826
06	ARD2193	77341001	1D132	03/31/03	2240
07	ARD0031	77341002	1D133	03/31/03	2306
08	ARD0033	77341003	1D134	03/31/03	2331
09	ARD2190	77341004	1D135	03/31/03	2357
10	ARD2189	77341005	1D136	04/01/03	0022
11	ARD2200	77341006	1D137	04/01/03	0048
12	ARD2193MS	1200401501	1D138	04/01/03	0113
13	ARD2193MSD	1200401502	1D139	04/01/03	0138
14					
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22					

8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341  
 Lab File ID (Standard): 1D115 Date Analyzed: 03/31/03  
 Instrument ID: VOA1 Time Analyzed: 1451  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
12 HOUR STD	1209699	5.35	783978	8.41	355024	11.08
UPPER LIMIT	2419398	5.85	1567956	8.91	710048	11.58
LOWER LIMIT	604850	4.85	391989	7.91	177512	10.58
=====						
EPA SAMPLE NO.						
=====						
01 VBLK01LCS	1209699	5.35	783978	8.41	355024	11.08
02 VBLK01SLCS	1160098	5.35	734893	8.41	319207	11.08
03 VBLK01	1045244	5.35	652571	8.41	250679	11.08
04 ARD2193	979506	5.35	617886	8.41	264016	11.07
05 ARD0031	970914	5.35	618723	8.40	266428	11.08
06 ARD0033	949913	5.35	614039	8.40	256769	11.08
07 ARD2190	955421	5.35	617726	8.41	267156	11.08
08 ARD2189	935839	5.35	603128	8.41	263673	11.08
09 ARD2200	927011	5.35	599665	8.41	269003	11.08
10 ARD2193MS	972764	5.35	631031	8.41	316446	11.08
11 ARD2193MSD	991808	5.35	660294	8.41	320255	11.08
12						
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22						

IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**GC  
SEMIVOLATILE  
FID  
ANALYSIS**

**FID Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77341**

**Method/Analysis Information**

**Procedure:** Dissolved Gases by Flame Ionization Detector  
**Analytical Method:** SW846 8015A/B SVOC  
**Prep Method:** SW846 8015A/B SVOC  
**Analytical Batch Number:** 242476  
**Prep Batch Number:** 242475

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 8015A/B SVOC:

<b>Sample ID</b>	<b>Client ID</b>
77341001	ARD2193
77341004	ARD2190
77341005	ARD2189
77341006	ARD2200
1200402047	Method Blank (MB)
1200402049	Laboratory Control Sample (LCS)
1200402048	77341001(ARD2193) Sample Duplicate (DUP)

**Preparation/Analytical Method Verification**

Procedures for preparation, analysis, and reporting of analytical data are documented by General Engineering Laboratories, Inc. (GEL) as Standard Operating Procedures (SOP).

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**CCV Requirements**

All calibration verification standard(s) (CVS, ICV or CCV) requirements have been met for this SDG.

**Quality Control (QC) Information**

**Surrogate Recoveries**

No surrogate was added to any samples in this batch.

**Blank Acceptance**

The blank(s) analyzed with this SDG met the established acceptance criteria.

**LCS Recovery Statement**

The Laboratory Control Sample (LCS) spike recoveries for this SDG were within the established acceptance limits.

**QC Sample Designation**

No matrix spike (MS) or matrix spike duplicate (MSD) were analyzed with this SDG. A sample duplicate was analyzed to measure the precision for this batch

**Duplicate RPD Statement**

The relative percent differences (RPD) between the sample and its duplicate were within the acceptable limits.

**Technical Information**

**Holding Time Specifications**

All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

None of the samples in this SDG required dilutions.

**Sample Re-prep/Re-analysis**

None of the samples in this sample group were reprepared or reanalyzed.

**Miscellaneous Information**

**Nonconformance (NCR) Documentation**

No nonconformance reports (NCRs) have been generated for this SDG.

**Manual Integrations**

Certain standards and QC samples may have required manual integrations to correctly position the baseline as set in the calibration standard injections. If manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Samples 1200402049 (LCS), 77341004 (ARD2190) and 77341006 (ARD2200) were manually integrated.

**Additional Comments**

No additional comments are needed for this sample group.

**System Configuration**

**Chromatographic Columns**

Column ID	Column Description
J&W1	DB-WAX(0.53mm x 0.5u x 30m)
J&W2	DB-624(0.53mm x 3.0u x 30m)
J&W3	DB-1(0.53mm x 1.5u x 30m)
J&W4	DB-608(0.53mm x 0.83u x 30m)
J&W5	GS-Q(0.53mm x 30m)
Phenomenex	ZB-5(0.25mm x 0.25u x 30m)

**Instrument Configuration**

<b>Instrument ID</b>	<b>System Configuration</b>	<b>Chromatographic Column</b>
FIDa	HP 5890 Series II GC/FID	J&W1/J&W3/J&W4
FID2a	HP 5890 Series II GC/FID	J&W2/J&W5
FID3a	HP 5890 Series II GC/FID	Phenomenex
FID4a	HP 5890 Series II GC/FID	Phenomenex

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Jinxi Cao Date: 4/18/03

**SAMPLE  
DATA  
SUMMARY**



FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2193

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) GROUND WAT Lab Sample ID: 77341001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 019B1901

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) MG/L Q

74-82-8-----	Methane	25.0	U
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

FORM 1  
 FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2190

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) GROUND WAT Lab Sample ID: 77341004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 016B1601

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8-----	Methane	126		
74-84-0-----	Ethane	25.0	U	
74-85-1-----	Ethene	25.0	U	

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2189

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) GROUND WAT Lab Sample ID: 77341005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 017B1701

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-82-8-----	Methane	25.0	U
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

FORM 1  
FID ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

ARD2200

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix: (soil/water) GROUND WAT Lab Sample ID: 77341006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 018B1801

Level: (low/med) LOW Date Received: 03/29/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8-----	Methane	48.8		
74-84-0-----	Ethane	25.0		U
74-85-1-----	Ethene	25.0		U

**QUALITY  
CONTROL  
SUMMARY**

FORM 3  
GROUND WATER FID LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Matrix Spike - Sample No.: MBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Methane	100	0.0	112	112	70-130
Ethane	100	0.0	88.6	89	56-140
Ethene	100	0.0	89.3	89	56-125

# 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 3 outside limits

COMMENTS: \_\_\_\_\_

FORM 4  
FID METHOD BLANK SUMMARY

CLIENT SAMPLE NO

MBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77341

Lab File ID: 003B0301MB Lab Sample ID: 1200402047

Instrument ID: FID2A Date Extracted: 04/01/03

Matrix: (soil/water) GROUND WATER Date Analyzed: 04/03/03

Level: (low/med) LOW Time Analyzed: 1050

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MBLK01LCS	1200402049	004B0401LCS	04/03/03
02	ARD2193DUP	1200402048	014B1401	04/03/03
03	ARD2190	77341004	016B1601	04/03/03
04	ARD2189	77341005	017B1701	04/03/03
05	ARD2200	77341006	018B1801	04/03/03
06	ARD2193	77341001	019B1901	04/03/03
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# INORGANIC ANALYSIS



**Metals Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77341**

**Method/Analysis Information**

**Analytical Batch:** 2242575  
**Prep Batch :** 2242572  
**Standard Operating Procedures:** GL-MA-E-013 REV.8, GL-MA-E-006 REV.8  
**Analytical Method:** SSW846 6010B  
**Prep Method :** SSW846 3005A

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
77341001	ARD2193
77341004	ARD2190
77341005	ARD2189
77341006	ARD2200
1200402400	Method Blank (MB) ICP
1200402401	Laboratory Control Sample (LCS)
1200402404	77341001(ARD2193L) Serial Dilution (SD)
1200402402	77341001(ARD2193D) Sample Duplicate (DUP)
1200402403	77341001(ARD2193S) Matrix Spike (MS)

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

**Calibration Information**

**Instrument Calibration**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

**CRDL Requirements**

All CRDL standard(s) met the referenced advisory control limits.

**ICSA/ICSAB statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

**Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

**Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

**Quality Control (QC) Information**

**Method Blank (MB) Acceptance**

The method blanks analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

**LCS Recovery Statement**

The laboratory control samples (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

**Quality Control (QC) Sample Statement**

The following sample was selected as the quality control (QC) sample for this batch: 77341001 (ARD2193).

**Matrix Spike Recovery Statement**

The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes except potassium, as indicated by the "N" qualifier.

**Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

**Serial Dilution % Difference Statement**

The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

**Technical Information**

**Holding Time Specifications**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines. All samples in this SDG were prepared in accordance with the referenced SW-846 procedures.

**Sample Dilutions**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

**Preparation Information**

The samples in this SDG were prepared exactly according to the sited SOP.

**Miscellaneous Information**

**Nonconformance Documentation**

Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

**Additional Comments**

No additional comments are needed for this sample group.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:     *Allysa M. C.*     Date:     *4/12/03*

**SAMPLE  
DATA  
SUMMARY**

**TOTAL METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77341

Method Type: SW846

**Sample ID:** 77341001

**Client ID:** ARD2193

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 3/29/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	241000	µg/L			P	7.760	TJA61 Trace ICP2	40303
7439-95-4	Magnesium	36000	µg/L			P	14.2	TJA61 Trace ICP2	40303
7439-96-5	Manganese	50.7	µg/L			P	0.421	TJA61 Trace ICP2	40303
7440-09-7	Potassium	2960	µg/L		N	P	48.7	TJA61 Trace ICP2	40703
7440-23-5	Sodium	54200	µg/L			P	33.9	TJA61 Trace ICP2	40703

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

**Comments:**

**TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77341

Method Type: SW846

**Sample ID:** 77341004

**Client ID:** ARD2190

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 3/29/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	78500	µg/L			P	7.760	TJA61 Trace ICP2	40303
7439-95-4	Magnesium	10500	µg/L			P	14.2	TJA61 Trace ICP2	40303
7439-96-5	Manganese	7.900	µg/L	B		P	0.421	TJA61 Trace ICP2	40303
7440-09-7	Potassium	1320	µg/L		N	P	48.7	TJA61 Trace ICP2	40703
7440-23-5	Sodium	6560	µg/L			P	33.9	TJA61 Trace ICP2	40703

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

**Comments:**

**TOTAL METALS**  
- 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77341

Method Type: SW846

**Sample ID:** 77341005

**Client ID:** ARD2189

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 3/29/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	82700	µg/L			P	7.760	TJA61 Trace ICP2	40303
7439-95-4	Magnesium	10400	µg/L			P	14.2	TJA61 Trace ICP2	40303
7439-96-5	Manganese	1.660	µg/L	B		P	0.421	TJA61 Trace ICP2	40303
7440-09-7	Potassium	635	µg/L		N	P	48.7	TJA61 Trace ICP2	40703
7440-23-5	Sodium	10200	µg/L			P	33.9	TJA61 Trace ICP2	40703

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

Comments:

**TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77341

Method Type: SW846

**Sample ID:** 77341006

**Client ID:** ARD2200

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 3/29/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	242000	µg/L			P	7.760	TJA61 Trace ICP2	40303
7439-95-4	Magnesium	36400	µg/L			P	14.2	TJA61 Trace ICP2	40303
7439-96-5	Manganese	45.0	µg/L			P	0.421	TJA61 Trace ICP2	40303
7440-09-7	Potassium	3130	µg/L		N	P	48.7	TJA61 Trace ICP2	40703
7440-23-5	Sodium	57000	µg/L			P	33.9	TJA61 Trace ICP2	40703

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

Comments:



**GENERAL  
CHEMISTRY  
ANALYSIS**

**General Chemistry Narrative  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77341**

**Method/Analysis Information**

**Procedure:** Ion Chromatography (IC)  
**Analytical Method:** EPA 300.0  
**Analytical Batch Number:** 242086

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 300.0:

<b>Sample ID</b>	<b>Client ID</b>
77341001	ARD2193
77341004	ARD2190
77341005	ARD2189
77341006	ARD2200
1200401085	Method Blank (MB)
1200401090	Laboratory Control Sample (LCS)
1200401086	77341001(ARD2193) Sample Duplicate (DUP)
1200401088	77341001(ARD2193) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV.8.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The instrument used in this analysis was the following: Dionex DX300 Ion Chromatograph equipped with a Dionex AS9-HC general purpose anion column

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

#### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

#### **Laboratory Control Sample (LCS) Recovery**

The recoveries for the laboratory control sample were within the required acceptance limits.

#### **Quality Control**

The following sample was designated for Quality Control:  
77341001 (ARD2193)

#### **Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

#### **Sample Duplicate Acceptance**

The Relative Percent Differences between the sample and duplicate for this batch were within the required acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples in this sample group were diluted due to high concentration for chloride and/or sulfate. See the Certificates of Analysis for the individual dilution factors.

1200401086 (ARD2193)

1200401088 (ARD2193)

77341001 (ARD2193)

77341004 (ARD2190)

77341005 (ARD2189)

77341006 (ARD2200)

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Method/Analysis Information**

**Procedure:** Total Organic Carbon (TOC)  
**Analytical Method:** SW846 9060  
**Analytical Batch Number:** 244246

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 9060:

<b>Sample ID</b>	<b>Client ID</b>
77341001	ARD2193
77341004	ARD2190
77341005	ARD2189
77341006	ARD2200
1200406420	Method Blank (MB)
1200406425	Laboratory Control Sample (LCS)
1200406421	77035005(TR2106) Sample Duplicate (DUP)
1200406422	77341001(ARD2193) Sample Duplicate (DUP)
1200406423	77035005(TR2106) Post Spike (PS)
1200406424	77341001(ARD2193) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV.3.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**Calibration Information**

The instrument used in this analysis was the following: O-I Analytical Model 1010 Total Organic Carbon Analyzer

**Initial Calibration**

The instrument was properly calibrated.

**Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Quality Control (QC) Information****Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

**Quality Control**

The following samples were designated for Quality Control:

77035005 (TR2106)

77341001 (ARD2193)

**Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

**Sample Duplicate Acceptance**

The Relative Percent Differences between the samples and duplicates for this batch were within the required acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

No samples in this sample group required dilutions.

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Additional Comments**

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.

**Certification Statement**

\* Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer:  Date: 4/15/03

**SAMPLE  
DATA  
SUMMARY**



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact : Todd Heino  
 Project : Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID:	ARD2193	Project:	PARS00103
Sample ID:	77341001	Client ID:	PARS001
Matrix:	Ground Water		
Collect Date:	28-MAR-03 09:15		
Receive Date:	29-MAR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		2.25	0.025	0.200	mg/L	1	TSM	04/10/03	2303	244246	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Nitrate		0.522	0.0341	0.100	mg/L	1	MAR103/29/03	1753	242086		2
Chloride		60.6	0.644	4.00	mg/L	20	MAR103/31/03	2021	242086		3
Sulfate		439	3.86	8.00	mg/L	20					

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/02/03	0815	242572
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475
SW846 8260B	8260B Volatiles In Liquid Federal	CDS1	03/31/03	2240	242254

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2

Client Sample ID: ARD2193  
Sample ID: 77341001


Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	--------

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

  
\_\_\_\_\_  
Reviewed by

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID: ARD2190  
 Sample ID: 77341004  
 Matrix: Ground Water  
 Collect Date: 28-MAR-03 11:45  
 Receive Date: 29-MAR-03  
 Collector: Client

Project: PARS00103  
 Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.41	0.025	0.200	mg/L	1	TSM	04/10/03	2358	244246	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		6.03	0.0322	0.200	mg/L	1	MAR103/29/03	1849	242086		2
Nitrate		0.127	0.0341	0.100	mg/L	1					
Sulfate		41.6	0.386	0.800	mg/L	2	MAR103/31/03	2116	242086		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/02/03	0815	242572
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475
SW846 8260B	8260B Volatiles In Liquid Federal	AW2	03/31/03	2357	242254

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

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- > Actual result is greater than amount reported
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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2

Client Sample ID: ARD2190  
Sample ID: 77341004

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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The above sample is reported on an "as received" basis.

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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID: ARD2189      Project: PARS00103  
 Sample ID: 77341005      Client ID: PARS001  
 Matrix: Ground Water  
 Collect Date: 28-MAR-03 13:05  
 Receive Date: 29-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.18	0.025	0.200	mg/L	1	TSM	04/11/03	0027	244246	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		6.97	0.0322	0.200	mg/L	1	MAR103/29/03	1944	242086		2
Nitrate	U	0.00	0.0341	0.100	mg/L	1					
Sulfate		41.2	0.386	0.800	mg/L	2	MAR103/31/03	2134	242086		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/02/03	0815	242572
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475
SW846 8260B	8260B Volatiles In Liquid Federal	AW2	04/01/03	0022	242254

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
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- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2

Client Sample ID: ARD2189  
Sample ID: 77341005

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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The above sample is reported on an "as received" basis.

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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 1 of 2

Client Sample ID: ARD2200      Project: PARS00103  
 Sample ID: 77341006      Client ID: PARS001  
 Matrix: Ground Water  
 Collect Date: 28-MAR-03 09:15  
 Receive Date: 29-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		2.13	0.025	0.200	mg/L	1	TSM 04/11/03	0057	244246	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Nitrate		0.487	0.0341	0.100	mg/L	1	MAR103/29/03	2002	242086	2
Chloride		58.3	0.644	4.00	mg/L	20	MAR103/31/03	2153	242086	3
Sulfate		433	3.86	8.00	mg/L	20				

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/02/03	0815	242572
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475
SW846 8260B	8260B Volatiles In Liquid Federal	AW2	04/01/03	0048	242254

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

Notes:

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 11, 2003

Page 2 of 2

Client Sample ID: ARD2200  
Sample ID: 77341006

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	-------------	------	-------	--------

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  




**QUALITY  
CONTROL  
SUMMARY**

## QC Summary

Report Date: April 14, 2003

Page 1 of 2

Client : Parsons  
 100 Summer Street  
 Suite 800  
 Boston, Massachusetts

Contact: Todd Heino

Workorder: 77341

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis Federal</b>											
Batch	244246										
QC1200406421	77035005	DUP									
Total Organic Carbon		1.54		1.51	mg/L	2		(0%-20%)	TSM	04/10/03	20:53
QC1200406422	77341001	DUP									
Total Organic Carbon		2.25		2.34	mg/L	4		(0%-20%)		04/10/03	23:33
QC1200406425	LCS										
Total Organic Carbon	10.0			9.72	mg/L		97	(85%-115%)		04/10/03	18:19
QC1200406420	MB										
Total Organic Carbon			J	0.146	mg/L					04/10/03	18:11
QC1200406423	77035005	PS									
Total Organic Carbon	10.0	1.54		10.8	mg/L		92	(80%-120%)		04/10/03	21:11
QC1200406424	77341001	PS									
Total Organic Carbon	10.0	2.25		11.2	mg/L		90	(80%-120%)		04/10/03	23:50
<b>Ion Chromatography Federal</b>											
Batch	242086										
QC1200401086	77341001	DUP									
Nitrate-N		0.522		0.554	mg/L	6		(0%-22%)	MAR1	03/29/03	18:12
Sulfate		439		434	mg/L	1		(0%-14%)		03/31/03	20:39
Chloride		60.6		59.2	mg/L	2		(0%-16%)			
QC1200401090	LCS										
Nitrate-N	5.00			4.81	mg/L		96	(90%-110%)		03/29/03	16:21
Sulfate	20.0			19.7	mg/L		99	(90%-110%)			
Chloride	10.0			9.54	mg/L		95	(90%-110%)			
QC1200401085	MB										
Nitrate-N			U	0.00	mg/L					03/29/03	16:03
Sulfate			U	0.00	mg/L						
Chloride			U	0.00	mg/L						
QC1200401088	77341001	PS									
Nitrate-N	5.00	0.522		5.16	mg/L		93	(71%-130%)		03/29/03	18:30
Sulfate	20.0	21.9		43.3	mg/L		107	(65%-130%)		03/31/03	20:58
Chloride	10.0	3.03		12.6	mg/L		96	(64%-129%)			

**Notes:**

The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D

## QC Summary

Workorder: 77341

Page 2 of 2

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
U	Indicates the compound was analyzed for but not detected above the detection limit										
UI	Uncertain identification for gamma spectroscopy.										
X	Lab-specific qualifier - must be fully described in case narrative and data summary package										
Y	QC Samples were not spiked with this compound.										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Q. 10

1. The following are the details of the transactions of a firm during the year 2018-19:

Date	Particulars	Amount (₹)
1.1.18	Bank Balance b/d	1000
1.1.18	Capital b/d	2000
1.1.18	Debtors b/d	500
1.1.18	Creditors b/d	300
1.1.18	Stock b/d	200
1.1.18	Profit b/d	100
1.1.18	Reserve b/d	500
1.1.18	Bank Balance c/d	1000
1.1.18	Capital c/d	2000
1.1.18	Debtors c/d	500
1.1.18	Creditors c/d	300
1.1.18	Stock c/d	200
1.1.18	Profit c/d	100
1.1.18	Reserve c/d	500





**CASE NARRATIVE**  
for  
**Parsons Engineering Science, Inc.**  
**Seneca Army Depot**  
**SDG# 77228/77230**

**April 15, 2003**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29414

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC (GEL) Charleston, South Carolina on March 28, 2003, for Environmental Analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
77228001	TR2100
77228002	ARD2197
77228003	ARD2198
77228004	TR2102
77228005	TR2109
77228006	ARD2182
77228007	TR0040

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

**Internal Chain of Custody:**

Custody was maintained for all samples.

**Data Package:**

The enclosed data package contains the following sections: Case Narrative, Qualifier Flag Definitions, Chain of Custody, Cooler Receipt Checklist, GC/MS Volatile Analysis, FID Analysis, Inorganic Analysis, and General Chemistry Analysis.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis  
Project Manager



CHAIN OF CUSTODY RECORD

Send results to:  
 PARSONS Boston  
 200 Edward Davis Road Suite 312  
 Liverpool, NY 13090 617 451-4300  
 Telephone: (315) 451-0500  
 Fax: (315) 451-9520  
 Lab Submitted to

PROJECT NO.  
 743.155.01200

PROJECT MGR  
 Todd Heino  
 Parsons Boston

PROJECT NO.  
 743.155.01200

MECA Army Depot  
 55 ACOE  
 Landfill

REMARKS  
 GEL  
 Charleston S

ANALYSES REQUIRED  
 VOC TCL  
 MEE  
 TOC  
 Metals

GRAB  
 COMP  
 MATRIX  
 Number of Bottles

LOCATION DESCRIPTION  
 DATE  
 TIME

FIELD SAMPLE ID

FIELD SAMPLE ID	LOCATION DESCRIPTION	DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	VOC TCL	MEE	TOC	Metals
1100	MWT-1	3/27/03	0915	X		GW	9	X	X	X	X
1102	MWT-3		1020	X		GW	9	X	X	X	X
1109	MWT-10		1135	X		GW	9	X	X	X	X
2182	MW-27		1310	X		GW	9	X	X	X	X
2197	MW-20		1435	X		GW	9	X	X	X	X
2198	MW-21A		1545	X		GW	9	X	X	X	X
2040	Trip Blank	-	-	-		W	2	X			

Date	Time	Shipped via	Arrival #	Date	Time	Shipped via	Arrival #
3/27/03	1900	Fedex	839734548990	3/29/03	1015	Fedex	

Received by (Signature)  
 J. Rafferty

WATER	WATER	ST- Storm Water	MAATRIX	QUALITY CONTROL
MW- Monitoring Well LC- Leachate SW- Surface Water DW- Drill Water	FD- Fuel Dispenser MH- Manhole OW- Oil Water Separator PR- Piping Run	WW- Waste Water OL- Other Liquid (eg. Drvm liquid)	W - Water S - Soil	FB- Field Blank (with date) TB- Trip Blank (with date) WB- Wash Blank (with date)

**GC/MS  
VOLATILE  
ANALYSIS**

**GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77228**

**Method/Analysis Information**

Procedure: Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometer  
Analytical Method: EPA 524.2  
Prep Method: EPA 524.2  
Analytical Batch Number: 243842

**Sample Analysis**

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77228004	TR2102
77228005	TR2109
77228006	ARD2182
77228007	TR0040
1200405473	Method Blank (MB)
1200405474	Laboratory Control Sample (LCS)

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-022 REV.3.

**Calibration Information**

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

**Initial Calibration**

All the initial calibration requirements were met.

**Continuing Calibration Verification Requirements**

All the calibration verification standard (CCV) requirements were met.

**Quality Control (QC) Information**

**Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

**Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

**Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

**QC Sample Designation**

Matrix spikes analysis were analyzed on a sample of similar matrix in PARS sample delivery group 77559.

**Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Spike Duplicate Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Relative Percent Difference Statement (RPD)**

The RPD between spike recoveries were within the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

**Technical Information****Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this sample delivery group/work order did not require dilutions.

**Miscellaneous Information****Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

Instrument ID	System Configuration	Chromatographic Column	P & T Trap
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Pat Steele

Date: 04-15-03

## Roadmap for PARS 77228 VOA

This roadmap was analyzed by Debbie Smith on 04-11-2003, 14:21.

This roadmap was reviewed by Sara Jones on 04-14-2003, 15:44.

This roadmap was packaged by LySandra Gathers on 04-14-2003, 16:15.

Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e207.d	77228004	TR2102	08-APR-2003	11:02	77228.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e208.d	77228005	TR2109	08-APR-2003	11:28	77228.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e209.d	77228006	ARD2182	08-APR-2003	11:54	77228.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e210.d	77228007	TR0040	08-APR-2003	12:20	77228.sub	1.00000	<input type="checkbox"/>

QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e202LCSC.d	1200405474	VBLK01LCS	lcs	08-APR-2003	08:32	77228.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e203C.d	1200405473	VBLK01	mb	08-APR-2003	09:04	77228.sub	1.00000	<input type="checkbox"/>

**SAMPLE  
DATA  
SUMMARY**



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2182

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77228

Matrix: (soil/water) WATER      Lab Sample ID: 77228006

Sample wt/vol: 10.00 (g/ml) ML      Lab File ID: 8P2E209

Level: (low/med) LOW      Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.45	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	0.50	U
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	0.50	U
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.50	U
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2182

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E209

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.8	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2182
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Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228006

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E209

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
75-15-0	Carbon disulfide	1.0	U	
108-05-4	Vinyl acetate	1.0	U	
74-88-4	Iodomethane	1.0	U	

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0040

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E210

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	Q
74-97-5	Bromochloromethane	0.50 U
74-87-3	Chloromethane	0.50 U
74-83-9	Bromomethane	0.50 U
75-01-4	Vinyl chloride	0.50 U
75-00-3	Chloroethane	0.50 U
75-09-2	Methylene chloride	0.50 U
75-35-4	1,1-Dichloroethylene	0.50 U
75-34-3	1,1-Dichloroethane	0.50 U
67-66-3	Chloroform	0.50 U
107-06-2	1,2-Dichloroethane	0.50 U
156-60-5	trans-1,2-Dichloroethylene	0.50 U
71-55-6	1,1,1-Trichloroethane	0.50 U
56-23-5	Carbon tetrachloride	0.50 U
75-27-4	Bromodichloromethane	0.50 U
78-87-5	1,2-Dichloropropane	0.50 U
156-59-2	cis-1,2-Dichloroethylene	0.50 U
10061-01-5	cis-1,3-Dichloropropylene	0.50 U
540-59-0	1,2-Dichloroethylene (total)	0.50 U
79-01-6	Trichloroethylene	0.50 U
124-48-1	Dibromochloromethane	0.50 U
79-00-5	1,1,2-Trichloroethane	0.50 U
71-43-2	Benzene	0.50 U
10061-02-6	trans-1,3-Dichloropropylene	0.50 U
75-25-2	Bromoform	0.50 U
127-18-4	Tetrachloroethylene	0.50 U
79-34-5	1,1,2,2-Tetrachloroethane	0.50 U
108-88-3	Toluene	0.50 U
108-90-7	Chlorobenzene	0.50 U
100-41-4	Ethylbenzene	0.50 U
100-42-5	Styrene	0.50 U
107-06-2	Dichlorodifluoromethane	0.50 U
75-69-4	Trichlorofluoromethane	0.50 U
541-73-1	1,3-Dichlorobenzene	0.50 U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0040

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E210

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	0.84	J
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0040

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E210

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
75-15-0	Carbon disulfide	1.0	U	
108-05-4	Vinyl acetate	1.0	U	
74-88-4	Iodomethane	1.0	U	

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2102

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E207

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

74-97-5-----	Bromochloromethane	0.50	U
74-87-3-----	Chloromethane	0.50	U
74-83-9-----	Bromomethane	0.50	U
75-01-4-----	Vinyl chloride	0.50	U
75-00-3-----	Chloroethane	0.50	U
75-09-2-----	Methylene chloride	0.46	J
75-35-4-----	1,1-Dichloroethylene	0.50	U
75-34-3-----	1,1-Dichloroethane	0.50	U
67-66-3-----	Chloroform	0.50	U
107-06-2-----	1,2-Dichloroethane	0.50	U
156-60-5-----	trans-1,2-Dichloroethylene	0.50	U
71-55-6-----	1,1,1-Trichloroethane	0.50	U
56-23-5-----	Carbon tetrachloride	0.50	U
75-27-4-----	Bromodichloromethane	0.50	U
78-87-5-----	1,2-Dichloropropane	0.50	U
156-59-2-----	cis-1,2-Dichloroethylene	17.2	
10061-01-5-----	cis-1,3-Dichloropropylene	0.50	U
540-59-0-----	1,2-Dichloroethylene (total)	17.2	
79-01-6-----	Trichloroethylene	3.8	
124-48-1-----	Dibromochloromethane	0.50	U
79-00-5-----	1,1,2-Trichloroethane	0.50	U
71-43-2-----	Benzene	0.50	U
10061-02-6-----	trans-1,3-Dichloropropylene	0.50	U
75-25-2-----	Bromoform	0.50	U
127-18-4-----	Tetrachloroethylene	0.50	U
79-34-5-----	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3-----	Toluene	0.50	U
108-90-7-----	Chlorobenzene	0.50	U
100-41-4-----	Ethylbenzene	0.50	U
100-42-5-----	Styrene	0.50	U
107-06-2-----	Dichlorodifluoromethane	0.50	U
75-69-4-----	Trichlorofluoromethane	0.50	U
541-73-1-----	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2102

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228004

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E207

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	0.86	J
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2102

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77228

Matrix: (soil/water) WATER      Lab Sample ID: 77228004

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2E207

Level: (low/med)      LOW      Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide_____	1.0	U
108-05-4-----	Vinyl acetate_____	1.0	U
74-88-4-----	Iodomethane_____	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2109

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E208

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	Q
74-97-5	Bromochloromethane	0.50 U
74-87-3	Chloromethane	0.50 U
74-83-9	Bromomethane	0.50 U
75-01-4	Vinyl chloride	0.50 U
75-00-3	Chloroethane	0.50 U
75-09-2	Methylene chloride	0.51
75-35-4	1,1-Dichloroethylene	0.50 U
75-34-3	1,1-Dichloroethane	0.50 U
67-66-3	Chloroform	0.50 U
107-06-2	1,2-Dichloroethane	0.50 U
156-60-5	trans-1,2-Dichloroethylene	0.50 U
71-55-6	1,1,1-Trichloroethane	0.50 U
56-23-5	Carbon tetrachloride	0.50 U
75-27-4	Bromodichloromethane	0.50 U
78-87-5	1,2-Dichloropropane	0.50 U
156-59-2	cis-1,2-Dichloroethylene	5.4
10061-01-5	cis-1,3-Dichloropropylene	0.50 U
540-59-0	1,2-Dichloroethylene (total)	5.4
79-01-6	Trichloroethylene	0.50 U
124-48-1	Dibromochloromethane	0.50 U
79-00-5	1,1,2-Trichloroethane	0.50 U
71-43-2	Benzene	0.50 U
10061-02-6	trans-1,3-Dichloropropylene	0.50 U
75-25-2	Bromoform	0.50 U
127-18-4	Tetrachloroethylene	0.50 U
79-34-5	1,1,2,2-Tetrachloroethane	0.50 U
108-88-3	Toluene	0.50 U
108-90-7	Chlorobenzene	0.50 U
100-41-4	Ethylbenzene	0.50 U
100-42-5	Styrene	0.50 U
107-06-2	Dichlorodifluoromethane	0.50 U
75-69-4	Trichlorofluoromethane	0.50 U
541-73-1	1,3-Dichlorobenzene	0.50 U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2109

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228005

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E208

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.4	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2109

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77228

Matrix: (soil/water) WATER      Lab Sample ID: 77228005

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2E208

Level: (low/med) LOW      Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

# QUALITY CONTROL SUMMARY

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 #	OTHER	TOT OUT
01	VBLK01LCS	104	94	96		0
02	VBLK01	96	94	101		0
03	TR2102	94	93	98		0
04	TR2109	97	94	107		0
05	ARD2182	92	76	100		0
06	TRO040	97	84	107		0
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QC LIMITS

SMC1 (TOL) = Toluene-d8 (73-112)  
 SMC2 (BFB) = Bromofluorobenzene (73-123)  
 SMC3 = Dibromofluoromethane (81-126)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	4.9	98	70-130
Chloromethane	5.0	0.0	4.4	88	70-130
Bromomethane	5.0	0.0	4.1	82	70-130
Vinyl chloride	5.0	0.0	4.5	90	70-130
Chloroethane	5.0	0.0	4.9	98	70-130
Methylene chloride	5.0	0.0	5.1	102	70-130
1,1-Dichloroethylene	5.0	0.0	4.8	96	70-130
1,1-Dichloroethane	5.0	0.0	4.8	96	70-130
Chloroform	5.0	0.0	5.0	100	70-130
1,2-Dichloroethane	5.0	0.0	5.1	102	70-130
trans-1,2-Dichloroethyl	5.0	0.0	4.9	98	70-130
1,1,1-Trichloroethane	5.0	0.0	5.0	100	70-130
Carbon tetrachloride	5.0	0.0	4.8	96	70-130
Bromodichloromethane	5.0	0.0	4.7	94	70-130
1,2-Dichloropropane	5.0	0.0	4.7	94	70-130
cis-1,2-Dichloroethylen	5.0	0.0	4.8	96	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.8	96	70-130
1,2-Dichloroethylene (t	10.0	0.0	9.7	97	70-130
Trichloroethylene	5.0	0.0	4.9	98	70-130
Dibromochloromethane	5.0	0.0	4.6	92	70-130
1,1,2-Trichloroethane	5.0	0.0	4.8	96	70-130
Benzene	5.0	0.0	5.0	100	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.8	96	70-130
Bromoform	5.0	0.0	4.3	86	70-130
Tetrachloroethylene	5.0	0.0	5.4	108	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Toluene	5.0	0.0	5.0	100	70-130
Chlorobenzene	5.0	0.0	5.0	100	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.3	106	70-130
Styrene	5.0	0.0	5.2	104	70-130
Dichlorodifluoromethane	5.0	0.0	5.0	100	70-130
Trichlorofluoromethane	5.0	0.0	4.4	88	70-130
1,3-Dichlorobenzene	5.0	0.0	5.0	100	70-130
1,4-Dichlorobenzene	5.0	0.0	5.0	100	70-130
1,2-Dichlorobenzene	5.0	0.0	5.0	100	70-130
o-Xylene	5.0	0.0	5.1	102	70-130
m,p-Xylenes	10.0	0.0	10.4	104	70-130
Xylenes (total)	15.0	0.0	15.5	103	70-130
2,2-Dichloropropane	5.0	0.0	4.8	96	70-130
1,1-Dichloropropene	5.0	0.0	5.0	100	70-130
Dibromomethane	5.0	0.0	4.9	98	70-130
1,2-Dibromoethane	5.0	0.0	4.8	96	70-130
1,3-Dichloropropane	5.0	0.0	4.9	98	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	4.8	96	70-130
Isopropylbenzene	5.0	0.0	5.1	102	70-130
Bromobenzene	5.0	0.0	5.0	100	70-130
1,2,3-Trichloropropane	5.0	0.0	4.9	98	70-130
n-Propylbenzene	5.0	0.0	5.1	102	70-130
2-Chlorotoluene	5.0	0.0	5.2	104	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.1	102	70-130
4-Chlorotoluene	5.0	0.0	5.2	104	70-130
tert-Butylbenzene	5.0	0.0	4.9	98	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.2	104	70-130
sec-Butylbenzene	5.0	0.0	5.1	102	70-130
4-Isopropyltoluene	5.0	0.0	5.2	104	70-130
n-Butylbenzene	5.0	0.0	5.2	104	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	3.8	76	70-130
1,2,4-Trichlorobenzene	5.0	0.0	5.2	104	70-130
Hexachlorobutadiene	5.0	0.0	5.3	106	70-130
Naphthalene	5.0	0.0	4.8	96	70-130
1,2,3-Trichlorobenzene	5.0	0.0	5.3	106	70-130
tert-Butyl methyl ether	5.0	0.0	4.8	96	70-130
Acetone	25.0	0.0	23.8	95	70-130
2-Butanone	25.0	0.0	22.7	91	70-130
4-Methyl-2-pentanone	25.0	0.0	25.7	103	70-130
2-Hexanone	25.0	0.0	25.3	101	70-130
Carbon disulfide	25.0	0.0	24.6	98	70-130
Vinyl acetate	25.0	0.0	26.8	107	70-130
Iodomethane	25.0	0.0	25.5	102	70-130

# 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 69 outside limits

COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Lab File ID: 8P2E203C Lab Sample ID: 1200405473

Date Analyzed: 04/08/03 Time Analyzed: 0904

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200405474	8P2E202LCSC	0832
02	TR2102	77228004	8P2E207	1102
03	TR2109	77228005	8P2E208	1128
04	ARD2182	77228006	8P2E209	1154
05	TR0040	77228007	8P2E210	1220
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Lab File ID: 8C301 BFB Injection Date: 03/26/03

Instrument ID: VOA8 BFB Injection Time: 0654

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.3
75	30.0 - 60.0% of mass 95	46.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.2 ( 0.2)1
174	50.0 - 100.0% of mass 95	77.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.7)1
176	95.0 - 101.0% of mass 174	75.1 ( 97.4)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0002	W8V030326-01	8P2C304A	03/26/03	0810
02	VSTD0005	W8V030326-02	8P2C305A	03/26/03	0836
03	VSTD001	W8V030326-03	8P2C306A	03/26/03	0902
04	VSTD002	W8V030326-04	8P2C307A	03/26/03	0928
05	VSTD005	W8V030326-05	8P2C308A	03/26/03	0954
06	VSTD010	W8V030326-06	8P2C309A	03/26/03	1020
07	VSTD020	W8V030326-07	8P2C310A	03/26/03	1046
08	VSTD050	W8V030326-08	8P2C311A	03/26/03	1112
09	VSTD100	W8V030326-09	8P2C312A	03/26/03	1138
10					
11					
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13					
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16					
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Lab File ID: 8E201 BFB Injection Date: 04/08/03

Instrument ID: VOAB BFB Injection Time: 0817

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	46.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.4 ( 0.5)1
174	50.0 - 100.0% of mass 95	80.8
175	5.0 - 9.0% of mass 174	6.0 ( 7.4)1
176	95.0 - 101.0% of mass 174	78.9 ( 97.6)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030408-01	8P2E202	04/08/03	0832
02	VBLK01LCS	1200405474	8P2E202LCSC	04/08/03	0832
03	VBLK01	1200405473	8P2E203C	04/08/03	0904
04	TR2102	77228004	8P2E207	04/08/03	1102
05	TR2109	77228005	8P2E208	04/08/03	1128
06	ARD2182	77228006	8P2E209	04/08/03	1154
07	TR0040	77228007	8P2E210	04/08/03	1220
08					
09					
10					
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14					
15					
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17					
18					
19					
20					
21					
22					

8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Lab File ID (Standard): 8P2E202 Date Analyzed: 04/08/03

Instrument ID: VOA8 Time Analyzed: 0832

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
12 HOUR STD	594714	4.50	420450	6.78	226752	8.88
UPPER LIMIT	1189428	5.00	840900	7.28	453504	9.38
LOWER LIMIT	297357	4.00	210225	6.28	113376	8.38
=====						
EPA SAMPLE NO.						
=====						
01 VBLK01LCS	594714	4.50	420450	6.78	226752	8.88
02 VBLK01	535312	4.50	397414	6.78	209728	8.89
03 TR2102	569683	4.50	411572	6.78	214051	8.88
04 TR2109	517181	4.50	381562	6.77	197138	8.88
05 ARD2182	523958	4.50	404934	6.77	254317	8.88
06 TR0040	510546	4.50	379988	6.77	222332	8.88
07						
08						
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22						

IS1 (FLB) = Fluorobenzene  
IS2 (CBZ) = Chlorobenzene-d5  
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
AREA LOWER LIMIT = - 50% of internal standard area  
RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
\* Values outside of QC limits.

**GC/MS  
VOLATILE  
ANALYSIS**

GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77230

Method/Analysis Information

Procedure: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer  
Analytical Method: SW846 8260B  
Prep Method: SW846 5030B  
Analytical Batch Number: 242254

Sample Analysis

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77230001	TR2100
77230002	ARD2197
77230003	ARD2198
1200401500	Method Blank (MB)
1200401503	Laboratory Control Sample (LCS)
1200403129	Laboratory Control Sample (LCS)

Preparation/Analytical Method Verification

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV.7.

Calibration Information

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

**Initial Calibration**

All the initial calibration requirements were met.

77230 -VOA

Page 1 of 4

### **Continuing Calibration Verification Requirements**

The instrument was calibrated to meet the 8260B initial calibration criteria. Although sample analyses are quantitated using the average response factor generated from the initial calibration, a daily calibration verification standard (CVS) was analyzed to verify the accuracy and acceptability of the multi-point initial calibration. The criteria adopted by the laboratory to determine the acceptability and accuracy of the initial calibration is a  $\pm 40\%$  response factor difference for all non-CCC analytes of interest. In the following CVS(s), the following target analyte(s) did not meet the criteria:

<u>Date of CVS</u>	<u>Target Analyte(s)</u>
3/31/03	2-Chloroethylvinyl ether Cyclohexanone

The response factor for 2-chloroethylvinyl ether in the CCV was less than the average response factor in the initial calibration. Detection and quantitation of this analyte in samples would be considered biased low. However, the response for the target analyte was sufficient for detection above the required reporting limit.

The response factor for cyclohexanone in the CCV was above the average response factor in the initial calibration. Detection and quantitation of this analyte in samples would be considered biased high.

### **Quality Control (QC) Information**

#### **Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

#### **Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

#### **Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the laboratory control sample were within the acceptance limits, except for the low recoveries for dichlorodifluoromethane, 2-chloroethylvinyl ether, and cyclohexanone. The LCS requirements were still met, since the 5% failure rate permitted by the client was not exceeded.

#### **QC Sample Designation**

Matrix spike analyses were analyzed on a sample of similar matrix in PARS sample delivery group order, # 77341.

#### **Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

#### **Spike Duplicate Recovery Statement**

All the required spike recoveries were within the acceptance limits.

#### **Relative Percent Difference Statement (RPD)**

The RPD between the sample and duplicate spike recoveries were within the acceptance limits.

#### **Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

### **Technical Information**

#### **Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

77230 -VOA

Page 2 of 4



**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this sample delivery group/work order did not require dilutions.

**Sample Re-prep/Re-analysis**

Re-analyses were not required for samples in this sample group/work order.

**Miscellaneous Information****Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**Additional Comments**

There were no additional comments.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

77230 -VOA

Page 3 of 4

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

<b>Instrument ID</b>	<b>System Configuration</b>	<b>Chromatographic Column</b>	<b>P &amp; T Trap</b>
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:                     *Ami Clark*                    

Date:                     04-16-03

## Roadmap for PARS 77230 VOA

This roadmap was analyzed by Anson Walsh on 04-02-2003, 15:23.

This roadmap was reviewed by Crystal Stacey on 04-04-2003, 12:01.

This roadmap was reviewed by LySandra Gathers on 04-08-2003, 15:25.

### Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d129.d	77230001	TR2100	31-MAR-2003	21:24	77230.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d130.d	77230002	ARD2197	31-MAR-2003	21:49	77230.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d131.d	77230003	ARD2198	31-MAR-2003	22:15	77230.sub	1.00000	<input type="checkbox"/>

### QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d115Lb.d	1200401503	VBLK01LCS	lcs	31-MAR-2003	14:51	77230.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d117SLCSb.d	1200403129	VBLK01SLCS	lcs	31-MAR-2003	15:59	77230.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA1.i/033103v1.b/1d122b.d	1200401500	VBLK01	mb	31 MAR 2003	18:26	77230.sub	1.00000	<input type="checkbox"/>

**SAMPLE  
DATA  
SUMMARY**

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2197

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230002

Sample wt/vol: 5.000. (g/ml) ML Lab File ID: 1D130

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	7.8	
540-59-0	1,2-Dichloroethylene (total)	7.8	
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2197

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D130

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	12.0	
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
1330-20-7-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2197

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D130

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2198

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D131

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	1.0	U
540-59-0	1,2-Dichloroethylene (total)	1.0	U
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2198

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D131

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	1.0	U
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
1330-20-7-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2198

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D131

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 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

96-18-4-----1,2,3-Trichloropropane	1.0 U
108-86-1-----Bromobenzene	1.0 U
103-65-1-----n-Propylbenzene	1.0 U
95-49-8-----2-Chlorotoluene	1.0 U
108-67-8-----1,3,5-Trimethylbenzene	1.0 U
95-63-6-----1,2,4-Trimethylbenzene	1.0 U
106-43-4-----4-Chlorotoluene	1.0 U
98-06-6-----tert-Butylbenzene	1.0 U
135-98-8-----sec-Butylbenzene	1.0 U
76-01-7-----Pentachloroethane	5.0 U
99-87-6-----4-Isopropyltoluene	1.0 U
541-73-1-----1,3-Dichlorobenzene	1.0 U
106-46-7-----1,4-Dichlorobenzene	1.0 U
100-44-7-----Benzyl chloride	5.0 U
104-51-8-----n-Butylbenzene	1.0 U
95-50-1-----1,2-Dichlorobenzene	1.0 U
108-60-1-----bis(2-Chloroisopropyl) ether	5.0 U
96-12-8-----1,2-Dibromo-3-chloropropane	1.0 U
120-82-1-----1,2,4-Trichlorobenzene	1.0 U
87-68-3-----Hexachlorobutadiene	1.0 U
91-20-3-----Naphthalene	1.0 U
87-61-6-----1,2,3-Trichlorobenzene	1.0 U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2100

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D129

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/L	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	39.6	
540-59-0	1,2-Dichloroethylene (total)	39.6	
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2100

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D129

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/31/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-06-2	1,2-Dichloroethane	1.0	U
71-43-2	Benzene	1.0	U
79-01-6	Trichloroethylene	13.2	U
78-87-5	1,2-Dichloropropane	1.0	U
80-62-6	Methyl methacrylate	5.0	U
74-95-3	Dibromomethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
79-46-9	2-Nitropropane	5.0	U
110-75-8	2-Chloroethylvinyl ether	5.0	U
10061-01-5	cis-1,3-Dichloropropylene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropylene	1.0	U
97-63-2	Ethyl methacrylate	5.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
591-78-6	2-Hexanone	5.0	U
127-18-4	Tetrachloroethylene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene	1.0	U
95-47-6	o-Xylene	1.0	U
	m,p-Xylenes	2.0	U
1330-20-7	Xylenes (total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
1476-11-5	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1	Cyclohexanone	50.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2100

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix: (soil/water) WATER Lab Sample ID: 77230001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1D129

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: not dec. Date Analyzed: 03/31/03

GC Column: DB-624 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
96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

# QUALITY CONTROL SUMMARY

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

	EPA SAMPLE NO.	SMC1 #	SMC2 (TOL)#	SMC3 (BFB)#	OTHER	TOT OUT
01	VBLK01LCS	87	89	94		0
02	VBLK01SLCS	87	89	96		0
03	VBLK01	88	90	100		0
04	TR2100	89	90	97		0
05	ARD2197	91	90	95		0
06	ARD2198	91	90	96		0
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QC LIMITS

SMC1 = Dibromofluoromethane (74-144)  
 SMC2 (TOL) = Toluene-d8 (76-129)  
 SMC3 (BFB) = Bromofluorobenzene (69-137)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits



3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.0	0.0	32.6	65*	68-136
Chloromethane	50.0	0.0	42.3	85	68-129
Vinyl chloride	50.0	0.0	53.6	107	69-136
Bromomethane	50.0	0.0	36.8	74	62-136
Chloroethane	50.0	0.0	47.4	95	62-132
Trichlorofluoromethane	50.0	0.0	33.4	67	62-149
1,1-Dichloroethylene	50.0	0.0	48.2	96	78-140
Acetone	250	0.0	224	90	72-127
Iodomethane	250	0.0	221	88	78-130
Carbon disulfide	250	0.0	227	91	68-136
Acetonitrile	1250	0.0	1180	94	70-130
Methylene chloride	50.0	0.0	46.2	92	61-138
tert-Butyl methyl ether	50.0	0.0	48.3	97	70-130
trans-1,2-Dichloroethyl	50.0	0.0	50.7	101	78-126
1,1-Dichloroethane	50.0	0.0	50.6	101	78-121
Vinyl acetate	250	0.0	241	96	69-130
2-Butanone	250	0.0	240	96	71-127
cis-1,2-Dichloroethylen	50.0	0.0	52.1	104	82-120
1,2-Dichloroethylene (t	100	0.0	103	103	70-130
2,2-Dichloropropane	50.0	0.0	55.4	111	71-138
Bromochloromethane	50.0	0.0	46.6	93	82-126
Chloroform	50.0	0.0	50.2	100	82-119
1,1,1-Trichloroethane	50.0	0.0	51.0	102	80-131
1,1-Dichloropropene	50.0	0.0	48.2	96	79-124
Carbon tetrachloride	50.0	0.0	53.9	108	78-133
1,2-Dichloroethane	50.0	0.0	49.4	99	71-125
Benzene	50.0	0.0	49.0	98	78-119
Trichloroethylene	50.0	0.0	49.4	99	80-123

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,2-Dichloropropane	50.0	0.0	46.8	94	77-114
Dibromomethane	50.0	0.0	49.2	98	83-121
Bromodichloromethane	50.0	0.0	49.4	99	67-135
2-Chloroethylvinyl ethe	250	0.0	113	45*	70-130
cis-1,3-Dichloropropyle	50.0	0.0	48.2	96	85-128
4-Methyl-2-pentanone	250	0.0	243	97	76-132
Toluene	50.0	0.0	49.6	99	68-133
trans-1,3-Dichloropropy	50.0	0.0	49.8	100	65-130
1,1,2-Trichloroethane	50.0	0.0	45.6	91	68-127
1,3-Dichloropropane	50.0	0.0	45.4	91	83-110
2-Hexanone	250	0.0	243	97	74-132
Tetrachloroethylene	50.0	0.0	46.2	92	78-128
Dibromochloromethane	50.0	0.0	50.3	101	83-125
1,2-Dibromoethane	50.0	0.0	46.0	92	86-119
Chlorobenzene	50.0	0.0	48.4	97	82-120
1,1,1,2-Tetrachloroetha	50.0	0.0	47.1	94	83-127
Ethylbenzene	50.0	0.0	52.2	104	79-117
o-Xylene	50.0	0.0	50.0	100	78-122
m,p-Xylenes	100	0.0	100	100	79-120
Xylenes (total)	150	0.0	150	100	78-122
Styrene	50.0	0.0	49.1	98	79-128
Bromoform	50.0	0.0	42.8	86	71-138
Isopropylbenzene	50.0	0.0	47.7	95	77-132
1,1,2,2-Tetrachloroetha	50.0	0.0	45.3	91	72-124
1,2,3-Trichloropropane	50.0	0.0	44.5	89	81-116
Bromobenzene	50.0	0.0	46.9	94	82-125
n-Propylbenzene	50.0	0.0	54.0	108	81-124
2-Chlorotoluene	50.0	0.0	53.9	108	77-129

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	50.0	0.0	51.5	103	82-129
1,2,4-Trimethylbenzene	50.0	0.0	49.4	99	85-133
4-Chlorotoluene	50.0	0.0	52.3	105	78-127
tert-Butylbenzene	50.0	0.0	50.8	102	82-126
sec-Butylbenzene	50.0	0.0	52.4	105	82-127
4-Isopropyltoluene	50.0	0.0	52.9	106	82-131
1,3-Dichlorobenzene	50.0	0.0	50.4	101	77-126
1,4-Dichlorobenzene	50.0	0.0	48.5	97	70-130
n-Butylbenzene	50.0	0.0	54.6	109	79-140
1,2-Dichlorobenzene	50.0	0.0	47.0	94	78-122
1,2-Dibromo-3-chloropro	50.0	0.0	33.6	67	65-137
1,2,4-Trichlorobenzene	50.0	0.0	48.9	98	73-141
Hexachlorobutadiene	50.0	0.0	47.2	94	71-142
Naphthalene	50.0	0.34	43.4	86	69-132
1,2,3-Trichlorobenzene	50.0	0.0	47.3	95	64-151

# 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: 2 out of 71 outside limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
Acrolein	250	0.0	275	110	70-130
Trichlorotrifluoroethan	250	0.0	258	103	70-130
Isobutyl alcohol	2500	0.0	2140	86	70-130
Allyl chloride	250	0.0	247	99	70-130
Acrylonitrile	250	0.0	244	98	70-130
2-Chloro-1,3-butadiene	50.0	0.0	56.7	113	70-130
Methacrylonitrile	250	0.0	247	99	70-130
Propionitrile	250	0.0	235	94	70-130
Methyl methacrylate	250	0.0	221	88	70-130
2-Nitropropane	250	0.0	186	74	70-130
Ethyl methacrylate	250	0.0	235	94	70-130
cis-1,4-Dichloro-2-bute	250	0.0	248	99	70-130
Cyclohexanone	2500	0.0	983	39*	70-130
trans-1,4-Dichloro-2-bu	250	0.0	308	123	70-130
Pentachloroethane	250	0.0	296	118	70-130
Benzyl chloride	250	0.0	249	100	70-130
bis(2-Chloroisopropyl)e	250	0.0	203	81	70-130

# 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 17 outside limits

COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01
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Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Lab File ID: 1D122B Lab Sample ID: 1200401500

Date Analyzed: 03/31/03 Time Analyzed: 1826

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200401503	1D115LB	1451
02	VBLK01SLCS	1200403129	1D117SLCSB	1559
03	TR2100	77230001	1D129	2124
04	ARD2197	77230002	1D130	2149
05	ARD2198	77230003	1D131	2215
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Lab File ID: 1Y201 BFB Injection Date: 02/25/03

Instrument ID: VOA1 BFB Injection Time: 0728

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.5
75	30.0 - 60.0% of mass 95	43.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.5 ( 0.6)1
174	50.0 - 100.0% of mass 95	75.1
175	5.0 - 9.0% of mass 174	5.3 ( 7.1)1
176	95.0 - 101.0% of mass 174	74.5 ( 99.1)1
177	5.0 - 9.0% of mass 176	4.8 ( 6.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD001	W1V030225-01	1Y204	02/25/03	0833
02	VSTD002	W1V030225-02	1Y206	02/25/03	0925
03	VSTD005	W1V030225-03	1Y207	02/25/03	0951
04	VSTD010	W1V030225-04	1Y208	02/25/03	1017
05	VSTD020	W1V030225-05	1Y209	02/25/03	1043
06	VSTD050	W1V030225-06	1Y210	02/25/03	1109
07	VSTD100	W1V030225-07	1Y211	02/25/03	1135
08	VSTD005S	UVM021119-01D	1Y213	02/25/03	1228
09	VSTD010S	UVM021119-02D	1Y214	02/25/03	1254
10	VSTD025S	UVM021119-03D	1Y215	02/25/03	1320
11	VSTD050S	UVM021119-04D	1Y216	02/25/03	1346
12	VSTD100S	UVM021119-05D	1Y217	02/25/03	1412
13	VSTD250S	UVM021119-06D	1Y218	02/25/03	1438
14	VSTD500S	UVM021119-07D	1Y219	02/25/03	1505
15					
16					
17					
18					
19					
20					
21					
22					

5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Lab File ID: 1D115TUNE BFB Injection Date: 03/31/03

Instrument ID: VOA1 BFB Injection Time: 1451

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	47.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.4 ( 0.5)1
174	50.0 - 100.0% of mass 95	71.3
175	5.0 - 9.0% of mass 174	4.5 ( 6.3)1
176	95.0 - 101.0% of mass 174	69.1 ( 97.0)1
177	5.0 - 9.0% of mass 176	4.2 ( 6.1)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	UVM030307-01D	1D115	03/31/03	1451
02	VBLK01LCS	1200401503	1D115LB	03/31/03	1451
03	VSTD250S	UVM030212-01B	1D117	03/31/03	1559
04	VBLK01SLCS	1200403129	1D117SLCSB	03/31/03	1559
05	VBLK01	1200401500	1D122B	03/31/03	1826
06	TR2100	77230001	1D129	03/31/03	2124
07	ARD2197	77230002	1D130	03/31/03	2149
08	ARD2198	77230003	1D131	03/31/03	2215
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22					

## VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77230

Lab File ID (Standard): 1D115 Date Analyzed: 03/31/03

Instrument ID: VOA1 Time Analyzed: 1451

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	1209699	5.35	783978	8.41	355024	11.08
UPPER LIMIT	2419398	5.85	1567956	8.91	710048	11.58
LOWER LIMIT	604850	4.85	391989	7.91	177512	10.58
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK01LCS	1209699	5.35	783978	8.41	355024	11.08
02 VBLK01SLCS	1160098	5.35	734893	8.41	319207	11.08
03 VBLK01	1045244	5.35	652571	8.41	250679	11.08
04 TR2100	1030263	5.35	651291	8.41	281056	11.08
05 ARD2197	1030415	5.35	649652	8.40	284249	11.07
06 ARD2198	980046	5.35	628478	8.41	266842	11.08
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20						
21						
22						

IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.



**GC  
SEMIVOLATILE  
FID  
ANALYSIS**

**FID Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77228**

**Method/Analysis Information**

**Procedure:** Dissolved Gases by Flame Ionization Detector  
**Analytical Method:** SW846 8015A/B SVOC  
**Prep Method:** SW846 8015A/B SVOC  
**Analytical Batch Number:** 242476  
**Prep Batch Number:** 242475

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 8015A/B SVOC:

<b>Sample ID</b>	<b>Client ID</b>
77228001	TR2100
77228002	ARD2197
77228003	ARD2198
77228004	TR2102
77228005	TR2109
77228006	ARD2182
1200402047	Method Blank (MB)
1200402049	Laboratory Control Sample (LCS)

**Preparation/Analytical Method Verification**

Procedures for preparation, analysis, and reporting of analytical data are documented by General Engineering Laboratories, Inc. (GEL) as Standard Operating Procedures (SOP).

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**CCV Requirements**

All calibration verification standard(s) (CVS, ICV or CCV) requirements have been met for this SDG.

**Quality Control (QC) Information**

**Surrogate Recoveries**

No surrogate was added to any samples in this batch.

**Blank Acceptance**

The blank(s) analyzed with this SDG met the established acceptance criteria.

**LCS Recovery Statement**

The Laboratory Control Sample (LCS) spike recoveries for this SDG were within the established acceptance limits.

**QC Sample Designation**

No matrix spike (MS) or matrix spike duplicate (MSD) were analyzed with this SDG. A PARS sample from SDG 77341 and its duplicate was analyzed to measure the precision for this batch. The RPD between the sample and its duplicate met the acceptance criteria.

**Technical Information****Holding Time Specifications**

All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

Sample 77228005 (TR2109) was diluted at 1:10 due to the presence of over-range Methane.

**Sample Re-prep/Re-analysis**

Sample 77228005 (TR2109) was re-analyzed at 1:10 dilution for Methane.

**Miscellaneous Information:****Electronic Package Comment**

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

**Nonconformance (NCR) Documentation**

No nonconformance reports (NCRs) have been generated for this SDG.

**Manual Integrations**

Certain standards and QC samples may have required manual integrations to correctly position the baseline as set in the calibration standard injections. If manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Samples 1200402049 (LCS), 77228002 (ARD2197), 77228003 (ARD2198), 77228004 (TR2102) and 77228005 (TR2109) were manually integrated.

**Additional Comments**

No additional comments are needed for this sample group.

**System Configuration**

**Chromatographic Columns**

Column ID	Column Description
J&W1	DB-WAX(0.53mm x 0.5u x 30m)
J&W2	DB-624(0.53mm x 3.0u x 30m)
J&W3	DB-1(0.53mm x 1.5u x 30m)
J&W4	DB-608(0.53mm x 0.83u x 30m)
J&W5	GS-Q(0.53mm x 30m)
Phenomenex	ZB-5(0.25mm x 0.25u x 30m)

**Instrument Configuration**

Instrument ID	System Configuration	Chromatographic Column
FIDa	HP 5890 Series II GC/FID	J&W1/J&W3/J&W4
FID2a	HP 5890 Series II GC/FID	J&W2/J&W5
FID3a	HP 5890 Series II GC/FID	Phenomenex
FID4a	HP 5890 Series II GC/FID	Phenomenex

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Jimi Cao Date: 4/16/03

**SAMPLE  
DATA  
SUMMARY**

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2100

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 005B0501

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	25.0	U
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2197

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 006B0601

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	24.0	J
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2198

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 007B0701

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	25.4	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U



1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2102

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 008B0801

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

74-82-8-----	Methane	50.0	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2109

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 009B0901

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	2620	E
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2109RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 011B1101

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L Q

74-82-8-----	Methane	3720	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2182

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix: (soil/water) WATER Lab Sample ID: 77228006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 012B1201

Level: (low/med) LOW Date Received: 03/28/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/01/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/03/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	25.0	U
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

QUALITY  
CONTROL  
SUMMARY

3C  
GROUND WATER FID LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Matrix Spike - EPA Sample No.: MBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Methane	100	0.0	112	112	70-130
Ethane	100	0.0	88.6	89	56-140
Ethene	100	0.0	89.3	89	56-125

# 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 3 outside limits

COMMENTS: \_\_\_\_\_

4B  
FID METHOD BLANK SUMMARY

EPA SAMPLE NO.

MBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77228

Lab File ID: 003B0301 Lab Sample ID: 1200402047

Instrument ID: FID2A Date Extracted: 04/01/03

Matrix: (soil/water) GROUND WATER Date Analyzed: 04/03/03

Level: (low/med) LOW Time Analyzed: 1050

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MBLK01LCS	1200402049	004B0401	04/03/03
02	TR2100	77228001	005B0501	04/03/03
03	ARD2197	77228002	006B0601	04/03/03
04	ARD2198	77228003	007B0701	04/03/03
05	TR2102	77228004	008B0801	04/03/03
06	TR2109	77228005	009B0901	04/03/03
07	TR2109RR	77228005	011B1101	04/03/03
08	ARD2182	77228006	012B1201	04/03/03
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# INORGANIC ANALYSIS



**Metals Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 7728**

**Method/Analysis Information**

**Analytical Batch:** 2242024  
**Prep Batch :** 2242022  
**Standard Operating Procedures:** GL-MA-E-013 REV.8, GL-MA-E-006 REV.8  
**Analytical Method:** SSW846 6010B  
**Prep Method :** SSW846 3005A

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
77228001	TR2100
77228002	ARD2197
77228003	ARD2198
77228004	TR2102
77228005	TR2109
77228006	ARD2182
1200400909	Method Blank (MB) ICP
1200400910	Laboratory Control Sample (LCS)
1200400913	77228001(TR2100L) Serial Dilution (SD)
1200400911	77228001(TR2100D) Sample Duplicate (DUP)
1200400912	77228001(TR2100S) Matrix Spike (MS)

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The ICP analysis was performed on a Perkin Elmer 4300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

**Calibration Information**

**Instrument Calibration**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

**CRDL Requirements**

All CRDL standard(s) met the referenced advisory control limits.

**ICSA/ICSAB statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

**Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

**Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

**Quality Control (QC) Information****Method Blank (MB) Acceptance**

The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

**LCS Recovery Statement**

The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

**Quality Control (QC) Sample Statement**

The following sample was selected as the quality control (QC) sample for this batch: 77228001 (TR2100).

**Matrix Spike Recovery Statement**

The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

**Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

**Serial Dilution % Difference Statement**

The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10 except potassium, as indicated by the "E" qualifier.

**Technical Information****Holding Time Specifications**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP)

guidelines. All samples in this SDG were prepared in accordance with the referenced SW-846 procedures.

**Sample Dilutions**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. No sample dilutions were needed in this SDG.

**Preparation Information**

The samples in this SDG were prepared exactly according to the sited SOP.

**Miscellaneous Information**

**Nonconformance Documentation**

Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

**Additional Comments**

No additional comments are needed for this sample group.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: W.D. Smith, Sr. Date: 4/14/03

**SAMPLE  
DATA  
SUMMARY**

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77228

Method Type: SW846

Sample ID: 77228001

Client ID: TR2100

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/28/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	125000	µg/L			P	11.0	Optimal	040203
7439-95-4	Magnesium	14700	µg/L			P	33.2	Optimal	040203
7439-96-5	Manganese	7.540	µg/L	B		P	0.354	Optimal	040203
7440-09-7	Potassium	1490	µg/L		E	P	27.5	Optimal	040203
7440-23-5	Sodium	13300	µg/L			P	6.690	Optimal	040203

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77228

Method Type: SW846

Sample ID: 77228002

Client ID: ARD2197

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/28/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	139000	µg/L			P	11.0	Optimal	040203
7439-95-4	Magnesium	14900	µg/L			P	33.2	Optimal	040203
7439-96-5	Manganese	5.880	µg/L	B		P	0.354	Optimal	040203
7440-09-7	Potassium	1190	µg/L		E	P	27.5	Optimal	040203
7440-23-5	Sodium	15800	µg/L			P	6.690	Optimal	040203

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77228

Method Type: SW846

Sample ID: 77228003

Client ID: ARD2198

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/28/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	153000	µg/L			P	11.0	Optima1	040203
7439-95-4	Magnesium	40100	µg/L			P	33.2	Optima1	040203
7439-96-5	Manganese	141	µg/L			P	0.354	Optima1	040203
7440-09-7	Potassium	8720	µg/L		E	P	27.5	Optima1	040203
7440-23-5	Sodium	31000	µg/L			P	6.690	Optima1	040203

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77228

Method Type: SW846

Sample ID: 77228004

Client ID: TR2102

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/28/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	128000	µg/L			P	11.0	Optima1	040203
7439-95-4	Magnesium	15600	µg/L			P	33.2	Optima1	040203
7439-96-5	Manganese	13.7	µg/L			P	0.354	Optima1	040203
7440-09-7	Potassium	1330	µg/L		E	P	27.5	Optima1	040203
7440-23-5	Sodium	12700	µg/L			P	6.690	Optima1	040203

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:



**TOTAL METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

SDG No.: 77228

Method Type: SW846

**Sample ID:** 77228005

**Client ID:** TR2109

**Contract:** PARS00103

**Lab Code:** GEL

**Case No.:** GEL

**SAS No.:**

**Matrix:** WATER

**Date Received:** 3/28/2003

**Level:** LOW

**% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	38300	µg/L			P	11.0	Optimal	040203
7439-95-4	Magnesium	14200	µg/L			P	33.2	Optimal	040203
7439-96-5	Manganese	91.4	µg/L			P	0.354	Optimal	040203
7440-09-7	Potassium	1190	µg/L		E	P	27.5	Optimal	040203
7440-23-5	Sodium	11600	µg/L			P	6.690	Optimal	040203

**Color Before:**

**Clarity Before:**

**Texture:**

**Color After:**

**Clarity After:**

**Artifacts:**

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77228

Method Type: SW846

Sample ID: 77228006

Client ID: ARD2182

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 3/28/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	95200	µg/L			P	11.0	Optimal	040203
7439-95-4	Magnesium	10100	µg/L			P	33.2	Optimal	040203
7439-96-5	Manganese	9.130	µg/L	B		P	0.354	Optimal	040203
7440-09-7	Potassium	1270	µg/L		E	P	27.5	Optimal	040203
7440-23-5	Sodium	24200	µg/L			P	6.690	Optimal	040203

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**GENERAL  
CHEMISTRY  
ANALYSIS**

**General Chemistry Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77228**

**Method/Analysis Information**

**Procedure:** Ion Chromatography (IC)

**Analytical Method:** EPA 300.0

**Analytical Batch Number:** 242083

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 300.0:

<b>Sample ID</b>	<b>Client ID</b>
77228001	TR2100
77228002	ARD2197
77228003	ARD2198
77228004	TR2102
77228005	TR2109
77228006	ARD2182
1200401067	Method Blank (MB)
1200401072	Laboratory Control Sample (LCS)
1200401068	77228001(TR2100) Sample Duplicate (DUP)
1200401070	77228001(TR2100) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV.8.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The instrument used in this analysis was the following: Dionex DX300 Ion Chromatograph equipped with a Dionex AS9-HC general purpose anion column

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

#### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

#### **Laboratory Control Sample (LCS) Recovery**

The recoveries for the laboratory control sample were within the required acceptance limits.

#### **Quality Control**

The following sample was designated for Quality Control:  
77228001 (TR2100)

#### **Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

#### **Sample Duplicate Acceptance**

The Relative Percent Differences between the sample and duplicate for this batch were within the required acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples in this sample group were diluted due to high concentration for chloride and/or sulfate. See the Certificates of Analysis for the individual dilution factors.

1200401068 (TR2100)

1200401070 (TR2100)

77228001 (TR2100)

77228002 (ARD2197)

77228003 (ARD2198)

77228004 (TR2102)

77228005 (TR2109)

77228006 (ARD2182)

**Miscellaneous Information**

**Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

### Method/Analysis Information

**Procedure:** Total Organic Carbon (TOC)  
**Analytical Method:** SW846 9060  
**Analytical Batch Number:** 244061

### Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060:

<b>Sample ID</b>	<b>Client ID</b>
77228001	TR2100
77228002	ARD2197
77228003	ARD2198
77228004	TR2102
77228005	TR2109
77228006	ARD2182
1200405954	Method Blank (MB)
1200405955	Laboratory Control Sample (LCS)
1200405956	77228001(TR2100) Sample Duplicate (DUP)
1200405957	77228001(TR2100) Post Spike (PS)

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV.3.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### Calibration Information

The instrument used in this analysis was the following: O-I Analytical Model 1010 Total Organic Carbon Analyzer

#### **Initial Calibration**

The instrument was properly calibrated.

**Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Quality Control (QC) Information****Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

**Quality Control**

The following sample was designated for Quality Control:  
77228001 (TR2100)

**Sample Spike Recovery**

The spike recovery for this sample set was within the required acceptance limits.

**Sample Duplicate Acceptance**

The Relative Percent Difference between the sample and duplicate for this batch was within the required acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

No samples in this sample group required dilutions.

**Sample Reanalysis**

The original matrix QC failed and was reanalyzed with passing results for sample 1200405957 (TR2100).

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Additional Comments**

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.




**Certification Statement**

\* Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer:  Date: 4/15/03

**SAMPLE  
DATA  
SUMMARY**

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID:	TR2100	Project:	PARS00103
Sample ID:	77228001	Client ID:	PARS001
Matrix:	Water		
Collect Date:	27-MAR-03 09:15		
Receive Date:	28-MAR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.28	0.025	0.200	mg/L	1	TSM	04/09/03	1434	244061	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		13.0	0.0322	0.200	mg/L	1	MAR103	03/29/03	0009	242083	4
Nitrate		0.302	0.0341	0.100	mg/L	1					
Sulfate		114	0.965	2.00	mg/L	5	MAR103	03/31/03	1413	242083	5

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/01/03	1000	242022
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	SW846 9060	
3	SW846 9060	
4	EPA 300.0	
5	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

Client Sample ID: TR2100  
Sample ID: 77228001

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by 

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID:	ARD2197	Project:	PARS00103
Sample ID:	77228002	Client ID:	PARS001
Matrix:	Water		
Collect Date:	27-MAR-03 14:35		
Receive Date:	28-MAR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		1.49	0.025	0.200	mg/L	1	TSM 04/09/03	1529	244061	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Chloride		3.72	0.0322	0.200	mg/L	1	MAR103/29/03	0104	242083	2
Nitrate		0.229	0.0341	0.100	mg/L	1				
Sulfate		130	0.965	2.00	mg/L	5	MAR103/31/03	1508	242083	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/01/03	1000	242022
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

Client Sample ID: ARD2197  
Sample ID: 77228002

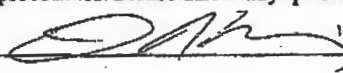
Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
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 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID: ARD2198      Project: PARS00103  
 Sample ID: 77228003      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 27-MAR-03 15:45  
 Receive Date: 28-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.09	0.025	0.200	mg/L	1	TSM	04/09/03	1558	244061	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Nitrate		0.239	0.0341	0.100	mg/L	1	MAR103/29/03	0123	242083		2
Chloride		106	0.322	2.00	mg/L	10	MAR103/31/03	1526	242083		3
Sulfate		202	1.93	4.00	mg/L	10					

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/01/03	1000	242022
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

Notes:

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
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Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

Client Sample ID: ARD2198  
Sample ID: 77228003

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  




## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
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 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID: TR2102                      Project: PARS00103  
 Sample ID: 77228004                      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 27-MAR-03 10:20  
 Receive Date: 28-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		1.14	0.025	0.200	mg/L	1	TSM 04/09/03	1628	244061	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Chloride		14.6	0.0322	0.200	mg/L	1	MAR103/29/03	0141	242083	2
Nitrate		0.211	0.0341	0.100	mg/L	1				
Sulfate		126	0.965	2.00	mg/L	5	MAR103/31/03	1545	242083	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/01/03	1000	242022
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

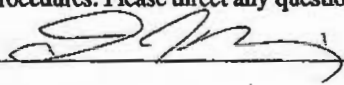
Client Sample ID: TR2102  
Sample ID: 77228004

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID: TR2109      Project: PARS00103  
 Sample ID: 77228005      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 27-MAR-03 11:35  
 Receive Date: 28-MAR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.658	0.025	0.200	mg/L	1	TSM	04/09/03	1713	244061	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		11.6	0.0322	0.200	mg/L	1	MAR1	03/29/03	0159	242083	2
Nitrate	U	0.00	0.0341	0.100	mg/L	1					
Sulfate		82.5	0.965	2.00	mg/L	5	MAR1	03/31/03	1603	242083	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/01/03	1000	242022
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

Client Sample ID: TR2109  
Sample ID: 77228005

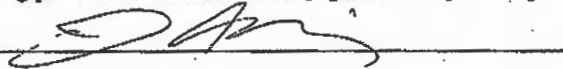
Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 1 of 2

Client Sample ID:	ARD2182	Project:	PARS00103
Sample ID:	77228006	Client ID:	PARS001
Matrix:	Water		
Collect Date:	27-MAR-03 13:10		
Receive Date:	28-MAR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		1.30	0.025	0.200	mg/L	1	TSM 04/09/03	1743	244061	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Chloride		6.06	0.0322	0.200	mg/L	1	MAR103/29/03	0218	242083	2
Nitrate		0.711	0.0341	0.100	mg/L	1				
Sulfate		55.0	0.386	0.800	mg/L	2	MAR103/31/03	1622	242083	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	FGA	04/01/03	1000	242022
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/01/03	0821	242475

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- BD Flag for results below the MDC or a flag for low tracer recovery.
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- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
          Suite 800  
          Boston, Massachusetts 02110  
Contact : Todd Heino  
Project : Seneca Army Depot (Task Order# 0003)

Report Date: April 14, 2003

Page 2 of 2

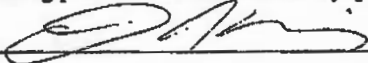
Client Sample ID:       ARD2182  
Sample ID:               77228006

Project:    PARS00103  
Client ID:   PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	-------------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by 

**QUALITY  
CONTROL  
SUMMARY**

## QC Summary

Report Date: April 15, 2003

Page 1 of 2

Client : **Parsons**  
**100 Summer Street**  
**Suite 800**  
**Boston, Massachusetts**

Contact: **Todd Heino**

Workorder: **77228**

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis Federal</b>											
Batch	244061										
QC1200405956	77228001	DUP									
Total Organic Carbon			1.28	1.30	mg/L	1		(0%-20%)	TSM	04/09/03	15:04
QC1200405955	LCS										
Total Organic Carbon	10.0			10.1	mg/L		101	(85%-115%)		04/09/03	13:32
QC1200405954	MB										
Total Organic Carbon			U	-0.258	mg/L					04/09/03	13:24
QC1200405957	77228001	PS									
Total Organic Carbon	10.0		1.15	10.1	mg/L		88	(80%-120%)		04/10/03	13:08
<b>Ion Chromatography Federal</b>											
Batch	242083										
QC1200401068	77228001	DUP									
Nitrate-N			0.302	0.283	mg/L	7 ^		(+-0.100)	MAR1	03/29/03	00:27
Sulfate			114	113	mg/L	1		(0%-14%)		03/31/03	14:31
Chloride			13.0	12.9	mg/L	0		(0%-16%)		03/29/03	00:27
QC1200401072	LCS										
Nitrate-N	5.00			4.76	mg/L		95	(90%-110%)		03/28/03	23:51
Sulfate	20.0			19.2	mg/L		96	(90%-110%)			
Chloride	10.0			9.36	mg/L		94	(90%-110%)			
QC1200401067	MB										
Nitrate-N			U	0.00	mg/L					03/28/03	23:32
Sulfate			U	0.00	mg/L						
Chloride			U	0.00	mg/L						
QC1200401070	77228001	PS									
Nitrate-N	5.00		0.302	4.86	mg/L		91	(71%-130%)		03/29/03	00:46
Sulfate	20.0		22.8	44.7	mg/L		110	(65%-130%)		03/31/03	14:50
Chloride	10.0		13.0	24.0	mg/L		110	(64%-129%)		03/29/03	00:46

**Notes:**

The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package



## QC Summary

Workorder: 77228

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Y	QC Samples were not spiked with this compound.										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Introduction

The purpose of this study is to investigate the effects of the proposed changes on the system's performance. The study is organized as follows: Chapter 2 describes the system architecture and the proposed changes. Chapter 3 presents the experimental setup and the results of the performance tests. Chapter 4 discusses the results and the conclusions of the study.

The system architecture is based on a client-server model. The client is responsible for the user interface and the data entry. The server is responsible for the data processing and the storage. The proposed changes include the addition of a new data source and the modification of the data processing algorithms. The experimental setup consists of a set of test cases that are designed to measure the system's performance under various conditions. The results of the performance tests are presented in Chapter 3.





**CASE NARRATIVE**  
**for**  
**Parsons Engineering Science, Inc.**  
**Seneca Army Depot**  
**SDG#s 77468/77469**

**April 18, 2003**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29414

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC (GEL) Charleston, South Carolina on April 2, 2003, for Environmental Analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
77468001	TR2101
77468002	TR2104
77468003	TR2107
77468004	ARD2188
77468005	ARD2187
77468006	ARD2186
77468007	TR0041
77469001	ARD2188

GENERAL ENGINEERING LABORATORIES, LLC  
*a Member of THE GEL GROUP, INC.*

P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)  
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

77469002  
77469003

ARD2187  
ARD2186

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

**Internal Chain of Custody:**

Custody was maintained for all samples.

**Data Package:**

The enclosed data package contains the following sections: Case Narrative, Qualifier Flag Definitions, Chain of Custody, Cooler Receipt Checklist, GC/MS Volatile Analysis, FID Analysis, Inorganic Analysis, and General Chemistry Analysis.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis  
Project Manager

CHAIN OF CUSTODY RECORD

PROJECT NO		PROJECT NAME		PROJECT ADDRESS		PROJECT PHONE		PROJECT FAX		PROJECT E-MAIL			
74.155.01200		Tactical Heino Parsons Boston		250 BRIMCOMB DRIVE LITTLETON, CO 80120		(303) 734-8000		(303) 734-8000		parsons@parsons.com			
LOCATION DESCRIPTION		DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	ANALYSES REQUIRED					
FIELD SAMPLE ID		DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	VOC S4.2	VOC TCL	Nitrate/Sulfate/Chloride	MFE	TOC	Metals
MWT-2		4/1/03	0855	X		GW	9	X	X	X	X	X	X
MWT-5		4/1/03	0950	X		GW	9	X	X	X	X	X	X
MWT-8		4/1/03	1105	X		GW	9	X	X	X	X	X	X
MW-44A		4/1/03	1220	X		GW	9	X	X	X	X	X	X
MW-43		4/1/03	1340	X		GW	9	X	X	X	X	X	X
MW-40		4/1/03	1500	X		GW	9	X	X	X	X	X	X
Trip Blank		-	-			W	2	X					
4/1/03 1800		Fedex 839734548979		Shipped via		A.I.S.F.		Received by (Signature)		J.H. Gully		Date	
4/1/03 1800		Fedex 839734548979		Shipped via		A.I.S.F.		Received by (Signature)		J.H. Gully		Date	
4/1/03 1800		Fedex 839734548979		Shipped via		A.I.S.F.		Received by (Signature)		J.H. Gully		Date	

Send results to:  
 PARSONS Boston  
 250 BRIMCOMB DRIVE  
 LITTLETON, CO 80120  
 Telephone: (303) 734-8000  
 Fax: (303) 734-8000  
 Lab Submitted to:  
 GEL  
 Charleston S

REMARKS  
 Trip Blank

QUALITY CONTROL  
 TB- Field Blank (with date)  
 TR- Trip Blank (with date)  
 WB- Wash Blank (with date)

MATRIX  
 W - Water  
 S - Soil

ST - Storm Water  
 WW - Wastewater  
 OL - Other Liquid (by Decim legend)

FO - Fuel Dispenser  
 MH - Murrals  
 OW - Oil Water Separator  
 PR - Piping Run

WATER  
 MW - Monitoring Well  
 LC - Leachate  
 SW - Surface Water  
 DW - Duff Water

1P - Fast Flow/Work Pit  
 1K - Driven Well  
 WA - Suck Well  
 US - Other Well

10 - 100 ml  
 25 - 250 ml  
 50 - 500 ml  
 100 - 1000 ml

**GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77468**

**Method/Analysis Information**

Procedure: Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometer  
Analytical Method: EPA 524.2  
Prep Method: EPA 524.2  
Analytical Batch Number: 243842

**Sample Analysis**

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77468001	TR2101
77468002	TR2104
77468003	TR2107
77468007	TR0041
1200405473	Method Blank (MB)
1200405474	Laboratory Control Sample (LCS)

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-022 REV.3.

**Calibration Information**

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

77468 -VOA

Page 1 of 4



**Initial Calibration**

All the initial calibration requirements were met.

**Continuing Calibration Verification Requirements**

All the calibration verification standard (CCV) requirements were met.

**Quality Control (QC) Information****Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

**Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

**Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

**QC Sample Designation**

Matrix spikes analysis were analyzed on a sample of similar matrix in PARS sample delivery group, # 77468.

**Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Spike Duplicate Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Relative Percent Difference Statement (RPD)**

The RPD between spike recoveries were within the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

**Technical Information****Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this sample delivery group/work order did not require dilutions.

**Sample Re-prep/Re-analysis**

Re-analyses were not required for samples in this sample group/work order.

77468 -VOA

Page 2 of 4

**Miscellaneous Information**

**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**Additional Comments**

There were no additional comments.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

Instrument ID	System Configuration	Chromatographic Column	P & T Trap
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K

77468 -VOA

VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: *Jim Hart*

Date: 04-11-03

## Roadmap for PARS 77468 VOA

This roadmap was analyzed by Debbie Smith on 04-11-2003, 14:22.

This roadmap was reviewed by Sara Jones on 04-14-2003, 15:47.

This roadmap was packaged by LySandra Gathers on 04-18-2003, 13:42.

Sample

exclude	manual	datafile	smpid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e211.d	77468001	TR2101	08-APR-2003	12:46	77468.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e212.d	77468002	TR2104	08-APR-2003	13:12	77468.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e213.d	77468003	TR2107	08-APR-2003	13:38	77468.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e214.d	77468007	TR0041	08-APR-2003	14:04	77468.sub	1.00000	<input type="checkbox"/>

QC Sample

exclude	manual	datafile	smpid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e202LCSD.d	1200405474	VBLK01LCS	lcs	08-APR-2003	08:32	77468.sub	1.00000	<input type="checkbox"/>
<input type="checkbox"/>	N	/chem/VOA8.i/040803v8.b/8p2e203D.d	1200405473	VBLK01	mb	08-APR-2003	09:04	77468.sub	1.00000	<input type="checkbox"/>

**SAMPLE  
DATA  
SUMMARY**

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0041

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77468

Matrix: (soil/water) WATER      Lab Sample ID: 77468007

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2E214

Level: (low/med)      LOW      Date Received: 04/02/03

% Moisture: not dec.      \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

74-97-5-----Bromochloromethane_____	0.50	U
74-87-3-----Chloromethane_____	0.50	U
74-83-9-----Bromomethane_____	0.50	U
75-01-4-----Vinyl chloride_____	0.50	U
75-00-3-----Chloroethane_____	0.50	U
75-09-2-----Methylene chloride_____	0.41	J
75-35-4-----1,1-Dichloroethylene_____	0.50	U
75-34-3-----1,1-Dichloroethane_____	0.50	U
67-66-3-----Chloroform_____	0.50	U
107-06-2-----1,2-Dichloroethane_____	0.50	U
156-60-5-----trans-1,2-Dichloroethylene_____	0.50	U
71-55-6-----1,1,1-Trichloroethane_____	0.50	U
56-23-5-----Carbon tetrachloride_____	0.50	U
75-27-4-----Bromodichloromethane_____	0.50	U
78-87-5-----1,2-Dichloropropane_____	0.50	U
156-59-2-----cis-1,2-Dichloroethylene_____	0.50	U
10061-01-5-----cis-1,3-Dichloropropylene_____	0.50	U
540-59-0-----1,2-Dichloroethylene (total)_____	0.50	U
79-01-6-----Trichloroethylene_____	0.50	U
124-48-1-----Dibromochloromethane_____	0.50	U
79-00-5-----1,1,2-Trichloroethane_____	0.50	U
71-43-2-----Benzene_____	0.50	U
10061-02-6-----trans-1,3-Dichloropropylene_____	0.50	U
75-25-2-----Bromoform_____	0.50	U
127-18-4-----Tetrachloroethylene_____	0.50	U
79-34-5-----1,1,2,2-Tetrachloroethane_____	0.50	U
108-88-3-----Toluene_____	0.50	U
108-90-7-----Chlorobenzene_____	0.50	U
100-41-4-----Ethylbenzene_____	0.50	U
100-42-5-----Styrene_____	0.50	U
107-06-2-----Dichlorodifluoromethane_____	0.50	U
75-69-4-----Trichlorofluoromethane_____	0.50	U
541-73-1-----1,3-Dichlorobenzene_____	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0041

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468007

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E214

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

106-46-7-----	1,4-Dichlorobenzene	0.50	U
95-50-1-----	1,2-Dichlorobenzene	0.50	U
95-47-6-----	o-Xylene	0.50	U
-----	m,p-Xylenes	0.50	U
1330-20-1-----	Xylenes (total)	0.50	U
594-20-7-----	2,2-Dichloropropane	0.50	U
563-58-6-----	1,1-Dichloropropene	0.50	U
74-95-3-----	Dibromomethane	0.50	U
106-93-4-----	1,2-Dibromoethane	0.50	U
142-28-9-----	1,3-Dichloropropane	0.50	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8-----	Isopropylbenzene	0.50	U
108-86-1-----	Bromobenzene	0.50	U
96-18-4-----	1,2,3-Trichloropropane	0.50	U
103-65-1-----	n-Propylbenzene	0.50	U
95-49-8-----	2-Chlorotoluene	0.50	U
108-67-8-----	1,3,5-Trimethylbenzene	0.50	U
106-43-4-----	4-Chlorotoluene	0.50	U
98-06-6-----	tert-Butylbenzene	0.50	U
95-63-6-----	1,2,4-Trimethylbenzene	0.50	U
135-98-8-----	sec-Butylbenzene	0.50	U
99-87-6-----	4-Isopropyltoluene	0.50	U
104-51-8-----	n-Butylbenzene	0.50	U
96-12-8-----	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1-----	1,2,4-Trichlorobenzene	0.50	U
87-68-3-----	Hexachlorobutadiene	0.50	U
91-20-3-----	Naphthalene	0.50	U
87-61-6-----	1,2,3-Trichlorobenzene	0.50	U
1634-04-4-----	tert-Butyl methyl ether	0.50	U
67-64-1-----	Acetone	0.92	J
78-93-3-----	2-Butanone	1.0	U
108-10-1-----	4-Methyl-2-pentanone	1.0	U
591-78-6-----	2-Hexanone	1.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR0041

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77468

Matrix: (soil/water) WATER      Lab Sample ID: 77468007

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2E214

Level:      (low/med)      LOW      Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2101

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468001

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E211

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.27	J
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.53	
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	7.7	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	7.7	
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.41	J
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2101

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468001

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E211

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	1.9	
78-93-3	2-Butanone	1.0	U
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2101

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77468

Matrix: (soil/water) WATER      Lab Sample ID: 77468001

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID: 8P2E211

Level: (low/med) LOW      Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
75-15-0-----	Carbon disulfide	1.0 U	
108-05-4-----	Vinyl acetate	1.0 U	
74-88-4-----	Iodomethane	1.0 U	

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2104

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E212

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.50	U
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.49	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.25	J
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	5.7	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	5.7	
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.44	J
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2104

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77468

Matrix: (soil/water) WATER      Lab Sample ID: 77468002

Sample wt/vol:      10.00 (g/ml) ML      Lab File ID:      8P2E212

Level: (low/med)      LOW      Date Received: 04/02/03

% Moisture: not dec.      \_\_\_\_\_      Date Analyzed: 04/08/03

GC Column: DB-624      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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	2.3	
78-93-3	2-Butanone	0.54	J
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2104
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Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468002

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E212

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
75-15-0-----	Carbon disulfide	1.0	U
108-05-4-----	Vinyl acetate	1.0	U
74-88-4-----	Iodomethane	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2107

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E213

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
74-97-5	Bromochloromethane	0.50	U
74-87-3	Chloromethane	0.50	U
74-83-9	Bromomethane	0.50	U
75-01-4	Vinyl chloride	0.51	
75-00-3	Chloroethane	0.50	U
75-09-2	Methylene chloride	0.41	J
75-35-4	1,1-Dichloroethylene	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
67-66-3	Chloroform	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U
156-60-5	trans-1,2-Dichloroethylene	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
56-23-5	Carbon tetrachloride	0.50	U
75-27-4	Bromodichloromethane	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethylene	44.8	
10061-01-5	cis-1,3-Dichloropropylene	0.50	U
540-59-0	1,2-Dichloroethylene (total)	44.8	
79-01-6	Trichloroethylene	0.50	U
124-48-1	Dibromochloromethane	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
71-43-2	Benzene	0.28	J
10061-02-6	trans-1,3-Dichloropropylene	0.50	U
75-25-2	Bromoform	0.50	U
127-18-4	Tetrachloroethylene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
108-88-3	Toluene	0.50	U
108-90-7	Chlorobenzene	0.50	U
100-41-4	Ethylbenzene	0.50	U
100-42-5	Styrene	0.50	U
107-06-2	Dichlorodifluoromethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2107

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E213

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
95-47-6	o-Xylene	0.50	U
	m,p-Xylenes	0.50	U
1330-20-1	Xylenes (total)	0.50	U
594-20-7	2,2-Dichloropropane	0.50	U
563-58-6	1,1-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
103-65-1	n-Propylbenzene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
106-43-4	4-Chlorotoluene	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
99-87-6	4-Isopropyltoluene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U
1634-04-4	tert-Butyl methyl ether	0.50	U
67-64-1	Acetone	2.1	
78-93-3	2-Butanone	0.29	J
108-10-1	4-Methyl-2-pentanone	1.0	U
591-78-6	2-Hexanone	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2107

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468003

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 8P2E213

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/08/03

GC Column: DB-624 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

75-15-0-----	Carbon disulfide	1.0 U	
108-05-4-----	Vinyl acetate	1.0 U	
74-88-4-----	Iodomethane	1.0 U	

# QUALITY CONTROL SUMMARY

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 #	OTHER	TOT OUT
	=====	=====	=====	=====	=====	=====
01	VBLK01LCS	104	94	96		0
02	VBLK01	96	94	101		0
03	TR2101	98	90	108		0
04	TR2104	100	96	110		0
05	TR2107	93	87	109		0
06	TR0041	98	93	109		0
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QC LIMITS

SMC1 (TOL) = Toluene-d8 (73-112)  
 SMC2 (BFB) = Bromofluorobenzene (73-123)  
 SMC3 = Dibromofluoromethane (81-126)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Bromochloromethane	5.0	0.0	4.9	98	70-130
Chloromethane	5.0	0.0	4.4	88	70-130
Bromomethane	5.0	0.0	4.1	82	70-130
Vinyl chloride	5.0	0.0	4.5	90	70-130
Chloroethane	5.0	0.0	4.9	98	70-130
Methylene chloride	5.0	0.0	5.1	102	70-130
1,1-Dichloroethylene	5.0	0.0	4.8	96	70-130
1,1-Dichloroethane	5.0	0.0	4.8	96	70-130
Chloroform	5.0	0.0	5.0	100	70-130
1,2-Dichloroethane	5.0	0.0	5.1	102	70-130
trans-1,2-Dichloroethyl	5.0	0.0	4.9	98	70-130
1,1,1-Trichloroethane	5.0	0.0	5.0	100	70-130
Carbon tetrachloride	5.0	0.0	4.8	96	70-130
Bromodichloromethane	5.0	0.0	4.7	94	70-130
1,2-Dichloropropane	5.0	0.0	4.7	94	70-130
cis-1,2-Dichloroethylen	5.0	0.0	4.8	96	70-130
cis-1,3-Dichloropropyle	5.0	0.0	4.8	96	70-130
1,2-Dichloroethylene (t	10.0	0.0	9.7	97	70-130
Trichloroethylene	5.0	0.0	4.9	98	70-130
Dibromochloromethane	5.0	0.0	4.6	92	70-130
1,1,2-Trichloroethane	5.0	0.0	4.8	96	70-130
Benzene	5.0	0.0	5.0	100	70-130
trans-1,3-Dichloropropy	5.0	0.0	4.8	96	70-130
Bromoform	5.0	0.0	4.3	86	70-130
Tetrachloroethylene	5.0	0.0	5.4	108	70-130
1,1,2,2-Tetrachloroetha	5.0	0.0	5.0	100	70-130
Toluene	5.0	0.0	5.0	100	70-130
Chlorobenzene	5.0	0.0	5.0	100	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Ethylbenzene	5.0	0.0	5.3	106	70-130
Styrene	5.0	0.0	5.2	104	70-130
Dichlorodifluoromethane	5.0	0.0	5.0	100	70-130
Trichlorofluoromethane	5.0	0.0	4.4	88	70-130
1,3-Dichlorobenzene	5.0	0.0	5.0	100	70-130
1,4-Dichlorobenzene	5.0	0.0	5.0	100	70-130
1,2-Dichlorobenzene	5.0	0.0	5.0	100	70-130
o-Xylene	5.0	0.0	5.1	102	70-130
m,p-Xylenes	10.0	0.0	10.4	104	70-130
Xylenes (total)	15.0	0.0	15.5	103	70-130
2,2-Dichloropropane	5.0	0.0	4.8	96	70-130
1,1-Dichloropropene	5.0	0.0	5.0	100	70-130
Dibromomethane	5.0	0.0	4.9	98	70-130
1,2-Dibromoethane	5.0	0.0	4.8	96	70-130
1,3-Dichloropropane	5.0	0.0	4.9	98	70-130
1,1,1,2-Tetrachloroetha	5.0	0.0	4.8	96	70-130
Isopropylbenzene	5.0	0.0	5.1	102	70-130
Bromobenzene	5.0	0.0	5.0	100	70-130
1,2,3-Trichloropropane	5.0	0.0	4.9	98	70-130
n-Propylbenzene	5.0	0.0	5.1	102	70-130
2-Chlorotoluene	5.0	0.0	5.2	104	70-130
1,3,5-Trimethylbenzene	5.0	0.0	5.1	102	70-130
4-Chlorotoluene	5.0	0.0	5.2	104	70-130
tert-Butylbenzene	5.0	0.0	4.9	98	70-130
1,2,4-Trimethylbenzene	5.0	0.0	5.2	104	70-130
sec-Butylbenzene	5.0	0.0	5.1	102	70-130
4-Isopropyltoluene	5.0	0.0	5.2	104	70-130
n-Butylbenzene	5.0	0.0	5.2	104	70-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS: \_\_\_\_\_

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,2-Dibromo-3-chloropro	5.0	0.0	3.8	76	70-130
1,2,4-Trichlorobenzene	5.0	0.0	5.2	104	70-130
Hexachlorobutadiene	5.0	0.0	5.3	106	70-130
Naphthalene	5.0	0.0	4.8	96	70-130
1,2,3-Trichlorobenzene	5.0	0.0	5.3	106	70-130
tert-Butyl methyl ether	5.0	0.0	4.8	96	70-130
Acetone	25.0	0.0	23.8	95	70-130
2-Butanone	25.0	0.0	22.7	91	70-130
4-Methyl-2-pentanone	25.0	0.0	25.7	103	70-130
2-Hexanone	25.0	0.0	25.3	101	70-130
Carbon disulfide	25.0	0.0	24.6	98	70-130
Vinyl acetate	25.0	0.0	26.8	107	70-130
Iodomethane	25.0	0.0	25.5	102	70-130

# 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 69 outside limits

COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Lab File ID: 8P2E203D Lab Sample ID: 1200405473

Date Analyzed: 04/08/03 Time Analyzed: 0904

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA8

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200405474	8P2E202LCSD	0832
02	TR2101	77468001	8P2E211	1246
03	TR2104	77468002	8P2E212	1312
04	TR2107	77468003	8P2E213	1338
05	TR0041	77468007	8P2E214	1404
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Lab File ID: 8C301 BFB Injection Date: 03/26/03

Instrument ID: VOA8 BFB Injection Time: 0654

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.3
75	30.0 - 60.0% of mass 95	46.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.2 ( 0.2)1
174	50.0 - 100.0% of mass 95	77.1
175	5.0 - 9.0% of mass 174	6.0 ( 7.7)1
176	95.0 - 101.0% of mass 174	75.1 ( 97.4)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.9)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0002	W8V030326-01	8P2C304A	03/26/03	0810
02	VSTD0005	W8V030326-02	8P2C305A	03/26/03	0836
03	VSTD001	W8V030326-03	8P2C306A	03/26/03	0902
04	VSTD002	W8V030326-04	8P2C307A	03/26/03	0928
05	VSTD005	W8V030326-05	8P2C308A	03/26/03	0954
06	VSTD010	W8V030326-06	8P2C309A	03/26/03	1020
07	VSTD020	W8V030326-07	8P2C310A	03/26/03	1046
08	VSTD050	W8V030326-08	8P2C311A	03/26/03	1112
09	VSTD100	W8V030326-09	8P2C312A	03/26/03	1138
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468  
 Lab File ID: 8E201 BFB Injection Date: 04/08/03  
 Instrument ID: VOA8 BFB Injection Time: 0817  
 GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	46.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.4 ( 0.5)1
174	50.0 - 100.0% of mass 95	80.8
175	5.0 - 9.0% of mass 174	6.0 ( 7.4)1
176	95.0 - 101.0% of mass 174	78.9 ( 97.6)1
177	5.0 - 9.0% of mass 176	5.1 ( 6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005	W8V030408-01	8P2E202	04/08/03	0832
02	VBLK01LCS	1200405474	8P2E202LCSD	04/08/03	0832
03	VBLK01	1200405473	8P2E203D	04/08/03	0904
04	TR2101	77468001	8P2E211	04/08/03	1246
05	TR2104	77468002	8P2E212	04/08/03	1312
06	TR2107	77468003	8P2E213	04/08/03	1338
07	TR0041	77468007	8P2E214	04/08/03	1404
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8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468  
 Lab File ID (Standard): 8P2E202 Date Analyzed: 04/08/03  
 Instrument ID: VOA8 Time Analyzed: 0832  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	594714	4.50	420450	6.78	226752	8.88
UPPER LIMIT	1189428	5.00	840900	7.28	453504	9.38
LOWER LIMIT	297357	4.00	210225	6.28	113376	8.38
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK01LCS	594714	4.50	420450	6.78	226752	8.88
02 VBLK01	535312	4.50	397414	6.78	209728	8.89
03 TR2101	528467	4.50	385082	6.77	211248	8.88
04 TR2104	511324	4.50	373457	6.77	199342	8.88
05 TR2107	524880	4.50	395257	6.77	221554	8.88
06 TR0041	505787	4.50	372577	6.77	203904	8.88
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IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

**GC/MS  
VOLATILE  
ANALYSIS**

**GC/MS Volatile Organics  
Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)  
SDG 77469**

**Method/Analysis Information**

Procedure: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer  
Analytical Method: SW846 8260B  
Prep Method: SW846 5030B  
Analytical Batch Number: 244217

**Sample Analysis**

The following client and quality control samples were analyzed to complete this sample delivery group/work order using the methods referenced in the Analysis Information section:

Sample ID	Client ID
77469001	ARD2188
77469002	ARD2187
77469003	ARD2186
1200407010	Method Blank (MB)
1200407011	Laboratory Control Sample (LCS)
1200406337	77469001(ARD2188) Matrix Spike (MS)
1200406338	77469001(ARD2188) Matrix Spike Duplicate (MSD)

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV.7.

**Calibration Information**

Due to software limitations, all the data files comprising the initial calibration curve may not be listed on the initial calibration summary form. All calibration files are listed in the calibration history report in the "Standard Data" section.

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Page 1 of 4

**Initial Calibration**

All the initial calibration requirements were met.

**Continuing Calibration Verification Requirements**

The instrument was calibrated to meet the 8260B initial calibration criteria. Although sample analyses are quantitated using the average response factor generated from the initial calibration, a daily continuing calibration verification standard (CCV) was analyzed to verify the accuracy and acceptability of the multi-point initial calibration. The criteria adopted by the laboratory to determine the acceptability and accuracy of the initial calibration is a  $\pm 40\%$  response factor difference for all non-CCC analytes of interest. In the following CCV, the following target analyte(s) did not meet the criteria:

<u>Date of CCV</u>	<u>Target Analyte(s)</u>
04/10/03	Cyclohexanone

The response factor this target analyte in the CCV was above the average response factors in the initial calibration. Detection and quantitation of this analyte in samples would be considered biased high.

**Quality Control (QC) Information**

**Method Blank Acceptance**

Target analytes were not detected above the reporting limit in the blank.

**Surrogate Recoveries**

Surrogate recoveries, in all samples and quality control samples, were within the acceptance limits.

**Laboratory Control Sample Recovery Statement (LCS)**

All the required analyte recoveries in the LCS were within the acceptance limits.

**QC Sample Designation**

The following sample was designated for spike analysis: 77469001 (ARD2188).

**Spike Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Spike Duplicate Recovery Statement**

All the required spike recoveries were within the acceptance limits.

**Relative Percent Difference Statement (RPD)**

The RPD between spike recoveries were within the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses, in all samples and quality control samples, met the required acceptance criteria.

**Technical Information**

**Holding Time Specifications**

All the samples were prepared and/or analyzed within the required holding time period.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

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Page 2 of 4

**Preparation/Analytical Method Verification**  
All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples were diluted because target analyte concentrations exceeded the calibration range:

1200406337 (ARD2188) Matrix Spike	1:5
1200406338 (ARD2188) Matrix Spike Duplicate	1:5
77469001 (ARD2188)	1:5

**Sample Re-prep/Re-analysis**

Re-analyses were not required for samples in this sample group/work order.

**Miscellaneous Information**

**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Nonconformance (NCR) Documentation**

A nonconformance report was not required for this sample delivery group/work order.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this sample delivery group/work order.

**Additional Comments**

There were no additional comments.

**System Configuration**

The laboratory utilizes the following GC/MS configurations:

**Chromatographic Columns**

Chromatographic separation of volatile components is accomplished through analysis on one of the following columns:

Column ID	Column Description
J&W1	DB-624, 60m x 0.25mm, 1.4um
J&W2	DB-624, 75m x 0.53mm, 3.0um

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**Instrument Configuration**

Instrument systems are reference in the raw data and individual form headers by the Instrument ID designations below:

<b>Instrument ID</b>	<b>System Configuration</b>	<b>Chromatographic Column</b>	<b>P &amp; T Trap</b>
VOA1	HP6890/HP5973	J&W1	Trap C
VOA2	HP6890/HP5973	J&W1	Trap C
VOA4	HP5890/HP5972	J&W1	Trap K
VOA5	HP5890/HP5972	J&W1	Trap C
VOA7	HP5890/HP5972	J&W2	Trap K
VOA8	HP6890/HP5973	J&W1	Trap K
VOA9	HP6890/HP5973	J&W1	Trap C

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.



**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:                     *Am. Clark*                    

Date:                     04-22-03

## Roadmap for PARS 77469 VOA

This roadmap was analyzed by Sara Jones on 04-11-2003, 08:40.

This roadmap was reviewed by Debbie Smith on 04-14-2003, 14:14.

This roadmap was packaged by LySandra Gathers on 04-14-2003, 17:27.

Sample

exclude	manual	datafile	smplid	clientid	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e407.d	77469001	ARD2188	10-APR-2003	11:23	77469.sub	1.00000	RR 5X for cis-1,2-DCE; report with 9E412
<input checked="" type="checkbox"/>	N	/chem/VOA9.i/dcb2/9e407.d	77469001	ARD2188	10-APR-2003	11:23	77469.sub	1.00000	
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e408.d	77469002	ARD2187	10-APR-2003	11:51	77469.sub	1.00000	
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e409.d	77469003	ARD2186	10-APR-2003	12:19	77469.sub	1.00000	
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e412.d	77469001	ARD2188DL	10-APR-2003	13:44	77469.sub	5.00000	5X for cis-1,2-DCE; report with 9E407
<input checked="" type="checkbox"/>	N	/chem/VOA9.i/dcb2/9e412.d	77469001	ARD2188DL	10-APR-2003	13:44	77469.sub	5.00000	

QC Sample

exclude	manual	datafile	smplid	clientid	sampletype	injdate	injtime	sublist	dilution	comment
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e402PARSicsA.d	1200407011	VBLK01LCS	ics	10-APR-2003	08:52	77469.sub	1.00000	
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e406A.d	1200407010	VBLK01	mb	10-APR-2003	10:42	77469.sub	1.00000	
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e413.d	1200406337	ARD2188DLMS	ms	10-APR-2003	14:11	77469.sub	5.00000	5X
<input type="checkbox"/>	N	/chem/VOA9.i/041003v9.b/9e414.d	1200406338	ARD2188DLMSD	msd	10-APR-2003	14:39	77469.sub	5.00000	5X

# SAMPLE DATA SUMMARY

CHAIN OF CUSTODY RECORD

No. 43

with Army Report  
 7415155.01200  
 Landfill

John Parsons  
 Boston Parsons

PROJECT NO. 7415155.01200  
 PROJECT NAME: Todd Heino  
 Parsons Boston

NOTES: (reference OARF and/or analytical protocols to be used)

Send results to:

PARSONS Boston  
 280 Elmwood Davis Road-Suite 942  
 Liverpool, NY-13090-617457  
 Telephone: (315) 461-6900  
 Fax: (315) 461-0526  
 Lab Submitted to:

GEL  
 Charleston SC

FIELD SAMPLE ID	LOCATION DESCRIPTION	DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles
101	MWT-2	4/1/03	0855	X		SW	9
104	MWT-5	4/1/03	0950	X		SW	9
107	MWT-8	4/1/03	1105	X		SW	9
118	MW-44A	4/1/03	1330	X		SW	9
118	MW-43	4/1/03	1340	X		SW	9
218	MW-40	4/1/03	1500	X		SW	9
411	Tri Blank					W	2

DATE: 4/1/03  
 TIME: 1800  
 Shipped via: FedEx  
 A/c #: 839734548974

ANALYSES REQUESTED	RESERVED BY (Signature)	DATE	TIME	COOL/TAMP
VOC 524.2	<i>[Signature]</i>	4/2/03	1030	3
VOC TCL				
Nitrate/Sulfate/Chloride				
MFE				
TOC				
Metals				

1P - East Field Blank 1/4  
 1R - Drain Waste  
 1W - Soil Waste  
 1S - Other Soil

WATER  
 MW - Monitoring Well  
 LC - Leachate  
 SW - Surface Water  
 DW - Drain Water

FD - Field Deployer  
 LH - Manifest  
 OW - Oil Water Separator  
 PF - Piping Run

ST - Storm Water  
 WW - Wastewater  
 OC - Other Liquid (eg. Drain liquid)

MATRIX  
 W - Water  
 S - Soil

QUALITY CONTROL  
 FD - Field Blank (with date)  
 TB - Trip Blank (with date)  
 WB - Wash Blank (with date)

Date	Time	Cooler Temp	Seal Temp	Seal Temp	Seal Temp
4/2/03	1030	3			

Trip Blank

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2186

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E409

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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

75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
107-02-8	Acrolein	5.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5.0	U
76-13-1	Trichlorotrifluoroethane	5.0	U
74-88-4	Iodomethane	5.0	U
75-15-0	Carbon disulfide	5.0	U
75-05-8	Acetonitrile	25.0	U
78-83-1	Isobutyl alcohol	50.0	U
107-05-1	Allyl chloride	5.0	U
75-09-2	Methylene chloride	5.0	U
107-13-1	Acrylonitrile	5.0	U
1634-04-4	tert-Butyl methyl ether	5.0	U
156-60-5	trans-1,2-Dichloroethylene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
108-05-4	Vinyl acetate	5.0	U
126-99-8	2-Chloro-1,3-butadiene	1.0	U
78-93-3	2-Butanone	5.0	U
156-59-2	cis-1,2-Dichloroethylene	1.0	U
540-59-0	1,2-Dichloroethylene (total)	1.0	U
594-20-7	2,2-Dichloropropane	1.0	U
126-98-7	Methacrylonitrile	5.0	U
107-12-0	Propionitrile	5.0	U
74-97-5	Bromochloromethane	1.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
56-23-5	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2186

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E409

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	1.0	U
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
10061-01-5-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2186

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E409

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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
96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2187

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77469

Matrix: (soil/water) WATER      Lab Sample ID: 77469002

Sample wt/vol: 5.000 (g/ml) ML      Lab File ID: 9E408

Level: (low/med) LOW      Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/10/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

CONCENTRATION UNITS:  
CAS NO.      COMPOUND      (ug/L or ug/Kg) UG/L      Q

75-71-8-----	Dichlorodifluoromethane	1.0	U
74-87-3-----	Chloromethane	1.0	U
75-01-4-----	Vinyl chloride	1.0	U
74-83-9-----	Bromomethane	1.0	U
75-00-3-----	Chloroethane	1.0	U
75-69-4-----	Trichlorofluoromethane	1.0	U
107-02-8-----	Acrolein	5.0	U
75-35-4-----	1,1-Dichloroethylene	1.0	U
67-64-1-----	Acetone	5.0	U
76-13-1-----	Trichlorotrifluoroethane	5.0	U
74-88-4-----	Iodomethane	5.0	U
75-15-0-----	Carbon disulfide	5.0	U
75-05-8-----	Acetonitrile	25.0	U
78-83-1-----	Isobutyl alcohol	50.0	U
107-05-1-----	Allyl chloride	5.0	U
75-09-2-----	Methylene chloride	5.0	U
107-13-1-----	Acrylonitrile	5.0	U
1634-04-4-----	tert-Butyl methyl ether	5.0	U
156-60-5-----	trans-1,2-Dichloroethylene	1.0	U
75-34-3-----	1,1-Dichloroethane	1.0	U
108-05-4-----	Vinyl acetate	5.0	U
126-99-8-----	2-Chloro-1,3-butadiene	1.0	U
78-93-3-----	2-Butanone	5.0	U
156-59-2-----	cis-1,2-Dichloroethylene	1.0	U
540-59-0-----	1,2-Dichloroethylene (total)	1.0	U
594-20-7-----	2,2-Dichloropropane	1.0	U
126-98-7-----	Methacrylonitrile	5.0	U
107-12-0-----	Propionitrile	5.0	U
74-97-5-----	Bromochloromethane	1.0	U
67-66-3-----	Chloroform	1.0	U
71-55-6-----	1,1,1-Trichloroethane	1.0	U
563-58-6-----	1,1-Dichloropropene	1.0	U
56-23-5-----	Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0



1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2187

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E408

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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

107-06-2-----	1,2-Dichloroethane	1.0	U
71-43-2-----	Benzene	1.0	U
79-01-6-----	Trichloroethylene	1.0	U
78-87-5-----	1,2-Dichloropropane	1.0	U
80-62-6-----	Methyl methacrylate	5.0	U
74-95-3-----	Dibromomethane	1.0	U
75-27-4-----	Bromodichloromethane	1.0	U
79-46-9-----	2-Nitropropane	5.0	U
110-75-8-----	2-Chloroethylvinyl ether	5.0	U
10061-01-5-----	cis-1,3-Dichloropropylene	1.0	U
108-10-1-----	4-Methyl-2-pentanone	5.0	U
108-88-3-----	Toluene	1.0	U
10061-02-6-----	trans-1,3-Dichloropropylene	1.0	U
97-63-2-----	Ethyl methacrylate	5.0	U
79-00-5-----	1,1,2-Trichloroethane	1.0	U
142-28-9-----	1,3-Dichloropropane	1.0	U
591-78-6-----	2-Hexanone	5.0	U
127-18-4-----	Tetrachloroethylene	1.0	U
124-48-1-----	Dibromochloromethane	1.0	U
106-93-4-----	1,2-Dibromoethane	1.0	U
108-90-7-----	Chlorobenzene	1.0	U
630-20-6-----	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4-----	Ethylbenzene	1.0	U
95-47-6-----	o-Xylene	1.0	U
-----	m,p-Xylenes	2.0	U
10061-01-5-----	Xylenes (total)	1.0	U
100-42-5-----	Styrene	1.0	U
75-25-2-----	Bromoform	1.0	U
98-82-8-----	Isopropylbenzene	1.0	U
1476-11-5-----	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1-----	Cyclohexanone	50.0	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6-----	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2187

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E408

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. Date Analyzed: 04/10/03

GC Column: DB-624 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

96-18-4	1,2,3-Trichloropropane	1.0	U
108-86-1	Bromobenzene	1.0	U
103-65-1	n-Propylbenzene	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
76-01-7	Pentachloroethane	5.0	U
99-87-6	4-Isopropyltoluene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
100-44-7	Benzyl chloride	5.0	U
104-51-8	n-Butylbenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
108-60-1	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
91-20-3	Naphthalene	1.0	U
87-61-6	1,2,3-Trichlorobenzene	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188
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Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77469

Matrix: (soil/water) WATER      Lab Sample ID: 77469001

Sample wt/vol:      5.000 (g/ml) ML      Lab File ID:      9E407

Level: (low/med) LOW      Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/10/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 1.0

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

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

75-71-8-----Dichlorodifluoromethane	1.0	U
74-87-3-----Chloromethane	1.0	U
75-01-4-----Vinyl chloride	81.2	U
74-83-9-----Bromomethane	1.0	U
75-00-3-----Chloroethane	1.0	U
75-69-4-----Trichlorofluoromethane	1.0	U
107-02-8-----Acrolein	5.0	U
75-35-4-----1,1-Dichloroethylene	0.45	J
67-64-1-----Acetone	5.0	U
76-13-1-----Trichlorotrifluoroethane	5.0	U
74-88-4-----Iodomethane	5.0	U
75-15-0-----Carbon disulfide	5.0	U
75-05-8-----Acetonitrile	25.0	U
78-83-1-----Isobutyl alcohol	50.0	U
107-05-1-----Allyl chloride	5.0	U
75-09-2-----Methylene chloride	5.0	U
107-13-1-----Acrylonitrile	5.0	U
1634-04-4-----tert-Butyl methyl ether	5.0	U
156-60-5-----trans-1,2-Dichloroethylene	1.7	U
75-34-3-----1,1-Dichloroethane	4.3	U
108-05-4-----Vinyl acetate	5.0	U
126-99-8-----2-Chloro-1,3-butadiene	1.0	U
78-93-3-----2-Butanone	5.0	U
156-59-2-----cis-1,2-Dichloroethylene	221	E
540-59-0-----1,2-Dichloroethylene (total)	223	E
594-20-7-----2,2-Dichloropropane	1.0	U
126-98-7-----Methacrylonitrile	5.0	U
107-12-0-----Propionitrile	5.0	U
74-97-5-----Bromochloromethane	1.0	U
67-66-3-----Chloroform	1.0	U
71-55-6-----1,1,1-Trichloroethane	1.6	U
563-58-6-----1,1-Dichloropropene	1.0	U
56-23-5-----Carbon tetrachloride	1.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E407

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	UG/L	Q
107-06-2	1,2-Dichloroethane	1.0	U
71-43-2	Benzene	1.0	U
79-01-6	Trichloroethylene	10.8	
78-87-5	1,2-Dichloropropane	1.0	U
80-62-6	Methyl methacrylate	5.0	U
74-95-3	Dibromomethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
79-46-9	2-Nitropropane	5.0	U
110-75-8	2-Chloroethylvinyl ether	5.0	U
10061-01-5	cis-1,3-Dichloropropylene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropylene	1.0	U
97-63-2	Ethyl methacrylate	5.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
591-78-6	2-Hexanone	5.0	U
127-18-4	Tetrachloroethylene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
100-41-4	Ethylbenzene	1.0	U
95-47-6	o-Xylene	1.0	U
	m,p-Xylenes	2.0	U
10061-01-5	Xylenes (total)	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
98-82-8	Isopropylbenzene	1.0	U
1476-11-5	cis-1,4-Dichloro-2-butene	5.0	U
108-94-1	Cyclohexanone	50.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E407

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 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

96-18-4-----	1,2,3-Trichloropropane	1.0	U
108-86-1-----	Bromobenzene	1.0	U
103-65-1-----	n-Propylbenzene	1.0	U
95-49-8-----	2-Chlorotoluene	1.0	U
108-67-8-----	1,3,5-Trimethylbenzene	1.0	U
95-63-6-----	1,2,4-Trimethylbenzene	1.0	U
106-43-4-----	4-Chlorotoluene	1.0	U
98-06-6-----	tert-Butylbenzene	1.0	U
135-98-8-----	sec-Butylbenzene	1.0	U
76-01-7-----	Pentachloroethane	5.0	U
99-87-6-----	4-Isopropyltoluene	1.0	U
541-73-1-----	1,3-Dichlorobenzene	1.0	U
106-46-7-----	1,4-Dichlorobenzene	1.0	U
100-44-7-----	Benzyl chloride	5.0	U
104-51-8-----	n-Butylbenzene	1.0	U
95-50-1-----	1,2-Dichlorobenzene	1.0	U
108-60-1-----	bis(2-Chloroisopropyl) ether	5.0	U
96-12-8-----	1,2-Dibromo-3-chloropropane	1.0	U
120-82-1-----	1,2,4-Trichlorobenzene	1.0	U
87-68-3-----	Hexachlorobutadiene	1.0	U
91-20-3-----	Naphthalene	1.0	U
87-61-6-----	1,2,3-Trichlorobenzene	1.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188DL

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E412

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 5.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	74.9	D
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
107-02-8	Acrolein	25.0	U
75-35-4	1,1-Dichloroethylene	5.0	U
67-64-1	Acetone	25.0	U
76-13-1	Trichlorotrifluoroethane	25.0	U
74-88-4	Iodomethane	25.0	U
75-15-0	Carbon disulfide	25.0	U
75-05-8	Acetonitrile	125	U
78-83-1	Isobutyl alcohol	250	U
107-05-1	Allyl chloride	25.0	U
75-09-2	Methylene chloride	25.0	U
107-13-1	Acrylonitrile	25.0	U
1634-04-4	tert-Butyl methyl ether	25.0	U
156-60-5	trans-1,2-Dichloroethylene	5.0	U
75-34-3	1,1-Dichloroethane	3.7	DJ
108-05-4	Vinyl acetate	25.0	U
126-99-8	2-Chloro-1,3-butadiene	5.0	U
78-93-3	2-Butanone	25.0	U
156-59-2	cis-1,2-Dichloroethylene	194	D
540-59-0	1,2-Dichloroethylene (total)	194	D
594-20-7	2,2-Dichloropropane	5.0	U
126-98-7	Methacrylonitrile	25.0	U
107-12-0	Propionitrile	25.0	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
563-58-6	1,1-Dichloropropene	5.0	U
56-23-5	Carbon tetrachloride	5.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188DL

Lab Name: GENERAL ENGINEERING LABS Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix: (soil/water) WATER Lab Sample ID: 77469001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 9E412

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 04/10/03

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 5.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

107-06-2	1,2-Dichloroethane	5.0	U
71-43-2	Benzene	5.0	U
79-01-6	Trichloroethylene	10.0	D
78-87-5	1,2-Dichloropropane	5.0	U
80-62-6	Methyl methacrylate	25.0	U
74-95-3	Dibromomethane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
79-46-9	2-Nitropropane	25.0	U
110-75-8	2-Chloroethylvinyl ether	25.0	U
10061-01-5	cis-1,3-Dichloropropylene	5.0	U
108-10-1	4-Methyl-2-pentanone	25.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropylene	5.0	U
97-63-2	Ethyl methacrylate	25.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
142-28-9	1,3-Dichloropropane	5.0	U
591-78-6	2-Hexanone	25.0	U
127-18-4	Tetrachloroethylene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
	m,p-Xylenes	10.0	U
10061-01-5	Xylenes (total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
1476-11-5	cis-1,4-Dichloro-2-butene	25.0	U
108-94-1	Cyclohexanone	25.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
110-57-6	trans-1,4-Dichloro-2-butene	25.0	U

FORM I VOA

OLM03.0

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188DL

Lab Name: GENERAL ENGINEERING LABS      Contract: N/A

Lab Code: N/A      Case No.: N/A      SAS No.: N/A      SDG No.: 77469

Matrix: (soil/water) WATER      Lab Sample ID: 77469001

Sample wt/vol:      5.000 (g/ml) ML      Lab File ID: 9E412

Level: (low/med) LOW      Date Received: 04/02/03

% Moisture: not dec. \_\_\_\_\_      Date Analyzed: 04/10/03

GC Column: DB-624      ID: 0.25 (mm)      Dilution Factor: 5.0

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

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

96-18-4-----1,2,3-Trichloropropane	5.0	U
108-86-1-----Bromobenzene	5.0	U
103-65-1-----n-Propylbenzene	5.0	U
95-49-8-----2-Chlorotoluene	5.0	U
108-67-8-----1,3,5-Trimethylbenzene	5.0	U
95-63-6-----1,2,4-Trimethylbenzene	5.0	U
106-43-4-----4-Chlorotoluene	5.0	U
98-06-6-----tert-Butylbenzene	5.0	U
135-98-8-----sec-Butylbenzene	5.0	U
76-01-7-----Pentachloroethane	25.0	U
99-87-6-----4-Isopropyltoluene	5.0	U
541-73-1-----1,3-Dichlorobenzene	5.0	U
106-46-7-----1,4-Dichlorobenzene	5.0	U
100-44-7-----Benzyl chloride	25.0	U
104-51-8-----n-Butylbenzene	5.0	U
95-50-1-----1,2-Dichlorobenzene	5.0	U
108-60-1-----bis(2-Chloroisopropyl) ether	25.0	U
96-12-8-----1,2-Dibromo-3-chloropropane	5.0	U
120-82-1-----1,2,4-Trichlorobenzene	5.0	U
87-68-3-----Hexachlorobutadiene	5.0	U
91-20-3-----Naphthalene	5.0	U
87-61-6-----1,2,3-Trichlorobenzene	5.0	U



# QUALITY CONTROL SUMMARY

2A  
 WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

	EPA SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	VBLK01LCS	89	82	78		0
02	VBLK01	90	83	82		0
03	ARD2188	90	81	82		0
04	ARD2187	90	80	79		0
05	ARD2186	90	82	82		0
06	ARD2188DL	91	82	81		0
07	ARD2188DLMS	91	82	77		0
08	ARD2188DLMSD	92	83	78		0
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QC LIMITS

SMC1 = Dibromofluoromethane (74-144)  
 SMC2 (TOL) = Toluene-d8 (76-129)  
 SMC3 (BFB) = Bromofluorobenzene (69-137)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.0	0.0	40.7	81	68-141
Chloromethane	50.0	0.0	39.2	78	72-142
Vinyl chloride	50.0	0.0	49.8	100	67-141
Bromomethane	50.0	0.0	44.4	89	61-144
Chloroethane	50.0	0.0	49.3	99	68-132
Trichlorofluoromethane	50.0	0.0	41.9	84	65-142
1,1-Dichloroethylene	50.0	0.0	47.8	96	66-132
Acetone	250	0.0	237	95	71-139
Iodomethane	250	0.0	282	113	68-126
Carbon disulfide	250	0.0	256	102	68-120
Acetonitrile	1250	0.0	1140	91	70-135
Methylene chloride	50.0	0.0	45.9	92	73-112
tert-Butyl methyl ether	50.0	0.0	53.4	107	70-130
trans-1,2-Dichloroethyl	50.0	0.0	53.9	108	78-125
1,1-Dichloroethane	50.0	0.0	53.8	108	80-119
Vinyl acetate	250	0.0	255	102	67-136
2-Butanone	250	0.0	251	100	64-134
cis-1,2-Dichloroethylen	50.0	0.0	55.8	112	80-117
1,2-Dichloroethylene (t	100	0.0	110	110	70-130
2,2-Dichloropropane	50.0	0.0	59.1	118	74-142
Bromochloromethane	50.0	0.0	51.9	104	75-125
Chloroform	50.0	0.0	53.9	108	80-124
1,1,1-Trichloroethane	50.0	0.0	55.2	110	72-136
1,1-Dichloropropene	50.0	0.0	55.0	110	84-126
Carbon tetrachloride	50.0	0.0	58.8	118	66-141
1,2-Dichloroethane	50.0	0.0	49.2	98	67-131
Benzene	50.0	0.0	52.5	105	78-116
Trichloroethylene	50.0	0.0	53.3	107	83-122

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,2-Dichloropropane	50.0	0.0	51.2	102	75-119
Dibromomethane	50.0	0.0	54.1	108	80-126
Bromodichloromethane	50.0	0.0	52.7	105	78-127
2-Chloroethylvinyl ethe	250	0.0	191	76	63-131
cis-1,3-Dichloropropyle	50.0	0.0	54.1	108	77-129
4-Methyl-2-pentanone	250	0.0	260	104	69-127
Toluene	50.0	0.0	53.8	108	79-118
trans-1,3-Dichloropropy	50.0	0.0	54.6	109	67-132
1,1,2-Trichloroethane	50.0	0.0	51.0	102	76-119
1,3-Dichloropropane	50.0	0.0	49.8	100	83-114
2-Hexanone	250	0.0	262	105	60-136
Tetrachloroethylene	50.0	0.0	53.7	107	78-126
Dibromochloromethane	50.0	0.0	56.4	113	81-129
1,2-Dibromoethane	50.0	0.0	53.0	106	75-130
Chlorobenzene	50.0	0.0	53.8	108	82-118
1,1,1,2-Tetrachloroetha	50.0	0.0	53.1	106	82-119
Ethylbenzene	50.0	0.0	55.3	111	80-120
o-Xylene	50.0	0.0	58.2	116	81-118
m,p-Xylenes	100	0.0	112	112	79-119
Xylenes (total)	150	0.0	170	113	70-130
Styrene	50.0	0.0	59.3	119	82-121
Bromoform	50.0	0.0	56.6	113	79-141
Isopropylbenzene	50.0	0.0	48.8	98	73-115
1,1,2,2-Tetrachloroetha	50.0	0.0	47.0	94	66-127
1,2,3-Trichloropropane	50.0	0.0	48.6	97	76-120
Bromobenzene	50.0	0.0	50.7	101	78-118
n-Propylbenzene	50.0	0.0	54.4	109	78-126
2-Chlorotoluene	50.0	0.0	53.8	108	78-121

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENTS:

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3A  
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix Spike - EPA Sample No.: VBLK01

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	LCS CONCENTRATION (ug/l)	LCS % REC #	QC. LIMITS REC.
1,3,5-Trimethylbenzene	50.0	0.0	53.5	107	82-121
1,2,4-Trimethylbenzene	50.0	0.0	52.6	105	82-122
4-Chlorotoluene	50.0	0.0	51.5	103	78-122
tert-Butylbenzene	50.0	0.0	53.1	106	79-124
sec-Butylbenzene	50.0	0.0	54.6	109	83-123
4-Isopropyltoluene	50.0	0.0	56.1	112	83-125
1,3-Dichlorobenzene	50.0	0.0	54.4	109	80-122
1,4-Dichlorobenzene	50.0	0.0	52.8	106	70-130
n-Butylbenzene	50.0	0.0	56.5	113	79-127
1,2-Dichlorobenzene	50.0	0.0	51.9	104	80-116
1,2-Dibromo-3-chloropro	50.0	0.0	46.9	94	68-129
1,2,4-Trichlorobenzene	50.0	0.0	55.4	111	71-136
Hexachlorobutadiene	50.0	0.0	50.8	102	73-124
Naphthalene	50.0	0.0	49.4	99	64-143
1,2,3-Trichlorobenzene	50.0	0.0	53.3	107	71-134

# 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 71 outside limits

COMMENTS:

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## WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Matrix Spike - EPA Sample No.: ARD2188DL

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	MS CONCENTRATION (ug/l)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethylene	250	0.0	240	96	60-124
Benzene	250	0.0	260	104	71-116
Trichloroethylene	250	10.0	271	104	74-122
Toluene	250	0.0	259	104	72-116
Chlorobenzene	250	0.0	263	105	77-114

COMPOUND	SPIKE ADDED (ug/l)	MSD CONCENTRATION (ug/l)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethylene	250	235	94	2	20	60-124
Benzene	250	258	103	1	20	71-116
Trichloroethylene	250	273	105	1	20	74-122
Toluene	250	261	104	0	20	72-116
Chlorobenzene	250	258	103	2	20	77-114

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Lab File ID: 9E406A Lab Sample ID: 1200407010

Date Analyzed: 04/10/03 Time Analyzed: 1042

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VBLK01LCS	1200407011	9E402PARSLCS	0852
02	ARD2188	77469001	9E407	1123
03	ARD2187	77469002	9E408	1151
04	ARD2186	77469003	9E409	1219
05	ARD2188DL	77469001	9E412	1344
06	ARD2188DLMS	1200406337	9E413	1411
07	ARD2188DLMSD	1200406338	9E414	1439
08				
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5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Lab File ID: 9D307 BFB Injection Date: 04/02/03

Instrument ID: VOA9 BFB Injection Time: 1413

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.4
75	30.0 - 60.0% of mass 95	53.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.1 ( 0.1)1
174	50.0 - 100.0% of mass 95	69.6
175	5.0 - 9.0% of mass 174	5.2 ( 7.5)1
176	95.0 - 101.0% of mass 174	67.9 ( 97.6)1
177	5.0 - 9.0% of mass 176	4.4 ( 6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0005	W9V030402-01	9D309	04/02/03	1452
02	VSTD001	W9V030402-02	9D310	04/02/03	1519
03	VSTD002	W9V030402-03	9D312	04/02/03	1615
04	VSTD005	W9V030402-04	9D313	04/02/03	1642
05	VSTD010	W9V030402-05	9D314	04/02/03	1710
06	VSTD020	W9V030402-06	9D315	04/02/03	1737
07	VSTD050	W9V030402-07	9D316	04/02/03	1805
08	VSTD100	W9V030402-08	9D317	04/02/03	1832
09	VSTD005S	UVM030221-10A	9D318	04/02/03	1900
10	VSTD010S	UVM030221-11A	9D319	04/02/03	1927
11	VSTD025S	UVM030221-12A	9D320	04/02/03	1955
12	VSTD050S	UVM030221-13A	9D321	04/02/03	2022
13	VSTD100S	UVM030221-14A	9D322	04/02/03	2049
14	VSTD250S	UVM030221-15A	9D323	04/02/03	2116
15	VSTD500S	UVM030221-16A	9D324	04/02/03	2144
16					
17					
18					
19					
20					
21					
22					



5A  
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
BROMOFLUOROBENZENE (BFB)

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469

Lab File ID: 9E401 BFB Injection Date: 04/10/03

Instrument ID: VOA9 BFB Injection Time: 0842

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.9
75	30.0 - 60.0% of mass 95	53.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.2 ( 0.3)1
174	50.0 - 100.0% of mass 95	72.7
175	5.0 - 9.0% of mass 174	4.9 ( 6.7)1
176	95.0 - 101.0% of mass 174	70.5 ( 97.0)1
177	5.0 - 9.0% of mass 176	4.5 ( 6.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	UVM030404-01A	9E402	04/10/03	0852
02	VBLK01LCS	1200407011	9E402PARSLCSA	04/10/03	0852
03	VSTD250S	UVM030212-01B	9E403	04/10/03	0920
04	VBLK01	1200407010	9E406A	04/10/03	1042
05	ARD2188	77469001	9E407	04/10/03	1123
06	ARD2187	77469002	9E408	04/10/03	1151
07	ARD2186	77469003	9E409	04/10/03	1219
08	ARD2188DL	77469001	9E412	04/10/03	1344
09	ARD2188DLMS	1200406337	9E413	04/10/03	1411
10	ARD2188DLMSD	1200406338	9E414	04/10/03	1439
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

8A  
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A  
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77469  
 Lab File ID (Standard): 9E402 Date Analyzed: 04/10/03  
 Instrument ID: VOA9 Time Analyzed: 0852  
 GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) Y

	IS1 (FLB) AREA #	RT #	IS2 (CBZ) AREA #	RT #	IS3 (DCB) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	1055837	4.94	739866	7.94	381269	10.65
UPPER LIMIT	2111674	5.44	1479732	8.44	762538	11.15
LOWER LIMIT	527918	4.44	369933	7.44	190634	10.15
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 VBLK01LCS	1055837	4.94	739105	7.94	381269	10.65
02 VBLK01	977656	4.94	684922	7.94	317851	10.65
03 ARD2188	1053184	4.94	747730	7.94	341992	10.65
04 ARD2187	1043629	4.94	748025	7.94	348272	10.65
05 ARD2186	1000881	4.95	713910	7.94	333008	10.65
06 ARD2188DL	979814	4.95	697762	7.94	323708	10.65
07 ARD2188DLMS	1020531	4.94	733273	7.94	375128	10.65
08 ARD2188DLMSD	1067711	4.94	763141	7.94	387332	10.65
09						
10						
11						
12						
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16						
17						
18						
19						
20						
21						
22						

IS1 (FLB) = Fluorobenzene  
 IS2 (CBZ) = Chlorobenzene-d5  
 IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area  
 AREA LOWER LIMIT = - 50% of internal standard area  
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT  
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.  
 \* Values outside of QC limits.

GC  
SEMIVOLATILE  
FID  
ANALYSIS

**FID Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77468**

**Method/Analysis Information**

**Procedure:** Dissolved Gases by Flame Ionization Detector  
**Analytical Method:** SW846 8015A/B SVOC  
**Prep Method:** SW846 8015A/B SVOC  
**Analytical Batch Number:** 242857  
**Prep Batch Number:** 242856

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 8015A/B SVOC:

<b>Sample ID</b>	<b>Client ID</b>
77468001	TR2101
77468002	TR2104
77468003	TR2107
77468004	ARD2188
77468005	ARD2187
77468006	ARD2186
1200403144	Method Blank (MB)
1200403146	Laboratory Control Sample (LCS)

**Preparation/Analytical Method Verification**

Procedures for preparation, analysis, and reporting of analytical data are documented by General Engineering Laboratories, Inc. (GEL) as Standard Operating Procedures (SOP).

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**CCV Requirements**

All calibration verification standard(s) (CVS, ICV or CCV) requirements have been met for this SDG.

**Quality Control (QC) Information**

**Blank Acceptance**

The blank(s) analyzed with this SDG met the established acceptance criteria.

**Surrogate Recoveries**

No surrogate was added to any of the samples in this batch.

**LCS Recovery Statement**

The Laboratory Control Sample (LCS) spike recoveries for this SDG were within the established acceptance limits.

**QC Sample Designation**

No matrix spike (MS) or matrix spike duplicate (MSD) were analyzed with this SDG. A PARS sample from SDG 77559 and its duplicate was analyzed to measure the precision for this batch. The RPD between the sample and its duplicate met the acceptance criteria.

**Technical Information****Holding Time Specifications**

All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

Samples 77468001 (TR2101) (1:10), 77468002 (TR2104) (1:20) and 77468003 (TR2107) (1:10) were diluted due to the presence of over-range target analytes.

**Sample Re-prep/Re-analysis**

Samples 77468001 (TR2101), 77468002 (TR2104) and 77468003 (TR2107) were re-analyzed at dilutions for Methane.

**Miscellaneous Information****Nonconformance (NCR) Documentation**

No nonconformance reports (NCRs) have been generated for this SDG.

**Manual Integrations**

Certain standards and QC samples may have required manual integrations to correctly position the baseline as set in the calibration standard injections. If manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Samples 77468001 (TR2101), 77468002 (TR2104), 77468004 (ARD2188) and 77468005 (ARD2187) required manual integrations.

**Additional Comments**

No additional comments are needed for this sample group.

**System Configuration****Chromatographic Columns**

Column ID	Column Description
J&W1	DB-WAX(0.53mm x 0.5u x 30m)
J&W2	DB-624(0.53mm x 3.0u x 30m)
J&W3	DB-1(0.53mm x 1.5u x 30m)
J&W4	DB-608(0.53mm x 0.83u x 30m)

J&W5 GS-Q(0.53mm x 30m)  
Phenomenex ZB-5(0.25mm x 0.25u x 30m)

**Instrument Configuration**

<b>Instrument ID</b>	<b>System Configuration</b>	<b>Chromatographic Column</b>
FIDa	HP 5890 Series II GC/FID	J&W1/J&W3/J&W4
FID2a	HP 5890 Series II GC/FID	J&W2/J&W5
FID3a	HP 5890 Series II GC/FID	Phenomenex
FID4a	HP 5890 Series II GC/FID	Phenomenex

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer: Jimi Cao Date: 4/21/03

# SAMPLE DATA

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2101
--------

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 011B1101

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-82-8-----	Methane	3240	E
74-84-0-----	Ethane	8.12	J
74-85-1-----	Ethene	6.40	J



1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2101RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468001

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 018B1801

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	3940	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2104

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 012B1201

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
74-82-8	Methane	4340	E	
74-84-0	Ethane	10.9	J	
74-85-1	Ethene	5.92	J	

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2104RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468002

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 019B1901

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	5960	
74-84-0-----	Ethane	500	U
74-85-1-----	Ethene	500	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2107

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 013B1301

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L Q

74-82-8-----	Methane	3090	E
74-84-0-----	Ethane	9.28	J
74-85-1-----	Ethene	8.16	J

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TR2107RR

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468003

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 020B2001

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-82-8-----	Methane	3800	
74-84-0-----	Ethane	250	U
74-85-1-----	Ethene	250	U

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2188
---------

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468004

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 021B2101

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
 (ug/L or ug/Kg) UG/L Q

74-82-8-----	Methane	37.0	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	4.73	J

1B  
 FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2187

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468005

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 015B1501

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	UG/L	Q
---------	----------	------	---

74-82-8-----	Methane	40.8	
74-84-0-----	Ethane	25.0	U
74-85-1-----	Ethene	25.0	U

1B  
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ARD2186
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Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix: (soil/water) WATER Lab Sample ID: 77468006

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: 016B1601

Level: (low/med) LOW Date Received: 04/02/03

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_\_\_ Date Extracted: 04/04/03

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 04/04/03

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-82-8-----	Methane	26.8	
74-84-0-----	Ethane	26.5	
74-85-1-----	Ethene	25.0	U



QUALITY  
CONTROL  
SUMMARY

FORM 3  
WATER FID LAB CONTROL SAMPLE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Matrix Spike - Sample No.: MBLK01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Methane	100	0.00	90.4	90	70-130
Ethane	100	0.00	89.5	90	56-140
Ethene	100	0.00	91.7	92	56-125

# 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 3 outside limits

COMMENTS: \_\_\_\_\_

4B  
FID METHOD BLANK SUMMARY

EPA SAMPLE NO.

MBLK01

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 77468

Lab File ID: 003B0301MB Lab Sample ID: 1200403144

Instrument ID: FID2A Date Extracted: 04/02/03

Matrix: (soil/water) WATER Date Analyzed: 04/04/03

Level: (low/med) LOW Time Analyzed: 0952

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	MBLK01LCS	1200403146	004B0401LCS	04/04/03
02	TR2101	77468001	011B1101	04/04/03
03	TR2104	77468002	012B1201	04/04/03
04	TR2107	77468003	013B1301	04/04/03
05	ARD2187	77468005	015B1501	04/04/03
06	ARD2186	77468006	016B1601	04/04/03
07	TR2101RR	77468001	018B1801	04/04/03
08	TR2104RR	77468002	019B1901	04/04/03
09	TR2107RR	77468003	020B2001	04/04/03
10	ARD2188	77468004	021B2101	04/04/03
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# INORGANIC ANALYSIS

**Metals Case Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77468**

**Method/Analysis Information**

**Analytical Batch:** 2242907  
**Prep Batch :** 2242906  
**Standard Operating Procedures:** GL-MA-E-013 REV.8, GL-MA-E-006 REV.8  
**Analytical Method:** SSW846 6010B  
**Prep Method :** SSW846 3005A

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
77468001	TR2101
77468002	TR2104
77468003	TR2107
77468004	ARD2188
77468005	ARD2187
77468006	ARD2186
1200403263	Method Blank (MB) ICP
1200403273	Laboratory Control Sample (LCS)
1200403268	77468001(TR2101L) Serial Dilution (SD)
1200403265	77468001(TR2101D) Sample Duplicate (DUP)
1200403271	77468001(TR2101S) Matrix Spike (MS)

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

**Calibration Information**

**Instrument Calibration**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements have been met for this SDG.

**CRDL Requirements**

All CRDL standard(s) met the referenced advisory control limits.

**ICSA/ICSAB statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

**Continuing Calibration Blank (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

**Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

**Quality Control (QC) Information****Method Blank (MB) Acceptance**

The method blank analyzed with this SDG did not contain analytes of interest at concentrations greater than the client required detection limits (CRDL).

**LCS Recovery Statement**

The laboratory control sample (LCS) met the recommended acceptance criteria for percent recovery (%R) for all elements of interest.

**Quality Control (QC) Sample Statement**

The following samples were selected as the quality control (QC) samples for this batch: 77468001 (TR2101).

**Matrix Spike Recovery Statement**

The percent recovery (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

**Duplicate RPD Statement**

The relative percent difference (RPD) obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of RL is used to evaluate the DUP results. All applicable analytes met these requirements.

**Serial Dilution % Difference Statement**

The serial dilution is used to assess interferences due to matrix suppression or enhancement. Raw element concentrations that are at least 50X the instrument detection limit (IDL) for ICP analyses and 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria, percent difference value of <10.

**Technical Information****Holding Time Specifications**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the GELIMS system by hours. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time requirements.

**Preparation/Analytical Method Verification**

All procedures performed in association with this SDG followed the Standard Operating Procedure (SOP) guidelines.

**Sample Dilutions**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in soil samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Sample 77468004 (ARD2188) required dilution in order to bring sodium within the linear calibration range of the instrument.

**Preparation Information**

The samples in this SDG were prepared exactly according to the sited SOP.

**Miscellaneous Information**

**Nonconformance Documentation**

Nonconformance reports (NCRs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR was generated with this SDG.

**Additional Comments**

No additional comments are needed for this sample group.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Alessandra A Date: 4/16/03

# SAMPLE DATA SUMMARY



TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77468

Method Type: SW846

Sample ID: 77468001

Client ID: TR2101

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/2/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	24500	µg/L			P	7.760	TJA61 Trace ICP2	40403
7439-95-4	Magnesium	16800	µg/L			P	14.2	TJA61 Trace ICP2	40403
7439-96-5	Manganese	38.2	µg/L			P	0.421	TJA61 Trace ICP2	40403
7440-09-7	Potassium	1200	µg/L			P	48.7	TJA61 Trace ICP2	40403
7440-23-5	Sodium	13500	µg/L			P	33.9	TJA61 Trace ICP2	40403

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77468

Method Type: SW846

Sample ID: 77468002

Client ID: TR2104

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/2/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	15400	µg/L			P	7.760	TJA61 Trace ICP2	40403
7439-95-4	Magnesium	13300	µg/L			P	14.2	TJA61 Trace ICP2	40403
7439-96-5	Manganese	70.9	µg/L			P	0.421	TJA61 Trace ICP2	40403
7440-09-7	Potassium	1020	µg/L			P	48.7	TJA61 Trace ICP2	40403
7440-23-5	Sodium	17400	µg/L			P	33.9	TJA61 Trace ICP2	40403

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77468

Method Type: SW846

Sample ID: 77468003

Client ID: TR2107

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/2/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	9550	µg/L			P	7.760	TJA61 Trace ICP2	40403
7439-95-4	Magnesium	16400	µg/L			P	14.2	TJA61 Trace ICP2	40403
7439-96-5	Manganese	33.3	µg/L			P	0.421	TJA61 Trace ICP2	40403
7440-09-7	Potassium	897	µg/L			P	48.7	TJA61 Trace ICP2	40403
7440-23-5	Sodium	9600	µg/L			P	33.9	TJA61 Trace ICP2	40403

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77468

Method Type: SW846

Sample ID: 77468004

Client ID: ARD2188

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/2/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	483000	µg/L			P	7.760	TJA61 Trace ICP2	40403
7439-95-4	Magnesium	179000	µg/L			P	14.2	TJA61 Trace ICP2	40403
7439-96-5	Manganese	835	µg/L			P	0.421	TJA61 Trace ICP2	40403
7440-09-7	Potassium	28900	µg/L			P	48.7	TJA61 Trace ICP2	40403
7440-23-5	Sodium	186000	µg/L			P	170	TJA61 Trace ICP2	40803

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77468

Method Type: SW846

Sample ID: 77468005

Client ID: ARD2187

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/2/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	94100	µg/L			P	7.760	TJA61 Trace ICP2	40403
7439-95-4	Magnesium	9090	µg/L			P	14.2	TJA61 Trace ICP2	40403
7439-96-5	Manganese	8.670	µg/L	B		P	0.421	TJA61 Trace ICP2	40403
7440-09-7	Potassium	718	µg/L			P	48.7	TJA61 Trace ICP2	40403
7440-23-5	Sodium	8220	µg/L			P	33.9	TJA61 Trace ICP2	40403

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

TOTAL METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 77468

Method Type: SW846

Sample ID: 77468006

Client ID: ARD2186

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Date Received: 4/2/2003

Level: LOW

% Solids: 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-70-2	Calcium	94900	µg/L			P	7.760	TJA61 Trace ICP2	40403
7439-95-4	Magnesium	12700	µg/L			P	14.2	TJA61 Trace ICP2	40403
7439-96-5	Manganese	96.5	µg/L			P	0.421	TJA61 Trace ICP2	40403
7440-09-7	Potassium	1810	µg/L			P	48.7	TJA61 Trace ICP2	40403
7440-23-5	Sodium	23300	µg/L			P	33.9	TJA61 Trace ICP2	40403

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

**QUALITY  
CONTROL  
DATA**

**General Engineering Laboratories, LLC**

**TOTAL METALS**

- 2a -

**INITIAL AND CONTINUING CALIBRATION VERIFICATION**

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Initial Calibration Source: Solutions Plus

Continuing Calibration Source: o2si

Instrument ID: TJA61 Trace ICP2

Sample ID	Analyte	Result µg/L	True Value µg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
<b>ICV1</b>									
	Calcium	515	500	103.0	90.0 - 110.0	P	4/4/2003	07:43	40403
	Potassium	2590	2500	103.6	90.0 - 110.0	P	4/4/2003	07:43	40403
	Magnesium	505	500	101.0	90.0 - 110.0	P	4/4/2003	07:43	40403
	Manganese	503	500	100.4	90.0 - 110.0	P	4/4/2003	07:43	40403
	Sodium	2600	2500	104.0	90.0 - 110.0	P	4/4/2003	07:43	40403
	Sodium	2570	2500	102.8	90.0 - 110.0	P	4/8/2003	09:07	40803
<b>CCV1</b>									
	Calcium	4960	5000	99.2	90.0 - 110.0	P	4/4/2003	08:26	40403
	Potassium	5160	5000	103.2	90.0 - 110.0	P	4/4/2003	08:26	40403
	Magnesium	5030	5000	100.6	90.0 - 110.0	P	4/4/2003	08:26	40403
	Manganese	490	500	98.0	90.0 - 110.0	P	4/4/2003	08:26	40403
	Sodium	10000	10000	100.0	90.0 - 110.0	P	4/4/2003	08:26	40403
	Sodium	10100	10000	100.0	90.0 - 110.0	P	4/8/2003	09:45	40803
<b>CCV2</b>									
	Calcium	4980	5000	99.6	90.0 - 110.0	P	4/4/2003	09:18	40403
	Potassium	5190	5000	103.8	90.0 - 110.0	P	4/4/2003	09:18	40403
	Magnesium	5030	5000	100.4	90.0 - 110.0	P	4/4/2003	09:18	40403
	Manganese	489	500	97.8	90.0 - 110.0	P	4/4/2003	09:18	40403
	Sodium	10300	10000	103.0	90.0 - 110.0	P	4/4/2003	09:18	40403
	Sodium	10000	10000	100.0	90.0 - 110.0	P	4/8/2003	10:34	40803
<b>CCV3</b>									
	Calcium	5060	5000	101.2	90.0 - 110.0	P	4/4/2003	10:21	40403
	Potassium	5250	5000	105.0	90.0 - 110.0	P	4/4/2003	10:21	40403
	Magnesium	5070	5000	101.4	90.0 - 110.0	P	4/4/2003	10:21	40403
	Manganese	494	500	98.8	90.0 - 110.0	P	4/4/2003	10:21	40403
	Sodium	10400	10000	104.0	90.0 - 110.0	P	4/4/2003	10:21	40403
<b>CCV4</b>									
	Calcium	5100	5000	102.0	90.0 - 110.0	P	4/4/2003	11:11	40403
	Potassium	5230	5000	104.6	90.0 - 110.0	P	4/4/2003	11:11	40403
	Magnesium	5210	5000	104.2	90.0 - 110.0	P	4/4/2003	11:11	40403
	Manganese	492	500	98.4	90.0 - 110.0	P	4/4/2003	11:11	40403
	Sodium	10300	10000	103.0	90.0 - 110.0	P	4/4/2003	11:11	40403



TOTAL METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Initial Calibration Source: Solutions Plus

Continuing Calibration Source: o2si

Instrument ID: TJA61 Trace ICP2

Sample ID	Analyte	Result µg/L	True Value µg/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
<b>CCV5</b>									
	Calcium	5190	5000	103.8	90.0 - 110.0	P	4/4/2003	12:46	40403
	Potassium	5480	5000	109.6	90.0 - 110.0	P	4/4/2003	12:46	40403
	Magnesium	5240	5000	104.8	90.0 - 110.0	P	4/4/2003	12:46	40403
	Manganese	498	500	99.6	90.0 - 110.0	P	4/4/2003	12:46	40403
	Sodium	10700	10000	107.0	90.0 - 110.0	P	4/4/2003	12:46	40403
<b>CCV6</b>									
	Calcium	5070	5000	101.4	90.0 - 110.0	P	4/4/2003	13:46	40403
	Potassium	5360	5000	107.2	90.0 - 110.0	P	4/4/2003	13:46	40403
	Magnesium	5140	5000	102.8	90.0 - 110.0	P	4/4/2003	13:46	40403
	Manganese	497	500	99.4	90.0 - 110.0	P	4/4/2003	13:46	40403
	Sodium	10500	10000	105.0	90.0 - 110.0	P	4/4/2003	13:46	40403

TOTAL METALS

- 2b -

CRDL STANDARD FOR AA & ICP

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

AA CRDL Standard Source: SPEX

ICP CRDL Standard Source: o2si

Sample ID	Analyte	Result µg/L	True Value µg/L	% Recovery	Advisory Limits (%R)	M	Analysis Date	Analysis Time	Run Number
CRDL1									
	Calcium	198	200	99.0	50 - 150	P	4/4/2003	08:00	40403
	Potassium	222	200	111.0	50 - 150	P	4/4/2003	08:00	40403
	Magnesium	198	200	99.0	50 - 150	P	4/4/2003	08:00	40403
	Manganese	19.1	20.0	95.5	50 - 150	P	4/4/2003	08:00	40403
	Sodium	174	200	87.0	50 - 150	P	4/4/2003	08:00	40403
CRDL1									
	Sodium	195	200	97.0	50 - 150	P	4/8/2003	09:20	40803

TOTAL METALS

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Sample ID	Analyte	Result µg/L	Acceptance µg/L	Conc Qual	IDL µg/L	RDL µg/L	M	Analysis Date	Analysis Time	Run
<b>ICB1</b>										
	Calcium	7.76	+/-100.00	U	7.76	100	P	4/4/2003	07:54	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	07:54	40403
	Magnesium	14.2	+/-100.00	U	14.2	100	P	4/4/2003	07:54	40403
	Manganese	0.421	+/-10.00	U	0.421	10.0	P	4/4/2003	07:54	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/4/2003	07:54	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/8/2003	09:14	40803
<b>CCB1</b>										
	Calcium	7.76	+/-100.00	U	7.76	100	P	4/4/2003	08:32	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	08:32	40403
	Magnesium	14.2	+/-100.00	U	14.2	100	P	4/4/2003	08:32	40403
	Manganese	0.421	+/-10.00	U	0.421	10.0	P	4/4/2003	08:32	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/4/2003	08:32	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/8/2003	09:51	40803
<b>CCB2</b>										
	Calcium	7.76	+/-100.00	U	7.76	100	P	4/4/2003	09:24	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	09:24	40403
	Magnesium	14.2	+/-100.00	U	14.2	100	P	4/4/2003	09:24	40403
	Manganese	0.421	+/-10.00	U	0.421	10.0	P	4/4/2003	09:24	40403
	Sodium	-46.2	+/-100.00	B	33.9	100	P	4/4/2003	09:24	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/8/2003	10:40	40803
<b>JCB3</b>										
	Calcium	7.76	+/-100.00	U	7.76	100	P	4/4/2003	10:27	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	10:27	40403
	Magnesium	14.2	+/-100.00	U	14.2	100	P	4/4/2003	10:27	40403
	Manganese	0.421	+/-10.00	U	0.421	10.0	P	4/4/2003	10:27	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/4/2003	10:27	40403
<b>CCB4</b>										
	Calcium	20.7	+/-100.00	B	7.76	100	P	4/4/2003	11:17	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	11:17	40403
	Magnesium	15.7	+/-100.00	B	14.2	100	P	4/4/2003	11:17	40403
	Manganese	0.421	+/-10.00	U	0.421	10.0	P	4/4/2003	11:17	40403
	Sodium	-34.0	+/-100.00	B	33.9	100	P	4/4/2003	11:17	40403

TOTAL METALS

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Sample ID	Analyte	Result µg/L	Acceptance µg/L	Conc Qual	IDL µg/L	RDL µg/L	M	Analysis Date	Analysis Time	Run
<b>CCB5</b>										
	Calcium	39.0	+/-100.00	B	7.76	100	P	4/4/2003	12:52	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	12:52	40403
	Magnesium	14.2	+/-100.00	U	14.2	100	P	4/4/2003	12:52	40403
	Manganese	0.454	+/-10.00	B	0.421	10.0	P	4/4/2003	12:52	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/4/2003	12:52	40403
<b>CCB6</b>										
	Calcium	9.39	+/-100.00	B	7.76	100	P	4/4/2003	13:52	40403
	Potassium	48.7	+/-100.00	U	48.7	100	P	4/4/2003	13:52	40403
	Magnesium	14.2	+/-100.00	U	14.2	100	P	4/4/2003	13:52	40403
	Manganese	0.421	+/-10.00	U	0.421	10.0	P	4/4/2003	13:52	40403
	Sodium	33.9	+/-100.00	U	33.9	100	P	4/4/2003	13:52	40403

TOTAL METALS  
- 3b -  
PREPARATION BLANK SUMMARY

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Preparation Blank Matrix: WATER

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<u>Sample ID</u>	<u>Analyte</u>	<u>Result (µg/L)</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M</u>	<u>IDL</u>	<u>RDL</u>
1200403263	Calcium	7.76	+/-100	U	P	7.76	100
	Magnesium	14.2	+/-100	U	P	14.2	100
	Manganese	0.421	+/-10.0	U	P	0.421	10.0
	Potassium	48.7	+/-100	U	P	48.7	100
	Sodium	33.9	+/-100	U	P	33.9	100

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TOTAL METALS

- 4 -

INTERFERENCE CHECK SAMPLE

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

ICS Source: o2si

Instrument ID: TJA61 Trace ICP2

Sample ID	Analyte	Result µg/L	True Value µg/L	% Recovery	Acceptance Window %Rec	Analysis Date	Analysis Time	Run Number
<b>ICS-A1</b>								
	Calcium	449000	500000	89.8	80 - 120	4/4/2003	08:06	40403
	Potassium	-58.710				4/4/2003	08:06	40403
	Magnesium	486000	500000	97.2	80 - 120	4/4/2003	08:06	40403
	Manganese	2.650				4/4/2003	08:06	40403
	Sodium	-101.280				4/4/2003	08:06	40403
<b>ICS-AB1</b>								
	Calcium	450000	500000	90.0	80 - 120	4/4/2003	08:12	40403
	Potassium	5700	5000	114.0	80 - 120	4/4/2003	08:12	40403
	Magnesium	491000	500000	98.2	80 - 120	4/4/2003	08:12	40403
	Manganese	479	500	95.8	80 - 120	4/4/2003	08:12	40403
	Sodium	5130	5000	102.6	80 - 120	4/4/2003	08:12	40403
<b>ICS-A1</b>								
	Sodium	-61.940				4/8/2003	09:26	40803
<b>ICS-AB1</b>								
	Sodium	5120	5000	102.4	80 - 120	4/8/2003	09:31	40803

TOTAL METALS

- 5a -

MATRIX SPIKE SUMMARY

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Level: LOW

Client ID: TR2101S

Sample ID: 77468001

Spiked ID: 1200403271

Percent Solids for Spike Sample: 0.00

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Calcium	µg/L		29800		24500		5000	106.0		P
Magnesium	µg/L	75 - 125	22000		16800		5000	104.0		P
Manganese	µg/L	75 - 125	535		38.2		500	99.2		P
Potassium	µg/L	75 - 125	6330		1200		5000	102.6		P
Sodium	µg/L	75 - 125	19100		13500		5000	110.0		P

TOTAL METALS

- 6 -

DUPLICATE SAMPLE SUMMARY

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Level: LOW

Client ID: TR2101D

Sample ID: 77468001

Duplicate ID: 1200403265

Percent Solids for Duplicate: 0.00

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Calcium	µg/L	+/-20	24500		24600		0.4		P
Magnesium	µg/L	+/-20	16800		17000		1.2		P
Manganese	µg/L	10.0	38.2		38.0		0.5		P
Potassium	µg/L	+/-20	1200		1240		3.3		P
Sodium	µg/L	+/-20	13500		13500		0.0		P



TOTAL METALS

- 7 -

LABORATORY CONTROL SAMPLE SUMMARY

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Aqueous LCS Source: SPEX

Solid LCS Source:

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
1200403273	Calcium	µg/L	5000	5100		102.0	80 - 120	P
	Magnesium	µg/L	5000	5090		101.8	80 - 120	P
	Manganese	µg/L	500.0	499		99.8	80 - 120	P
	Potassium	µg/L	5000	5030		100.6	80 - 120	P
	Sodium	µg/L	5000	5250		105.0	80 - 120	P

**TOTAL METALS**

- 9 -

**SERIAL DILUTION SAMPLE SUMMARY**

SDG No.: 77468

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: WATER

Level: LOW

Client ID: TR2101L

Sample ID: 77468001

Serial Dilution ID: 1200403268

Analyte	Initial µg/L	C	Serial µg/L	C	% Difference	Qual	Acceptance Limits	M
Calcium	24500		25200		2.9		10 %	P
Magnesium	16800		17200		2.4		10 %	P
Manganese	38.2		40.8	B	6.8		10 %	P
Potassium	1200		1260		5.0		10 %	P
Sodium	13500		14000		3.7		10 %	P

TOTAL METALS  
- 13 -  
SAMPLE PREPARATION SUMMARY

SDG No.: 77468

Method: P

Contract: PARS00103

Lab Code: GEL

Case No.: GEL

SAS No.:

<u>Sample ID</u>	<u>Client ID</u>	<u>Sample Type</u>	<u>Matrix</u>	<u>Prep Date</u>	<u>Initial Sample Size(mL)</u>	<u>Final Sample Volume (mL)</u>	<u>Percent Solids</u>
Batch Number: 242906							
1200403263	Method Blank (MB)	MB	WATER	03-APR-03	50.00	50.00	
1200403273	Laboratory Control Sample (LCS)	LCS	WATER	03-APR-03	50.00	50.00	
77468001	TR2101	SAM	WATER	03-APR-03	50.00	50.00	
1200403265	TR2101D	DUP	WATER	03-APR-03	50.00	50.00	
1200403271	TR2101S	MS	WATER	03-APR-03	50.00	50.00	
77468002	TR2104	SAM	WATER	03-APR-03	50.00	50.00	
77468003	TR2107	SAM	WATER	03-APR-03	50.00	50.00	
77468004	ARD2188	SAM	WATER	03-APR-03	50.00	50.00	
77468005	ARD2187	SAM	WATER	03-APR-03	50.00	50.00	
77468006	ARD2186	SAM	WATER	03-APR-03	50.00	50.00	

TOTAL METALS

- 14 -

ANALYSIS RUN LOG

Contract: PARS00103

Lab Code GEL

Case No.: GEL

SAS No.:

SDG No.: 77468

Instrument ID Number: TJA61 Trace ICP2

Method: P

Start Date: 4/4/2003

End Date: 4/4/2003

Sample No.	D/F	Time	% R	Analytes																				
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C F	P B	M G	M N	H N	K I	S E	A G	N A	T L	V N	Z N
CAL-S0	1.00	07:11							X					X	X		X		X					
CAL-S0.1	1.00	07:17												X			X							
CAL-S0.5	1.00	07:23												X			X							
CAL-SCAL	1.00	07:29						X					X	X		X		X						
CAL-S10	1.00	07:35						X					X						X					
ICV1	1.00	07:43						X					X	X		X		X		X				
ICB1	1.00	07:54						X					X	X		X		X		X				
CRDL1	1.00	08:00						X					X	X		X		X		X				
ICS-A1	1.00	08:06						X					X	X		X		X		X				
ICS-AB1	1.00	08:12						X					X	X		X		X		X				
CCV1	1.00	08:26						X					X	X		X		X		X				
CCB1	1.00	08:32						X					X	X		X		X		X				
ZZZZZZ	1.00	08:41																						
ZZZZZZ	1.00	08:47																						
ZZZZZZ	1.00	08:53																						
ZZZZZZ	1.00	09:00																						
ZZZZZZ	1.00	09:06																						
ZZZZZZ	1.00	09:12																						
CCV2	1.00	09:18						X					X	X		X		X		X				
CCB2	1.00	09:24						X					X	X		X		X		X				
ZZZZZZ	1.00	09:33																						
ZZZZZZ	1.00	09:39																						
ZZZZZZ	1.00	09:45																						
ZZZZZZ	5.00	09:51																						
ZZZZZZ	1.00	09:57																						
ZZZZZZ	1.00	10:03																						
ZZZZZZ	1.00	10:09																						
ZZZZZZ	1.00	10:15																						
CCV3	1.00	10:21						X					X	X		X		X		X				
CCB3	1.00	10:27						X					X	X		X		X		X				
ZZZZZZ	1.00	10:35																						
ZZZZZZ	1.00	10:41																						
ZZZZZZ	1.00	10:47																						

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

TOTAL METALS  
- 14 -  
ANALYSIS RUN LOG

Contract: PARS00103

Lab Code GEL

Case No.: GEL

SAS No.:

SDG No.: 77468

Instrument ID Number: TJA61 Trace ICP2

Method: P

Start Date: 4/4/2003

End Date: 4/4/2003

Sample No.	D/F	Time	% R	Analytes																					
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C F	P B	M G	M N	H G	N I	K E	S G	A A	N L	T L	V N	Z N
ZZZZZZ	1.00	10:53																							
ZZZZZZ	1.00	10:59																							
ZZZZZZ	1.00	11:05																							
CCV4	1.00	11:11						X				X	X		X				X						
CCB4	1.00	11:17						X				X	X		X				X						
1200403263	1.00	11:51						X				X	X		X				X						
1200403273	1.00	11:57						X				X	X		X				X						
77468001	1.00	12:03						X				X	X		X				X						
1200403268	5.00	12:09						X				X	X		X				X						
1200403265	1.00	12:15						X				X	X		X				X						
1200403271	1.00	12:23						X				X	X		X				X						
77468002	1.00	12:29						X				X	X		X				X						
77468003	1.00	12:34						X				X	X		X				X						
77468004	1.00	12:40						X				X	X		X				X						
CCV5	1.00	12:46						X				X	X		X				X						
CCB5	1.00	12:52						X				X	X		X				X						
77468005	1.00	12:58						X				X	X		X				X						
77468006	1.00	13:04						X				X	X		X				X						
ZZZZZZ	1.00	13:10																							
ZZZZZZ	1.00	13:16																							
ZZZZZZ	1.00	13:22																							
ZZZZZZ	1.00	13:28																							
ZZZZZZ	1.00	13:34																							
ZZZZZZ	5.00	13:40																							
CCV6	1.00	13:46						X				X	X		X				X						
CCB6	1.00	13:52						X				X	X		X				X						

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14



GENERAL  
CHEMISTRY  
ANALYSIS

**General Chemistry Narrative**  
**Parsons Engineering Science, Inc. DACA87-02-D-0005 (PARS)**  
**SDG 77468**

**Method/Analysis Information**

**Procedure:** Ion Chromatography (IC)  
**Analytical Method:** EPA 300.0  
**Analytical Batch Number:** 242925

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 300.0:

<b>Sample ID</b>	<b>Client ID</b>
77468001	TR2101
77468002	TR2104
77468003	TR2107
77468004	ARD2188
77468005	ARD2187
77468006	ARD2186
1200403321	Method Blank (MB)
1200403328	Laboratory Control Sample (LCS)
1200403324	77468001(TR2101) Sample Duplicate (DUP)
1200403327	77468001(TR2101) Post Spike (PS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV.8.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.



### **Calibration Information**

The instrument used in this analysis was the following: Dionex DX300 Ion Chromatograph equipped with a Dionex AS9-HC general purpose anion column

#### **Initial Calibration**

The instrument was properly calibrated.

#### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

#### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Quality Control (QC) Information**

#### **Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

#### **Laboratory Control Sample (LCS) Recovery**

The recoveries for the laboratory control sample were within the required acceptance limits.

#### **Quality Control**

The following sample was designated for Quality Control:  
77468001 (TR2101)

#### **Sample Spike Recovery**

The spike recoveries for this sample set were within the required acceptance limits.

#### **Sample Duplicate Acceptance**

The Relative Percent Differences between the sample and duplicate for this batch were within the required acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The following samples in this sample group were diluted due to high concentration for chloride and/or sulfate. See the Certificates of Analysis for the individual dilution factors.

1200403324 (TR2101)

1200403327 (TR2101)

77468001 (TR2101)

77468002 (TR2104)

77468003 (TR2107)

77468004 (ARD2188)

77468005 (ARD2187)

77468006 (ARD2186)

**Miscellaneous Information**

**Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

### Method/Analysis Information

**Procedure:** Total Organic Carbon (TOC)  
**Analytical Method:** SW846 9060  
**Analytical Batch Number:** 244647

### Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060:

<b>Sample ID</b>	<b>Client ID</b>
77468001	TR2101
77468002	TR2104
77468003	TR2107
77468004	ARD2188
77468005	ARD2187
77468006	ARD2186
1200407396	Method Blank (MB)
1200407401	Laboratory Control Sample (LCS)
1200407398	77559003(ARD2185) Sample Duplicate (DUP)
1200407400	77559003(ARD2185) Post Spike (PS)

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV.3.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by General Engineering Laboratories, Inc. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### Calibration Information

The instrument used in this analysis was the following: O-I Analytical Model I010 Total Organic Carbon Analyzer

### **Initial Calibration**

The instrument was properly calibrated.

**Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Quality Control (QC) Information****Blank Acceptance**

The method blank associated with this data was within the required acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The recovery for the laboratory control sample was within the required acceptance limits.

**Quality Control**

The following sample was designated for Quality Control:  
77559003 (ARD2185)

**Sample Spike Recovery**

The spike recovery for this sample set was within the required acceptance limits.

**Sample Duplicate Acceptance**

The Relative Percent Difference between the sample and duplicate for this batch was within the required acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples from this sample group were analyzed within the required holding time for this method.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

No samples in this sample group required dilutions.

**Miscellaneous Information****Nonconformance Reports**

No Nonconformance Reports (NCR) were required for any of the samples in this sample group for this analysis.

**Additional Comments**

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.

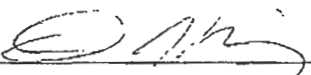
**Certification Statement**

\* Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  Date: 4/17/03

**SAMPLE  
DATA  
SUMMARY**

## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: TR2101      Project: PARS00103  
 Sample ID: 77468001      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 01-APR-03 08:55  
 Receive Date: 02-APR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.782	0.025	0.200	mg/L	1	TSM	04/15/03	1227	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		15.9	0.0322	0.200	mg/L	1	MAR104/02/03	2338	242925		2
Nitrate	U	0.00	0.0341	0.100	mg/L	1					
Sulfate		106	0.965	2.00	mg/L	5	MAR104/03/03	2013	242925		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/03/03	0800	242906
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/02/03	1355	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Hcino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

Client Sample ID: TR2101  
Sample ID: 77468001

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by 



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID:	TR2104	Project:	PARS00103
Sample ID:	77468002	Client ID:	PARS001
Matrix:	Water		
Collect Date:	01-APR-03 09:50		
Receive Date:	02-APR-03		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.419	0.025	0.200	mg/L	1	TSM	04/15/03	1257	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Nitrate	U	0.00	0.0341	0.100	mg/L	1	MAR104/03/03	0034	242925		2
Chloride		19.5	0.322	2.00	mg/L	10	MAR104/03/03	2108	242925		3
Sulfate		76.9	1.93	4.00	mg/L	10					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/03/03	0800	242906
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/02/03	1355	242856

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

Notes:

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
          Suite 800  
          Boston, Massachusetts 02110  
Contact : Todd Heino  
Project : Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

Client Sample ID: TR2104  
Sample ID: 77468002

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Scneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: TR2107      Project: PARS00103  
 Sample ID: 77468003      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 01-APR-03 11:05  
 Receive Date: 02-APR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		0.598	0.025	0.200	mg/L	1	TSM	04/15/03	1326	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		3.59	0.0322	0.200	mg/L	1	MAR104	03/03	0052	242925	2
Nitrate	U	0.00	0.0341	0.100	mg/L	1					
Sulfate		41.6	0.386	0.800	mg/L	2	MAR104	03/03	2127	242925	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/03/03	0800	242906
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/02/03	1355	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

Client Sample ID: TR2107  
Sample ID: 77468003

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: ARD2188  
 Sample ID: 77468004  
 Matrix: Water  
 Collect Date: 01-APR-03 12:20  
 Receive Date: 02-APR-03  
 Collector: Client  
 Project: PARS00103  
 Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		5.78	0.025	0.200	mg/L	1	TSM	04/15/03	1355	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Nitrate	U	0.00	0.0341	0.100	mg/L	1	MAR104/03/03	0110	242925		2
Chloride		522	1.61	10.0	mg/L	50	MAR104/03/03	2145	242925		3
Sulfate		1340	9.65	20.0	mg/L	50					

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/03/03	0800	242906
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/02/03	1355	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact: Todd Heino  
Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

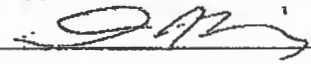
Client Sample ID: ARD2188  
Sample ID: 77468004

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	--------

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by \_\_\_\_\_  


## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 1 of 2

Client Sample ID: ARD2187      Project: PARS00103  
 Sample ID: 77468005      Client ID: PARS001  
 Matrix: Water  
 Collect Date: 01-APR-03 13:40  
 Receive Date: 02-APR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis Federal</b>										
<i>SW 9060 Total Organic Carbon</i>										
Total Organic Carbon		1.43	0.025	0.200	mg/L	1	TSM 04/15/03	1425	244647	1
<b>Ion Chromatography Federal</b>										
<i>EPA 300.0 Chloride in Liquid</i>										
Chloride		8.26	0.0322	0.200	mg/L	1	MAR104/03/03	0129	242925	2
Nitrate	U	0.00	0.0341	0.100	mg/L	1				
Sulfate		53.2	0.386	0.800	mg/L	2	MAR104/03/03	2203	242925	3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/03/03	0800	242906
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/02/03	1355	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
Suite 800  
Boston, Massachusetts 02110  
Contact : Todd Heino  
Project : Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

Page 2 of 2

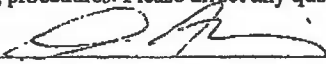
Client Sample ID: ARD2187  
Sample ID: 77468005

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by 



## Certificate of Analysis

Company : Parsons  
 Address : 100 Summer Street  
 Suite 800  
 Boston, Massachusetts 02110  
 Contact: Todd Heino  
 Project: Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

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Client Sample ID: ARD2186 Project: PARS00103  
 Sample ID: 77468006 Client ID: PARS001  
 Matrix: Water  
 Collect Date: 01-APR-03 15:00  
 Receive Date: 02-APR-03  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis Federal</b>											
<i>SW 9060 Total Organic Carbon</i>											
Total Organic Carbon		1.64	0.025	0.200	mg/L	1	TSM	04/15/03	1510	244647	1
<b>Ion Chromatography Federal</b>											
<i>EPA 300.0 Chloride in Liquid</i>											
Chloride		4.36	0.0322	0.200	mg/L	1	MAR104/03/03	0147	242925		2
Nitrate		0.120	0.0341	0.100	mg/L	1					
Sulfate		69.0	0.965	2.00	mg/L	5	MAR104/03/03	2222	242925		3

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-TRACE SW846 3005A	BCD1	04/03/03	0800	242906
SW846 8015A/B SVOC	SW846 8015B Dissolved Gases Prep	JMB3	04/02/03	1355	242856

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 300.0	
3	EPA 300.0	

**Notes:**

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Parsons  
Address : 100 Summer Street  
          Suite 800  
          Boston, Massachusetts 02110  
Contact : Todd Heino  
Project : Seneca Army Depot (Task Order# 0003)

Report Date: April 17, 2003

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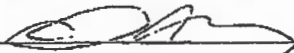
Client Sample ID: ARD2186  
Sample ID: 77468006

Project: PARS00103  
Client ID: PARS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

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Reviewed by \_\_\_\_\_  


QUALITY  
CONTROL  
SUMMARY

## QC Summary

Report Date: April 17, 2003

Page 1 of 2

Client : Parsons  
 100 Summer Street  
 Suite 800  
 Boston, Massachusetts

Contact: Todd Heino

Workorder: 77468

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis Federal											
Batch	244647										
QC1200407398	77559003	DUP									
Total Organic Carbon			3.29	3.10	mg/L	6		(0%-20%)	TSM	04/15/03	17:08
QC1200407401	LCS										
Total Organic Carbon	10.0			10.4	mg/L		104	(85%-115%)		04/15/03	11:39
QC1200407396	MB										
Total Organic Carbon			U	-0.34	mg/L					04/15/03	11:31
QC1200407400	77559003	PS									
Total Organic Carbon	10.0		3.29	13.3	mg/L		101	(80%-120%)		04/15/03	17:26
Ion Chromatography Federal											
Batch	242925										
QC1200403324	77468001	DUP									
Nitrate-N			U	0.00	mg/L	N/A ^		(+/-0.100)	MAR1	04/02/03	23:57
Sulfate				106	mg/L	1		(0%-20%)		04/03/03	20:31
Chloride				15.9	mg/L	1		(0%-20%)		04/02/03	23:57
QC1200403328	LCS										
Nitrate-N	5.00			4.73	mg/L		95	(90%-110%)		04/02/03	23:20
Sulfate	20.0			19.2	mg/L		96	(90%-110%)			
Chloride	10.0			9.21	mg/L		92	(90%-110%)			
QC1200403321	MB										
Nitrate-N				U	0.00	mg/L				04/02/03	23:02
Sulfate				U	0.00	mg/L					
Chloride				U	0.00	mg/L					
QC1200403327	77468001	PS									
Nitrate-N	5.00	U		0.00	mg/L		93	(77%-115%)		04/03/03	00:15
Sulfate	20.0			21.1	mg/L		107	(75%-130%)		04/03/03	20:50
Chloride	10.0			15.9	mg/L		111	(80%-125%)		04/03/03	00:15

**Notes:**

The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package

## QC Summary

Workorder: 77468

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Paramname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
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Y QC Samples were not spiked with this compound.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Appendix 10

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The following information is provided for your information. This information is confidential and should be kept confidential. It is not to be used for any other purpose.

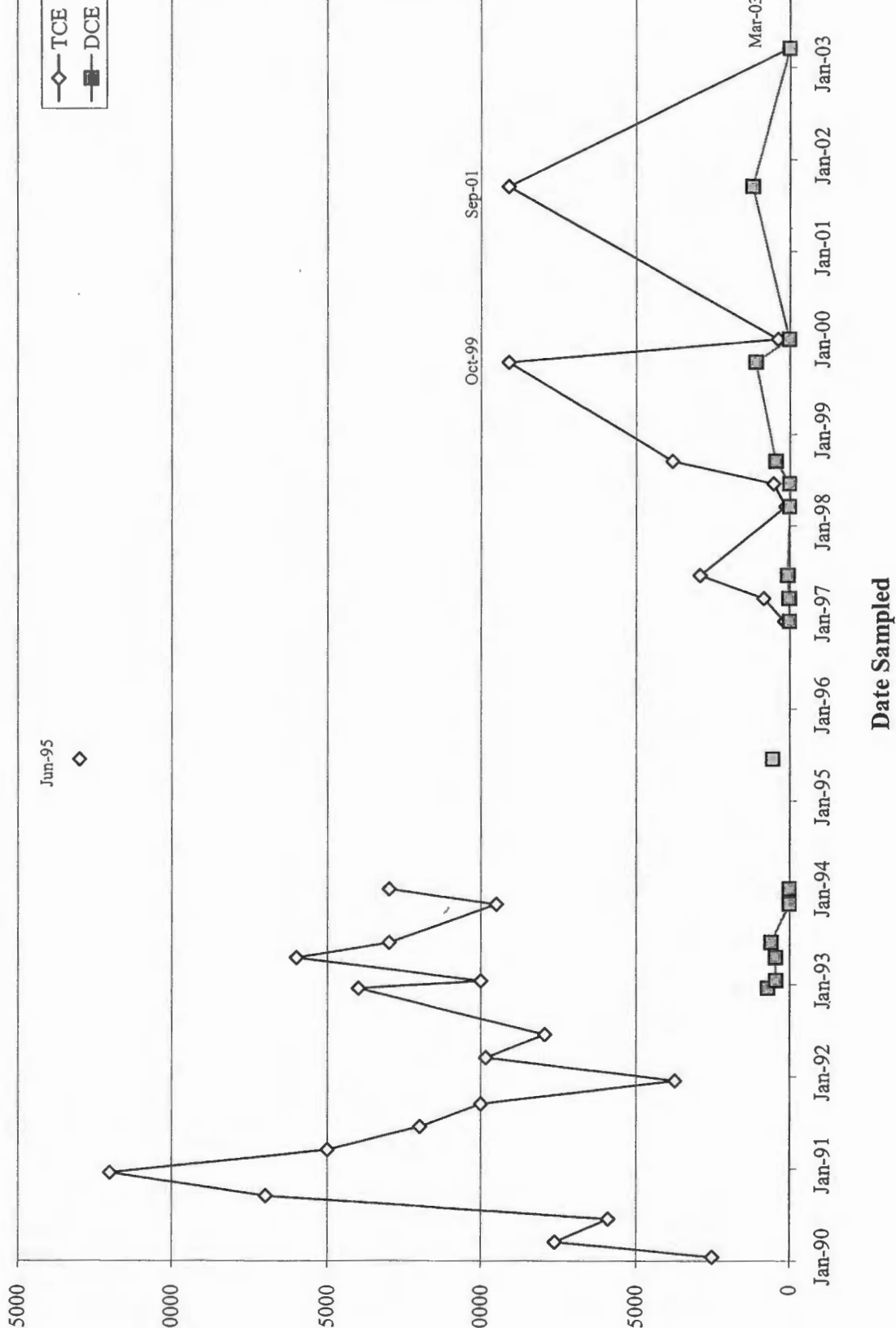


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**FIGURE 3-5**  
**HISTORIC TCE AND DCE CONCENTRATIONS AT PT-18**  
**GROUNDWATER MONITORING - ASH LANDFILL**  
**SENECA ARMY DEPOT ACTIVITY**



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**FIGURE 3-4**  
**HISTORIC TCE AND DCE CONCENTRATIONS AT PT-12A**  
**GROUNDWATER MONITORING - ASH LANDFILL**  
**SENECA ARMY DEPOT ACTIVITY**

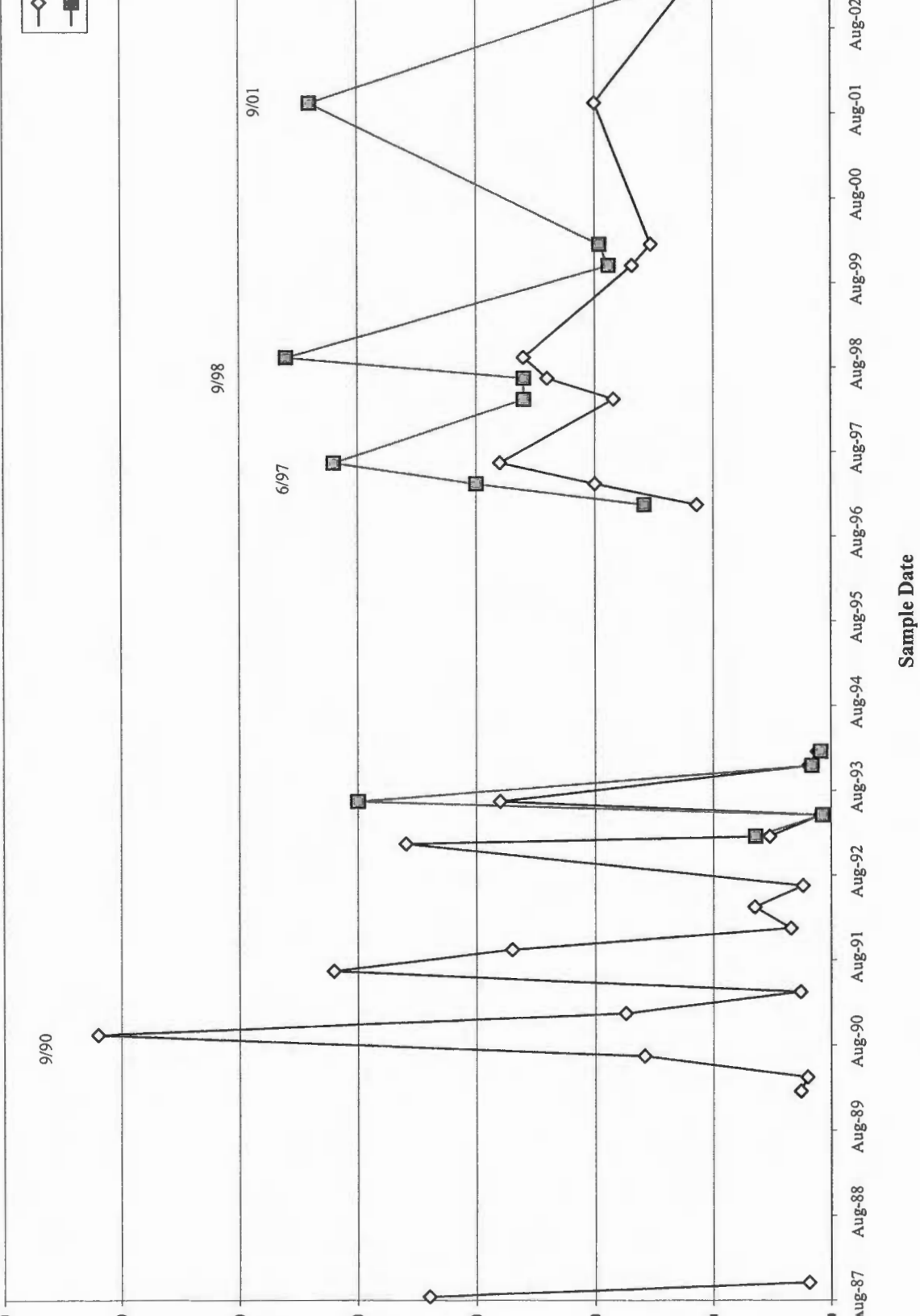
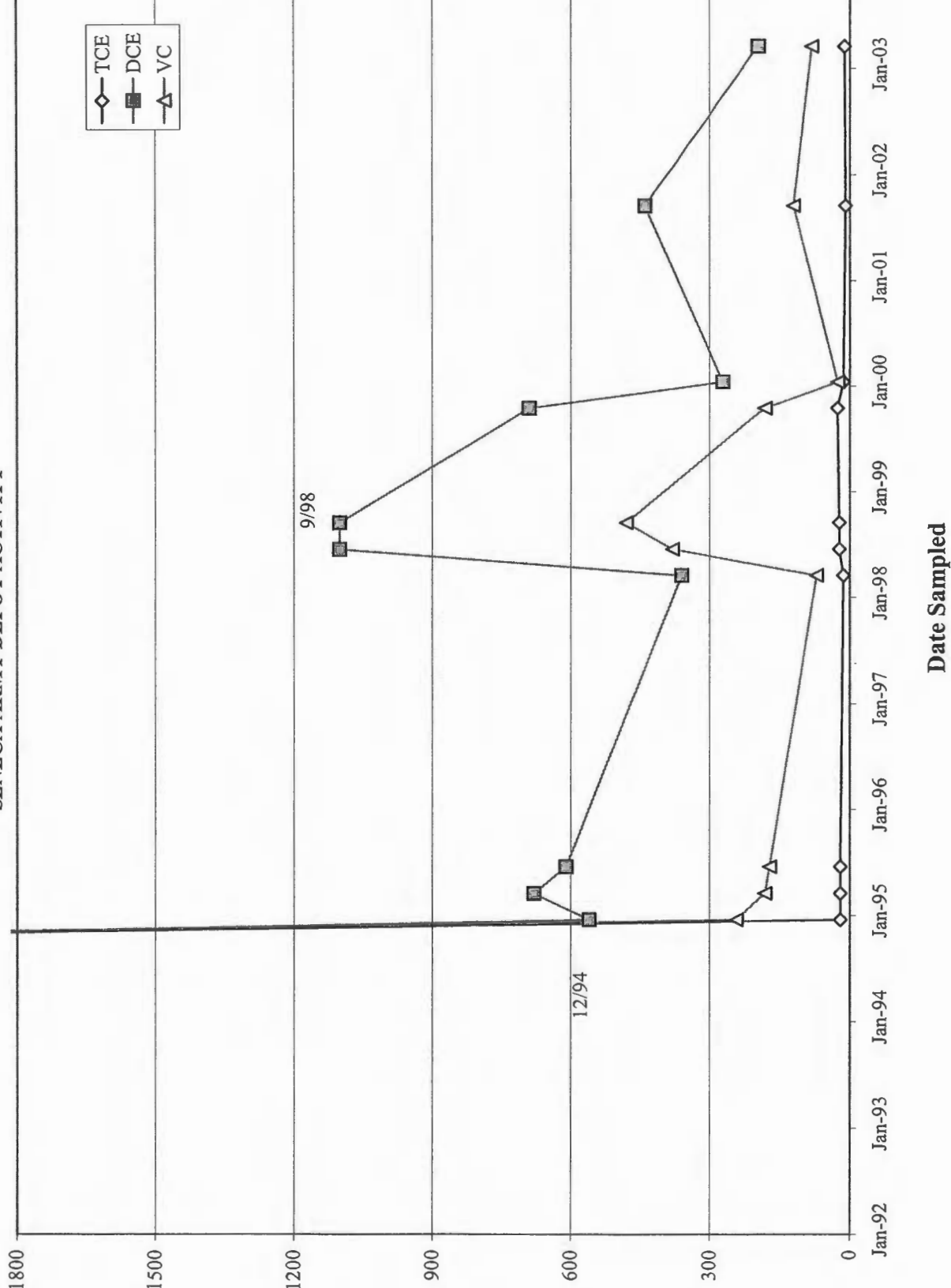


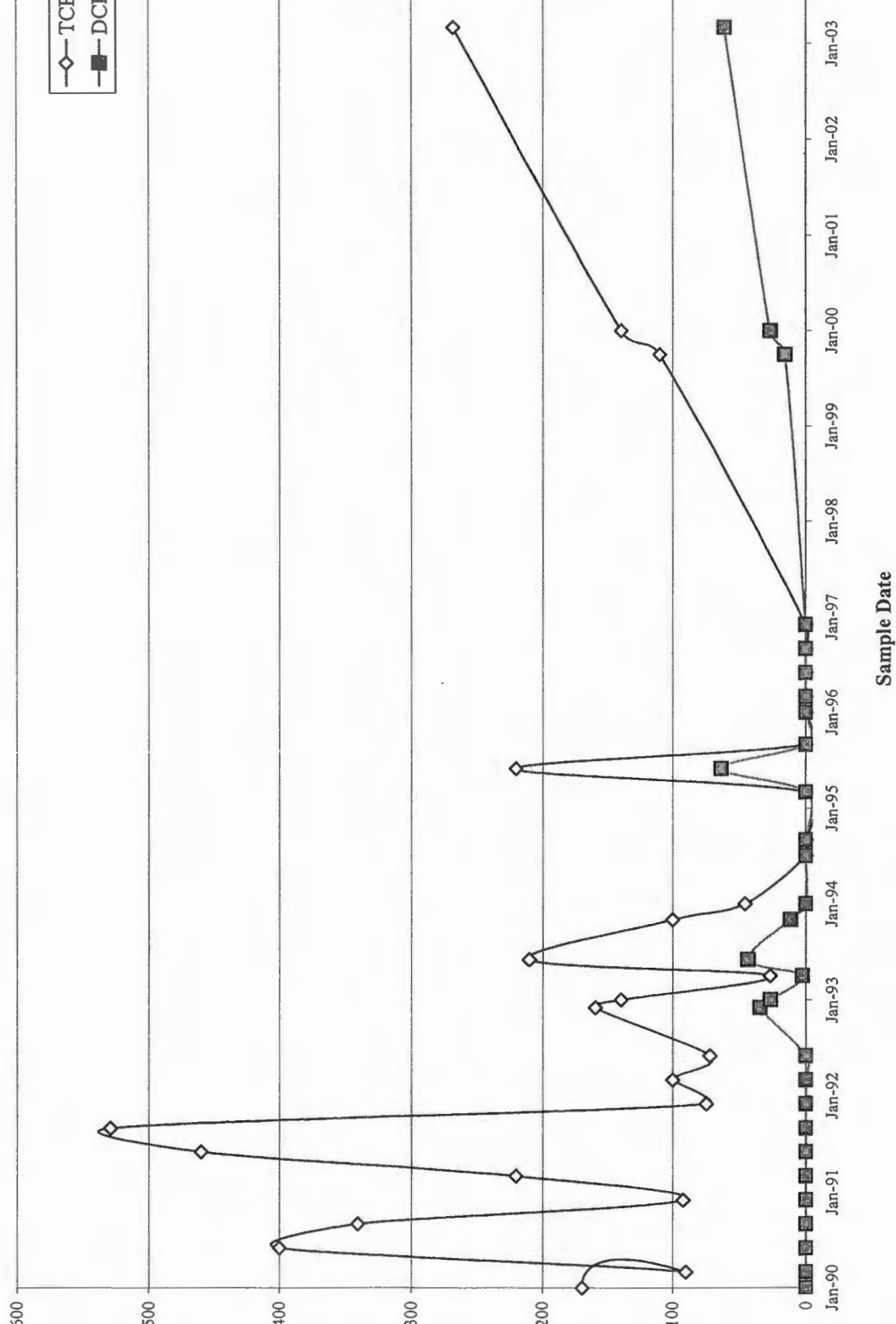


FIGURE 3-6  
 HISTORIC TCE, DCE, and VINYL CHLORIDE CONCENTRATIONS AT MW-44a (Small Scale)  
 GROUNDWATER MONITORING - ASH LANDFILL  
 SENECA ARMY DEPOT ACTIVITY





**FIGURE 3-7**  
**HISTORIC TCE AND DCE CONCENTRATIONS AT PT-17**  
**GROUNDWATER MONITORING - ASH LANDFILL**  
**SENECA ARMY DEPOT ACTIVITY**



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