ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive • Suite 203 • San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

R0265

June 19, 2002

JUN 24 2002

Mr. Barney M. Chan
Alameda County
Department of Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **StID#3337**
Site Address: 3609 International Blvd., Oakland, California

Dear Mr. Chan:

A copy of SOMA's "Second Quarter 2002 Groundwater Monitoring and Remediation System Operation Report" for the subject property is enclosed.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 244-6600.

Sincerely,

Mansour Sepehr, Ph.D.,P.E.
Principal Hydrogeologist

REGISTERED PROFESSIONAL ENGINEER
MANSOUR SEPEHR
No. C042928
Exp. 3-31-04
CIVIL
STATE OF CALIFORNIA

Enclosure

cc: Mr. Abolghassem Razi w/enclosure
Tony's Express Auto Service

Certification

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Abolghassem Razi, the property owner of 3609 International Boulevard, Oakland, California, to comply with the Alameda County Department of Environmental Health Service's requirements for the Second Quarter 2002 groundwater monitoring event.

JUN 24 2002

REGISTERED PROFESSIONAL ENGINEER
MANSOUR SEPEHR
No. C042928
Exp. 3-31-04
CIVIL
STATE OF CALIFORNIA

Mansour Sepehr, Ph.D., P.E.
Principal Hydrogeologist

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Abolghassem Razi, the property owner. The property, Tony's Express Auto Service, is located at 3609 International Boulevard at the intersection of 36th Avenue in Oakland, California (the "Site"), as shown in Figure 1.

The Site is located in an area where the surrounding properties are primarily commercial businesses and residential housing. The Site currently houses a gasoline service station and mechanic shop. Figure 2 shows the location of the main building, fuel tank areas, and the on-site and off-site groundwater monitoring wells.

This report summarizes the results of the Second Quarter 2002 groundwater monitoring event conducted on May 7, 2002 at the Site, including the results of the laboratory analysis on groundwater samples, which were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-g)
- Benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX)
- Methyl tertiary Butyl Ether (MtBE)

These activities were performed in accordance with the general guidelines of the Regional Water Quality Control Board (RWQCB) and the Alameda County Environmental Health Services (ACEHS).

This report also describes the operation of the groundwater extraction system installed by SOMA in December 1999. The vapor extraction system, which was installed by SOMA in July 2000, was not operational during the Second Quarter 2002, and has been inoperable since March 7, 2002.

1.1 Background

The environmental investigation at the subject property started in 1992, when Mr. Razi, the property owner, retained Soil Tech Engineering, Inc. (STE) of San Jose to conduct a limited subsurface investigation. The purpose of STE's investigation was to determine whether or not the soil near the product lines and underground storage tanks (USTs) had been impacted with petroleum hydrocarbons.

In July 1993, STE removed one single-walled 10,000-gallon gasoline tank and one single-walled 6,000-gallon gasoline tank along with a 550-gallon waste oil tank from the Site. Three double-walled USTs replaced these tanks. Currently, there is one 10,000-gallon double-walled gasoline tank and two 6,000-gallon double-walled gasoline tanks beneath the Site (the locations are shown in Figure 2).

In December 1997, Mr. Razi retained Western Geo-Engineers (WEGE) to conduct additional investigations and perform groundwater monitoring on a quarterly basis. The results of the WEGE groundwater monitoring events indicated elevated levels of petroleum hydrocarbons and MtBE in the groundwater. The historical groundwater elevation data and chemical data including TPH-g, BTEX and MtBE concentrations reported by STE and WEGE are included in Tables 2 and 6 of this report.

In April 1999, Mr. Razi retained SOMA to conduct groundwater monitoring, risk based corrective action (RBCA), a corrective action plan (CAP) and soil and groundwater remediation at the Site. The results of the RBCA study indicated that the Site is a high-risk groundwater site; therefore, the soil and groundwater in on-and off-site areas warranted remedial actions. The source of the petroleum hydrocarbons in the groundwater was believed to have been the former USTs, which were used to store gasoline at the Site. The results of the CAP study

indicated that the installation of a French drain combined with a vapor extraction system would be the most cost effective alternative for the Site's remediation.

In late August 1999, SOMA installed a French drain and groundwater treatment system to prevent further migration of the chemically impacted groundwater. This treatment system has been in operation since early December 1999.

In July 2000, following approval from the ACEHS, SOMA installed a vapor extraction system as recommended in our CAP document, dated July 1, 1999.

In January 2002, Environmental Fabric removed and installed new product dispensers in the fuel islands.

1.2 Site Hydrogeology

Previous investigations have shown that groundwater is encountered at depths of approximately 10 to 11 feet beneath the Site. Figure 2 shows the location of the on-site and off-site groundwater monitoring wells. Prior to the operation of the French drain, groundwater was found to flow from the north to the south with an average gradient of 0.014 feet/feet. When the groundwater extraction system is in operation, the groundwater flows towards the French drain. The capture zone of the drain has extended downgradient past well MW-10.

Based on the results of a pumping test conducted by SOMA, the hydraulic conductivity of the saturated sediments ranges from 1.5 to 18.3 feet per day. Assuming that the effective porosity of the saturated sediments is 0.35, the groundwater flow velocity ranges from 22 to 267 feet per year.

2.0 Field Activities

On May 7, 2002, SOMA's field crew conducted a groundwater monitoring event

in accordance with the procedures and guidelines of the RWQCB, San Francisco Bay Region. During this groundwater monitoring event, a total of eleven wells were monitored. The depths to groundwater were measured from the top of the casings to the nearest 0.01 foot using an electric sounder. The top of the casing elevation data and the depth to groundwater at each groundwater monitoring well were used to calculate the groundwater elevation. The thickness of floating product was measured using a petroleum gauging paste on the sounder.

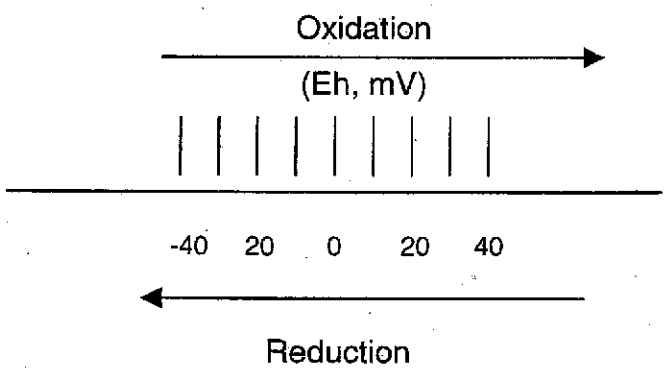
Prior to collecting samples, each well was purged using a battery operated 2-inch diameter pump (Model ES-60 DC). During the purging activities, in order to obtain accurate measurements of groundwater parameters and especially to avoid the intrusion of oxygen from ambient air into the groundwater samples, field measurements were conducted in-situ (i.e., down-hole inside each monitoring well). The DO and temperature were measured with a dissolved oxygen meter, YSI Model 50B; see the field notes in Appendix A for details of the field measurements. The instrument was calibrated at the Site according to a procedure provided by the manufacturer and prescribed by Taras *et.al.* (1975). Details of the calibration and measurement procedures can be found in the instrument's handbook. Other groundwater parameters such as pH, electric conductivity (EC), turbidity, and Redox were measured in-situ using a Horiba, Model U-22 multi-parameter instrument. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer.

The Horiba U-22 portable microprocessor-based turbidity probe provides lab-grade accuracy, even in the field. The unit of measure adopted by the ISO Standard is the Formazine Turbidity Unit (FTU), which is identical to the Nephelometric Turbidity Unit (NTU). Turbidity is one of the most important parameters used to determine the quality of drinking water. It has been found that there is a strong correlation between the turbidity level and the biological oxygen demand of natural water bodies. Turbidity is an indicator and, as such,

does not reveal the presence or quantity of specific pollutants in the groundwater. It does, however, provide general information on the extent of the suspended solids in the groundwater.

The Horiba U-22's ORP electrode was used to measure the ORP of the groundwater samples. Oxidation is a process in which a molecule or ion loses one or several electrons. Reduction is a process by which a molecule or ion gains one or several electrons. The ORP, or Eh, is a measure of the potential for these processes to occur. The unit of Eh, which is commonly referred to as the Redox potential, is the Volt or m-Volt. The most important Redox reaction in petroleum contaminated groundwater is the oxidation of petroleum hydrocarbons in the presence of bacteria and free molecular oxygen. Because the solubility of O_2 in water is low (9 mg/L at 25 °C and 11 mg/L at 5 °C), and because the rate of O_2 replenishment in subsurface environments is limited, oxidation of only a small amount of petroleum hydrocarbons can result in the consumption of all the DO.

When all the dissolved O_2 in the groundwater is consumed, oxidation of petroleum hydrocarbons can still occur, but the oxidizing agents (i.e., the constituents that undergo reduction) are then $Fe(OH)_3$, SO_4^{2-}, NO^-_3, MnO_2, and others (Freeze and Cherry, 1979). As these oxidizing agents are consumed, the groundwater environment becomes more and more reduced. If the process proceeds far enough, the environment may become so strongly reduced that the petroleum hydrocarbons may undergo anaerobic degradation, resulting in the production of methane and carbon dioxide. The concept of oxidation and reduction in terms of changes in oxidation states is illustrated below:



The purging continued until the parameters for pH, temperature, EC, DO, turbidity, and Redox stabilized or three casing volumes were purged. The groundwater samples were also tested on-site for Fe^{+2}, SO_4^{-2}, and NO_3^--N concentrations once stabilization occurred.

Fe^{+2}, SO_4^{-2} , NO_3^--N were measured colorimetrically using the Hach Model DR/850 colorimeter. The Hach DR/800 Series Colorimeter is a microprocessor-controlled photometer suitable for colorimetric testing in the laboratory or the field. The required reagents for each specific test are provided in AccuVac ampuls.

Fe^{+2} was measured colorimetrically using Method 8146 (1,10-phenanthroline Method). The 1,10-phenathroline indicator in Ferrous Iron Reagent reacts with Fe^{+2} in the sample to form an orange color. The intensity of the orange color is proportional to the iron concentration.

SO_4^{-2} was measured colorimetrically using Method 8051 of Sulfa Ver 4 Method. Sulfate ions in the sample react with Sulfa Ver 4 Sulfate Reagent to form insoluble barium sulfate. The amount of turbidity formed is proportional to the sulfate concentration. The Sulfa Ver 4 also contains a stabilizing agent to hold the barium sulfate in suspension.

NO_3^--N was measured colorimetrically using Method 8039: the Cadmium Reduction Method. Cadmium metal in the Nitra Ver 5 Nitrate Reagent reduces nitrates present in the sample to nitrite; the nitrite ion reacts in an acidic medium with sulfanilic acid to form an intermediate diazonium salt, which couples with getistic acid to form an amber-colored product. The intensity of the color is proportional to nitrate-N concentration in the sample.

For sampling purposes, after purging, a disposable polyethylene bailer was used to collect sufficient samples from each monitoring well for laboratory analyses. The groundwater sample was transferred into four 40-mL VOA vials, which had been prepared with HCl preservative. The vials were sealed properly to prevent the development of any air bubbles within the headspace area. After the groundwater samples were collected, they were placed in an ice chest, along with a chain of custody (COC) form. On May 8, 2002, SOMA's field crew delivered the groundwater samples to Curtis and Tompkins, Ltd. laboratory in Berkeley, California.

3.0 Laboratory Analysis

Curtis & Tompkins, Ltd., a state certified laboratory, analyzed the groundwater samples for TPH-g, BTEX and MtBE. TPH-g was prepared and measured using EPA Methods 5030 and 8015M. EPA Method 8021B was used to measure BTEX and MtBE concentrations. Detections of MtBE were confirmed using EPA Method 8260B.

4.0 Results

The following sections provide the results of field measurements and laboratory analyses for the May 7, 2002 groundwater monitoring event.

4.1 Field Measurements

Table 1 presents the measured groundwater elevations at each groundwater monitoring well. A total of 11 groundwater monitoring wells (on-site monitoring wells and off-site monitoring wells MW-10, MW-11, and MW-12) and three risers of the French drain were monitored during this event. At each groundwater monitoring well, the top of casing elevation and depth to groundwater were used to calculate the groundwater elevation. All wells were also checked for the presence of free product, using a petroleum gauging paste. No free product was detected in any of the monitoring wells.

As Table 1 shows, depths to groundwater in the monitoring wells ranged from 9.49 feet in monitoring well MW-10 to 11.33 feet in monitoring well MW-6. The corresponding groundwater elevations ranged from 84.58 feet in monitoring well MW-12 to 88.35 feet in monitoring well MW-5. Depths to groundwater inside the risers ranged from 10.14 feet in the west riser to 11.18 feet in the east riser. The corresponding groundwater elevations ranged from 86.72 feet in the east riser to 86.76 feet in the west riser.

Table 2 presents the historical groundwater elevations at different groundwater monitoring wells and the risers of the French drain. Since the previous monitoring event (First Quarter 2002) the following groundwater elevation trends were observed. The groundwater elevations decreased in all monitoring wells. This can be attributed to the on-set of a drier season. The groundwater elevations increased in the risers of the French drain. The increase in the risers can be attributed to difficulties encountered with the treatment system during the Second Quarter 2002. SOMA's field crew repaired several problems on the groundwater extraction system during this quarter. Also this quarter, the groundwater extraction system was inoperable.

The groundwater elevation contour map in feet as measured on May 7, 2002 is displayed in Figure 3. As Figure 3 shows, in general, the groundwater flows toward the southwest, at an average gradient of 0.010 feet/feet.

Table 3 summarizes the field measurements of physical and chemical properties of groundwater samples collected from the groundwater monitoring wells at the time of sampling. The pH measurements ranged from 6.54 in monitoring well MW-12 to 7.21 in monitoring well MW-7. The temperature measurements ranged from 18.3 °C in monitoring well MW-8 to 20 °C in monitoring well MW-2. EC ranged from 488 µS/cm in monitoring well MW-7 to 940 µS/cm in monitoring well MW-3.

The groundwater biodegradation parameters for this monitoring event, as well as, previous monitoring events, are shown in Table 4. DO concentrations were not detected in any of the monitoring wells during the Second Quarter 2002 monitoring event. No concentration contour map for DO was prepared this quarter. The low oxygen contents may suggest the presence of anaerobic biodegradation processes in this groundwater system.

Turbidity of the groundwater samples ranged from 9.7 NTU in monitoring well MW-4 to 531 NTU in monitoring well MW-7. The Redox potential in the groundwater samples ranged from –148 mV in monitoring well MW-3 to +19 mV in monitoring well MW-10. Monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-11, and MW-12 showed strongly reduced conditions, while monitoring well MW-10 was the only monitoring well to show a strongly oxidized condition. The low oxygen levels in combination with the positive Redox potentials, suggest the presence of weak aerobic oxidation of the petroleum hydrocarbons. Oxygen-depleted environments with strongly reduced conditions depict anaerobic processes utilizing alternate electron acceptors for oxidation of petroleum hydrocarbons. Possible alternate electron acceptors include nitrate,

iron (III) and sulfate (Lovley *et. al.*, 1994). Under strongly reduced conditions and a lack of other terminal electron acceptors, the occurrence of methanogenesis and production of methane gas is quite possible.

Ferrous iron was detected in all of the groundwater samples, with the exception of the groundwater sample taken from monitoring well MW-10. Ferrous iron concentrations ranged from 0.49 mg/L in monitoring well MW-11 to 50 mg/L in monitoring well MW-3. High concentrations of ferrous iron in groundwater is a good indication of biological activities. Ferrous iron concentrations increased MW-1, MW-2, MW-3, MW-7, MW-11, and MW-12. The contour map of ferrous iron concentrations in the groundwater as measured on May 7, 2002 is displayed in Figure 4. As Figure 4 shows, the highest ferrous iron concentration was measured in the vicinity of the USTs in monitoring well MW-3. High concentrations were also detected in monitoring wells MW-1, MW-6, and MW-7. The presence of high ferrous iron concentrations in combination with low concentrations of other electron receptors, such as DO, sulfate, and nitrogen is indicative of anaerobic biodegradation beneath the Site.

Sulfate concentrations were detected in all groundwater samples, with the exception of groundwater samples taken from monitoring wells MW-1 and MW-3. Sulfate concentrations ranged from 2 mg/L in monitoring well MW-8 to 54 mg/L in monitoring well MW-5. Sulfate concentrations decreased in monitoring wells MW-2, MW-5, MW-6, and MW-11. Sulfate-depleted subsurface contaminated environments may reveal a strong demand by microorganisms for a source of terminal electron acceptor for oxidizing contaminant hydrocarbons (Lovley *et. al.*, 1994). The contour map of sulfate concentrations in the groundwater as measured on May 7, 2002 is displayed in Figure 5. As shown in Figure 5, sulfate concentrations were below the measurable specifications of the equipment in monitoring wells MW-1 and MW-3, which are in the vicinity of the USTs. The highest on-site sulfate concentration was measured in monitoring well MW-5, in

the northern section of the Site, while the highest off-site concentration was measured in monitoring well MW-11.

During this monitoring event, nitrate was detected in monitoring wells MW-2, MW-5, and MW-11, with concentrations ranging from 0.6 mg/L in monitoring well MW-2 to 7.2 mg/L in monitoring well MW-5. As discussed earlier, the concentrations of DO in all wells was zero, and because the replenishment of oxygen in the subsurface environments is limited, oxidation of only a small amount of petroleum hydrocarbons depletes the oxygen. Under this condition, oxidation of petroleum hydrocarbons can still occur, but the oxidizing agents (i.e., constituents that undergo reduction) are $Fe(OH)_3$, SO_4^{2-}, NO^-_3, MnO_2, and others (Lovley *et. al.*, 1994). The disappearance of DO and nitrate in many of the wells may suggest that, under the observed anaerobic conditions, nitrate may have been consumed as a source of terminal electron acceptors by microorganisms (Lovley *et. al.*, 1994). The contour map of nitrate concentrations in the groundwater is displayed in Figure 6. As Figure 6 shows, nitrate was below the measurable specifications of the equipment in the vicinity of the USTs, and the only nitrate concentrations detected were in monitoring wells MW-2, MW-5 and MW-11.

As discussed before, in this contaminated groundwater system beneath the Site, most of the electron receptors have been consumed by microorganisms, as a result, methanogenesis may be the only remaining route of natural biodegradation. Therefore, to enhance the biodegradation processes we highly recommend the injection of concentrated solutions of terminal electron receptors into the groundwater in the vicinity of the contaminated wells.

4.2 Laboratory Analysis

Table 5 presents the results of the laboratory analyses on the groundwater samples collected on May 7, 2002. The results indicate that on-site monitoring wells MW-1 and MW-3 are the most impacted locations. These monitoring wells are in the vicinity of the USTs.

As shown in Table 5, TPH-g was detected in all of the groundwater samples. TPH-g ranged in concentration from 160 µg/L in monitoring well MW-5 to 54,000 µg/L in monitoring well MW-3. A high TPH-g concentration was also detected in monitoring well MW-1, which is in the vicinity of the USTs. The contour map of TPH-g concentrations in the groundwater is displayed in Figure 7. As Figure 7 shows, high TPH-g concentrations were detected in the vicinity of the USTs, in monitoring wells MW-1 and MW-3. TPH-g was detected in all off-site monitoring wells, where the highest TPH-g concentration was detected in monitoring well MW-10 at 3,400 µg/L. This can be attributed to the groundwater flow direction and the difficulties encountered with the groundwater treatment system during this quarter.

The following trends were observed for BTEX analytes during this monitoring event. Benzene was not detected above the laboratory reporting limits for monitoring well MW-5, and ranged in concentration from 15 µg/L in monitoring well MW-7 to 6,700 µg/L in monitoring well MW-3. Toluene was not detected above the laboratory reporting limits for monitoring well MW-12, and ranged in concentration from 0.78 µg/L in monitoring well MW-5 to 5,100 µg/L in monitoring well MW-1. Ethylbenzene was detected in all of the monitoring wells, and ranged in concentration from 2 µg/L in monitoring well MW-5 to 1,800 µg/L in monitoring well MW-3. Total xylenes were detected in all of the monitoring wells, and ranged in concentration from 2.15 µg/L in monitoring well MW-5 to 7,100 µg/L in monitoring well MW-3. The contour map of benzene concentrations in the

groundwater is displayed in Figure 8. As Figure 8 shows, the highest benzene concentration was detected in the vicinity of the USTs, in monitoring well MW-3. Benzene concentrations were detected in all off-site monitoring wells, with the highest off-site benzene concentration at 660 µg/L in monitoring well MW-10.

MtBE was not detected above laboratory reporting limits for monitoring wells MW-2, MW-4, MW-6, and MW-11. MtBE ranged in concentration from 2.3 µg/L in monitoring well MW-5 to 32,000 µg/L in monitoring well MW-1. The contour map of MtBE concentrations in groundwater is displayed in Figure 9. As Figure 9 shows, the highest MtBE concentration was detected in the vicinity of the USTs, in monitoring well MW-1. This can be attributed to the southwesterly groundwater flow direction and the solubility of MtBE. MtBE has migrated as far off-site as monitoring well MW-12.

Table 6 shows the historical groundwater analytical data. Since the previous monitoring event the following concentration trends were observed. TPH-g decreased in monitoring wells MW-1, MW-3, MW-5, MW-6, MW-8, MW-10, and MW-11, and increased in monitoring wells MW-2, MW-4, MW-7, and MW-12. All BTEX analytes decreased in monitoring wells MW-5, MW-6, MW-10, and MW-11, and increased in monitoring wells MW-1 and MW-3. Both benzene and ethylbenzene increased in monitoring well MW-2. Toluene was the only BTEX analyte to increase in monitoring MW-8. Toluene remained constant in monitoring well MW-12, while ethylbenzene increased. All BTEX analytes increased in monitoring wells MW-4 and MW-7. MtBE decreased in monitoring wells MW-3, MW-7, MW-10, and MW-12. MtBE remained constant in monitoring wells MW-2, MW-4, MW-6, and MW-11.

5.0 Groundwater Treatment System Operation

The treatment system began operation on December 9, 1999. Since that time, 1,571,630 gallons of groundwater has been treated and discharged into the East

Bay Municipal Utility District (EBMUD) sewer system under the existing discharge permit (as of May 30, 2002).

As required by the discharge permit and the ACEHS, sampling of the groundwater treatment system has been performed on a routine basis. The effluent sampling and maintenance of the system was performed on a weekly basis from the start of the system's operation to the end of July 2000. In August 2000, maintenance of the system continued weekly, but sampling was performed on a monthly basis. The results from the first effluent testing was used to acquire a discharge permit from EBMUD.

A total of 93,130 gallons of chemically impacted groundwater was treated since the beginning of the Second Quarter 2002 (April 2002). The effluent passing both Granulated Active Carbon (GAC) units is regularly being collected for chemical analysis. The schedule for refurbishing the GAC units is based on the analytical results of the samples. The first GAC unit was refurbished as soon as traces of chemicals broke through the unit. The second GAC unit is serving as a polishing unit and is always kept highly active. This procedure ensures that the effluent discharging into the EBMUD sewer system has non-detectable levels of contaminants. A schematic diagram of the groundwater remediation system is displayed in Figure 10.

Table 7 presents the total volume and chemical composition of GAC-1 and effluent treated at the Site. Table 7 shows that all the effluent samples have maintained in compliance with the permit, having concentrations below the laboratory detection limits for the effluent. The laboratory reports are included in Appendix B of this report.

Monthly sampling was not performed during March 2002. During March 2002 the compressor piston was repaired due to insufficient air build-up in the compressor.

During this same month a carbon change-out was performed on GAC-1 (2,000 pounds of carbon was replaced), and GAC-2 was replaced. Two compressor changes were performed during May 2002.

The cumulative weight of TPH-g and MtBE extracted from the groundwater since the installation of the treatment system is displayed in Figure 11. As Figure 11 shows, an approximate total of 142 pounds of TPH-g and 52.3 pounds of MtBE have been removed during the operation of the treatment system, from start-up to date.

6.0 Vapor Extraction System Operation

The Vapor Extraction System (VES) consists of 6 vapor extraction wells, a de-moisturizing unit, a blower and four drums of GAC filters. The VES began operation on July 24, 2000. Since then, during its working days, the system extracted and treated more than 3,000,000 liters/day of soil gas. When the system first began to operate, the influent had a concentration of 394 parts per million on volumetric basis (ppmv) petroleum hydrocarbons. However, it gradually decreased to 68 ppmv after 31 days of operation. On January 4, 2001, due to extremely low influent concentrations (i.e., less than 10 ppm of hydrocarbons), the soil vapor extraction (SVE) system was turned off.

On October 23, 2001, the system was inspected for operation and it was determined that all four GACs were not in good enough condition to re-start the system. On October 25, 2001, one of the four GACs was replaced with a new one, and on October 29, 2001 three of the remaining GAC units were replaced. Since then, the system was under continuous operation and extracted over 80 cubic feet per minute (CFM) of contaminated air from the vadose zone. On November 21, 2001 due to the low concentration of contaminants in the influent (i.e., less than 10 ppmv of hydrocarbons) the system was turned off. In February 2002, the system was inspected for operation and it was determined that the

blower was not functioning. The blower was repaired and installed on February 15, 2002. On the same day four old GACs were replaced with four new ones and the system was turned on. The system was shut down on March 7, 2002, due to low influent readings caused by saturated soil conditions on-site. The system has not been operational since March 7, 2002. The total mass of petroleum hydrocarbons removed by the VES are shown in Table 8. As of March 7, 2002, the VES has removed 389.55 pounds of petroleum hydrocarbons from the vadose zone beneath the Site.

7.0 Conclusions and Recommendations

The findings of the Second Quarter 2002 groundwater monitoring event can be summarized as follows:

1. The groundwater flows toward the southwest, at an average gradient of 0.010 feet/feet.

2. In comparison with the previous monitoring event, the groundwater elevations decreased in all of the monitoring wells. The decrease can be attributed to the on-set of a drier season. Groundwater elevations increased in all the risers of the French drain. This may be attributed to the treatment system being inoperable the day of the monitoring event.

3. The following groundwater biodegradation parameter trends were observed during the Second Quarter 2002 monitoring event. DO was completely consumed in all of the monitoring wells measured during this monitoring event. Ferrous iron concentrations were the highest in the vicinity of the USTs, in monitoring well MW-3. Sulfate concentrations were below the measurable equipment specifications in the vicinity of the USTs, in monitoring wells MW-1 and MW-3. Nitrate concentrations were below

the measurable equipment specifications in all on-site monitoring wells, with the exception of MW-2 and MW-5. The presence of high ferrous iron concentrations in combination with low concentrations of other electron receptors, such as DO, sulfate, and nitrogen is indicative of an anaerobic biodegradation beneath the Site.

4. In the contaminated groundwater system beneath the Site, most of the electron receptors have been consumed by microorganisms, as a result, methanogenesis may be the only remaining route of natural biodegradation. Therefore, to enhance the biodegradation processes we highly recommend the injection of concentrated solutions of terminal electron receptors into the groundwater in the vicinity of the contaminated wells.

5. The highest concentrations of TPH-g, benzene, and MtBE were detected in the vicinity of the USTs as shown in Figures 7, 8, and 9. TPH-g and benzene were detected in all off-site monitoring wells. MtBE was detected in all off-site monitoring wells with exception of monitoring well MW-11. The concentrations in the off-site monitoring wells can be attributed to the groundwater flow direction and the difficulties encountered with the treatment system during this quarter. The off-site concentrations should decrease in the Third Quarter 2002 now that the treatment system is running more efficiently.

6. So far, 1,571,630 gallons of groundwater has been treated and discharged into the East Bay Municipal Utility District (EBMUD) sewer system under the existing discharge permit (as of May 30, 2002).

7. All effluent samples have maintained compliance with the permit, with all contaminant concentrations remaining below the laboratory detection limit.

8. As Figure 11 shows, an approximate total of 142 pounds of TPH-g and 52.3 pounds of MtBE have been removed during the operation of the treatment system, over its entire life to date.

9. As of March 7, 2002 the VES has removed 389.55 pounds of petroleum hydrocarbons from the vadose zone beneath the Site since it's installation. Due to the very low concentrations of petroleum hydrocarbons in the influent, the system was shut down on March 7, 2002.

8.0 Report Limitations

This report is the summary of work done by SOMA including observations and descriptions of the Site's conditions. It includes the analytical results produced by Curtis & Tompkins Laboratories as well as the summaries of data produced by previous environmental consultants. The number and location of the wells were selected to provide the required information, but may not be completely representative of the entire Site's conditions. All conclusions and recommendations are based on the results of the laboratory analysis. Conclusions beyond those specifically stated in this document should not be inferred from this report.

SOMA warrants that the services provided were done in accordance with the generally accepted practices in the environmental engineering and consulting field at the time of this sampling.

9.0 References

Freeze R.A. and Cherry J.A. 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, N.J. PP.114-127.

Lovley, D.R.; Chapell, F.H.; Woodward, J.C. 1994. Use of Dissolved H_2 Concentration to Determine Distribution of Microbially Catalyzed Redox Reactions in Anoxic Groundwater. Environmental Science & Technology. Vol,28, No. 7:1205-1210.

Soil Tech Engineering, Quarterly Groundwater Monitoring Reports, from 1995 to July 1997.

SOMA Environmental Engineering, Inc., June 9, 2000. "Semi-Annual Technical Report: Treatment System Discharge to EBMUD Sewer from November 15, 1999 to May 14, 2000".

SOMA Environmental Engineering, Inc., December 4, 2000. "Semi-Annual Technical Report: Treatment System Discharge to EBMUD Sewer from May 15, 2000 to November 14, 2000".

SOMA Environmental Engineering, Inc., March 7, 2001. "Semi-Annual Technical Report: Treatment System Discharge to EBMUD Sewer from November 15, 2000 to February 14, 2001".

SOMA Environmental Engineering, Inc., June 30, 1999. "Second Quarter 1999 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., September 14, 1999. "Third Quarter 1999 Groundwater Monitoring Report Tony's Express Auto Service Oakland,

California".

SOMA Environmental Engineering, Inc., November 30, 1999. "Fourth Quarter 1999 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., March 10, 2000. "First Quarter 2000 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., July 26, 2000. "Second Quarter 2000 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., August 24, 2000. "Installation of Soil Vapor Extraction and Air Sparging System and Initial Results Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., August 29, 2000. "Third Quarter 2000 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., December 4, 2000. "Fourth Quarter 2000 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., April 23, 2001. "First Quarter 2001 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., July 17, 2001. "Second Quarter 2001 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., September 20, 2001. "Third Quarter 2001 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

SOMA Environmental Engineering, Inc., January 8, 2002. "Fourth Quarter 2001 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

Taras, M.J.; Greenberg, A.E.; Hoak, R.D.; and Rand, A.E. 1975. Standard Methods for the Examination of Water and Wastewater. American Public Health Association, Washington, D.C.

Western Geo-Engineers, Quarterly Groundwater Monitoring and Sampling Reports from Fourth Quarter 1997 to First Quarter 1999.

SOMA Environmental Engineering, Inc., April 8, 2002. "First Quarter 2002 Groundwater Monitoring Report Tony's Express Auto Service Oakland, California".

TABLES

Table 1

Groundwater Elevation Data, May 7, 2002

3609 International Boulevard, Oakland, California

Monitoring Well	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Free Product
MW-1	97.99	10.86	87.13	ND
MW-2	98.58	10.59	87.99	ND
MW-3	97.78	11.28	86.50	ND
MW-4	97.85	10.81	87.04	ND
MW-5	99.04	10.69	88.35	ND
MW-6	98.77	11.33	87.44	ND
MW-7	97.83	10.13	87.70	ND
MW-8	97.25	10.32	86.93	ND
MW-10	94.54	9.49	85.05	ND
MW-11	95.94	10.99	84.95	ND
MW-12	94.84	10.26	84.58	ND
F.D. Center	97.10	10.36	86.74	ND
F.D. East	97.90	11.18	86.72	ND
F.D. West	96.90	10.14	86.76	ND

Notes:
ND: Not detected in monitoring well.
F.D. Center : French drain center riser.
F.D. East : French drain east riser.
F.D. West : French drain west riser.

Table 2
Historical Groundwater Elevation Data
3609 International Boulevard, Oakland, California

	Monitoring Wells											French Drain		
Date	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-10	MW-11	MW-12	FDC	FDE	FDW
May-02	**87.13**	**87.99**	**86.50**	**87.04**	**88.35**	**87.44**	**87.70**	**86.93**	**85.05**	**84.95**	**84.58**	**86.74**	**86.72**	**86.76**
Feb-02	87.88	89.59	87.77	87.88	90.00	88.85	88.92	87.37	86.26	86.25	86.06	80.36	84.72	84.12
Nov-01	83.98	85.15	83.46	84.17	85.32	NM	85.00	84.06	82.48	82.46	82.08	79.28	83.98	82.59
Aug-01	84.48	85.05	83.68	84.05	85.25	NM	84.81	84.28	82.90	82.90	82.60	83.80	84.21	83.82
May-01	86.49	87.58	85.97	86.35	87.92	86.95	87.23	86.10	84.74	84.79	84.32	81.25	84.85	83.40
Mar-01	89.03	90.03	88.35	88.61	90.37	89.28	89.79	88.50	86.47	86.33	85.80	87.71	88.76	86.78
Nov-00	84.79	85.98	84.38	84.80	85.49	85.37	85.88	84.70	83.19	83.39	82.79	80.25	85.15	81.40
Aug-00	84.63	85.55	84.05	84.5	85.82	84.99	85.2	84.38	83.02	81.07	82.77	81.40	NM	NM
May-00	86.50	87.70	86.10	86.39	88.01	87.07	87.31	86.10	85.09	82.14	84.36	84.69	84.68	84.70
Feb-00	86.79	88.73	86.83	86.60	89.19	87.82	88.33	86.40	85.29	82.34	84.64	81.70	NM	NM
Nov-99	83.54	84.48	83.08	83.75	84.74	84.02	84.58	83.60	82.04	82.09	81.64	NA	NA	NA
Aug.99	84.64	85.08	83.93	84.65	85.49	84.87	85.03	84.50	82.94	83.19	NA	NA	NA	NA
Jun.99	86.89	87.34	85.98	86.55	87.54	86.87	87.13	86.45	84.59	84.44	NA	NA	NA	NA
Mar.99	88.08	90.98	89.34	89.39	91.31	90.37	90.83	89.67	87.24	87.13	NA	NA	NA	NA
Dec.98	86.89	87.64	86.23	86.72	87.84	87.17	87.31	86.50	84.35	84.36	NA	NA	NA	NA
Sep.98	84.41	85.00	83.10	84.21	85.22	84.67	84.74	84.23	82.61	82.70	NA	NA	NA	NA
Dec.97	88.69	89.54	NM	88.42	89.89	89.47	89.18	88.30	85.76	85.54	NA	NA	NA	NA
Apr.97	86.85	87.18	86.05	86.62	87.69	87.01	84.88	84.30	84.47	84.47	NA	NA	NA	NA
Dec.96	86.32	86.91	85.76	86.27	87.56	86.73	86.86	86.12	84.10	83.95	NA	NA	NA	NA
Apr.96	89.70	90.45	89.02	89.50	90.80	90.01	90.08	89.27	NA	NA	NA	NA	NA	NA
Jan.96	87.92	88.65	87.23	87.74	89.01	88.22	88.26	87.46	NA	NA	NA	NA	NA	NA
Oct.95	84.70	85.16	84.87	NA	85.47	84.83	84.88	84.39	NA	NA	NA	NA	NA	NA
Jun.95	88.46	88.99	87.53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mar.95	89.92	90.90	89.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dec.94	88.67	89.98	87.99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oct.94	82.60	83.22	81.99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
NM: Not Measured
NA: Not Applicable, Well/Drain did not exist at time of sampling
FDC: French drain center riser.
FDE: French drain east riser.
FDW: French drain west riser.

Table 3
Field Measurements of Physical and Chemical Properties of Groundwater at Time of Sampling, May 7, 2002
3609 International Blvd., Oakland, CA

Monitoring Well	pH	Temp (°C)	EC (uS/cm)
MW-1	7.14	18.70	820
MW-2	7.05	20.00	656
MW-3	6.97	19.80	940
MW-4	7.11	18.50	577
MW-5	6.96	19.80	716
MW-6	7.03	19.00	759
MW-7	7.21	19.80	488
MW-8	7.12	18.30	732
MW-10	6.94	19.20	735
MW-11	6.99	18.50	661
MW-12	6.54	19.00	740

Table 4
Groundwater Biodegradation Parameters
3609 International Boulevard, Oakland, California

Well	Date	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Redox Potential (mV)	Ferrous Iron (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)
MW-1	**May 7, 2002**	**0.00**	**287**	**-81**	**3.09**	**0**	**0.0**
	February 21, 2002	0.00	153	-16	3.06	0	0.0
	November 19, 2001	0.36	17.2	-54	1.89	41	0.6
	August 8, 2001	1.71	200	-35	2.18	23	0.0
	May 22, 2001	1.36	40.9	32.5	0.34	21	0.0
	March 13, 2001	0.53	66	-4.7	0.50	80	4.4
	November 2, 2000	0.56	18	-39.4	1.14	33	0.0
	August 9, 2000	0.32	219	-40	1.70	0	0.0
	May 31, 2000	0.30	30	-37	0.57	0	2.8
	February 7, 2000	0.77	NM	-74	3.30	1	0.0
	November 9, 1999	0.20	NM	NM	5.10	26	0.0
	August 23, 1999	1.40	NM	NM	2.67	8	0.0
	June 10, 1999	0.14	NM	NM	3.17	1	0
	December 30, 1997	0.50	NM	NM	3.04	<1	<0.1
MW-2	**May 7, 2002**	**0.00**	**65.1**	**-46**	**0.64**	**35.0**	**0.6**
	February 21, 2002	1.46	41	131	0.36	45.0	0.8
	November 19, 2001	0.78	105	13	1.18	33.0	0.0
	August 8, 2001	2.03	0	160	0.09	51.0	7.4
	May 22, 2001	0.80	160	274	0.71	25.0	0.0
	March 13, 2001	0.89	24.15	117.9	0.10	80.0	6.8
	November 2, 2000	1.35	ND	111	0.69	7.9	0.0
	August 9, 2000	0.76	1,000	-74	0.72	0.0	5.4
	May 31, 2000	0.80	30.9	-55	0.18	54.0	2.5
	February 7, 2000	1.12	NM	-20	0.15	55.0	6.2
	November 9, 1999	0.80	NM	NM	1.00	55.0	0.9
	August 23, 1999	0.70	NM	NM	0.62	60.0	1.0
	June 10, 1999	0.44	NM	NM	0.55	40.0	0.7
	June 30, 1998	3.20	NM	NM	0.50	14.0	<0.1
	December 30, 1997	<0.1	NM	NM	3.35	<1	<0.1
MW-3	**May 7, 2002**	**0.00**	**218**	**-148**	**50**	**0**	**0**
	February 21, 2002	0	0.3	-61	6.80	0	0
	November 19, 2001	NA	NA	NA	NA	NA	NA
	August 8, 2001	1.17	28	-54	7.00	11	0.7
	May 22, 2001	0.08	98	-32	6.72	16	0.2
	March 13, 2001	0.62	26.91	-60	2.66	0	0.0
	November 2, 2000	0.83	4,816	-94	4.10	28	0.0
	August 9, 2000	0.40	123	-72	6.10	0	0.0
	May 31, 2000	0.45	188	-117	7.80	4	0.0
	February 7, 2000	0.70	NM	-82	3.60	140	0.0
	November 9, 1999	0.61	NM	NM	3.50	0	0.0
	August 23, 1999	0.80	NM	NM	3.90	0	0.0
	June 10, 1999	0.42	NM	NM	3.10	0	0.0
	June 30, 1998	2.00	NM	NM	0.37	77	0.1

Table 4
Groundwater Biodegradation Parameters
3609 International Boulevard, Oakland, California

Well	Date	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Redox Potential (mV)	Ferrous Iron (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)
MW-4	**May 7, 2002**	**0.00**	**9.7**	**-26**	**1.05**	**30**	**0.0**
	February 21, 2002	1.12	707	-26	3.90	4	0.0
	November 19, 2001	0.56	58.7	-108	3.20	37	0.0
	August 8, 2001	1.54	320	320	0.09	30	6.0
	May 22, 2001	1.27	50	193.9	0.47	31	0.1
	March 13, 2001	0.72	190	9.4	0.51	48	3.2
	November 2, 2000	0.60	ND	-39	0.00	45	4.5
	August 9, 2000	0.46	83	-50	0.32	14	1.0
	May 31, 2000	0.50	26.8	-40	0.25	40	0.5
	February 7, 2000	1.30	NM	-31	1.56	1	0.0
	November 9, 1999	0.12	NM	NM	0.99	23	0.5
	August 23, 1999	0.15	NM	NM	0.67	28	0.5
	June 10, 1999	0.15	NM	NM	0.81	10	0.4
	June 30, 1998	1.30	NM	NM	0.93	7	0.9
	December 30, 1997	<0.1	NM	NM	0.39	42	4.5
MW-5	**May 7, 2002**	**0.00**	**45**	**-23**	**0.64**	**54**	**7.2**
	February 21, 2002	2.65	34.2	104	0.69	67	0.0
	November 19, 2001	1.10	8.5	-33	1.05	27	3.5
	August 8, 2001	1.35	300	103	0.73	37	0.2
	May 22, 2001	1.20	593	167	1.10	13	14.8
	March 13, 2001	1.01	35.36	34.2	0.33	45	1.0
	November 2, 2000	0.56	ND	49	1.02	31	6.5
	August 9, 2000	1.97	490	80	0.00	26	0.0
	May 31, 2000	0.48	27.2	-25	0.35	50	0.0
	February 7, 2000	0.90	NM	18	0.64	47	0.0
	November 9, 1999	0.27	NM	NM	0.72	32	2.0
	August 23, 1999	0.75	NM	NM	1.19	45	2.4
	June 10, 1999	0.25	NM	NM	0.34	33	2.5
	June 30, 1998	0.60	NM	NM	0.50	6	1.6
	December 30, 1997	<0.1	NM	NM	0.94	18	0.3
MW-6	**May 7, 2002**	**0.00**	**263**	**-110**	**2.25**	**23**	**0.0**
	February 21, 2002	0.54	149	-40	6.20	41	0.0
	November 19, 2001	NA	NA	NA	NA	NA	NA
	August 8, 2001	NA	NA	NA	NA	NA	NA
	May 22, 2001	0.12	413	-9.5	1.30	17	0.0
	March 13, 2001	0.75	83	-42.1	2.63	79	1.3
	November 2, 2000	0.80	618	-34	2.65	16	0.0
	August 9, 2000	0.65	1,000	-33	4.10	0	2.5
	May 31, 2000	0.72	111	-62	3.27	0	0.0
	February 7, 2000	1.25	NM	-51	3.02	0	0.0
	November 9, 1999	0.22	NM	NM	7.00	0	0.0
	August 23, 1999	0.55	NM	NM	3.30	9	0.0
	June 10, 1999	0.61	NM	NM	2.52	23	0.0
	June 30, 1998	2.50	NM	NM	0.40	4	0.7
	December 30, 1997	<0.1	NM	NM	0.30	5	<0.1

Table 4
Groundwater Biodegradation Parameters
3609 International Boulevard, Oakland, California

Well	Date	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Redox Potential (mV)	Ferrous Iron (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)
MW-7	**May 7, 2002**	**0.00**	**531**	**-62**	**1.79**	**20**	**0.0**
	February 21, 2002	0.26	118	-6	1.77	0	0.0
	November 19, 2001	0.98	8.9	-14	1.14	21	0.0
	August 8, 2001	1.62	140	-18	0.51	13	0.0
	May 22, 2001	1.71	49.8	56	0.79	12	0.0
	March 13, 2001	0.79	110	-10.4	3.30	40	0.0
	November 2, 2000	0.58	ND	-11.6	0.27	30	3.5
	August 9, 2000	0.26	131	-33	0.95	17	0.0
	May 31, 2000	0.30	34.9	-52	0.72	28	0.0
	February 7, 2000	0.91	NM	-19	0.53	41	0.0
	November 9, 1999	0.14	NM	NM	0.99	25	0.0
	August 23, 1999	0.65	NM	NM	1.40	20	0.0
	June 10, 1999	0.15	NM	NM	0.19	22	0.0
	June 30, 1998	1.00	NM	NM	0.78	4	0.5
	December 30, 1997	1.20	NM	NM	0.23	32	0.2
MW-8	**May 7, 2002**	**0.00**	**308**	**-113**	**0.80**	**2**	**0.0**
	February 21, 2002	0.00	567	-64	3.08	0	0.0
	November 19, 2001	0.46	53.5	-142	>3.3	1	0.0
	August 8, 2001	1.24	990	-62	1.50	25	0.8
	May 22, 2001	1.16	179	-8.8	3.30	5	0.0
	March 13, 2001	0.48	110	-76	3.30	12	2.1
	November 2, 2000	-	350	-104.9	7.33	16	-
	August 9, 2000	0.50	94	-91	3.30	7	0.0
	May 31, 2000	0.45	13	-95	3.30	0	0.0
	February 7, 2000	0.65	NM	-90	3.46	0	0.0
	November 9, 1999	0.38	NM	NM	8.90	0	0.0
	August 23, 1999	0.20	NM	NM	8.20	13	0.0
	June 10, 1999	0.10	NM	NM	4.70	0	0.0
	June 30, 1998	1.30	NM	NM	2.82	3	<0.1
	December 30, 1997	2.50	NM	NM	3.35	<1	0.1
MW-10	**May 7, 2002**	**0.00**	**123**	**19**	**0.00**	**18**	**0.0**
	February 21, 2002	0.15	12.6	85	0.49	4	0.0
	November 19, 2001	0.89	3	45	0.99	12	2.7
	August 8, 2001	1.56	19.6	52	0.00	11	0.0
	May 22, 2001	1.76	19.56	105	0.10	13	1.7
	March 13, 2001	0.65	32.11	28	0.23	0	0.0
	November 2, 2000	0.53	ND	26.7	0.42	13	1.3
	August 9, 2000	0.45	116	19	0.40	0	0.0
	May 31, 2000	0.40	22.4	17	0.29	0	0.0
	February 7, 2000	0.82	NM	55	0.00	0	0.0
	November 9, 1999	0.44	NM	NM	0.37	12	0.0
	August 23, 1999	0.50	NM	NM	0.52	9	0.0
	June 10, 1999	0.20	NM	NM	0.25	0	0.0
	June 30, 1998	0.90	NM	NM	0.38	<1	<0.1
	December 30, 1997	<0.1	NM	NM	2.21	<1	0.3

Table 4
Groundwater Biodegradation Parameters
3609 International Boulevard, Oakland, California

Well	Date	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Redox Potential (mV)	Ferrous Iron (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)
MW-11	**May 7, 2002**	**0.00**	**155**	**-29**	**0.49**	**28**	**4.6**
	February 21, 2002	2.52	168	31	0.00	40	0.0
	November 19, 2001	0.72	8.4	-18	2.30	30	1.0
	August 8, 2001	NA	NA	NA	NA	NA	NA
	May 22, 2001	2.13	32.3	40.5	0.53	20	0.0
	March 13, 2001	0.79	111	114.7	0.34	78	0.0
	November 2, 2000	0.60	ND	17	0.44	21	1.5
	August 9, 2000	0.48	42	10	0.80	0	1.5
	May 31, 2000	0.50	12	-15	0.69	10	5.2
	February 7, 2000	1.10	NM	-14	0.75	24	0.0
	November 9, 1999	0.22	NM	NM	0.06	21	0.0
	August 23, 1999	0.60	NM	NM	0.92	52	0.0
	June 10, 1999	0.19	NM	NM	0.28	0	0.0
	June 30, 1998	2.20	NM	NM	0.15	6	1.2
	December 30, 1997	<0.1	NM	NM	0.32	35	3.5
MW-12	**May 7, 2002**	**0.00**	**53.1**	**-67**	**2.00**	**13**	**0.0**
	February 21, 2002	0.56	4.9	-6	1.43	0	0.0
	November 19, 2001	0.92	20	-72	2.29	2	0.0
	August 8, 2001	1.66	72	3	2.46	0	0.0
	May 22, 2001	1.76	6.28	-18.9	2.38	0	1.9
	March 13, 2001	0.64	8.42	-5.6	1.44	0	0.0
	November 2, 2000	0.60	19	12	1.93	6	0.0
	August 9, 2000	0.31	56	-48	2.84	0	0.0
	May 31, 2000	0.29	7.7	-54	2.11	0	0.0
	February 7, 2000	0.62	NM	-42	1.53	0	0.0
	November 9, 1999	0.34	NM	NM	2.21	9	3.1

Notes:
NA: Not analyzed, MW-3 not analyzed on November 19, 2001 due to free product,
MW-6 not analyzed on November 19, 2001, well was inaccessible due to property obstacles.
ND: Not Detected
NM: Not Measured

Table 5
Groundwater Analytical Data, May 7, 2002
3609 International Boulevard, Oakland, California

Monitoring Well	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-1	53,000	4,400	5,100	1,300	7,000	32,000
MW-2	1,800	31	140	110	348	<2
MW-3	54,000	6,700	3,200	1,800	7,100	9,100
MW-4	570	72	29	27	74	<2
MW-5	160	<0.5	0.78[C]	2.0	2.15	2.3
MW-6	10,000	400	160	470	970	<2
MW-7	560	15	28	9.2	44	37
MW-8	9,000	360	56	560	622	2,100
MW-10	3,400	660	13	260	48	270
MW-11	280	16	3	7.6	7.6	<2
MW-12	2,700	74	<0.5	20.0	5.1	94

Notes:
< : Not detected above laboratory reporting limits.
[C] : Presence confirmed, but confirmation concentration differed by more than a factor of two.
[1] MTBE concentrations were confirmed with EPA Method 8260B.

Table 6
Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-1	**5/7/02**	**53,000**	**4,400**	**5,100**	**1300**	**7,000**	**32,000**
	2/21/02	260,000	3,700	12,000	3,700	19,200	23,000
	11/19/01	41,000	2,700	5,100	1,000	4,570	74,000
	8/8/01	14,820	852	342	568	1,606	2,000
	5/22/01	4,900	310	81	82	388	150
	3/13/01	14,570	1,005	440	108	2,030	16
	11/2/00	7,050	435	52	ND	689	10
	8/9/00	11,000	638	<5	<5	<5	17.1
	5/31/00	15,610	610	350	310	1,400	<5
	2/7/00	40,000	2,280	1,380	8	6,130	47
	11/9/99	10,000	693	15	<5	3,471	50
	8/23/99	19,750	678	463	893	2,938	38
	6/10/99	25,000	1,110	1,460	1,330	5,265	77
	3/16/99	17,000	480	860	850	3,000	190
	12/16/98	65,000	2,500	2,400	2,300	9,500	160
	12/30/97	27,000	2,300	2,100	1,400	5,100	NA
	4/10/97	NA	NA	NA	NA	NA	NA
	12/9/96	NA	NA	NA	NA	NA	NA
	4/3/96	31,000	98	120	63	170	NA
	1/3/96	30,000	71	73	50	120	NA
	10/2/95	59,000	140	130	140	390	NA
	6/5/95	21,000	950	650	570	150	NA
	3/6/95	32,000	190	160	150	490	NA
	12/2/94	80,000	3,800	6,600	2,300	11,000	NA
	10/5/94	320,000	24,000	21,000	2,600	15,000	NA
MW-2	**5/7/02**	**1,800**	**31**	**140**	**110**	**348**	**<2**
	2/21/02	1,700	26	180	95	360	<2
	11/19/01	470	13	64	22	83	14
	8/8/01	125	4	4	3	11	ND
	5/22/01	870	37	75	55	179	2.7
	3/13/01	932	18	34	1.3	225	ND
	11/2/00	ND	ND	ND	ND	ND	ND
	8/9/00	<50	<5	<5	<5	<5	<5
	5/31/00	2,930	130	330	130	570	<5
	2/7/00	6,400	372	639	46	134	8
	11/9/99	<50	<5	<5	<5	<5	<5
	8/23/99	60	6	9	4	11	ND
	6/10/99	3,500	290	428	211	744	ND
	3/16/99	7,600	730	830	610	1,900	55
	12/16/98	26,000	1,400	1,600	880	9,500	<5
	9/29/98	29,000	290	180	160	360	<0.5
	6/30/98	25,000	2,000	2,000	1,300	4,300	NA
	12/30/97	35,000	4,900	4,900	1,600	7,000	NA
	4/10/97	53,000	150	110	37	0	ND
	12/9/96	6,200	11	7	2	14	ND
	4/3/96	27,000	0	92	44	13	NA
	1/3/96	46,000	160	130	93	240	NA
	10/2/95	46,000	160	130	93	240	NA
	6/5/95	8,000	220	330	350	660	NA
	3/6/95	490	3	3	3	1	NA
	12/2/94	42,000	1,700	2,200	1,200	3,600	NA

Table 6
Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-3	**5/7/02**	**54,000**	**6,700**	**3,200**	**1,800**	**7,100**	**9,100**
	2/21/02	62,000	6,000	7,600	1,900	9,200	12,000
	11/19/01	NA	NA	NA	NA	NA	NA
	8/8/01	41,750	3,485	2,670	1,255	5,420	52
	5/22/01	44,000	5,400	3,100	1,400	6,400	200
	3/13/01	14,754	2,250	140	ND	1,284	110
	11/2/00	48,000	6,789	4,816	676	7,258	83
	8/9/00	76,000	8,900	5,636	883	7,356	176
	5/31/00	68,000	15,000	8,900	1,500	7,400	<5
	2/7/00	44,000	6,090	3,360	<5	5,780	276
	11/9/99	26,000	3,218	1,319	<5	6,697	126
	8/23/99	64,000	7,484	8,052	1,744	9,749	141
	6/10/99	46,000	8,245	6,425	1,015	7,173	274
	3/16/99	45,000	4,100	6,400	1,000	6,100	470
	12/16/98	51,000	5,700	3,900	1,200	6,300	410
	1/3/96	150,000	510	410	210	650	NA
	10/2/95	150,000	510	410	210	65	NA
	6/5/95	350,000	20,000	42,000	5,800	36,000	NA
	3/6/95	350,000	20,000	42,000	5,800	36,000	NA
	12/2/94	250,000	19,000	22,000	4,400	28,000	NA
	10/5/94	3,000,000	190,000	740,000	310,000	130,000	NA
MW-4	**5/7/02**	**570**	**72**	**29**	**27**	**74**	**<2**
	2/21/02	450	63	4.1	22	28.7	<2
	11/19/01	670	180	5	17	53	ND
	8/8/01	133	12	2.2	3.9	9	ND
	5/22/01	80	12	1.9	4.1	9.8	ND
	3/13/01	62	ND	ND	3.2	8.7	ND
	11/2/00	ND	5.30	ND	ND	8	ND
	8/9/00	370	5.08	<5	<5	<5	<5
	5/31/00	552	42	19	16	67	<5
	2/7/00	7,800	1,200	61	<5	781	<5
	11/9/99	<50	<5	<5	<5	<5	<5
	8/23/99	660	497	41	54	145	6
	6/10/99	1,000	298	44	19	64	13
	3/16/99	600	200	35	19	56	11
	12/16/98	1,400	590	33	28	94	24
	9/29/98	6,200	910	77	68	200	18
	6/30/98	1,700	780	160	54	200	NA
	12/30/97	2,300	410	270	100	1,500	NA
	4/10/97	ND	ND	ND	ND	ND	ND
	12/9/96	4,000	14	6	4	12	ND
	4/3/96	1,900	12	8	5	14	NA
	1/3/96	9,300	230	110	10	29	NA
	10/2/95	9,300	23	11	10	29	NA

Table 6
Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-5	**5/7/02**	**160**	**<0.5**	**0.78C**	**2.0**	**2.15**	**2.3**
	2/21/02	290	3.5	2	6.2	6.2	< 0.5
	11/19/01	920	17	160	26	135	40
	8/8/01	258	1	1.1	3.4	7.3	1.4
	5/22/01	180	ND	ND	2.1	0.57	4.4
	3/13/01	382	6.1	1.9	6.6	5.9	ND
	11/2/00	ND	ND	ND	ND	ND	ND
	8/9/00	<50	<5	<5	<5	<5	<5
	5/31/00	627.4	7.4	24	12	32.4	<5
	2/7/00	70	<5	<5	<5	7	<5
	11/9/99	<50	<5	<5	<5	<5	<5
	8/23/99	120	ND	4	ND	4	ND
	6/10/99	270	4	3	6	4	ND
	3/16/99	650	3	1	16	2	10
	12/16/98	1,400	1	1	ND	2	ND
	9/29/98	270	2	1	3	3	<.5
	6/30/98	400	<5	<5	15	<10	NA
	12/30/97	790	82	66	59	160	NA
	4/10/97	NA	NA	NA	NA	NA	NA
	12/9/96	NA	NA	NA	NA	NA	NA
	4/3/96	780	1	1	5	4	NA
	1/3/96	1,500	1	1	4	5	NA
	10/2/95	1,500	1	1	4	5	NA
MW-6	**5/7/02**	**10,000**	**400**	**160**	**470**	**970**	**<2**
	2/21/02	14,000	440	180	750	1,020	<10
	11/19/01	NA	NA	NA	NA	NA	NA
	8/8/01	NA	NA	NA	NA	NA	NA
	5/22/01	27,000	760	450	1,600	4,270	ND
	3/13/01	15,637	713	459	238	2,363	ND
	11/2/00	19,000	1,387	618	ND	5,250	ND
	8/9/00	24,000	1,306	870	<5	5,162	<5
	5/31/00	21,700	1,700	1,200	17	3,600	<5
	2/7/00	17,000	1,360	521	<5	4,150	6
	11/9/99	40,000	1,084	130	<5	10,940	<5
	8/23/99	42,000	3,806	3,649	1,554	7,996	10
	6/10/99	18,500	2,060	1,650	735	3,170	ND
	3/16/99	37,000	3,900	4,300	1,600	7,000	180
	1/3/96	120,000	350	310	200	610	NA
	10/2/95	120,000	350	310	200	610	NA

Table 6
Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-7	**5/7/02**	**560**	**15**	**28.0**	**9.2**	**44.0**	**37**
	2/21/02	380	<0.5	2.5	2	3.8	78
	11/19/01	1,700	24	220	41	205	69
	8/8/01	610	3.7	3	6.2	18.9	10
	5/22/01	370	ND	9.1	1.3	2.3	28
	3/13/01	82	0.97	ND	0.76	ND	78
	11/2/00	50	ND	ND	ND	ND	9.1
	8/9/00	80	<5	<5	<5	<5	11.7
	5/31/00	494.9	4.9	22	4.2	21.9	29
	2/7/00	80	<5	<5	<5	<5	23
	11/9/99	290	<5	9	<5	<5	12
	8/23/99	570	5	10	ND	ND	ND
	6/10/99	320	3	7	4	3	26
	3/16/99	300	3	1	1	1	62
	12/16/98	990	5	10	5	20	160
	9/29/98	1,800	1	1	1	2	68
	6/30/98	620	4	<5	9	<10	NA
	12/30/97	1,400	130	98	75	200	NA
	4/10/97	NA	NA	NA	NA	NA	NA
	12/9/96	NA	NA	NA	NA	NA	NA
	4/3/96	1,900	2	3	5	7	NA
	1/3/96	3,300	9	12	17	45	NA
	10/2/95	NA	10	12	17	NA	3,300
MW-8	**5/7/02**	**9,000**	**360**	**56**	**560**	**622**	**2,100**
	2/21/02	240,000	1,400	<25	4,200	6,560	<100
	11/19/01	13,000	600	270	750	1,200	400
	8/8/01	5,620	153	46	373	345	174
	5/22/01	3,100	110	28	140	194	410
	3/13/01	2,360	81	16	71	270	221
	11/2/00	3,000	278	350	209	980	21
	8/9/00	22,000	632	5.38	<5	2,686	37.3
	5/31/00	25,940	940	130	1,600	3,960	75
	2/7/00	44,200	1,080	617	<5	4,160	240
	11/9/99	10,500	92	<5	<5	3,414	769
	8/23/99	58,000	5,379	2,438	3,001	6,960	639
	6/10/99	39,500	3,610	1,635	2,175	5,913	988
	3/16/99	22,000	1,800	470	2,000	2,000	820
	12/16/98	61,000	6,300	1,700	2,200	4,400	1,300
	6/30/98	54,000	4,600	2,800	3,500	7,300	NA
	12/30/97	28,000	6,000	1,600	2,100	4,700	NA
	4/10/97	24,000	86	55	50	100	ND
	12/9/96	27,000	88	43	44	80	ND
	4/3/96	58,000	250	170	140	330	NA
	1/3/96	94,000	310	250	180	480	NA
	10/2/95	94,000	310	250	180	480	NA

Table 6
Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-10	**5/7/02**	**3,400**	**660**	**13**	**260**	**48.0**	**270**
	2/21/02	4,700	1,100	20	370	63.7	500
	11/19/01	3,500	900	260	310	258	410
	8/8/01	242	35	1	11	2	64
	5/22/01	2,900	630	11	200	31	270
	3/13/01	4,935	969	18	41	72	630
	11/2/00	ND	ND	ND	ND	ND	145
	8/9/00	6,800	1,055	26	54	53.8	1,283
	5/31/00	4,400	1,500	25	390	107.1	580
	2/7/00	<50	<5	<5	<5	<5	448
	11/9/99	2,950	1,134	20	<5	70	652
	8/23/99	3,250	2,135	97	600	248	1,800
	6/10/99	4,200	1,168	34	264	154	1,195
	3/16/99	4,100	15	28	420	250	2,800
	12/16/98	8,700	3,800	51	790	420	1,800
	9/29/98	9,900	5,400	66	970	620	2,600
	12/30/97	10,000	5,300	76	1,100	780	NA
	4/10/97	1,000	21	9	3	3	ND
MW-11	**5/7/02**	**280**	**16**	**3**	**7.6**	**7.6**	**<2**
	2/21/02	560	34	20	32	37.3	< 0.5
	11/19/01	300	7.9	26	5.1	28.9	ND
	8/8/01	NS	NS	NS	NS	NS	NS
	5/22/01	280	12	8.3	3.3	9.8	12
	3/13/01	273	8.6	2.1	10	14	ND
	11/2/00	60	ND	ND	ND	ND	ND
	8/9/00	590	10.5	5.94	<5	7.75	<5
	5/31/00	477	27	13	9.5	29.0	<5
	2/7/00	700	20	15	<5	35	<5
	11/9/99	<50	<5	<5	<5	<5	<5
	8/23/99	170	4	4	ND	6	ND
	6/10/99	4,600	1,240	35	290	159	1,291
	3/16/99	710	30	6	53	84	8
	12/16/98	650	27	4	25	33	>0.5
	9/29/98	170	7	1	4	9	22
	6/30/98	1,100	45	24	71	100	NA
	12/30/97	710	66	97	59	190	NA
	4/10/97	ND	ND	ND	ND	ND	ND

Table 6
Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L)
MW-12	**5/7/2002**	**2,700**	**74**	**<0.5**	**20.0**	**5.1**	**94**
	2/21/2002	2,500	77	<0.5	5.7	7.4	95
	11/19/2001	3,000	81	69	13	73	120
	8/8/2001	2,090	71	1.8	3	4	142
	5/22/2001	31,000	1,200	ND	95	165	1,900
	3/13/2001	1,517	13	5.6	5.5	11	214
	11/2/2000	1,010	9.3	19.0	ND	7.40	215
	8/9/2000	1,730	15.4	12.4	<5	<5	185
	5/31/2000	3,930	230	10	34	12	200
	2/7/2000	4,000	351	37	<5	24	513
	11/9/1999	80	<5	<5	<5	<5	229

Notes:

[1] MtBE was detected using the EPA Method 8260B.

ND, < : Not Detected above laboratory reporting limits.

NA: Not Analyzed

[c] Presence confirmed, but confirmation concentration differed by more than a factor of two.

NS: Not Sampled

Table 7
Total Volume of Water Treated and GAC-1 and Effluent Chemistry
3609 International Boulevard, Oakland, California

Month	Date	Meter Reading (gallons)	Lab Results For Effluent [1] and GAC-1 (concentrations in µg/L) MtBE [2]	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
2002								
April	**4/24/2002**	**1,528,740**	**< 0.5**	**< 50**	**< 0.5**	**< 0.5**	**< 0.5**	**< 0.5**
			< 0.5	**< 50**	**< 0.5**	**< 0.5**	**< 0.5**	**< 0.5**
February	2/27/2002	1,449,830	< 0.5	< 50	< 0.5	< 0.5	< 0.5	< 0.5
			1.1	< 50	< 0.5	< 0.5	< 0.5	< 0.5
January	1/22/2002	1,381,370	< 2.0	< 50	< 0.5	< 0.5	< 0.5	< 0.5
			< 2.0	< 50	< 0.5	< 0.5	< 0.5	< 0.5
2001								
December	12/12/2001	1,311,340	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
November	11/2/2001	1,272,660	ND	ND	ND	ND	ND	ND
			0.6	ND	ND	ND	ND	ND
September	9/28/2001	NA	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
August	8/22/2001	1,243,100	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
July	7/26/2001	1,227,270	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
	7/11/2001	1,226,730	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
June	6/29/2001	1,224,600	NA	NA	NA	NA	NA	NA
		1,224,600	ND	ND	ND	ND	ND	ND
	6/16/2001	1,216,580	NA	NA	NA	NA	NA	NA
		1,216,580	NA	NA	NA	NA	NA	NA
	6/7/2001	1,216,580	NA	NA	NA	NA	NA	NA
		1,216,580	NA	NA	NA	NA	NA	NA
May	5/30/2001	1,205,198	NA	NA	NA	NA	NA	NA
		1,205,198	NA	NA	NA	NA	NA	NA
	5/23/2001	1,194,390	NA	NA	NA	NA	NA	NA
		1,194,390	NA	NA	NA	NA	NA	NA
	5/17/2001	1,182,360	ND	ND	ND	ND	ND	ND
		1,182,360	ND	ND	ND	ND	ND	ND
	5/10/2001	1,166,850	NA	NA	NA	NA	NA	NA
		1,166,850	NA	NA	NA	NA	NA	NA
	5/5/2001	1,151,600	NA	NA	NA	NA	NA	NA
		1,151,600	NA	NA	NA	NA	NA	NA
April	4/28/2001	1,135,690	NA	NA	NA	NA	NA	NA
		1,135,690	NA	NA	NA	NA	NA	NA
	4/21/2001	1,113,570	NA	NA	NA	NA	NA	NA
		1,113,570	NA	NA	NA	NA	NA	NA
	4/11/2001	1,082,700	NA	ND	ND	ND	ND	ND
		1,082,700	ND	ND	ND	ND	ND	ND
	4/6/2001	1,065,540	NA	NA	NA	NA	NA	NA
		1,065,540	NA	NA	NA	NA	NA	NA

Table 7
Total Volume of Water Treated and GAC-1 and Effluent Chemistry
3609 International Boulevard, Oakland, California

Month	Date	Meter Reading (gallons)	Lab Results For Effluent [1] and GAC-1 (concentrations in µg/L) MtBE [2]	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
March	3/29/2001	1,036,330	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	3/21/2001	1,036,070	NA	NA	NA	NA	NA	NA
		1,036,070	NA	NA	NA	NA	NA	NA
	3/17/2001	1,035,100	NA	NA	NA	NA	NA	NA
		1,035,100	NA	NA	NA	NA	NA	NA
	3/13/2001	1,032,500	ND	ND	ND	ND	ND	ND
		1,032,500	NA	NA	NA	NA	NA	NA
	3/2/2001	996,520	NA	NA	NA	NA	NA	NA
		996,520	NA	NA	NA	NA	NA	NA
February	2/10/2001	975,490	System shut down for maintenance and cleaning.					
January	1/29/2001	957,880	ND	ND	ND	ND	ND	ND
	1/29/2001	957,880	ND	ND	ND	ND	ND	ND
2000								
December	12/5/2000	883,000	ND	ND	ND	ND	ND	ND
	12/5/2000	883,000	ND	ND	ND	ND	ND	ND
November	11/24/2000		ND	ND	ND	ND	ND	ND
	11/24/2000		ND	ND	ND	ND	ND	ND
	11/1/2000	842,000	ND	ND	ND	ND	ND	ND
	11/1/2000	842,000	ND	ND	ND	ND	ND	ND
October	10/1/2000	809,000	ND	ND	ND	ND	ND	ND
	10/1/2000	809,000	ND	ND	ND	ND	ND	ND
August	8/24/2000	778,000	ND	ND	ND	ND	ND	ND
July	7/26/2000	726,000	ND	ND	ND	ND	ND	ND
	7/19/2000	718,000	ND	ND	ND	ND	ND	ND
	7/13/2000	712,000	ND	ND	ND	ND	ND	ND
	7/7/2000	706,000	ND	ND	ND	ND	ND	ND
June	06/29/00	700,000	ND	ND	ND	ND	ND	ND
	06/21/00	682,220	ND	ND	ND	ND	ND	ND
	06/16/00	669,720	ND	ND	ND	ND	ND	ND
	06/10/00	651,200	ND	ND	ND	ND	ND	ND
May	05/31/00	629,000	ND	ND	ND	ND	ND	ND
	05/23/00	603,700	ND	ND	ND	ND	ND	ND
	05/18/00	570,000	ND	ND	ND	ND	ND	ND
	05/10/00	530,400	ND	ND	ND	ND	ND	ND
April	04/30/00	488,300	ND	ND	ND	ND	ND	ND
	04/18/00	485,300	ND	ND	ND	ND	ND	0.51
	04/10/00	440,200	ND	ND	ND	ND	ND	ND
	04/04/00	390,100	ND	ND	ND	ND	ND	ND

Table 7
Total Volume of Water Treated and GAC-1 and Effluent Chemistry
3609 International Boulevard, Oakland, California

Month	Date	Meter Reading (gallons)	Lab Results For Effluent [1] and GAC-1 (concentrations in µg/L) MtBE [2]	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
March	03/24/00	388,000	ND	ND	ND	ND	ND	ND
	03/17/00	357,100	ND	ND	ND	ND	ND	ND
	03/10/00	329,000	ND	ND	ND	ND	ND	ND
	03/03/00	300,000						
February	02/25/00	274,000	ND	ND	ND	ND	ND	ND
	02/18/00	233,000	ND	ND	ND	ND	ND	ND
	02/11/00	190,000	ND	ND	ND	ND	ND	ND
	02/04/00	160,800	ND	ND	ND	ND	ND	ND
January	01/28/00	130,600	ND	ND	ND	ND	ND	ND
	01/21/00	103,435	ND	ND	ND	ND	ND	ND
	01/14/00	83,500	185	ND	ND	ND	ND	ND
December	12/23/99	51,680	1486	NA	ND	ND	ND	ND
	12/23/99	51,680	ND	NA	ND	ND	ND	ND
	12/16/99	30,450	963	NA	ND	ND	ND	ND
	12/16/99	30,450	ND	NA	ND	ND	ND	ND
	12/09/99	9,000	230	ND	ND	ND	ND	ND
Pumping began on December 6, 1999								

Notes:
[1] Effluent is equivalent to PSP#1.
[2] MTBE was detected using EPA Method 8260B.
ND, < : Not Detected above laboratory reporting limits.
NA: Not Analyzed

Table 8

Total Mass of Petroleum Hydrocarbons Removed by Vapor Extraction System

3609 International Boulevard, Oakland, California

Date	Time	PID (ppmv)		Flow Rate (cfm)	Time Elapsed (Hours)	Air Flow (Liters)	Mass Removed [1] (Pounds)
		Influent	Effluent				
7/24/00	5:00	394	0	85	0	0	0.00
7/25/00	5:15	38	2	95	24	3,914,096	1.01
7/26/00	5:05	207	1	80	48	3,228,121	4.52
7/27/00	9:00	160	5	92	64	2,500,944	2.71
7/28/00	4:30	141	7	87	96	4,656,139	4.44
7/29/00	1:30	225	8	85	117	3,032,734	4.62
7/30/00	9:00	226	12	85	136	2,816,110	4.31
7/31/00	3:00	141	5	85	166	4,332,478	4.13
8/1/00	5:00	135	4	80	192	3,533,942	3.23
8/2/00	4:00	80	4	80	215	3,126,180	1.69
8/3/00	5:00	60	5	85	240	3,610,398	1.47
8/4/00	3:00	57	4	85	262	3,177,150	1.23
8/5/00	2:00	97	8	87	285	3,399,721	2.23
8/6/00	12:00	114	8	80	307	2,990,259	2.31
8/7/00	12:00	93	9	85	331	3,465,982	2.18
8/8/00	4:30	152	10	85	360	4,115,854	4.23
8/10/00	10:00	173	1	85	377	2,527,279	2.96
8/11/00	7:00	78	4	70	410	3,924,715	2.07
8/12/00	9:00	100	6	70	424	1,665,031	1.13
8/13/00	5:00	107	9	70	456	3,805,784	2.75
8/14/00	12:30	122	5	70	476	2,319,150	1.91
8/15/00	6:00	103	12	70	505	3,508,457	2.44
8/16/00	12:30	112	0	70	524	2,200,219	1.67
8/18/00	9:00	90	0	75	568	5,670,449	3.45
8/21/00	12:00	74	5	80	643	10,194,065	5.10
8/24/00	12:00	68	13	80	712	9,378,540	4.31
8/27/00	12:30	68.5	2	80	785	9,854,263	4.57
8/31/00	1:30	52	6	80	882	13,184,324	4.64
9/4/00	12:30	54	5	80	977	12,912,482	4.72
9/7/00	12:00	55	3	80	1,048	9,718,342	3.62
9/11/00	4:30[2]	141	0	80	1,149	13,660,047	13.03
9/14/00	9:30	56	5	80	1,214	8,834,856	3.35
9/18/00	2:00	46	9.5	80	1,314	13,660,047	4.25
9/18/00	4:30[3]	34	0	80	1,317	339,802	0.08
9/21/00	4:30	43	1	80	1,389	9,786,302	2.85
9/25/00	5:30	55	6	80	1,486	13,184,324	4.91
9/28/00	9:00	47.5	7.5	80	1,550	8,766,896	2.82
10/1/00	1:00	38.5	6	80	1,626	10,329,986	2.69
10/5/00	3:00[4]	28.5	3	80	1,724	13,320,245	2.57
10/5/00	5:00	36	0	80	1,726	271,842	0.07
10/8/00	3:00	28.5	3	80	1,796	9,514,460	1.83
10/14/00	3:00	24.5	2.5	80	1,940	19,572,604	3.24
10/17/00	2:00	36.5	3.5	80	2,011	9,650,381	2.38
10/20/00	8:30	18.5	3.5	80	2,078	9,038,737	1.13

Table 8

Total Mass of Petroleum Hydrocarbons Removed by Vapor Extraction System

3609 International Boulevard, Oakland, California

Date	Time	PID (ppmv)		Flow Rate (cfm)	Time Elapsed (Hours)	Air Flow (Liters)	Mass Removed [1] (Pounds)
		Influent	Effluent				
10/25/00	2:00	38	3.7	80	2,203	17,058,068	4.39
10/29/00	10:00	35	4	80	2,295	12,504,719	2.96
11/2/00	4:00	30.5	4	80	2,397	13,863,928	2.86
11/7/00	4:00	30	6	80	2,517	16,310,504	3.31
11/19/00	12:00	92.7	5.5	80	2,801	38,601,525	24.20
11/24/00	13:30	25	6.5	80	2,923	16,514,385	2.79
11/29/00	15:00	14.5	3.5	80	3,044	16,514,385	1.62
12/4/00	16:30	10.7	1	80	3,190	19,776,486	1.43
12/13/00	15:30	24	3	80	3,405	29,222,986	4.74
12/28/00	14:30	10	6	85	3,764	51,845,314	3.51
1/4/2001[5]	14:00	8.7	3.7	85	3,907	20,723,684	1.22
8/8/01	15:00	217	0	85	3,907	0	0
9/6/01	12:00	85	0	85	4,048	20,362,644	11.71
9/13/01	16:00	186	8	85	4,220	24,839,538	31.26
9/18/01	15:00	184	9	85	4,344	17,907,574	22.29
9/21/2001 [6]		--	--	--	4,344	0	0
10/12/01 [7]		--	--	--	4,344	0	0
10/23/01	17:00	114	58	87	4,344	0	0
10/25/01 [4]	15:00	133	0	85	4,390	6,643,132	5.98
10/29/2001 [8]	13:20	569	0	85	4,485	13,647,304	52.53
11/7/01	15:30	177	0	87	4,679	28,675,904	34.34
11/16/01	15:00	117	0	87	4,894	31,853,904	25.21
11/21/01 [9]	12:00	85	72	87	5,011	17,294,231	9.94
2/15/02 [10]	16:30	49	0	80	5,011.5	67,960	0.02
2/16/02	15:45	50	0	80	5,035	3,160,160	1.07
2/21/02	16:00	37	4	80	5,155	16,344,484	4.09
2/27/02	10:30	11	0	83	5,294	19,530,979	1.45
3/7/02 [11]	12:20	10		80	5,488	26,429,812	1.79
					Total Mass of Petroleum Hydrocarbons Removed =		**389.55**
					Average Daily Removal Rate (pounds / day)=		**2.38**

Notes:

[1] The representative molecular weight of hydrocarbons was assumed to be 78 gram/mole and used the measured temperature of Vapor (36 °C) in converting ppm-v to ppm on mass basis.

[2] System accidentally shut down from main box, readings taken 30 minutes after startup.

[3] GAC Replaced

[4] GAC-1 removed, new GAC installed at effluent end

[5] SVE System turned off for rainy season due to low influent concentrations

[6] system down, hoses disconnected and GAC moved for replacement

[7] system down for electrical repair

[8] Carbon change-out of three drums, moved new effluent drum on 10/25/01 to GAC-1

[9] system shut-down due to high effluent value

[10] System re-started (since November 21, 2001), installed new 4-55 gallon vapor phase carbon vessels repaired blower

[11] System was shut-down due to low influent reading

FIGURES

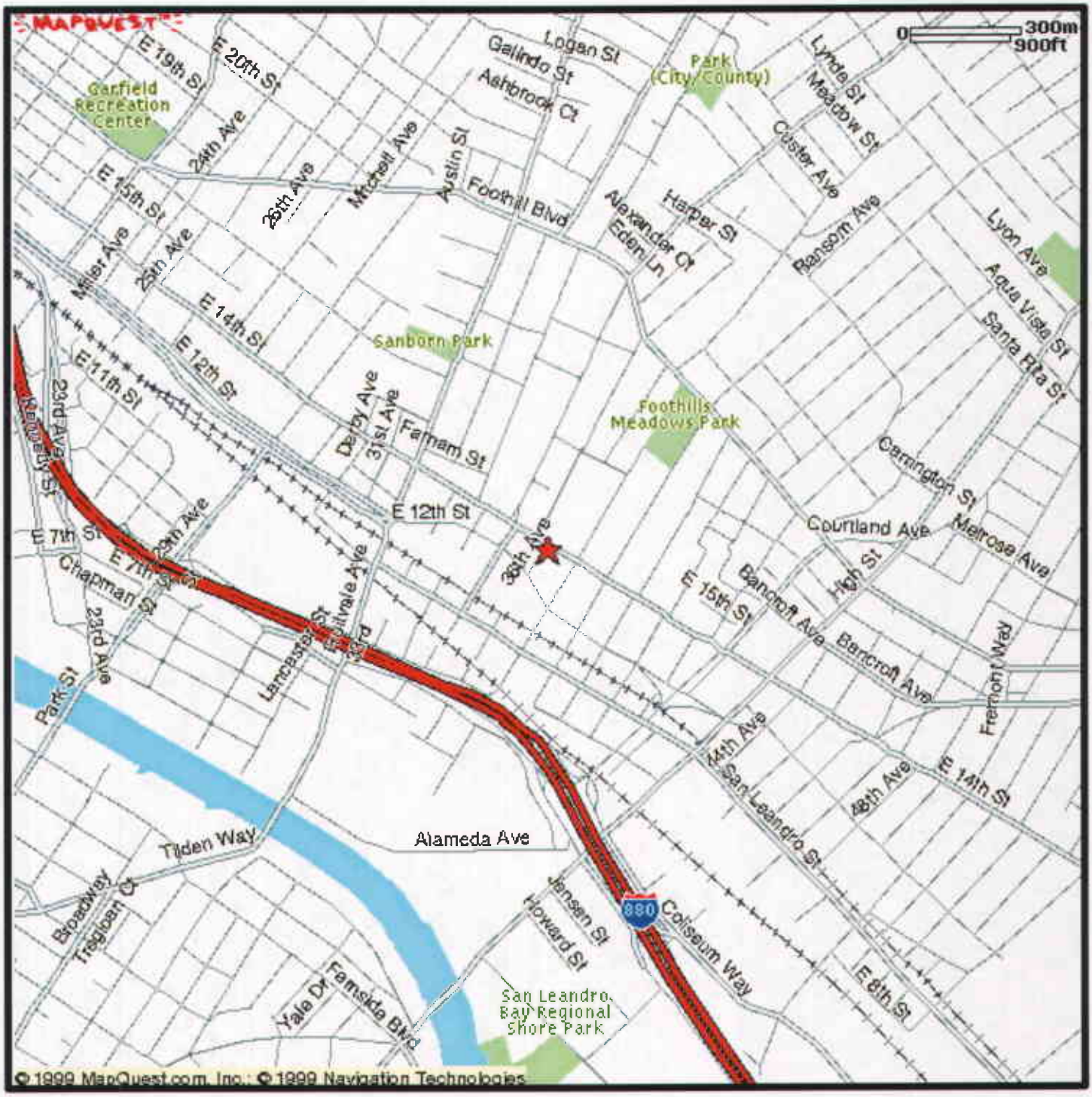


Figure 1: Site vicinity map.

Figure 2: Site map showing location of groundwater monitoring wells and french drain.

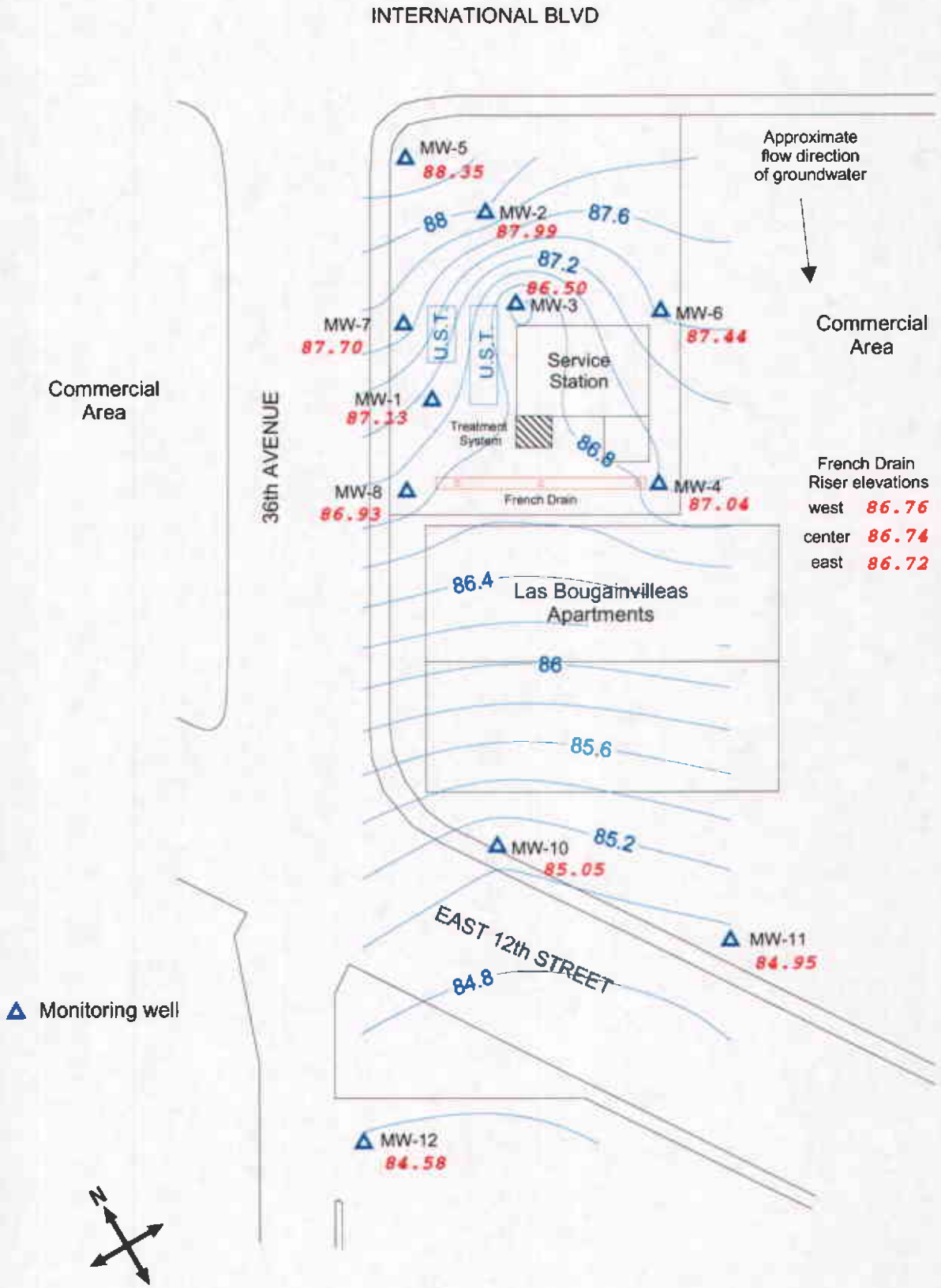


Figure 3: Groundwater elevation contour map in feet.
May 7, 2002.

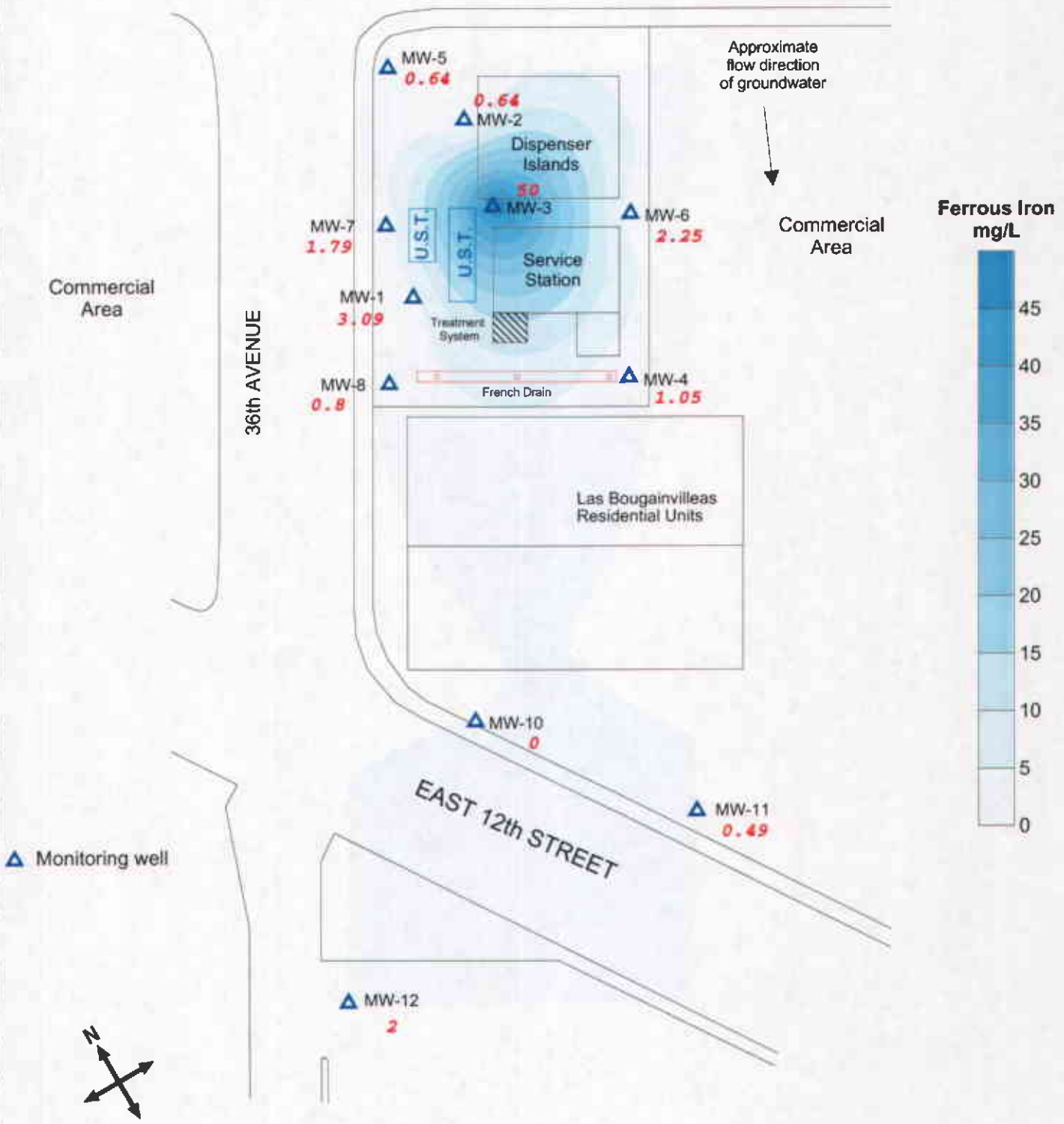


Figure 4: Contour map of Ferrous Iron concentrations in groundwater. May 7, 2002.

scale in feet
0 25 50

SOMA ENVIRONMENTAL ENGINEERING, INC.

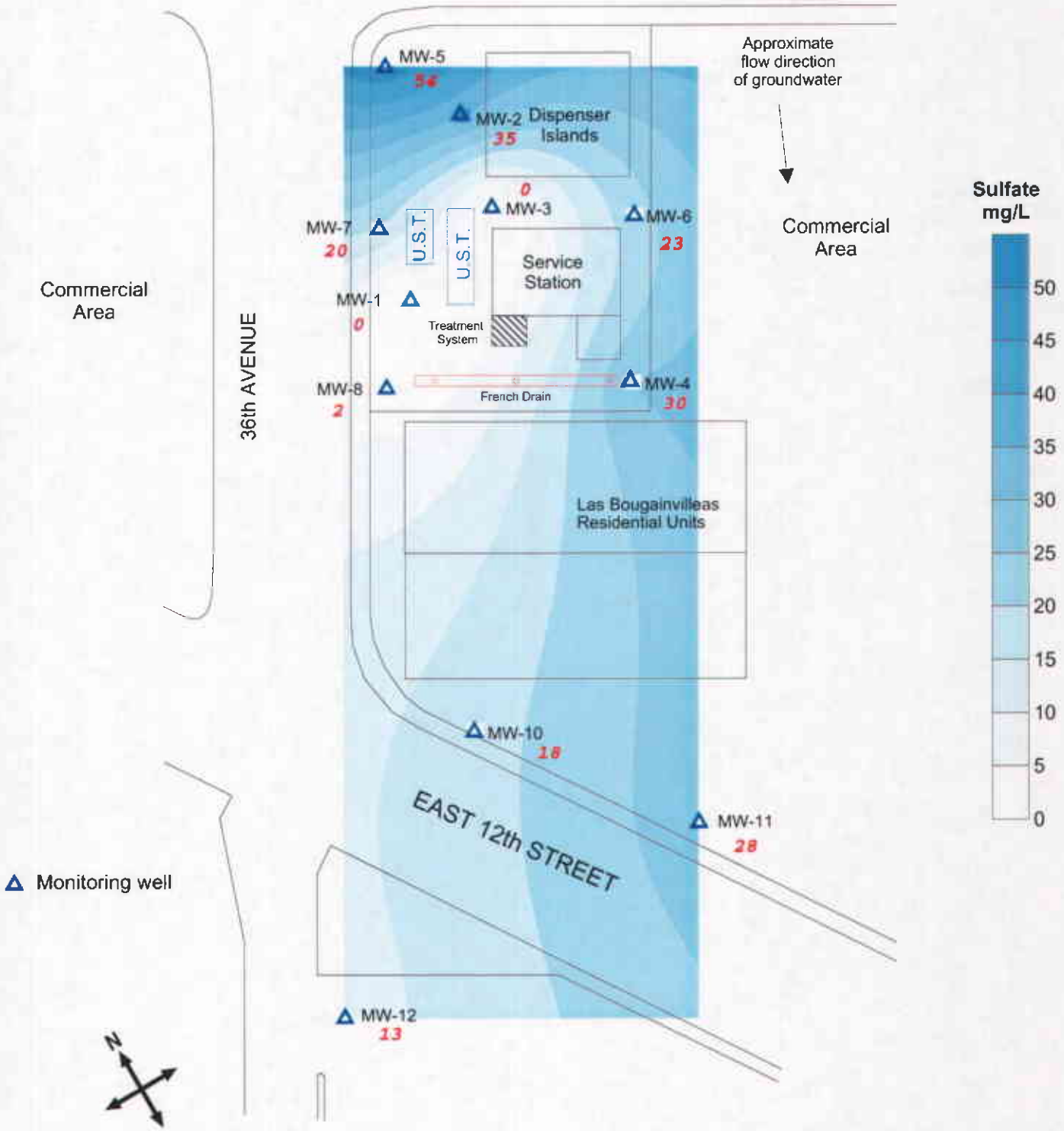


Figure 5: Contour map of Sulfate concentrations in groundwater.
May 7, 2002.

scale in feet
0 25 50

SOMA ENVIRONMENTAL ENGINEERING, INC.

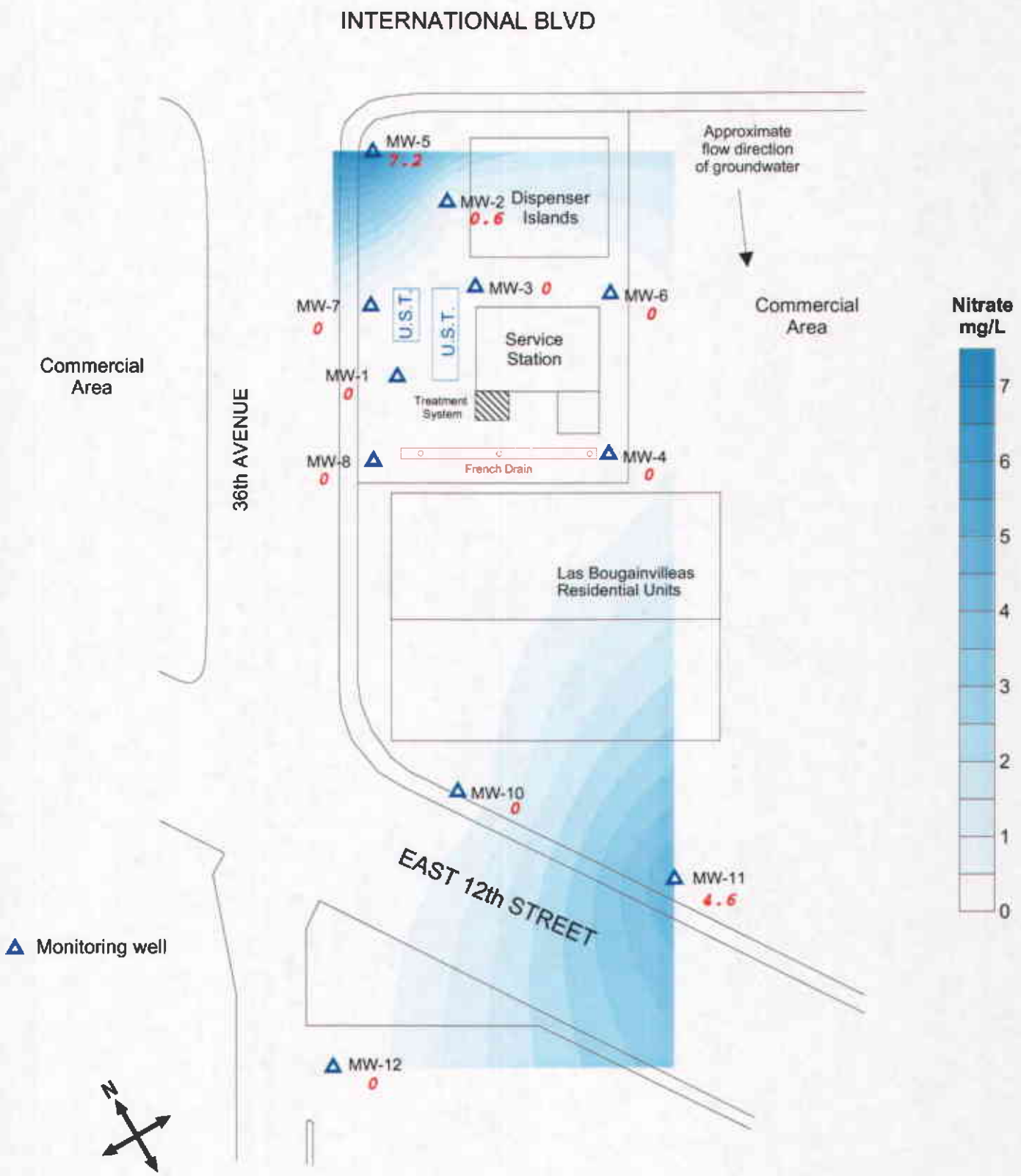


Figure 6: Contour map of Nitrate concentrations in groundwater.
May 7, 2002.

scale in feet
0 25 50

SOMA ENVIRONMENTAL ENGINEERING, INC.

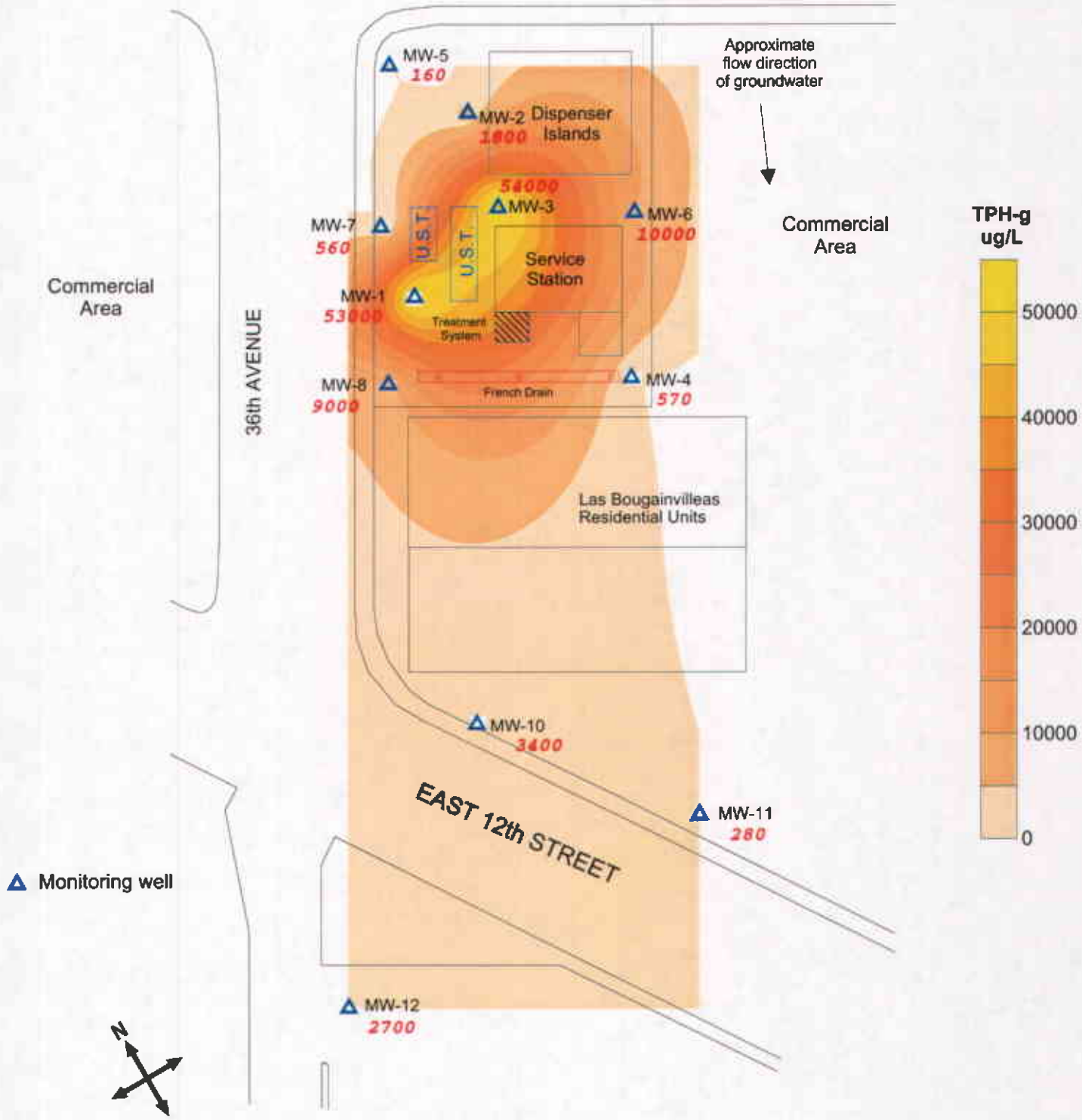


Figure 7: Contour map of TPH-g concentrations in groundwater.
May 7, 2002.

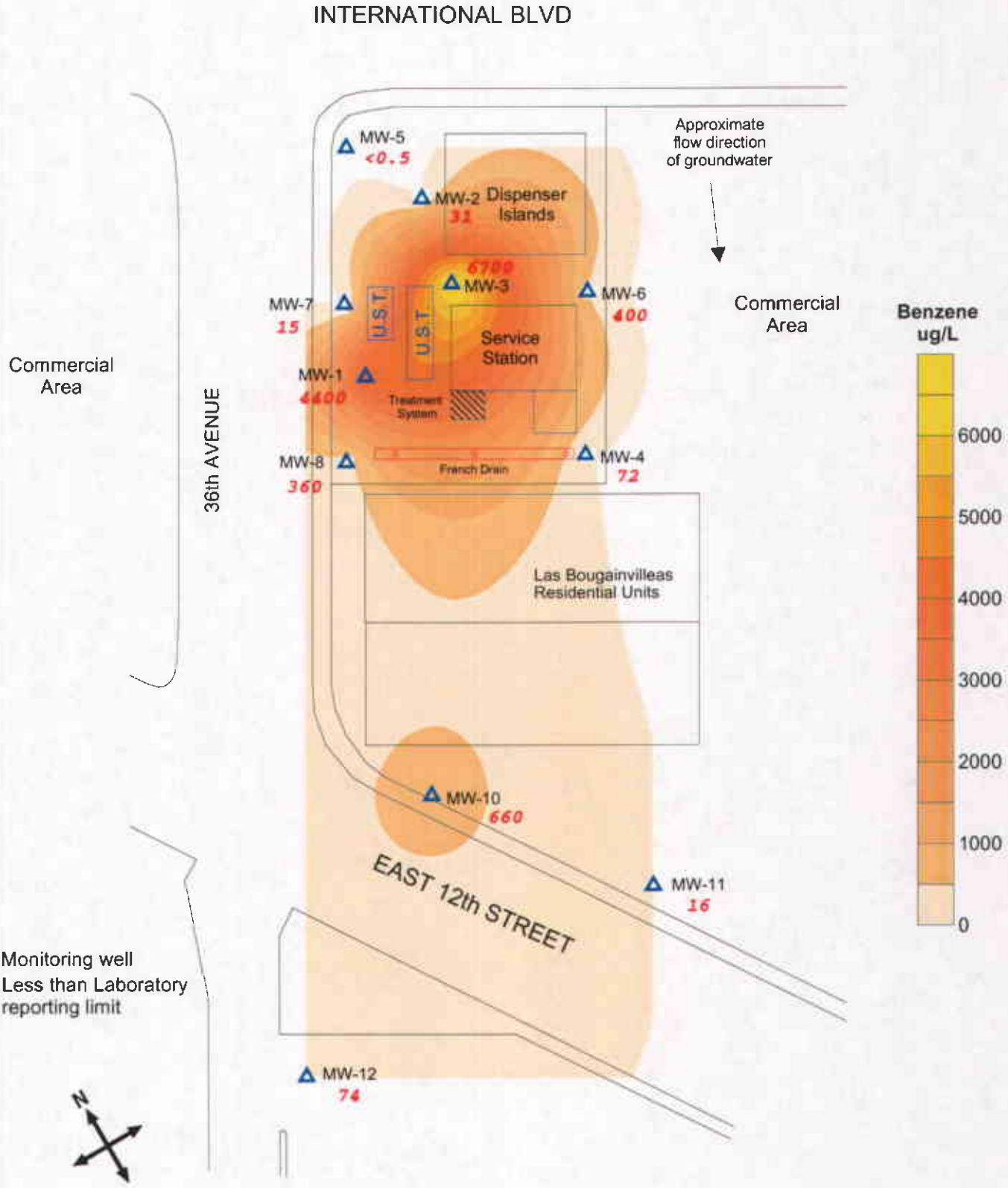


Figure 8: Contour map of Benzene concentrations in groundwater.
May 7, 2002.

ENVIRONMENTAL ENGINEERING, INC.

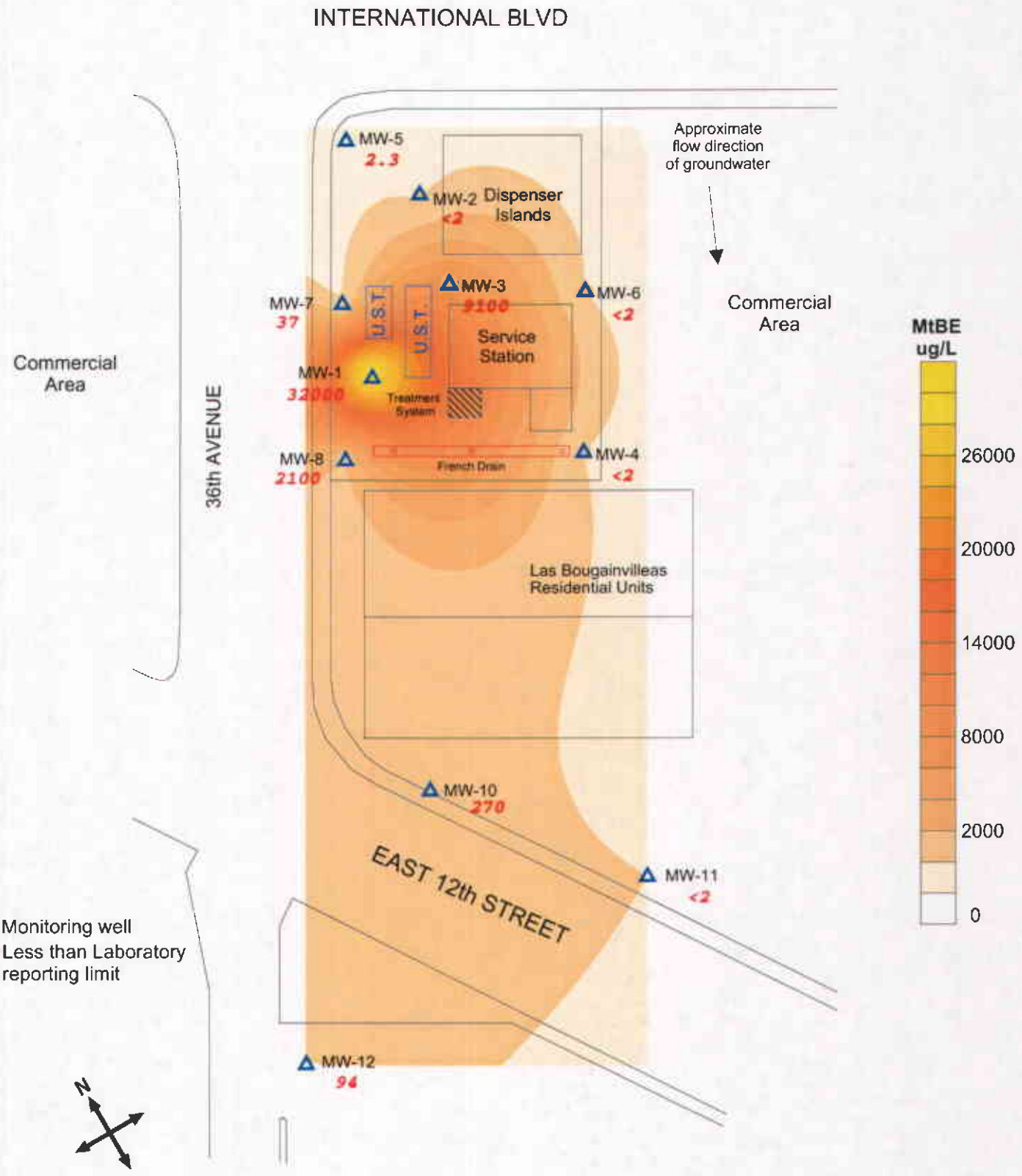


Figure 9: Contour map of MtBE concentrations in groundwater.
May 7, 2002.

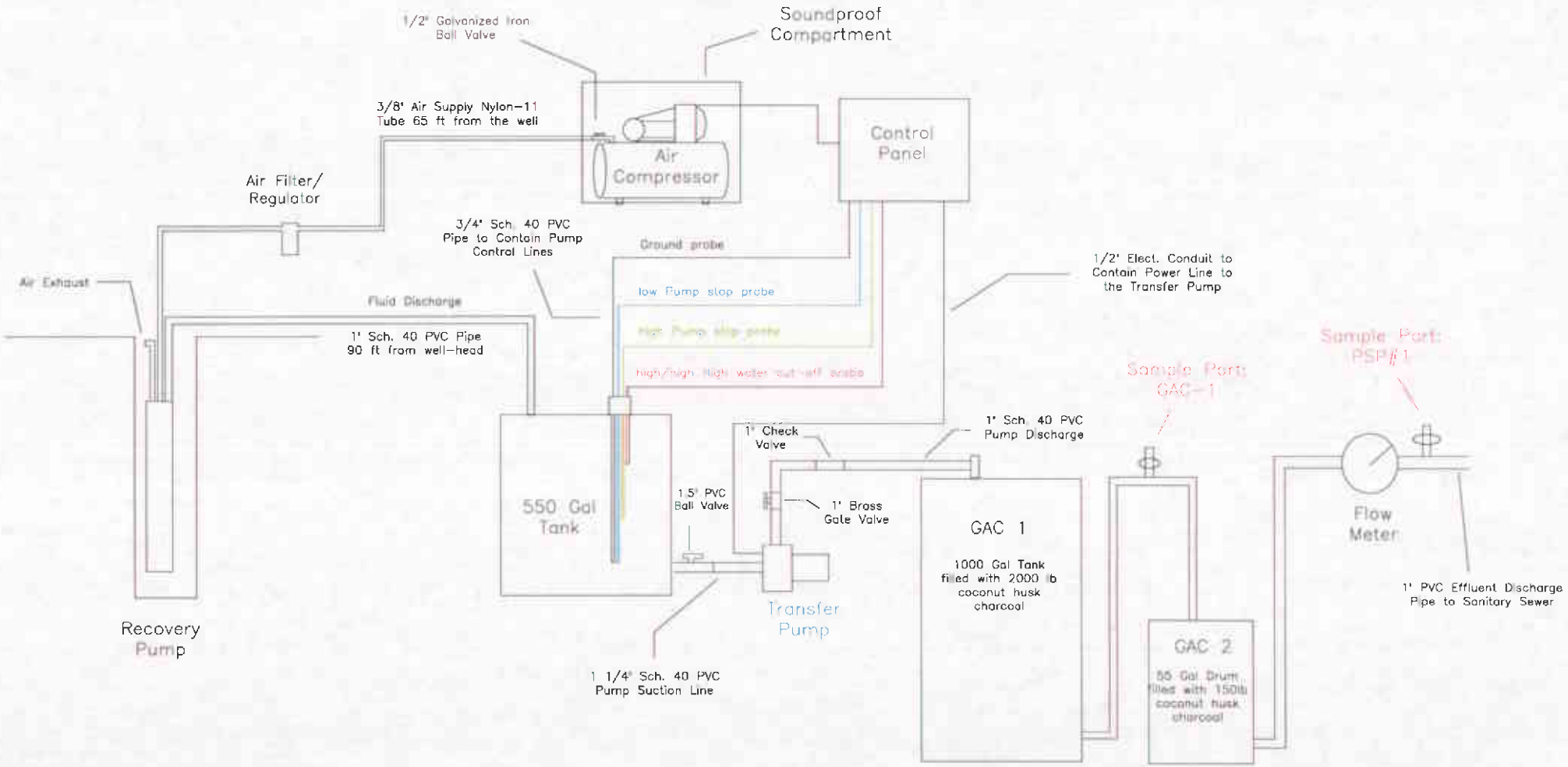
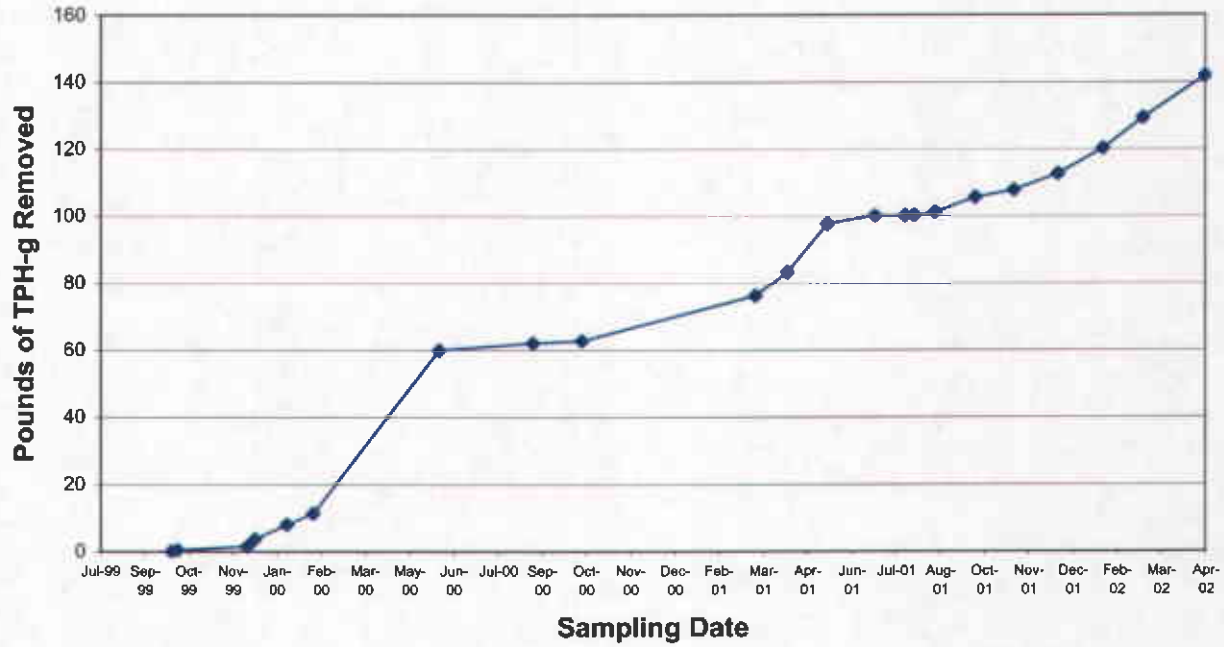
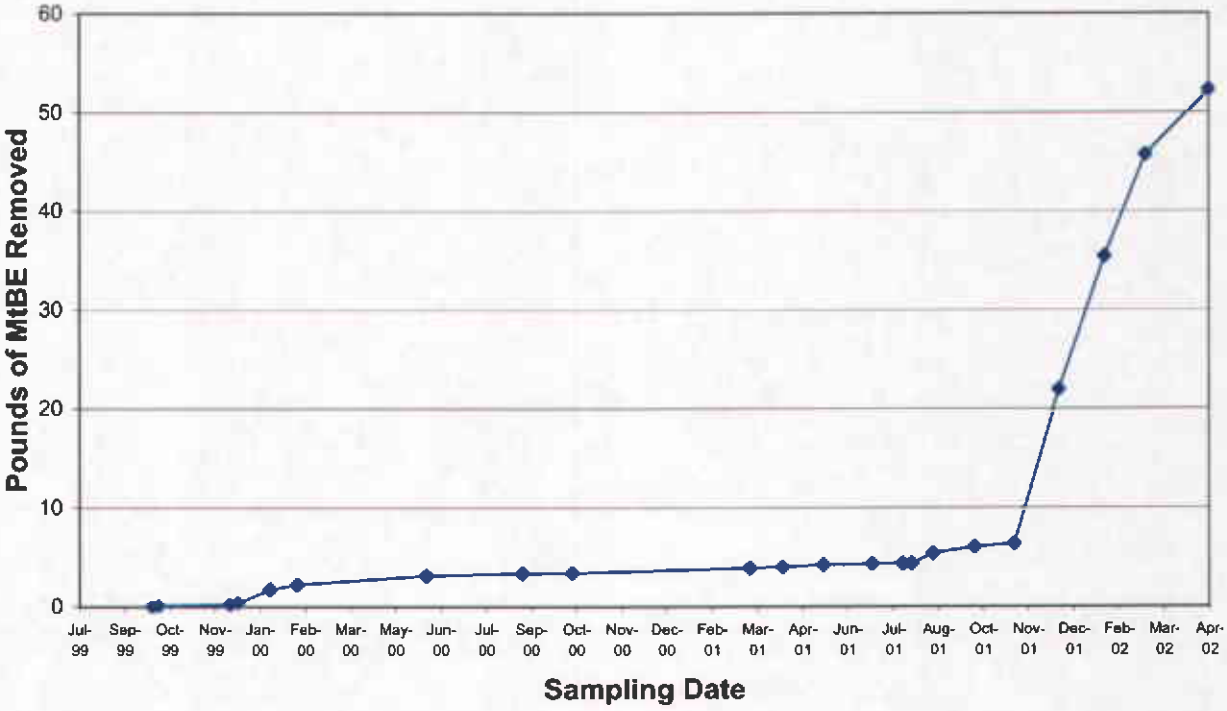


Figure 10: Schematic of the Groundwater Remediation System

Figure 11
Cumulative Weight of TPH-g and MtBE Extracted from Groundwater Since Installation of the Treatment System
3609 International Boulevard, Oakland, California





APPENDIX A

FIELD NOTES, CHAIN OF CUSTODY FORMS, LABORATORY REPORTS

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-1	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	30.5 feet		Oakland, CA
Top of Casing Elevation:	97.99 feet		
Depth to Groundwater:	10.86 feet	**Date:**	May 7,2002
Groundwater Elevation:	87.13 feet	**Sampler:**	Naser Pakrou
Water Column Height:	19.64 feet		Tony Perini
Purged Volume:	10 gallons		

Purging Method: **Bailer** ☐ **Pump** ☑

Sampling Method: **Bailer** ☑ **Pump** ☐

Color: **Yes** ☐ **No** ☐ **Describe:** _____

Sheen: **Yes** ☐ **No** ☐ **Describe:** _____

Odor: **Yes** ☐ **No** ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
3:50 P.M.	0.5	6.50				7.49	18.6	673	-70	191
3:54 P.M.	3.0	0.00				7.12	18.5	698	-103	999
3:57 P.M.	6.0	0.00				7.11	18.4	771	-88	754
4:02 P.M.	10	0.00				7.14	18.7	820	-81	287
4:05 P.M.		Sampled MW-1								
			0.0	0.0	3.09					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-2	**Project No.:**	2331
Casing Diameter:	4 inches	**Address:**	3609 International Blvd.
Depth of Well:	31.5 feet		Oakland, CA
Top of Casing Elevation:	98.58 feet		
Depth to Groundwater:	10.59 feet	**Date:**	May 7,2002
Groundwater Elevation:	87.99 feet	**Sampler:**	Naser Pakrou
Water Column Height:	20.91 feet		Tony Perini
Purged Volume:	28 gallons		

Purging Method: **Bailer** ☐ **Pump** ☑

Sampling Method: **Bailer** ☑ **Pump** ☐

Color: **Yes** ☐ **No** ☐ **Describe:** _____

Sheen: **Yes** ☐ **No** ☐ **Describe:** _____

Odor: **Yes** ☐ **No** ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
12:30 P.M.	2.0	0.0				7.09	19.7	625	91	23.8
12:34 P.M.	6.0	0.0				7.04	19.7	626	93	18.1
12:39 P.M.	10.0	0.0				7.01	19.9	624	78	64.2
12:43 P.M.	14.0	0.0				7.01	19.8	634	18	71.1
12:47 P.M.	18.0	0.0				7.03	19.9	649	-12	92.8
12:51 P.M.	22.0	0.0				7.04	20.0	649	-28	75.2
12:56 P.M.	28.0	0.0				7.05	20.0	656	-46	65.1
13:00		sampled MW-2								

0.6 35 0.64

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-3	**Project No.:**	2331
Casing Diameter:	4 inches	**Address:**	3609 International Blvd.
Depth of Well:	32 feet		Oakland, CA
Top of Casing Elevation:	97.78 feet		
Depth to Groundwater:	11.28 feet	**Date:**	May 7,2002
Groundwater Elevation:	86.5 feet	**Sampler:**	Naser Pakrou
Water Column Height:	20.72 feet		Tony Perini
Purged Volume:	20 gallons		

Purging Method: Bailer ☐ Pump ☐

Sampling Method: Bailer ☐ Pump ☐

Color: Yes ☑ No ☐ **Describe:** Black

Sheen: Yes ☑ No ☐ **Describe:** Free product noticed

Odor: Yes ☑ No ☐ **Describe:** petro odor

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
2:00 P.M.	1.5	0.02				6.90	19.6	895	-134	34.2
2:04 P.M.	4.0	0.00				6.91	19.6	909	-142	42.8
2:06 P.M.	8	0.00				6.92	19.6	918	-144	90.0
2:10 P.M.	12	0.00				6.93	19.6	935	-146	172
2:14 P.M.	16	0.00				6.95	19.7	940	-149	191
2:17 P.M.	20	0.00				6.97	19.8	940	-148	218
2:25 P.M.		Sampled MW-3								

0.0 0.0 >3.3

0.5

X

10

50

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-4	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	26.5 feet		Oakland, CA
Top of Casing Elevation:	97.85 feet		
Depth to Groundwater:	10.81 feet	**Date:**	May 7,2002
Groundwater Elevation:	87.04 feet	**Sampler:**	Naser Pakrou
Water Column Height:	15.69 feet		Tony Perini
Purged Volume:	7 gallons		

Purging Method: **Bailer** ☐ **Pump** ☑

Sampling Method: **Bailer** ☑ **Pump** ☐

Color: **Yes** ☐ **No** ☐ **Describe:** _____

Sheen: **Yes** ☐ **No** ☐ **Describe:** _____

Odor: **Yes** ☐ **No** ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
3:00 P.M.	1.0	5.78				7.40	18.3	565	-9	41
3:02 P.M.	2.5	0.0				7.16	18.2	570	-16	27.3
3:03 P.M.	4.0	0.0				7.13	18.3	572	-22	15.2
3:06 P.M.	7.0	0.0				7.11	18.5	577	-26	9.7
3:25 P.M.		Sampled MW-4								
			0.0	30	1.05					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-5	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	26.5 feet		Oakland, CA
Top of Casing Elevation:	99.04 feet		
Depth to Groundwater:	10.69 feet	**Date:**	May 7,2002
Groundwater Elevation:	88.35 feet	**Sampler:**	Naser Pakrou
Water Column Height:	15.81 feet		Tony Perini
Purged Volume:	8.5 gallons		

Purging Method: **Bailer** ☐ **Pump** ☑

Sampling Method: **Bailer** ☑ **Pump** ☐

Color: **Yes** ☐ **No** ☐ **Describe:** _____

Sheen: **Yes** ☐ **No** ☐ **Describe:** _____

Odor: **Yes** ☐ **No** ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
12:00 P.M.	1.0	7.04				7.10	20.0	700	50	117
12:03 P.M.	2.5	0.0				6.94	19.7	726	4	68.3
12:06 P.M.	4.0	0.0				6.91	19.7	724	-14	71.9
12:12 P.M.	7.0	0.0				6.96	19.8	716	-23	45
12:30		sampled MW-5								

7.2 54 0.64

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-6	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	25 feet		Oakland, CA
Top of Casing Elevation:	98.77 feet		
Depth to Groundwater:	11.33 feet	**Date:**	May 7,2002
Groundwater Elevation:	87.44 feet	**Sampler:**	Naser Pakrou
Water Column Height:	13.67 feet		Tony Perini
Purged Volume:	8 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Color: Yes ☐ No ☐ **Describe:** _____

Sheen: Yes ☐ No ☐ **Describe:** _____

Odor: Yes ☐ No ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
2:40 P.M.	1.0	5.13				7.11	18.6	876	-118	192
2:42 P.M.	2.5	0.0				7.01	18.6	887	-126	223
2:44 P.M.	4.0	0.0				7.02	18.9	793	-127	916
2:47 P.M.	8.0	0.0				7.03	19.0	759	-110	263
2:50 P.M.		Sampled MW-6								
			0.0	23	2.25					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-7	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	26.3 feet		Oakland, CA
Top of Casing Elevation:	97.83 feet		
Depth to Groundwater:	10.13 feet	**Date:**	May 7,2002
Groundwater Elevation:	87.7 feet	**Sampler:**	Naser Pakrou
Water Column Height:	16.17 feet		Tony Perini
Purged Volume:	8 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Color: Yes ☐ No ☑ **Describe:** _____

Sheen: Yes ☐ No ☑ **Describe:** _____

Odor: Yes ☐ No ☑ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
4:30 P.M.	1.0	3.96				7.29	19.6	488	-63	101
4:33 P.M.	3.0	0.0				7.19	19.7	447	-58	273
4:35 P.M.	6.0	0.0				7.21	19.8	487	-61	150
4:38 P.M.	8.0	0.0				7.21	19.8	488	-62	531
4:40 P.M.		Sampled MW-7								
			0.0	20	1.79					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-8	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	27 feet		Oakland, CA
Top of Casing Elevation:	97.25 feet		
Depth to Groundwater:	10.32 feet	**Date:**	May 7,2002
Groundwater Elevation:	86.93 feet	**Sampler:**	Naser Pakrou
Water Column Height:	16.68 feet		Tony Perini
Purged Volume:	7.5 gallons		

Purging Method: **Bailer** ☐ **Pump** ☑

Sampling Method: **Bailer** ☑ **Pump** ☐

Color: **Yes** ☐ **No** ☐ **Describe:** _____

Sheen: **Yes** ☐ **No** ☐ **Describe:** _____

Odor: **Yes** ☐ **No** ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
3:25 P.M.	1.0	6.13				7.15	18.7	639	-117	98.3
3:27 P.M.	Dried after one gallon									
3:31 P.M.	2.0	0.0				7.08	18.5	651	-103	179
3:33 P.M.	4.0	0.0				7.09	18.3	702	-132	308
3:36 P.M.	7.5	0.0				7.12	18.3	732	-113	308
3:40 P.M.	Sampled			MW-8						
			0.0	2.0	0.8					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-10	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	23.5 feet		Oakland, CA
Top of Casing Elevation:	94.54 feet		
Depth to Groundwater:	9.49 feet	**Date:**	May 7,2002
Groundwater Elevation:	85.05 feet	**Sampler:**	Naser Pakrou
Water Column Height:	14.01 feet		Tony Perini
Purged Volume:	8.0 gallons		

Purging Method: **Bailer** ☐ **Pump** ☑

Sampling Method: **Bailer** ☑ **Pump** ☐

Color: **Yes** ☐ **No** ☑ **Describe:** _____

Sheen: **Yes** ☐ **No** ☑ **Describe:** _____

Odor: **Yes** ☐ **No** ☑ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
10:40	1.0	4.45				7.14	19.4	734	68	99.1
10:43	3.0	0.0				7.00	19.2	726	58	97.2
10:45	8.0	0.0				6.94	19.2	735	19	123
10:55	sampled MW-10									
			0.0	18.0	0.0					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-11	**Project No.:**	2331
Casing Diameter:	2 inches	**Address:**	3609 International Blvd.
Depth of Well:	25.5 feet		Oakland, CA
Top of Casing Elevation:	95.94 feet		
Depth to Groundwater:	10.99 feet	**Date:**	May 7,2002
Groundwater Elevation:	84.95 feet	**Sampler:**	Naser Pakrou
Water Column Height:	14.51 feet		Tony Perini
Purged Volume:	8.0 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Color: Yes ☐ No ☐ **Describe:** _____

Sheen: Yes ☐ No ☐ **Describe:** _____

Odor: Yes ☐ No ☐ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
11:15 A.M.	1.0	5.27				7.0	18.7	661	64	351
11:17 A.M.	2.5	0.0				7.01	18.4	662	46	308
11:19 A.M.	4.0	0.0				7.00	18.4	666	6	159
11:21 A.M.	6.0	0.0				6.99	18.6	681	-17	500
11:23 A.M.	8.0	0.0				6.99	18.5	661	-29	155
11:30 A.M.		Sampled MW-11								
			4.6	28.0	0.49					

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-12	**Project No.:**	2331
Casing Diameter:	4 inches	**Address:**	3609 International Blvd.
Depth of Well:	31 feet		Oakland, CA
Top of Casing Elevation:	94.84 feet		
Depth to Groundwater:	10.26 feet	**Date:**	May 7,2002
Groundwater Elevation:	84.58 feet	**Sampler:**	Naser Pakrou
Water Column Height:	20.74 feet		Tony Perini
Purged Volume:	35 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Color: Yes ☐ No ☑ **Describe:** _____

Sheen: Yes ☐ No ☑ **Describe:** _____

Odor: Yes ☐ No ☑ **Describe:** _____

Field Measurements:

Time	Vol (gallons)	D.O. (mg/L)	NO_3^{-1} (mg/L)	SO_4^{-2} (mg/L)	Fe^{+2} (mg/L)	pH	Temp (°C)	E.C. (uS/cm)	ORP (mV)	Turbidity (NTU)
9:30 A.M.	1.0	2.6				5.85	18.8	755	-11	38
9:35 A.M.	5.0	0.0				6.04	18.8	752	-19	31
9:40 A.M.	10.0	0.0				6.15	18.9	745	-36	33
9:45 A.M.	15.0	0.0				6.28	18.9	740	-44	37
9:50 A.M.	20.0	0.0				6.35	19.0	739	-51	38
9:55 A.M.	25.0	0.0				6.44	19.0	740	-56	43
9:58 A.M.	30.0	0.0				6.50	19.0	739	-61	55.3
10:02 A.M.	35.0	0.0				6.54	19.0	740	-67	53.1
10:15 A.M. Sampled MW-12			0.0	13.0	2.0					

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

SOMA Environmental Engineering Inc.
2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Date: 22-MAY-02
Lab Job Number: 158494
Project ID: 2331
Location: Oakland

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: Paul Predergast
Project Manager

Reviewed by:
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

Laboratory Number: **158494**
Client: **Soma Environmental Engineering, Inc.**
Project Name: **3609 International Boulevard, Oakland**
Project #: **2331**
Receipt Date: **05/08/02**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for eleven water samples received from the above referenced project on May 8th, 2002. The samples were received cold and intact.

TVH/BTEX (EPA 8015B(M)/8021B):

The recovery for the trifluorotoluene surrogate was over the acceptable QC limits for client ID MW-6 (C&T ID 158494-006) and client ID MW-12 (C&T ID 158494-011) due to coelution of sample hydrocarbons with this surrogate. No other analytical problems were encountered.

Purgeable Aromatics by GC/MS (EPA 8260B):

No analytical problems were encountered.

CHAIN OF CUSTODY

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

C&T LOGIN # 158494

Sampler: Naser Pakrou / Tony Perini

Project No: 2331

Project Name: 3609 International Blvd., Oakland

Turnaround Time: Standard

Report To: Mansour Sepehr

Company : SOMA Environmental

Telephone: 925-244-6600

Fax: 925-244-6601

Analyses

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	TPHg 8015	BTEX + MtBE 8021 GC	MTBE Confirmation 8260 GCMS
-1	MW-1	5/7/02 4:05PM		X		4	X			X	X	X	X
-2	MW-2	1:00PM		X			X			X	X	X	X
-3	MW-3	2:25PM		X			X			X	X	X	X
-4	MW-4	3:25PM		X			X			X	X	X	X
-5	MW-5	12:30		X			X			X	X	X	X
-6	MW-6	2:50PM		X			X			X	X	X	X
-7	MW-7	4:40PM		X			X			X	X	X	X
-8	MW-8	3:40PM		X			X			X	X	X	X
-9	MW-10	11:30		X			X			X	X	X	X
-10	MW-11	10:55		X			X			X	X	X	X
-11	MW-12	5/7/02 10:15		X			X			X	X	X	X

Preservation Correct?
☒ Yes ☐ No ☐ N/A

Received ☒ On Ice
☐ Cold ☐ Ambient ☒ Intact

Notes:

RELINQUISHED BY:

Naser Pakrou — 5/8/02 DATE/TIME

DATE/TIME

DATE/TIME

RECEIVED BY:

5-8-02 12:25pm DATE/TIME

DATE/TIME

DATE/TIME

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Field ID:	MW-1	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	72312
Lab ID:	158494-001	Analyzed:	05/16/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	53,000	1,000	8015B(M)
Benzene	4,400	10	EPA 8021B
Toluene	5,100	10	EPA 8021B
Ethylbenzene	1,300	10	EPA 8021B
m,p-Xylenes	5,100	10	EPA 8021B
o-Xylene	1,900	10	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	131	68-145	8015B(M)
Bromofluorobenzene (FID)	113	66-143	8015B(M)
Trifluorotoluene (PID)	113	53-143	EPA 8021B
Bromofluorobenzene (PID)	112	52-142	EPA 8021B

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-002	Analyzed:	05/13/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,800	50	8015B(M)
Benzene	31	0.50	EPA 8021B
Toluene	140	0.50	EPA 8021B
Ethylbenzene	110	0.50	EPA 8021B
m,p-Xylenes	260	0.50	EPA 8021B
o-Xylene	88	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	74	68-145	8015B(M)
Bromofluorobenzene (FID)	82	66-143	8015B(M)
Trifluorotoluene (PID)	72	53-143	EPA 8021B
Bromofluorobenzene (PID)	83	52-142	EPA 8021B

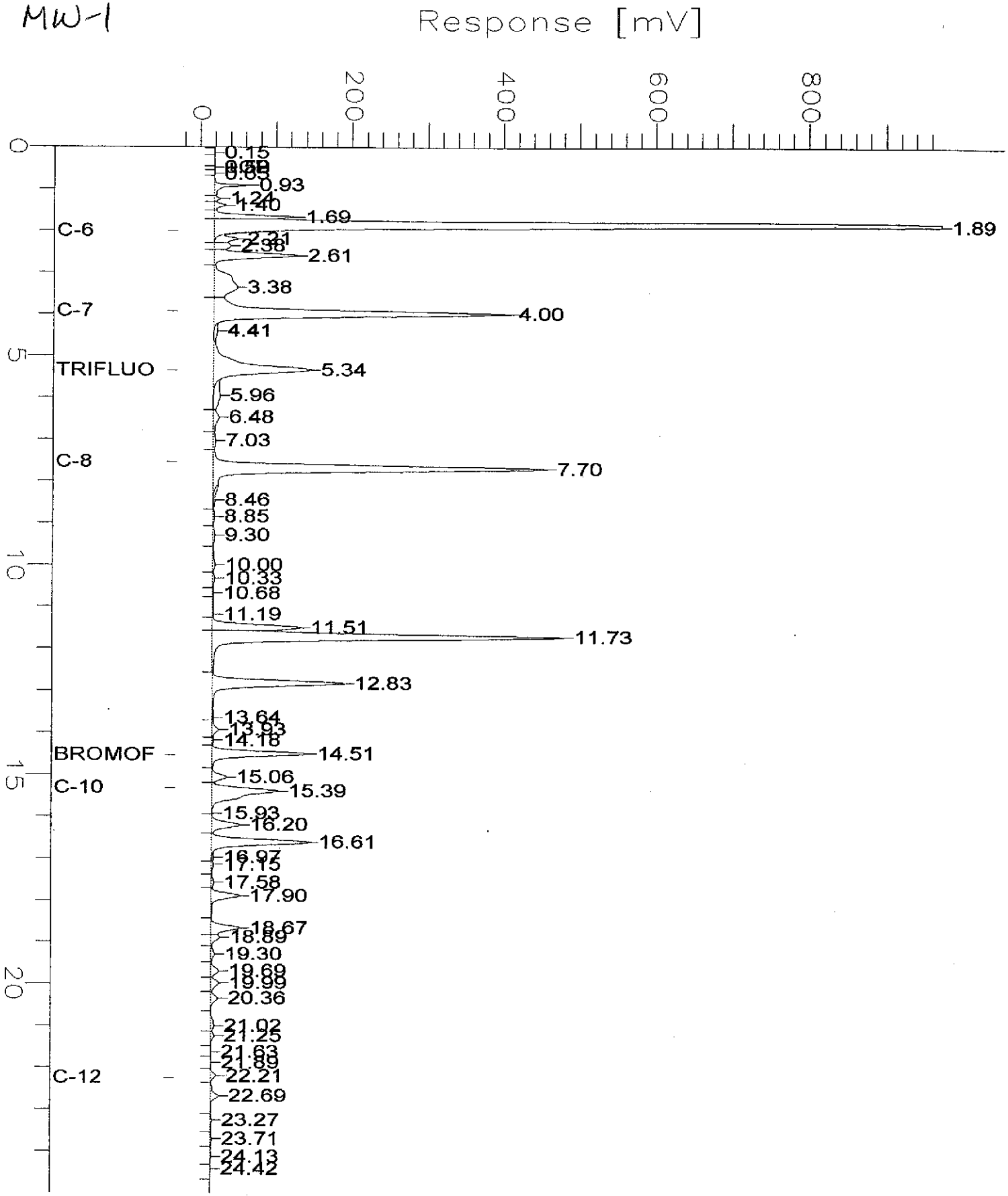
*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 158494-001,72312
FileName : G:\GC05\DATA\135G024.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -30 mV

Sample #: D1 Page 1 of 1
Date : 5/16/02 06:56 AM
Time of Injection: 5/16/02 05:31 AM
Low Point : -29.66 mV High Point : 972.78 mV
Plot Scale: 1002.4 mV

MW-1

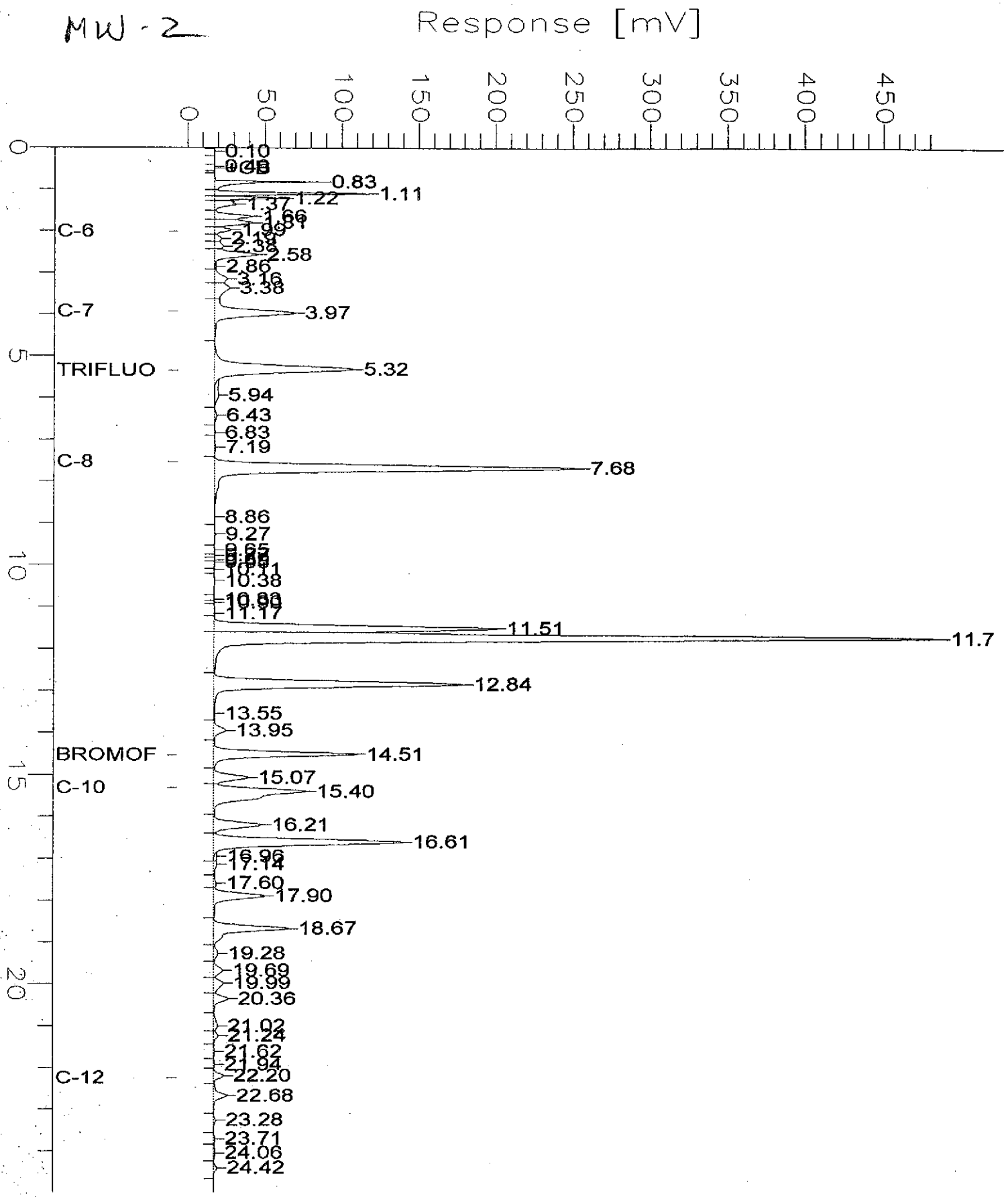


Chromatogram

Sample Name : MSS,158494-002,72230
FileName : G:\GC05\DATA\133G008.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -6 mV

Sample #: C1 Page 1 of 1
Date : 5/14/02 06:37 AM
Time of Injection: 5/13/02 08:31 PM
Low Point : -6.07 mV High Point : 487.05 mV
Plot Scale: 493.1 mV

MW-2



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Field ID:	MW-3	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-003	Analyzed:	05/14/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	54,000	1,000	8015B(M)
Benzene	6,700	10	EPA 8021B
Toluene	3,200	10	EPA 8021B
Ethylbenzene	1,800	10	EPA 8021B
m,p-Xylenes	5,200	10	EPA 8021B
o-Xylene	1,900	10	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	137	68-145	8015B(M)
Bromofluorobenzene (FID)	119	66-143	8015B(M)
Trifluorotoluene (PID)	122	53-143	EPA 8021B
Bromofluorobenzene (PID)	118	52-142	EPA 8021B

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-004	Analyzed:	05/14/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	570	50	8015B(M)
Benzene	72	0.50	EPA 8021B
Toluene	29	0.50	EPA 8021B
Ethylbenzene	27	0.50	EPA 8021B
m,p-Xylenes	55	0.50	EPA 8021B
o-Xylene	19	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	101	68-145	8015B(M)
Bromofluorobenzene (FID)	106	66-143	8015B(M)
Trifluorotoluene (PID)	101	53-143	EPA 8021B
Bromofluorobenzene (PID)	106	52-142	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

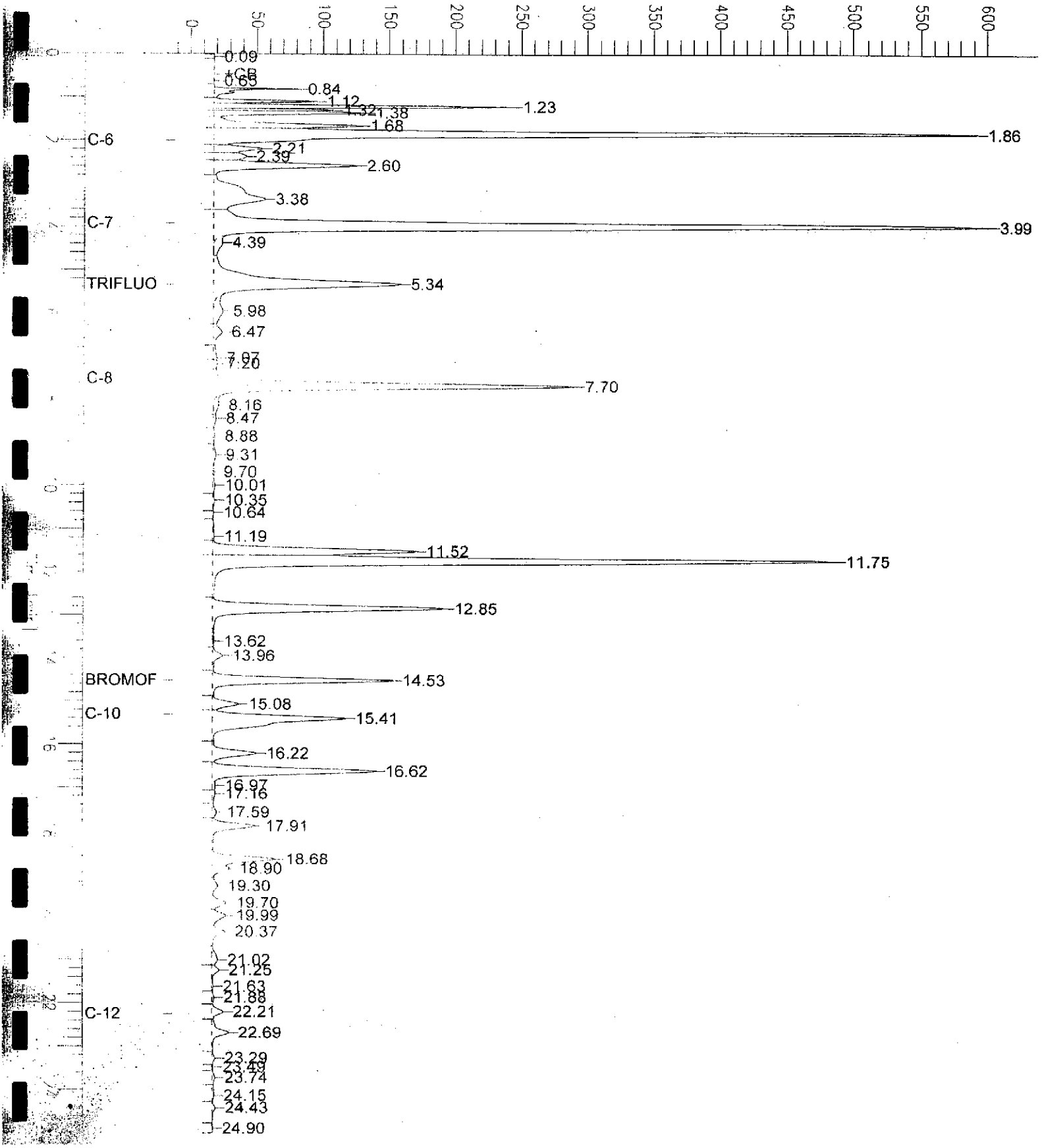
Chromatogram

Sample Name : 158494-003,72230
FileName : G:\GC05\DATA\133G036.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -12 mV

Sample #: C1 Page 1 of 1
Date : 5/14/02 12:39 PM
Time of Injection: 5/14/02 12:10 PM
Low Point : -11.81 mV High Point : 601.81 mV
Plot Scale: 613.6 mV

MW-3

Response [mV]

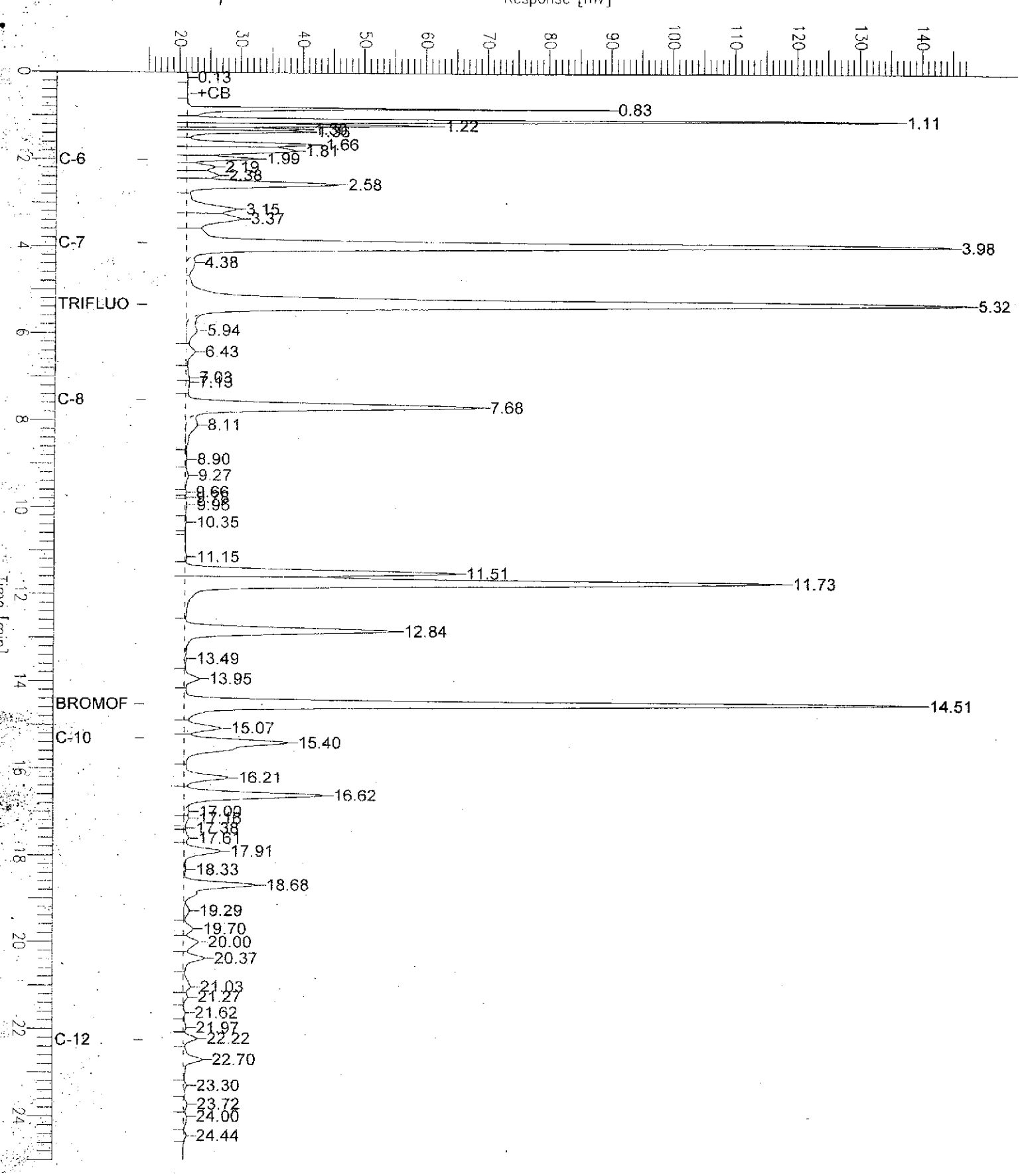


Chromatogram

Sample Name : 158494-004,72230
FileName : G:\GC05\DATA\133G022.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 15 mV

Sample #: B1 Page 1 of 1
Date : 5/14/02 04:44 AM
Time of Injection: 5/14/02 04:19 AM
Low Point : 14.86 mV High Point : 147.51 mV
Plot Scale: 132.6 mV

MW-4



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-005	Analyzed:	05/14/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	160	50	8015B(M)
Benzene	ND	0.50	EPA 8021B
Toluene	0.78 C	0.50	EPA 8021B
Ethylbenzene	2.0	0.50	EPA 8021B
m,p-Xylenes	1.5	0.50	EPA 8021B
o-Xylene	0.65	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	113	68-145	8015B(M)
Bromofluorobenzene (FID)	113	66-143	8015B(M)
Trifluorotoluene (PID)	106	53-143	EPA 8021B
Bromofluorobenzene (PID)	114	52-142	EPA 8021B

Field ID:	MW-6	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	72280
Lab ID:	158494-006	Analyzed:	05/15/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	10,000	250	8015B(M)
Benzene	400	2.5	EPA 8021B
Toluene	160	2.5	EPA 8021B
Ethylbenzene	470	2.5	EPA 8021B
m,p-Xylenes	740	2.5	EPA 8021B
o-Xylene	230	2.5	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	147 *	68-145	8015B(M)
Bromofluorobenzene (FID)	116	66-143	8015B(M)
Trifluorotoluene (PID)	116	53-143	EPA 8021B
Bromofluorobenzene (PID)	115	52-142	EPA 8021B

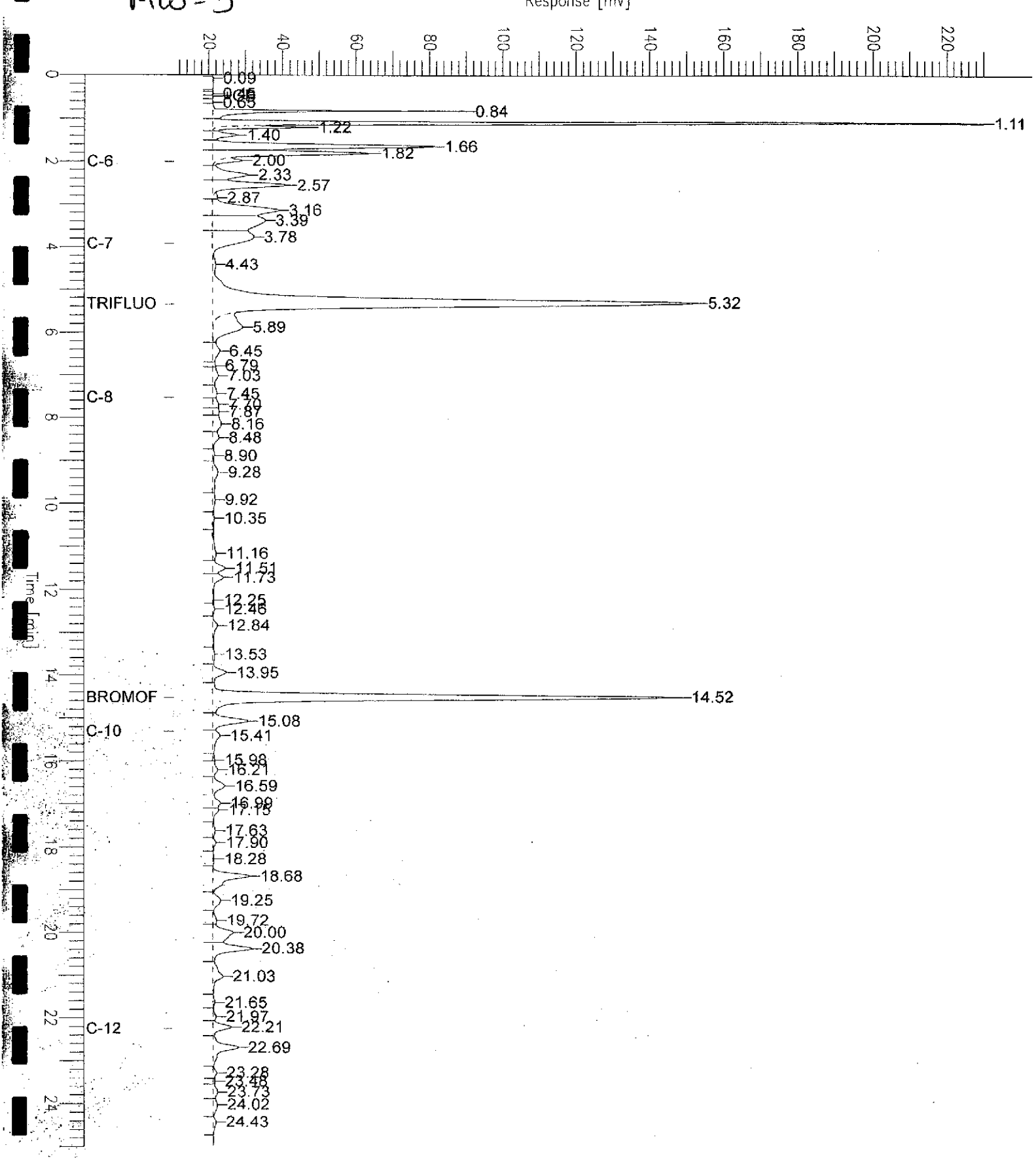
*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 158494-005,72230
FileName : G:\GC05\DATA\133G021.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 11 mV

Sample #: B1 Page 1 of 1
Date : 5/14/02 04:10 AM
Time of Injection: 5/14/02 03:45 AM
Low Point : 10.65 mV High Point : 230.23 mV
Plot Scale: 219.6 mV

MW-5

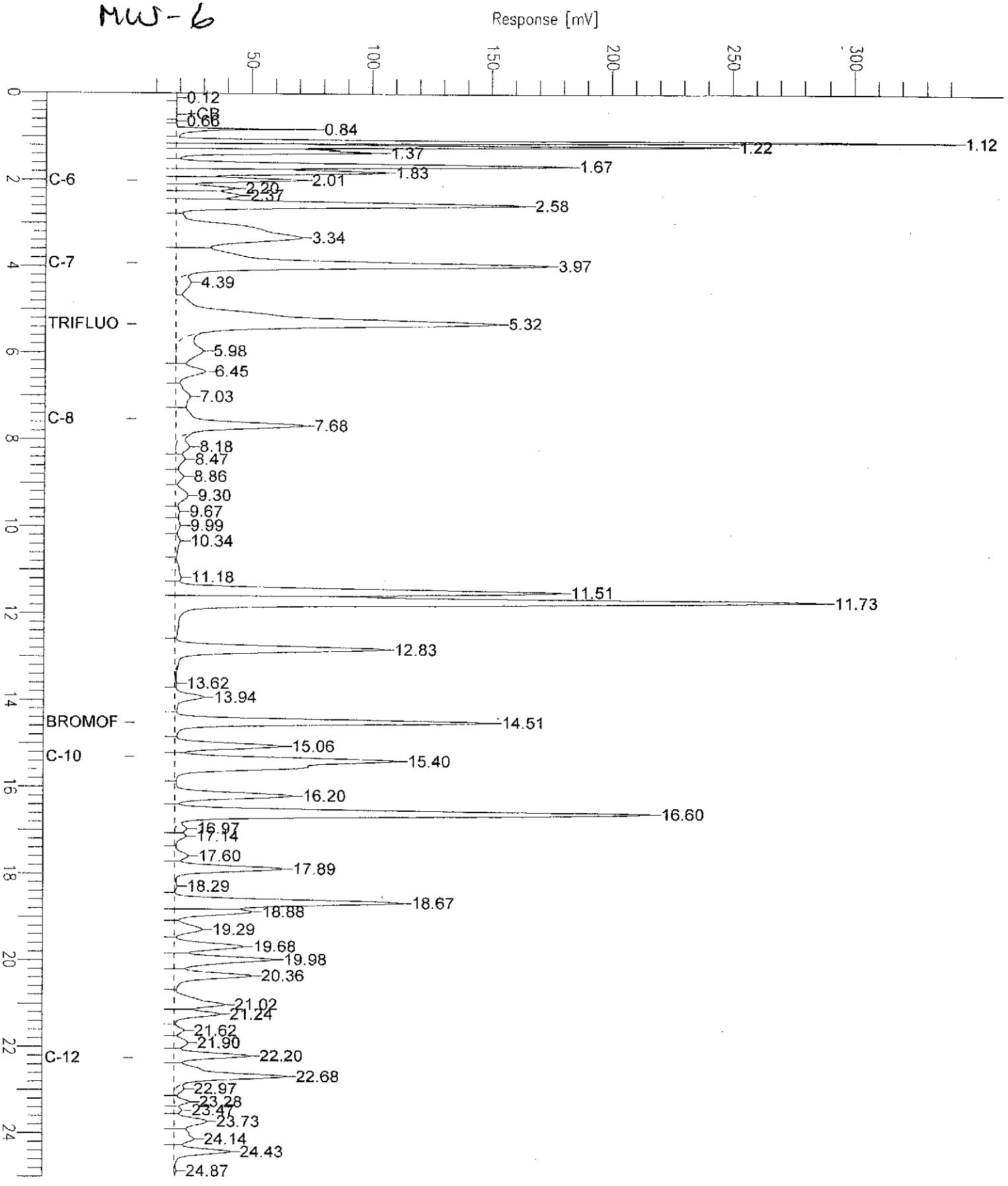


Chromatogram

Sample Name : 158494-006,72280
FileName : G:\GC05\DATA\134G032.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 2 mV

Sample #: C1 Page 1 of 1
Date : 5/15/02 09:42 AM
Time of Injection: 5/15/02 09:16 AM
Low Point : 2.21 mV High Point : 341.68 mV
Plot Scale: 339.5 mV

MW-6



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Field ID:	MW-7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-007	Analyzed:	05/14/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	560	50	8015B(M)
Benzene	15	0.50	EPA 8021B
Toluene	28	0.50	EPA 8021B
Ethylbenzene	9.2	0.50	EPA 8021B
m,p-Xylenes	32	0.50	EPA 8021B
o-Xylene	12	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	110	68-145	8015B(M)
Bromofluorobenzene (FID)	109	66-143	8015B(M)
Trifluorotoluene (PID)	110	53-143	EPA 8021B
Bromofluorobenzene (PID)	109	52-142	EPA 8021B

Field ID:	MW-8	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-008	Analyzed:	05/14/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	9,000	1,000	8015B(M)
Benzene	360	10	EPA 8021B
Toluene	56	10	EPA 8021B
Ethylbenzene	560	10	EPA 8021B
m,p-Xylenes	580	10	EPA 8021B
o-Xylene	42	10	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	111	68-145	8015B(M)
Bromofluorobenzene (FID)	111	66-143	8015B(M)
Trifluorotoluene (PID)	104	53-143	EPA 8021B
Bromofluorobenzene (PID)	111	52-142	EPA 8021B

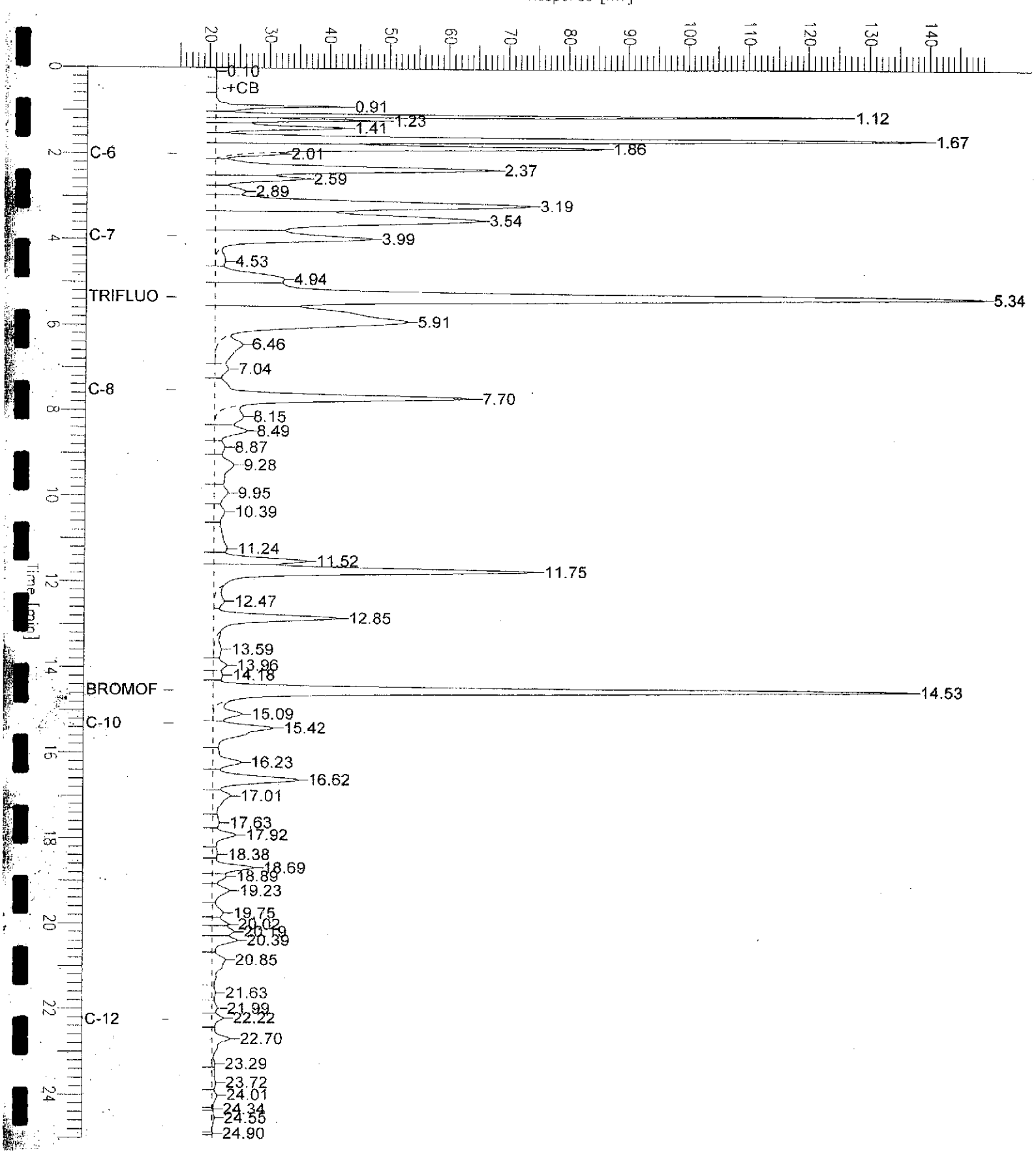
*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 158494-007,72230
FileName : G:\GC05\DATA\133G020.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 14 mV

Sample #: D1 Page 1 of 1
Date : 5/14/02 03:37 AM
Time of Injection: 5/14/02 03:12 AM
Low Point : 14.48 mV High Point : 149.02 mV
Plot Scale: 134.5 mV

MW-7

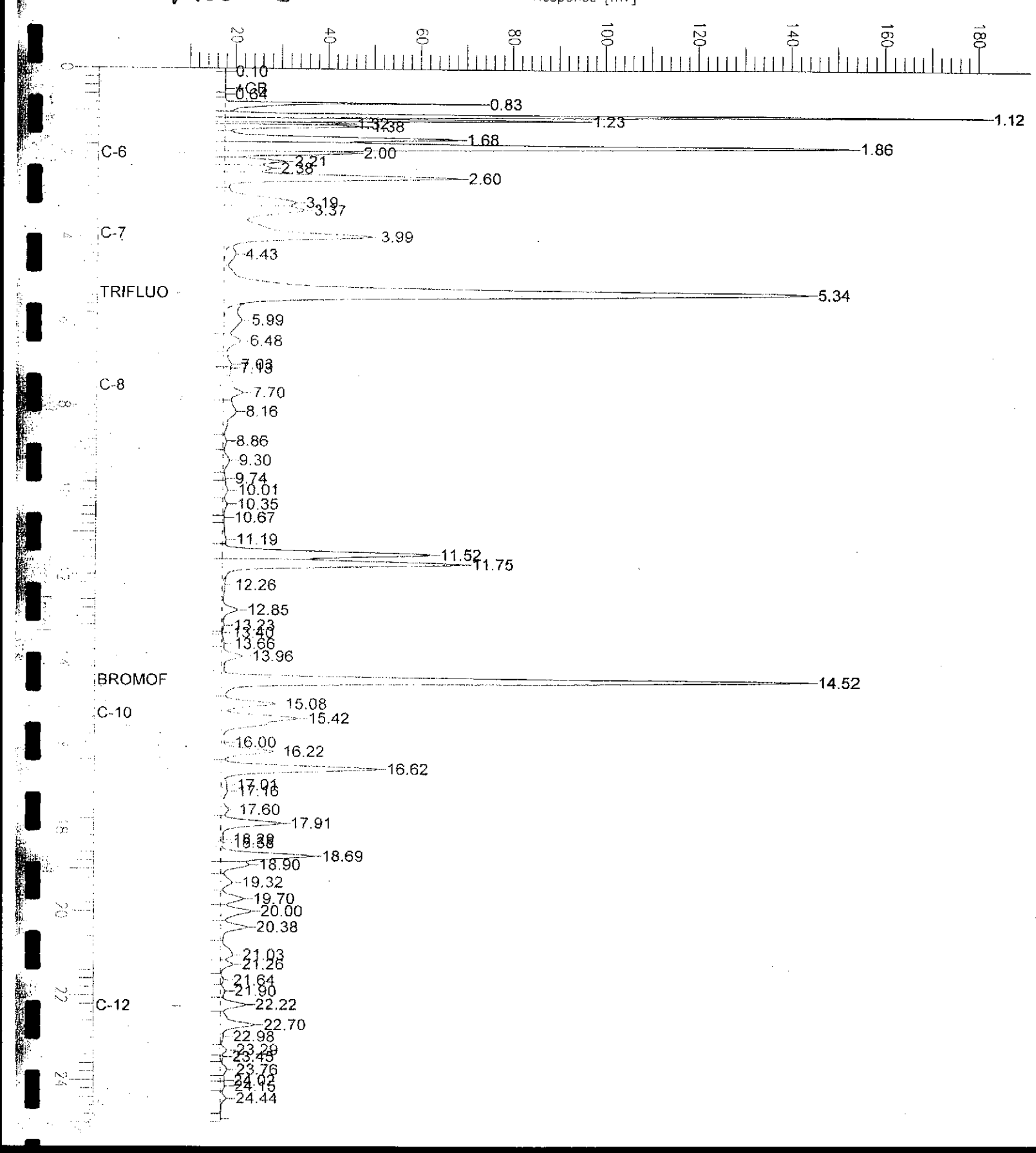


Chromatogram

Sample Name : 158494-008,72230
FileName : G:\GC05\DATA\133G035.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 9 mV

Sample #: B1 Page 1 of 1
Date : 5/14/02 12:02 PM
Time of Injection: 5/14/02 11:37 AM
Low Point : 9.43 mV High Point : 181.09 mV
Plot Scale: 171.7 mV

MW-8



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Field ID:	MW-10	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	72280
Lab ID:	158494-009	Analyzed:	05/15/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,400	250	8015B(M)
Benzene	660	2.5	EPA 8021B
Toluene	13	2.5	EPA 8021B
Ethylbenzene	260	2.5	EPA 8021B
m,p-Xylenes	44	2.5	EPA 8021B
o-Xylene	4.0	2.5	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	118	68-145	8015B(M)
Bromofluorobenzene (FID)	111	66-143	8015B(M)
Trifluorotoluene (PID)	109	53-143	EPA 8021B
Bromofluorobenzene (PID)	111	52-142	EPA 8021B

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-010	Analyzed:	05/13/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	280	50	8015B(M)
Benzene	16	0.50	EPA 8021B
Toluene	3.0	0.50	EPA 8021B
Ethylbenzene	7.6	0.50	EPA 8021B
m,p-Xylenes	6.3	0.50	EPA 8021B
o-Xylene	1.3	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	141	68-145	8015B(M)
Bromofluorobenzene (FID)	106	66-143	8015B(M)
Trifluorotoluene (PID)	119	53-143	EPA 8021B
Bromofluorobenzene (PID)	107	52-142	EPA 8021B

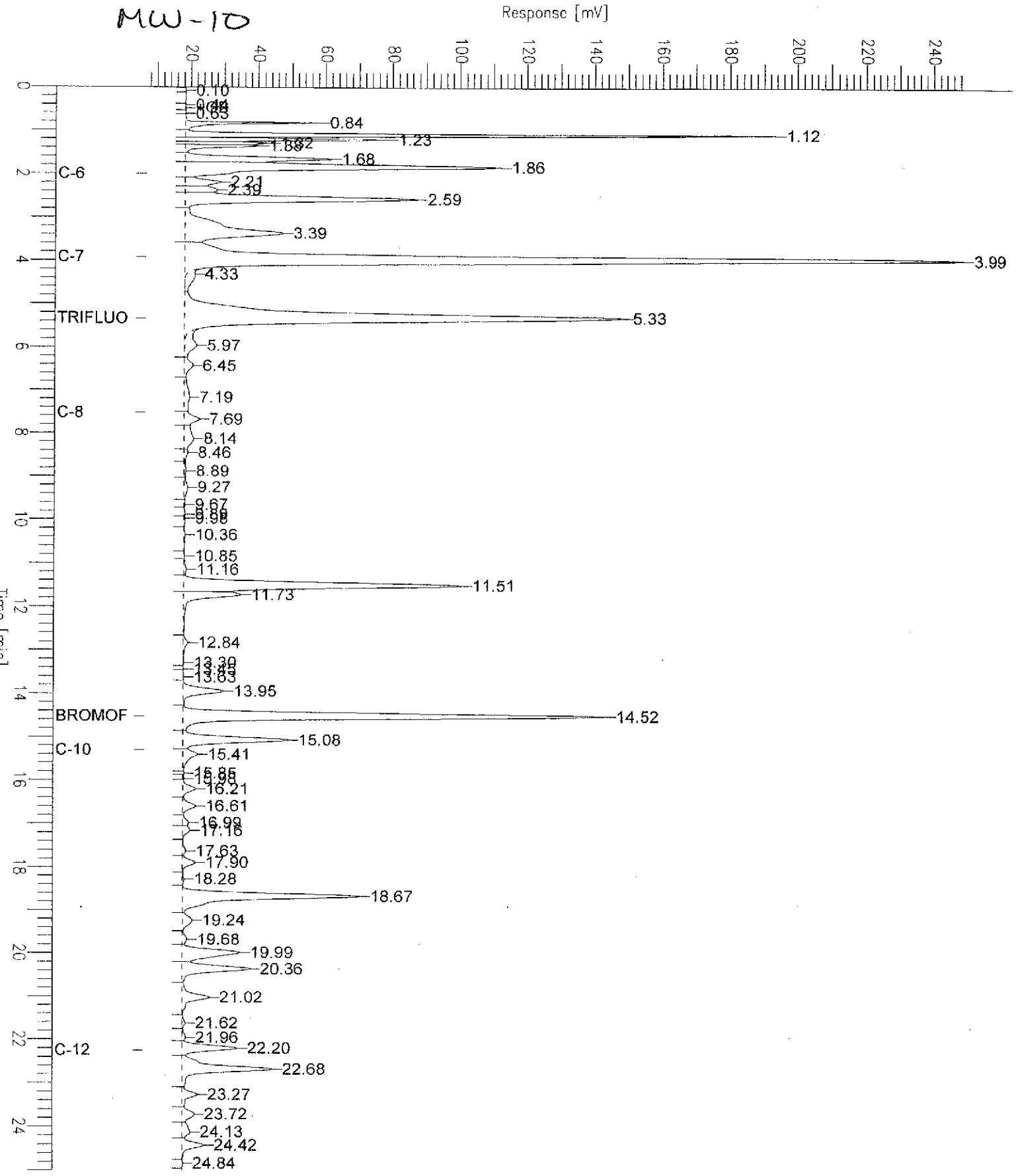
*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 158494-009,72280
FileName : G:\GC05\DATA\134G033.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 7 mV

Sample #: D1 Page 1 of 1
Date : 5/15/02 10:15 AM
Time of Injection: 5/15/02 09:50 AM
Low Point : 6.72 mV High Point : 248.90 mV
Plot Scale: 242.2 mV

MW-10

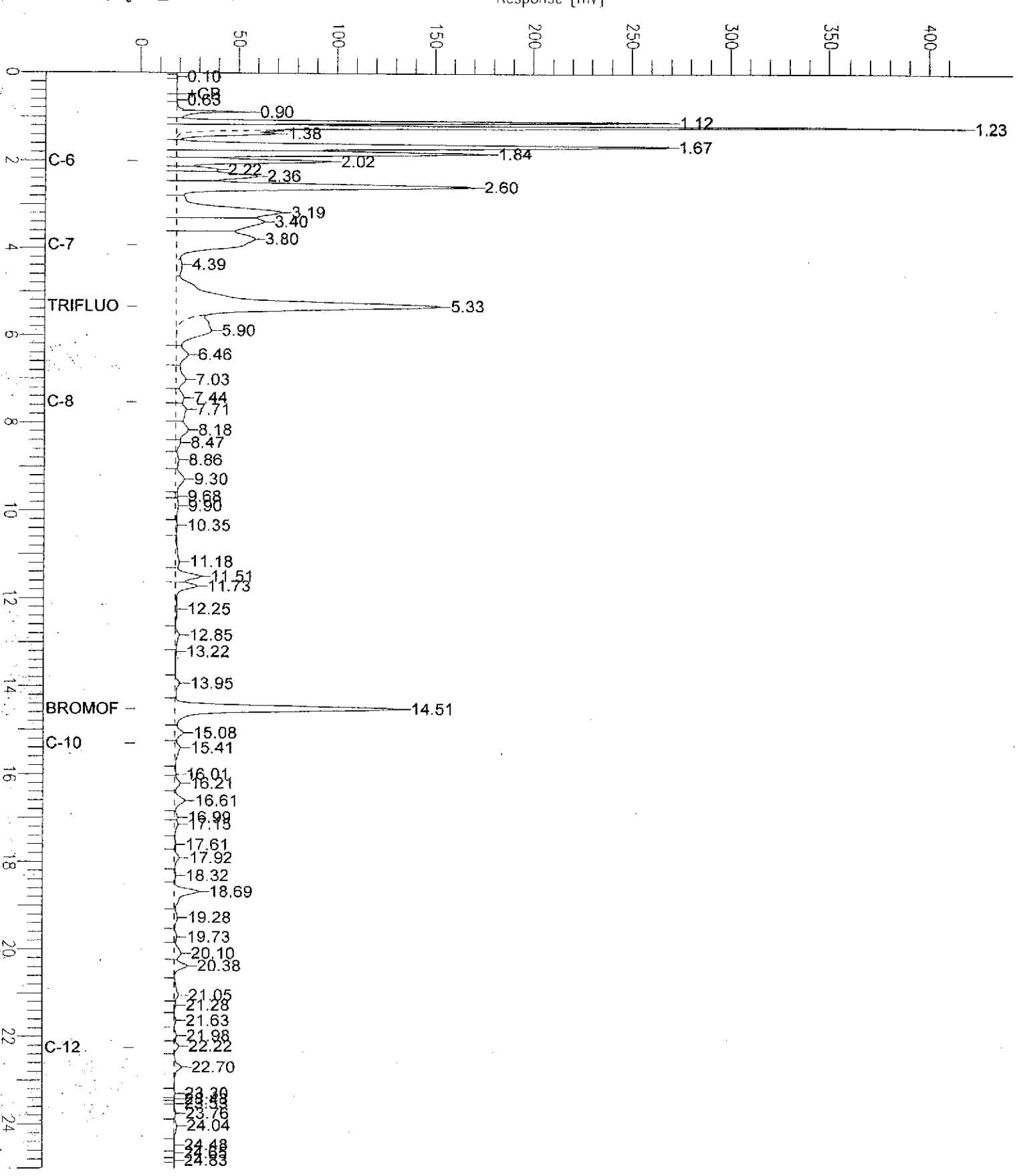


Chromatogram

Sample Name : 158494-010,72230
FileName : G:\GC05\DATA\133G011.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -2 mV

Sample #: C1 Page 1 of 1
Date : 5/13/02 10:36 PM
Time of Injection: 5/13/02 10:11 PM
Low Point : -1.56 mV High Point : 417.93 mV
Plot Scale: 419.5 mV

MW-11



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Field ID:	MW-12	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72230
Lab ID:	158494-011	Analyzed:	05/13/02

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,700	50	8015B(M)
Benzene	74	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	20	0.50	EPA 8021B
m,p-Xylenes	3.8	0.50	EPA 8021B
o-Xylene	1.3 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	134	68-145	8015B(M)
Bromofluorobenzene (FID)	102	66-143	8015B(M)
Trifluorotoluene (PID)	184 *	53-143	EPA 8021B
Bromofluorobenzene (PID)	96	52-142	EPA 8021B

Type:	BLANK	Batch#:	72230
Lab ID:	QC178146	Analyzed:	05/13/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	92	68-145	8015B(M)
Bromofluorobenzene (FID)	94	66-143	8015B(M)
Trifluorotoluene (PID)	92	53-143	EPA 8021B
Bromofluorobenzene (PID)	96	52-142	EPA 8021B

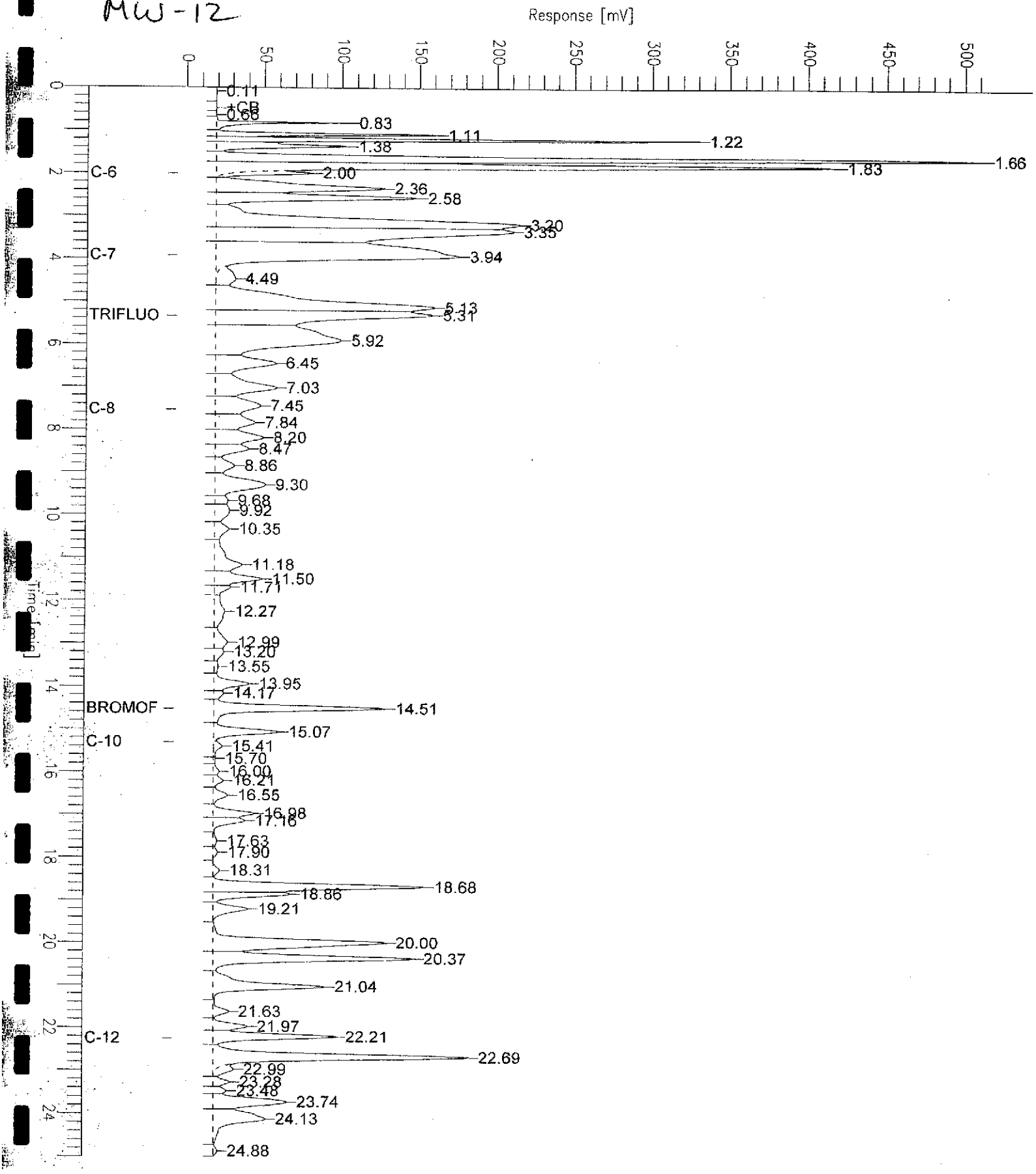
*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 158494-011,72230
FileName : G:\GC05\DATA\133G012.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -6 mV

Sample #: B1 Page 1 of 1
Date : 5/13/02 11:10 PM
Time of Injection: 5/13/02 10:45 PM
Low Point : -5.95 mV High Point : 512.40 mV
Plot Scale: 518.4 mV

MW-12

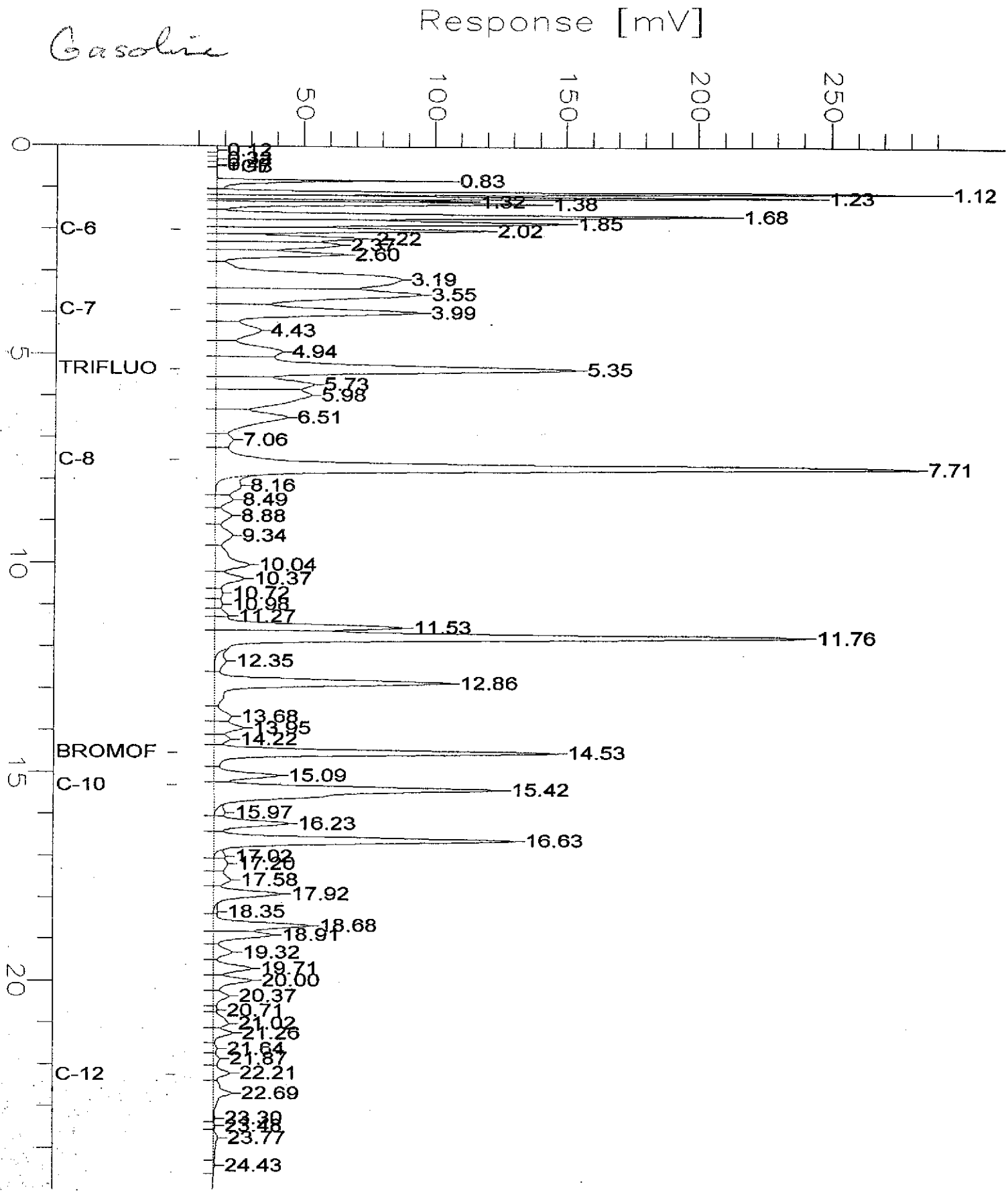


Chromatogram

Sample Name : CCV/LCS,QC178147,72230,02WS0791,5/5000
FileName : G:\GC05\DATA\133G004.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 3 mV

Sample #: Page 1 of 1
Date : 5/14/02 07:45 AM
Time of Injection: 5/13/02 12:16 PM
Low Point : 3.05 mV High Point : 292.05 mV
Plot Scale: 289.0 mV

Gasoline



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		
Matrix:	Water	Sampled:	05/07/02
Units:	ug/L	Received:	05/08/02

Type:	BLANK	Batch#:	72280
Lab ID:	QC178362	Analyzed:	05/15/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	103	68-145	8015B(M)
Bromofluorobenzene (FID)	112	66-143	8015B(M)
Trifluorotoluene (PID)	99	53-143	EPA 8021B
Bromofluorobenzene (PID)	110	52-142	EPA 8021B

Type:	BLANK	Batch#:	72312
Lab ID:	QC178484	Analyzed:	05/15/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	92	68-145	8015B(M)
Bromofluorobenzene (FID)	100	66-143	8015B(M)
Trifluorotoluene (PID)	90	53-143	EPA 8021B
Bromofluorobenzene (PID)	100	52-142	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC178147	Batch#:	72230
Matrix:	Water	Analyzed:	05/13/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,133	107	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	68-145
Bromofluorobenzene (FID)	117	66-143

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Type:	BS	Diln Fac:	1.000
Lab ID:	QC178148	Batch#:	72230
Matrix:	Water	Analyzed:	05/13/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	23.17	116	65-122
Toluene	20.00	22.45	112	67-121
Ethylbenzene	20.00	22.21	111	70-121
m,p-Xylenes	40.00	42.56	106	72-125
o-Xylene	20.00	19.95	100	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	63	53-143
Bromofluorobenzene (PID)	68	52-142

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Type:	BSD	Diln Fac:	1.000
Lab ID:	QC178277	Batch#:	72230
Matrix:	Water	Analyzed:	05/13/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	20.00	23.94	120	65-122	3	20
Toluene	20.00	23.40	117	67-121	4	20
Ethylbenzene	20.00	22.31	112	70-121	0	20
m,p-Xylenes	40.00	44.65	112	72-125	5	20
o-Xylene	20.00	20.45	102	73-122	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	53-143
Bromofluorobenzene (PID)	112	52-142

PD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC178363	Batch#:	72280
Matrix:	Water	Analyzed:	05/14/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,174	109	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	68-145
Bromofluorobenzene (FID)	123	66-143

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Type:	BS	Diln Fac:	1.000
Lab ID:	QC178364	Batch#:	72280
Matrix:	Water	Analyzed:	05/14/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	22.61	113	65-122
Toluene	20.00	22.09	110	67-121
Ethylbenzene	20.00	21.91	110	70-121
m,p-Xylenes	40.00	41.65	104	72-125
o-Xylene	20.00	19.58	98	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	108	53-143
Bromofluorobenzene (PID)	115	52-142

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Type:	BSD	Diln Fac:	1.000
Lab ID:	QC178367	Batch#:	72280
Matrix:	Water	Analyzed:	05/14/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	20.00	22.69	113	65-122	0	20
Toluene	20.00	22.29	111	67-121	1	20
Ethylbenzene	20.00	23.25	116	70-121	6	20
m,p-Xylenes	40.00	42.59	106	72-125	2	20
o-Xylene	20.00	20.27	101	73-122	3	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	109	53-143
Bromofluorobenzene (PID)	117	52-142

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC178485	Batch#:	72312
Matrix:	Water	Analyzed:	05/15/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,989	99	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	68-145
Bromofluorobenzene (FID)	112	66-143

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC178488	Batch#:	72312
Matrix:	Water	Analyzed:	05/15/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	22.27	111	65-122
Toluene	20.00	21.97	110	67-121
Ethylbenzene	20.00	21.35	107	70-121
m,p-Xylenes	40.00	42.92	107	72-125
o-Xylene	20.00	20.12	101	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	53-143
Bromofluorobenzene (PID)	114	52-142

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Field ID:	MW-2	Batch#:	72230
MSS Lab ID:	158494-002	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/13/02
Diln Fac:	1.000		

Type: MS Lab ID: QC178275

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,833	2,000	3,618	89	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	68-145
Bromofluorobenzene (FID)	114	66-143

Type: MSD Lab ID: QC178276

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	3,720	94	67-120	3	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	68-145
Bromofluorobenzene (FID)	119	66-143

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	72280
MSS Lab ID:	158524-001	Sampled:	05/09/02
Matrix:	Water	Received:	05/09/02
Units:	ug/L	Analyzed:	05/14/02
Diln Fac:	1.000		

ype: MS Lab ID: QC178365

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	322.6	2,000	2,378	103	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	141	68-145
Bromofluorobenzene (FID)	127	66-143

ype: MSD Lab ID: QC178366

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,378	103	67-120	0	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	140	68-145
Bromofluorobenzene (FID)	127	66-143

PD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	72312
MSS Lab ID:	158567-001	Sampled:	05/10/02
Matrix:	Water	Received:	05/10/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

ype: MS Lab ID: QC178486

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	43.45	2,000	1,862	91	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	68-145
Bromofluorobenzene (FID)	122	66-143

ype: MSD Lab ID: QC178487

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,151	105	67-120	14	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	68-145
Bromofluorobenzene (FID)	126	66-143

PD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	72313
Lab ID:	158494-001	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/15/02
Diln Fac:	200.0		

Analyte	Result	RL
MTBE	32,000	400

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	77-130
Toluene-d8	96	80-120
Bromofluorobenzene	103	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-2	Batch#:	72313
Lab ID:	158494-002	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/15/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	77-130
Toluene-d8	95	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	72313
Lab ID:	158494-003	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/15/02
Diln Fac:	71.43		

Analyte	Result	RL
MTBE	9,100	140

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-4	Batch#:	72313
Lab ID:	158494-004	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/15/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-5	Batch#:	72325
Lab ID:	158494-005	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	2.3	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	77-130
Toluene-d8	96	80-120
Bromofluorobenzene	106	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-6	Batch#:	72325
Lab ID:	158494-006	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	92	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-7	Batch#:	72325
Lab ID:	158494-007	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	37	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	90	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-8	Batch#:	72325
Lab ID:	158494-008	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	12.50		

Analyte	Result	RL
MTBE	2,100	25

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	87	77-130
Toluene-d8	93	80-120
Bromofluorobenzene	101	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-10	Batch#:	72325
Lab ID:	158494-009	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	2.000		

Analyte	Result	RL
MTBE	270	4.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	100	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	72325
Lab ID:	158494-010	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	88	77-130
Toluene-d8	108	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-12	Batch#:	72325
Lab ID:	158494-011	Sampled:	05/07/02
Matrix:	Water	Received:	05/08/02
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	94	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	88	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC178491	Batch#:	72313
Matrix:	Water	Analyzed:	05/15/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC178541	Batch#:	72325
Matrix:	Water	Analyzed:	05/16/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	110	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC178542	Batch#:	72325
Matrix:	Water	Analyzed:	05/16/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	72313
Units:	ug/L	Analyzed:	05/15/02
Diln Fac:	1.000		

Type: BS Lab ID: QC178489

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	50.76	102	54-131

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC178490

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	50.77	102	54-131	0	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	93	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158494	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	72325
Units:	ug/L	Analyzed:	05/16/02
Diln Fac:	1.000		

Type: BS Lab ID: QC178539

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	50.88	102	54-131

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC178540

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	50.51	101	54-131	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	90	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	100	80-120

RPD= Relative Percent Difference

Appendix B

Laboratory Reports and Chain of Custody Forms for Treatment System

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

SOMA Environmental Engineering Inc.
2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Date: 12-JUN-02
Lab Job Number: 158863
Project ID: 2333
Location: 3609 International Blvd.

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: Paul Predergast
Project Manager

Reviewed by:
Operations Manager

CHAIN OF CUSTODY

Page _____ of _____

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

C&T LOGIN # 158863

Sampler: Tony Perini

Report To: Mansour Sepehr

Company : SOMA Environmental

Telephone: 925-244-6600

Fax: 925-244-6601

Project No: 2333

Project Name: 3609 International Blvd., Oaklanc

Turnaround Time: Standard

Analyses

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	TPHg 8015	BTEX & MTBE 8260 GCMS
-1	Influent	5/30/02 3:40 PM		✓		4	✓			✓	✓	✓
-2	GAC-1	5/30/02 3:20 PM		✓		4	✓			✓	✓	✓
-3	PSP#1	5/30/02 3 PM		✓		4	✓			✓	✓	✓

Received ☐ On Ice ☐ Cold ☐ Ambient ☐ Intact

Preservation Correct? ☐ Yes ☐ No ☐ N/A

Notes:

RELINQUISHED BY:

5/30/02 Tony Perini 4:10 PM DATE/TIME

DATE/TIME

DATE/TIME

RECEIVED BY:

5-30-02 4:10 pm DATE/TIME

DATE/TIME

DATE/TIME

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Matrix:	Water	Sampled:	05/30/02
Units:	ug/L	Received:	05/30/02

Field ID:	INFLUENT	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	72693
Lab ID:	158863-001	Analyzed:	06/04/02

Analyte	Result	RL
Gasoline C7-C12	17,000	1,000

Surrogate	%REC	Limits
Trifluorotoluene (FID)	93	68-145
Bromofluorobenzene (FID)	93	66-143

Field ID:	GAC-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72667
Lab ID:	158863-002	Analyzed:	06/01/02

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	84	68-145
Bromofluorobenzene (FID)	97	66-143

Field ID:	PSP#1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	72667
Lab ID:	158863-003	Analyzed:	06/01/02

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	84	68-145
Bromofluorobenzene (FID)	96	66-143

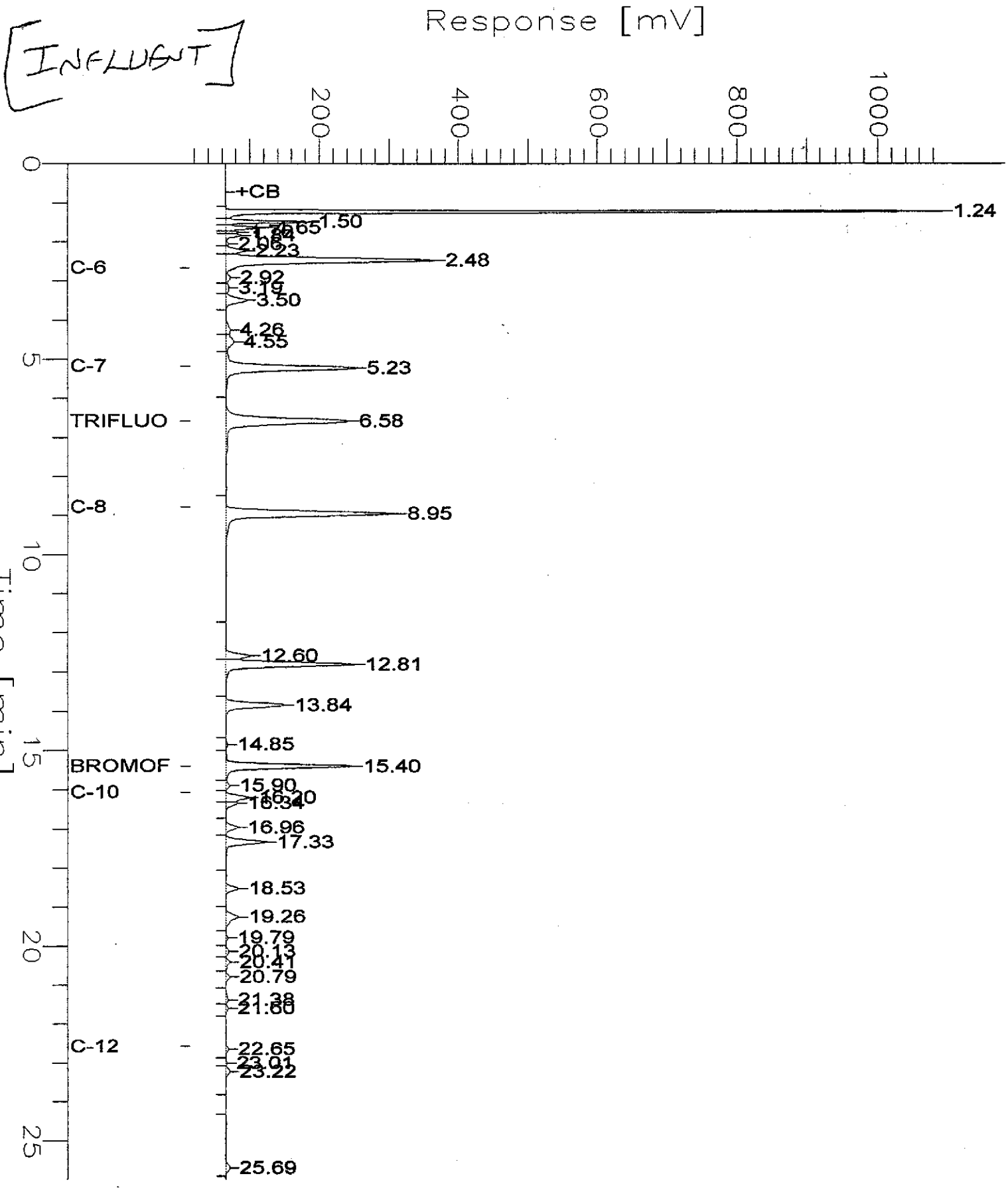
ND= Not Detected
RL= Reporting Limit

GC04 TVH 'J' Data File FID

Sample Name : 158863-001,72693
FileName : G:\GC04\DATA\154J032.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 14 mV

Sample #: D1 Page 1 of 1
Date : 6/4/02 08:54 AM
Time of Injection: 6/4/02 08:28 AM
Low Point : 13.60 mV High Point : 1094.07 mV
Plot Scale: 1080.5 mV

[INFLUENT]

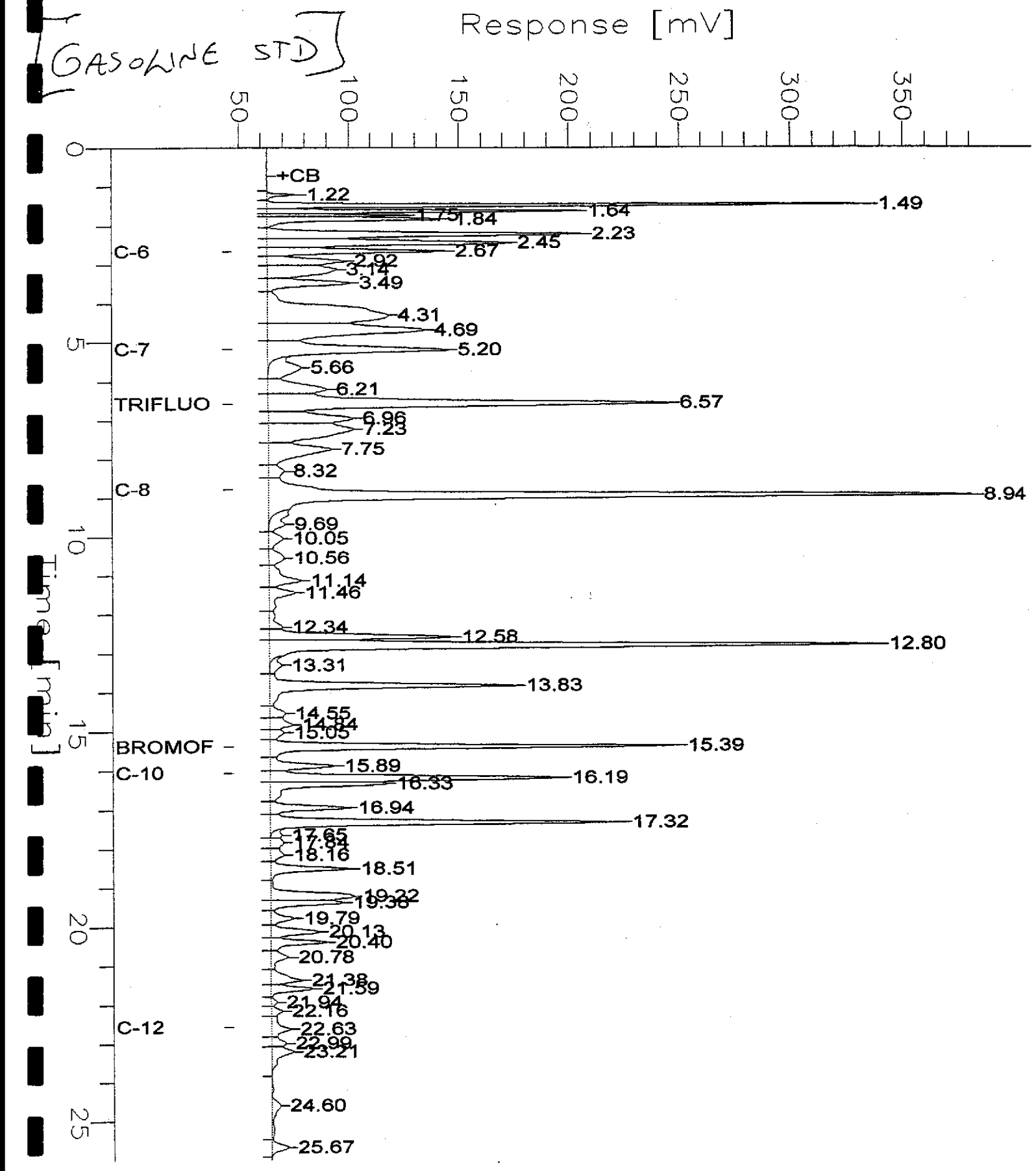


GC04 TVH 'J' Data File FID

Sample Name : CCV/LCS,QC179837,72667,02WS0791,5/5000
FileName : G:\GC04\DATA\152J001.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 47 mV

Sample #: Page 1 of 1
Date : 6/1/02 11:34 AM
Time of Injection: 6/1/02 11:08 AM
Low Point : 46.81 mV High Point : 381.25 mV
Plot Scale: 334.4 mV

GASOLINE STD



Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Matrix:	Water	Sampled:	05/30/02
Units:	ug/L	Received:	05/30/02

Type:	BLANK	Batch#:	72667
Lab ID:	QC179836	Analyzed:	06/01/02
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	90	68-145
Bromofluorobenzene (FID)	90	66-143

Type:	BLANK	Batch#:	72693
Lab ID:	QC179940	Analyzed:	06/03/02
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	84	68-145
Bromofluorobenzene (FID)	88	66-143

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC179837	Batch#:	72667
Matrix:	Water	Analyzed:	06/01/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,850	92	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	68-145
Bromofluorobenzene (FID)	93	66-143

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC179941	Batch#:	72693
Matrix:	Water	Analyzed:	06/03/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,880	94	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	68-145
Bromofluorobenzene (FID)	92	66-143

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	72667
MSS Lab ID:	158847-001	Sampled:	05/29/02
Matrix:	Water	Received:	05/29/02
Units:	ug/L	Analyzed:	06/01/02
Diln Fac:	1.000		

Type: MS Lab ID: QC179839

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	131.6	2,000	1,940	90	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	68-145
Bromofluorobenzene (FID)	97	66-143

Type: MSD Lab ID: QC179840

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,956	91	67-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	68-145
Bromofluorobenzene (FID)	98	66-143

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	72693
MSS Lab ID:	158874-002	Sampled:	05/30/02
Matrix:	Water	Received:	05/31/02
Units:	ug/L	Analyzed:	06/04/02
Diln Fac:	1.000		

Type: MS Lab ID: QC179959

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,850	93	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	68-145
Bromofluorobenzene (FID)	95	66-143

Type: MSD Lab ID: QC179960

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,860	93	67-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	68-145
Bromofluorobenzene (FID)	97	66-143

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	INFLUENT	Batch#:	72687
Lab ID:	158863-001	Sampled:	05/30/02
Matrix:	Water	Received:	05/30/02
Units:	ug/L	Analyzed:	06/03/02
Diln Fac:	71.43		

Analyte	Result	RL
MTBE	11,000	36
Benzene	1,600	36
Toluene	2,000	36
Chlorobenzene	ND	36
Ethylbenzene	270	36
m,p-Xylenes	1,400	36
o-Xylene	640	36
1,3-Dichlorobenzene	ND	36
1,4-Dichlorobenzene	ND	36
1,2-Dichlorobenzene	ND	36

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	112	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	108	80-120

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	GAC-1	Batch#:	72687
Lab ID:	158863-002	Sampled:	05/30/02
Matrix:	Water	Received:	05/30/02
Units:	ug/L	Analyzed:	06/03/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	117	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	PSP#1	Batch#:	72687
Lab ID:	158863-003	Sampled:	05/30/02
Matrix:	Water	Received:	05/30/02
Units:	ug/L	Analyzed:	06/03/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	109	77-130
Toluene-d8	94	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC179919	Batch#:	72687
Matrix:	Water	Analyzed:	06/03/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	77-130
Toluene-d8	96	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158863	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	72687
Units:	ug/L	Analyzed:	06/03/02
Diln Fac:	1.000		

Type: BS Lab ID: QC179916

Analyte	Spiked	Result	%REC	Limits
Benzene	50.00	47.42	95	76-120
Toluene	50.00	44.26	89	79-120
Chlorobenzene	50.00	47.17	94	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	77-130
Toluene-d8	96	80-120
Bromofluorobenzene	92	80-120

Type: BSD Lab ID: QC179917

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	50.00	47.36	95	76-120	0	20
Toluene	50.00	43.51	87	79-120	2	20
Chlorobenzene	50.00	46.78	94	80-120	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

SOMA Environmental Engineering Inc.
2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Date: 07-MAY-02
Lab Job Number: 158243
Project ID: 2333
Location: 3609 Intl Blvd., Oakland

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: Paul Predergast
Project Manager

Reviewed by:
Operations Manager

CHAIN OF CUSTODY

Page ____ of ____

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

C&T LOGIN # 158243

Sampler: TONY PERINI

Report To: Mansour Sepehr

Company : SOMA Environmental

Telephone: 925-244-6600

Fax: 925-244-6601

Project No: 2333

Project Name: 3609 International Blvd., Oakland

Turnaround Time: STANDARD

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Analyses: TPHg 8015	Analyses: BTEX & MTBE 8260 GCMS
-1	PSP #1	4/24/02 1245		✓		4	✓		✓	✓	✓	✓
-2	EAC-1	4/24/02 1255		✓		4	✓		✓	✓	✓	✓
-3	INFLUENT	4/24/02 1305		✓		4	✓			✓	✓	✓

Notes:

RELINQUISHED BY:

Tony Perini 4/24/02 1345 DATE/TIME

DATE/TIME

DATE/TIME

RECEIVED BY:

4/24/02 1345 DATE/TIME

DATE/TIME

DATE/TIME

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Matrix:	Water	Sampled:	04/24/02
Units:	ug/L	Received:	04/24/02

Field ID:	PSP #1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	71850
Lab ID:	158243-001	Analyzed:	04/25/02

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	68-145
Bromofluorobenzene (FID)	110	66-143

Field ID:	GAC-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	71850
Lab ID:	158243-002	Analyzed:	04/25/02

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	68-145
Bromofluorobenzene (FID)	108	66-143

Field ID:	INFLUENT	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	71882
Lab ID:	158243-003	Analyzed:	04/26/02

Analyte	Result	RL
Gasoline C7-C12	19,000	500

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	68-145
Bromofluorobenzene (FID)	111	66-143

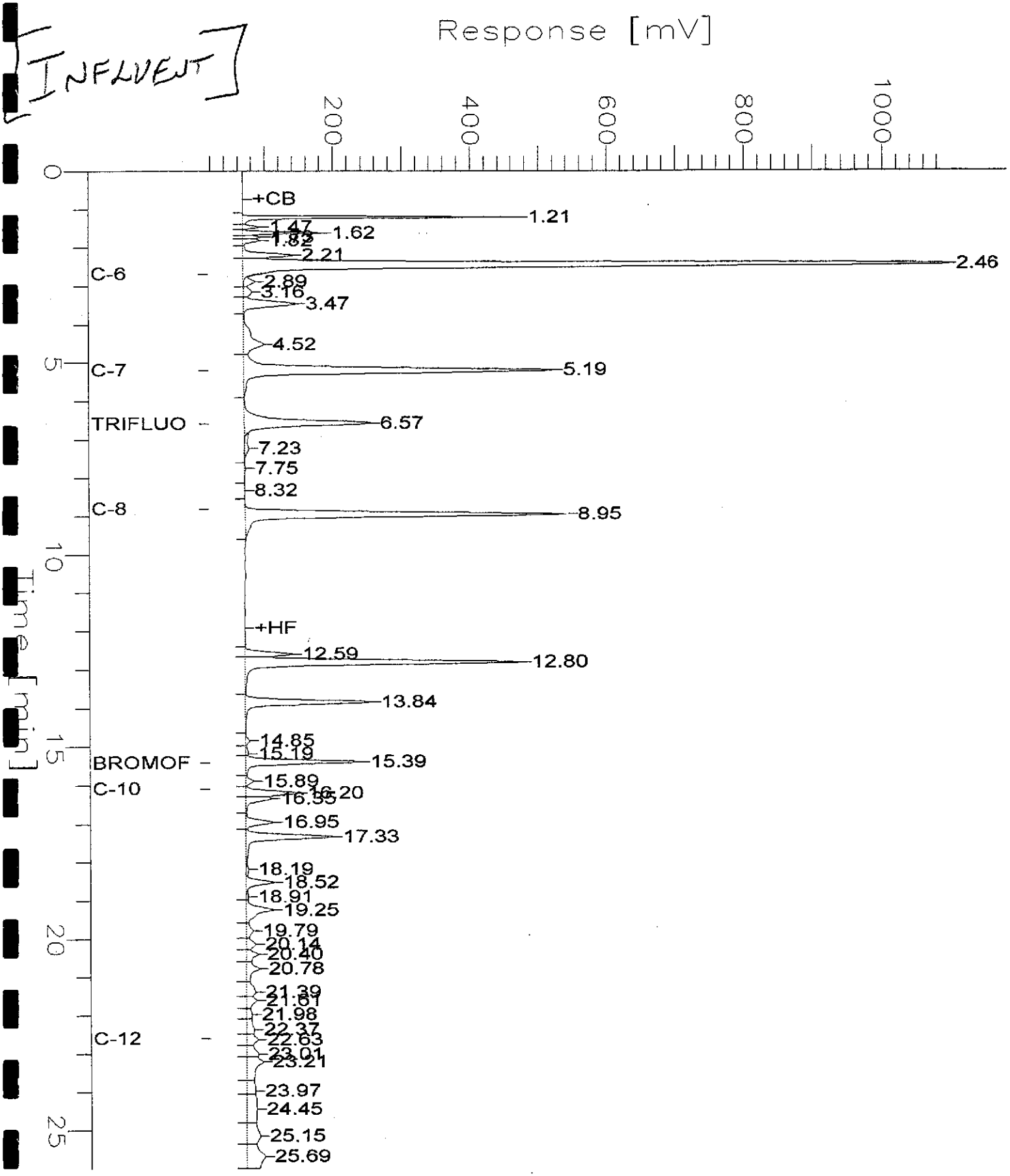
ND= Not Detected
RL= Reporting Limit

GC04 TVH 'J' Data File FID

Sample Name : 158243-003,71882,tvh only
FileName : G:\GC04\DATA\116J013.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 17 mV

Sample #: d1 Page 1 of 1
Date : 4/27/02 09:34 AM
Time of Injection: 4/26/02 07:13 PM
Low Point : 16.83 mV High Point : 1094.36 mV
Plot Scale: 1077.5 mV

[INFLUENT]

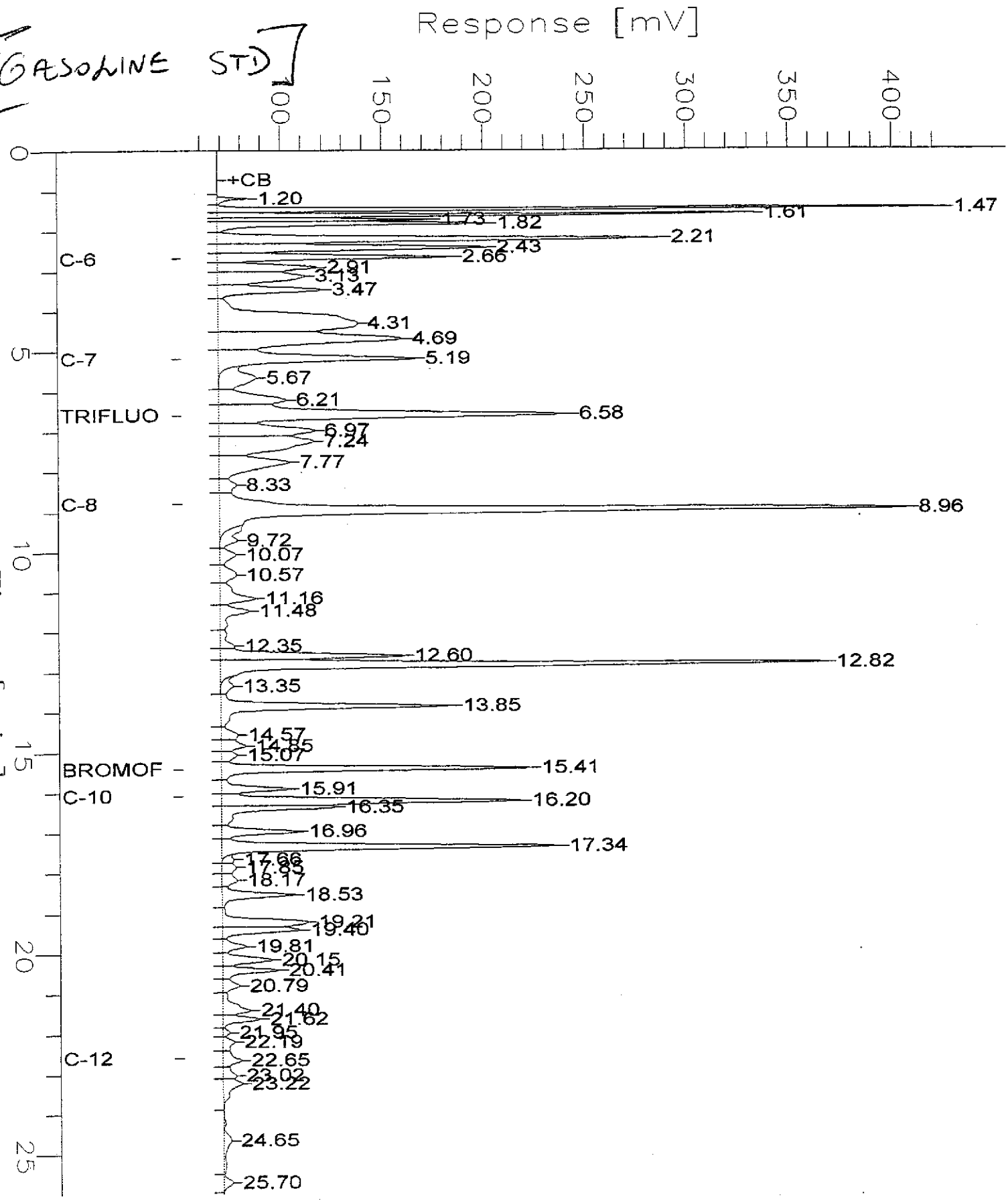


GC04 TVH 'J' Data File FID

Sample Name : CCV/lcs,qc176730,71850,02ws0643,5/5000
FileName : G:\GC04\DATA\115J003.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 51 mV

Sample #: Page 1 of 1
Date : 4/25/02 08:44 AM
Time of Injection: 4/25/02 08:18 AM
Low Point : 50.87 mV High Point : 425.84 mV
Plot Scale: 375.0 mV

[GASOLINE STD]



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Matrix:	Water	Sampled:	04/24/02
Units:	ug/L	Received:	04/24/02

Type:	BLANK	Batch#:	71850
Lab ID:	QC176729	Analyzed:	04/25/02
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	96	68-145
Bromofluorobenzene (FID)	105	66-143

Type:	BLANK	Batch#:	71882
Lab ID:	QC176841	Analyzed:	04/26/02
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	68-145
Bromofluorobenzene (FID)	99	66-143

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC176730	Batch#:	71850
Matrix:	Water	Analyzed:	04/25/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,003	100	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	115	68-145
Bromofluorobenzene (FID)	101	66-143

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC176842	Batch#:	71882
Matrix:	Water	Analyzed:	04/26/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,005	100	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	68-145
Bromofluorobenzene (FID)	107	66-143

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	71850
MSS Lab ID:	158257-001	Sampled:	04/24/02
Matrix:	Water	Received:	04/24/02
Units:	ug/L	Analyzed:	04/25/02
Diln Fac:	1.000		

Type: MS Lab ID: QC176731

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,898	95	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	68-145
Bromofluorobenzene (FID)	104	66-143

Type: MSD Lab ID: QC176732

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,925	96	67-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	68-145
Bromofluorobenzene (FID)	105	66-143

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	71882
MSS Lab ID:	158269-001	Sampled:	04/25/02
Matrix:	Water	Received:	04/25/02
Units:	ug/L	Analyzed:	04/26/02
Diln Fac:	1.000		

Type: MS Lab ID: QC176844

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	2,055	103	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	68-145
Bromofluorobenzene (FID)	116	66-143

Type: MSD Lab ID: QC176845

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,917	96	67-120	7	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	68-145
Bromofluorobenzene (FID)	110	66-143

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	PSP #1	Batch#:	71883
Lab ID:	158243-001	Sampled:	04/24/02
Matrix:	Water	Received:	04/24/02
Units:	ug/L	Analyzed:	04/26/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	108	77-130
Toluene-d8	102	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	GAC-1	Batch#:	71864
Lab ID:	158243-002	Sampled:	04/24/02
Matrix:	Water	Received:	04/24/02
Units:	ug/L	Analyzed:	04/25/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	108	77-130
Toluene-d8	94	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	INFLUENT	Batch#:	71884
Lab ID:	158243-003	Sampled:	04/24/02
Matrix:	Water	Received:	04/24/02
Units:	ug/L	Analyzed:	04/26/02
Diln Fac:	62.50		

Analyte	Result	RL
MTBE	10,000	31
Benzene	1,800	31
Toluene	1,900	31
Chlorobenzene	ND	31
Ethylbenzene	240	31
m,p-Xylenes	1,600	31
o-Xylene	700	31
1,3-Dichlorobenzene	ND	31
1,4-Dichlorobenzene	ND	31
1,2-Dichlorobenzene	ND	31

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	110	77-130
Toluene-d8	92	80-120
Bromofluorobenzene	100	80-120

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC176776	Batch#:	71864
Matrix:	Water	Analyzed:	04/25/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	110	77-130
Toluene-d8	92	80-120
Bromofluorobenzene	101	80-120

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC176848	Batch#:	71883
Matrix:	Water	Analyzed:	04/26/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC176850	Batch#:	71884
Matrix:	Water	Analyzed:	04/26/02
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	71864
Units:	ug/L	Analyzed:	04/25/02
Diln Fac:	1.000		

Type: BS Lab ID: QC176774

Analyte	Spiked	Result	%REC	Limits
Benzene	50.00	40.78	82	76-120
Toluene	50.00	48.71	97	79-120
Chlorobenzene	50.00	51.52	103	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	77-130
Toluene-d8	92	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC176775

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	50.00	46.97	94	76-120	14	20
Toluene	50.00	47.60	95	79-120	2	20
Chlorobenzene	50.00	50.58	101	80-120	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	88	77-130
Toluene-d8	91	80-120
Bromofluorobenzene	98	80-120

PD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	71883
Units:	ug/L	Analyzed:	04/26/02
Diln Fac:	1.000		

Type: BS Lab ID: QC176846

Analyte	Spiked	Result	%REC	Limits
Benzene	50.00	53.17	106	76-120
Toluene	50.00	48.19	96	79-120
Chlorobenzene	50.00	45.18	90	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	111	77-130
Toluene-d8	102	80-120
Bromofluorobenzene	106	80-120

Type: BSD Lab ID: QC176847

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	50.00	48.62	97	76-120	9	20
Toluene	50.00	47.29	95	79-120	2	20
Chlorobenzene	50.00	41.42	83	80-120	9	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	77-130
Toluene-d8	103	80-120
Bromofluorobenzene	100	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC176849	Batch#:	71884
Matrix:	Water	Analyzed:	04/26/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Benzene	50.00	45.75	91	76-120
Toluene	50.00	48.35	97	79-120
Chlorobenzene	50.00	51.76	104	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	91	77-130
Toluene-d8	92	80-120
Bromofluorobenzene	98	80-120

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	158243	Location:	3609 Intl Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	71884
MSS Lab ID:	158163-003	Sampled:	04/18/02
Matrix:	Water	Received:	04/18/02
Units:	ug/L	Analyzed:	04/26/02
Diln Fac:	1.000		

Type: MS Lab ID: QC176866

Analyte	MSS Result	Spiked	Result	%REC	Limits
Benzene	<0.1700	50.00	48.22	96	79-120
Toluene	<0.1500	50.00	50.43	101	75-120
Chlorobenzene	<0.1200	50.00	52.41	105	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	108	77-130
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

Type: MSD Lab ID: QC176867

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	50.00	46.82	94	79-120	3	20
Toluene	50.00	49.09	98	75-120	3	20
Chlorobenzene	50.00	51.12	102	80-120	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	77-130
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference