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Alomedo County

Environmento, Health

September 12, 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 "Third 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

Enclosure

cc: Mr. Abolghassem Razi w/enclosure Tony's Express Auto Service No. CO42928
Exp. 3-31-04

CIVIL REPERT OF CALIFORNIA

## 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 Third Quarter 2002 groundwater monitoring event.

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

Principal Hydrogeologist



Alameda County

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Environmental Health

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#### 1.0 Introduction

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Abolghassem Razi, the owner of Tony's Express Auto Service. The property is located at 3609 International Boulevard at the intersection of 36<sup>th</sup> 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 convenience store. During Third Quarter 2002, the station was remodeled and several hydraulic hoists were removed. The station currently no longer has an auto repair facility. Figure 2 shows the location of the main service station, dispenser islands, underground storage tanks (USTs), the on-site and off-site groundwater monitoring wells, and neighboring properties.

This report summarizes the results of the Third Quarter 2002 groundwater monitoring event conducted on July 30, 2002 at the Site. Included in this report are the bioattenuation parameters measured in the field for each groundwater sample. Also, included in this report are the results of the laboratory analysis of the 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, as well as the operation of the vapor extraction system, which was installed by SOMA in July 2000. The locations of the groundwater extraction system and the vapor extraction system are displayed in Figure 2.

# 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 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 of the USTs 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), as well as 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 old product dispensers and installed new ones 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 July 30, 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 eight on-site (MW-1 to MW-8) monitoring wells, three off-site (MW-10, MW-11, and MW-12) monitoring wells, and three French drain risers were measured for depth to groundwater.

The depth to groundwater at each monitoring well and riser was measured from the top of the casing to the nearest 0.01 foot using an electric sounder. The top of the casing elevation data and the depth to groundwater at each monitoring well and riser were used to calculate the groundwater elevation. Kier Wright Civil Engineers Surveyors, Inc. surveyed the wells and risers on August 9, 2002. With the exception of monitoring well MW-11, which could not be accessed due to obstacles preventing the proper use of surveying equipment, the top of casing elevations were based on the survey data measured at this time. The elevation data was based on an assumed datum of 14.20 NAVD88. Appendix A includes the survey data.

Prior to the collection of 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 pH, temperature, electric conductivity (EC), turbidity, and Oxygen Reduction Potential (ORP) were measured in-situ using a Horiba, Model

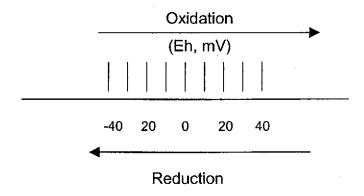
U-22 multi-parameter instrument. The Horiba, Model U-22 was calibrated at the Site using standard solutions and procedures provided by the manufacturer. Dissolved oxygen (DO) was measured with a dissolved oxygen meter, YSI Model 50B; see the field notes in Appendix A for details of the field measurements. 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.

The Horiba U-22 portable microprocessor-based turbidity probe provides labgrade 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). 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<sub>2</sub> in water is low (9 mg/L at 25 °C and 11 mg/L at 5 °C), and because the rate of O<sub>2</sub> 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 DO 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)<sub>3</sub>, SO<sub>4</sub><sup>2-</sup>, NŌ<sub>3</sub>, MnO<sub>2</sub>, 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<sup>+2</sup>, SO<sub>4</sub><sup>-2</sup>, and NO<sub>3</sub><sup>-</sup>-N concentrations once stabilization occurred.

Fe<sup>+2</sup>, SO<sub>4</sub><sup>-2</sup>, NO<sub>3</sub>-N were measured colorimetrically using the Hach Colorimeter Model 890. The Hach Model 890 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<sup>+2</sup> was measured colorimetrically using Method 8146 (1,10-phenanthroline Method). The 1,10-phenathroline indicator in Ferrous Iron Reagent reacts with Fe<sup>+2</sup> in the sample to form an orange color. The intensity of the orange color is proportional to the iron concentration.

SO<sub>4</sub>-2 was measured colorimetrically using Method 8051 of Sulfa Ver 4 Method. Sulfate ions in the sample react with barium in the 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<sub>3</sub>-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 three 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 on ice, in a cooler and maintained at 4°C. A chain of custody (COC) form was written for each sample and was placed along with the samples in the cooler. The following day, July 31, 2002, SOMA's field crew delivered the groundwater samples to Curtis & 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 using EPA Method 5030B and measured using EPA Method 8015B(M). 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 July 30, 2002 groundwater monitoring event.

#### 4.1 Field Measurements

Table 1 presents the calculated groundwater elevations at each groundwater monitoring well and riser. No free product was detected in any of the monitoring wells. The calculated groundwater elevation data was used to evaluate the impact of the French drain and determine the extent of the groundwater extraction capture zone. The groundwater elevation data presented in Table 1 is based on survey data measured by Kier Wright Civil Engineers Surveyors, Inc. on August 9, 2002. No survey was conducted for monitoring well MW-11; surveying equipment could not be set-up due to obstacles around this well.

As Table 1 shows, depths to groundwater in the monitoring wells ranged from 10.93 feet in monitoring wells MW-10 and MW-12 to 13.28 feet in monitoring well MW-6. The corresponding groundwater elevations, with the exception of monitoring well MW-11 which will be surveyed at a later date, ranged from 25.78 feet in monitoring well MW-10 to 28.22 feet in monitoring well MW-5. Depths to groundwater inside the risers ranged from 11.79 feet in the west riser to 12.81 feet in the east riser. The corresponding groundwater elevations ranged from 27.25 feet in the east riser to 27.42 feet in the center riser.

Table 2 shows the historical groundwater elevations at different groundwater

monitoring wells and the French drain risers. As previously mentioned the monitoring wells and French drain risers, with the exception of monitoring well MW-11, were resurveyed on August 9, 2002. The new survey was conducted to comply with an Electronically Deliverable Format (EDF) request made by the State Water Resources Control Board (SWRCB) Database. Due to the new survey data, further monitoring events will be needed to better determine groundwater elevation trends.

The groundwater elevation contour map, depicted in feet, as measured on July 30, 2002 is displayed in Figure 3. As Figure 3 shows, in general, the groundwater flows toward the southwest, at an average gradient of 0.005 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 6.43 in monitoring well MW-12 to 9.03 in monitoring well MW-8. The temperature measurements ranged from 18.85 °C in monitoring well MW-4 to 20.62 °C in monitoring well MW-7. EC ranged from 757  $\mu$ S/cm in monitoring well MW-7 to 1,250  $\mu$ S/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 detected in all of the monitoring wells during the Third Quarter 2002 monitoring event. The concentration contour map for DO during the Third Quarter 2002 is displayed in Figure 4. The lowest DO concentration was detected off-site in monitoring well MW-10 at 0.09 mg/L, the highest DO concentration was detected on-site in monitoring well MW-4 at 4.47 mg/L. The generally low oxygen contents may suggest the presence of anaerobic biodegradation processes in this groundwater system. Based on the low off-site DO readings, petroleum hydrocarbons may have undergone an anaerobic degradation in these off-site

wells.

Turbidity of the groundwater samples ranged from 1.7 NTU in monitoring well MW-12 to 157.0 NTU in monitoring well MW-8. The Redox potential in the groundwater samples ranged from –125 mV in monitoring well MW-3 to +57 mV in monitoring well MW-2. Monitoring wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-11, and MW-12 showed strongly reduced conditions, while monitoring wells MW-2 and MW-10 were the only monitoring wells 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, which is production of methane gas, is quite possible.

Ferrous iron was detected in all of the groundwater samples. Ferrous iron concentrations ranged from 0.16 mg/L in monitoring well MW-4 to 3.3 mg/L in monitoring wells MW-3 and MW-6. High concentrations of ferrous iron in groundwater are a good indication of biological activities. The contour map of ferrous iron concentrations in the groundwater as measured on July 30, 2002 is displayed in Figure 5. As Figure 5 shows, high ferrous iron concentrations were detected in the vicinity of the USTs in monitoring well MW-3, as well as monitoring well MW-6, and off-site in monitoring well MW-12. The presence of high ferrous iron concentrations in combination with low concentrations of other electron receptors, such as DO, sulfate, and nitrate 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, MW-3 and MW-12. Detected sulfate concentrations ranged from 1 mg/L in monitoring well MW-8 to 50 mg/L in monitoring well MW-2. Sulfate concentrations decreased in monitoring wells MW-5, MW-8, and MW-12. Sulfate-depleted subsurface contaminated environments may reveal a strong demand by microorganisms for a source of terminal electron acceptors for oxidizing contaminant hydrocarbons (Lovley et. al., 1994). The contour map of sulfate concentrations in the groundwater as measured on July 30, 2002 is displayed in Figure 6. As shown in Figure 6, 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, and off-site in monitoring well MW-12. The highest on-site sulfate concentration was measured in monitoring well MW-2 at 50 mg/L, near the fuel islands, while the highest off-site concentration was measured in monitoring well MW-11 at 31 mg/L.

During this monitoring event, nitrate was detected in monitoring wells MW-4, MW-5, MW-6, MW-11 and MW-12, with concentrations ranging from 0.7 mg/L in monitoring well MW-4 to 11 mg/L in monitoring well MW-6. The low levels of DO and consumption of 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 7. As Figure 7 shows, nitrate was below the measurable specifications of the equipment in the vicinity of the USTs, the dispenser islands in monitoring well MW-2, and off-site in monitoring well MW-10. The highest on-site sulfate concentration was detected in monitoring well MW-6, while the highest off-site concentration was detected in monitoring well MW-11 at 6.7 mg/L.

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.

The field notes for the physical, chemical and biodegradation parameters are shown in Appendix A.

# 4.2 Laboratory Analysis

Table 5 presents the results of the laboratory analyses on the groundwater samples collected on July 30, 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 110  $\mu$ g/L in monitoring well MW-5 to 45,000  $\mu$ g/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 8. As Figure 8 shows, high TPH-g concentrations were detected in the vicinity of the USTs, in monitoring wells MW-1 and MW-3. TPH-g was also detected in all off-site monitoring wells, where the highest TPH-g concentration was detected in monitoring well MW-12 at 2,200  $\mu$ g/L.

As shown in Table 5, the following trends were observed for BTEX analytes during this monitoring event. All BTEX analytes, with the exception of a slight trace of ethylbenzene, were below the laboratory reporting limit for monitoring well MW-5. Toluene was below the laboratory reporting limit also for monitoring wells MW-11 and MW-12. The highest benzene concentration was detected in

monitoring well MW-3 at 8,900  $\mu$ g/L. The highest toluene concentration was detected in monitoring well MW-1 at 2,500  $\mu$ g/L. Ethylbenzene was detected in all of the monitoring wells, and ranged in concentration from 0.61  $\mu$ g/L in monitoring well MW-11 to 1,600  $\mu$ g/L in monitoring well MW-3. A high ethylbenzene concentration was also detected in monitoring well MW-6 at 1,400  $\mu$ g/L. The highest total xylenes concentration was detected in monitoring well MW-3 at 5,600  $\mu$ g/L, however, high concentrations were also detected in monitoring wells MW-1 and MW-6 at 4,400  $\mu$ g/L and 3,770  $\mu$ g/L, respectively. The contour map of benzene concentrations in the groundwater is displayed in Figure 9. As Figure 9 shows, the highest benzene concentration was detected in the vicinity of the USTs, in monitoring well MW-3. High benzene concentrations were also detected in monitoring wells MW-1 and MW-6.

As shown in Table 5, MtBE was reported using both EPA Methods 8260B and 8021B. MtBE was below the laboratory reporting limit for monitoring wells MW-2, MW-4, MW-6, and MW-11, and confirmed below the laboratory reporting limit in monitoring well MW-5. The highest MtBE concentration was detected in monitoring well MW-1. The contour map of MtBE concentrations, based on EPA Method 8260B, in the groundwater is displayed in Figure 10. As Figure 10 shows, the highest MtBE concentration was detected in the vicinity of the USTs, in monitoring well MW-1. MtBE has also migrated as far off-site as monitoring well MW-12. This can be attributed to the southwesterly groundwater flow direction and the solubility of MtBE.

The laboratory report for the Third Quarter 2002 monitoring event is included as Appendix B.

Table 6 shows the historical groundwater analytical data. Since the previous monitoring event the following concentration trends have been observed. TPH-g decreased in all monitoring wells with the exception of monitoring well MW-6. In

general, all BTEX analytes decreased in all of the monitoring wells, with the exception of the following; benzene which increased in monitoring well MW-3, toluene increased in MW-8, and MW-6 where all BTEX analytes increased. MtBE has significantly decreased in monitoring well MW-1, as well as in monitoring well MW-3, and only slightly increased in monitoring wells MW-7 and MW-12.

# 5.0 Groundwater Treatment System Operation

The treatment system began operation on December 9, 1999. Since that time, 1,641,650 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 August 23, 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 were used to acquire a discharge permit from EBMUD.

A total of 29,250 gallons of chemically impacted groundwater has been treated since the beginning of the Third Quarter 2002 (July 2002). The effluent passing both Granulated Active Carbon (GAC) units is regularly being sampled 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 11.

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 compliance with the permit. The laboratory reports for the treatment system are included as Appendix C of this report.

In the beginning of July 2002, the solenoid valve which shutdown the compressor during high water level conditions was removed from the system. The valve was deemed to be ineffective and jammed easily during the compressor's operation.

The cumulative weight of TPH-g and MtBE extracted from the groundwater since the installation of the treatment system is displayed in Figure 12. As Figure 12 shows, an approximate total of 157 pounds of TPH-g and 62 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 demoisturizing 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 has extracted and treated more than 3,000,000 liters per 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 the three of remaining GAC units were replaced. The system was then 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, the 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 the saturated soil conditions on-site. The system was turned back on June 12, 2002 and has been operational, with the exception of the time period from August 15 to August 23, 2002 due to low influent readings. The total mass of petroleum hydrocarbons removed by the VES is shown in Table 8. As of August 26, 2002, the VES has removed 398.43 pounds of petroleum hydrocarbons from the vadose zone beneath the Site.

## 7.0 Conclusions and Recommendations

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

- The groundwater flows toward the southwest, at an average gradient of 0.005 feet/feet.
- The wells and French drain risers were re-surveyed during the Third Quarter 2002. The surveying was conducted to comply with EDF requirements as required by the SWRCB.
- 3. The following groundwater biodegradation parameter trends were

observed during the Third Quarter 2002 monitoring event. The lowest DO concentration was detected off-site in monitoring well MW-10 at 0.09 mg/L; the highest DO concentration was detected on-site in monitoring well MW-4. The low oxygen contents may suggest the presence of anaerobic biodegradation processes in this groundwater system. Based on the low off-site DO readings, petroleum hydrocarbons may have undergone an anaerobic degradation in these off-site wells.

- 4. High ferrous iron concentrations were detected in the vicinity of the USTs in monitoring well MW-3, as well as monitoring well MW-6, and off-site in monitoring well MW-12. The presence of high ferrous iron concentrations in combination with low concentrations of other electron receptors, such as DO, sulfate, and nitrate is indicative of anaerobic biodegradation beneath the Site.
- 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, and off-site in monitoring well MW-12. The highest on-site sulfate concentration was measured in monitoring well MW-2 at 50 mg/L, near the fuel islands, while the highest off-site concentration was measured in monitoring well MW-11 at 31 mg/L.
- 6. Nitrate was below the measurable specifications of the equipment in the vicinity of the USTs, the dispenser islands in monitoring well MW-2, and off-site in monitoring well MW-10. The highest on-site sulfate concentration was detected in monitoring well MW-6, while the highest off-site concentration was detected in monitoring well MW-11 at 6.7 mg/L.
- 7. In the contaminated groundwater system beneath the Site, microorganisms have consumed most of the electron receptors, such as

sulfate and nitrate; 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.

- 8. The highest concentrations of TPH-g, benzene, and MtBE were detected in the vicinity of the USTs as shown in Figures 8, 9, and 10. 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.
- 9. TPH-g decreased in all monitoring wells with the exception of monitoring well MW-6.
- 10. BTEX analytes decreased in all of the monitoring wells, with the exception of the following; benzene which increased in monitoring well MW-3, and toluene increased in MW-8, and MW-6 where all BTEX analytes increased.
- 11. MtBE significantly decreased in monitoring wells MW-1 and MW-3, and only slightly increased in monitoring wells MW-7 and MW-12.
- 12. The treatment system began operation on December 9, 1999. Since that time, 1,641,650 gallons of groundwater has been treated and discharged into EBMUD's sewer system under the existing discharge permit (as of August 23, 2002).
- 13. All effluent samples have maintained compliance with the permit, with all contaminant concentrations remaining below the allowable discharge requirements.

- 14. As Figure 12 shows, approximately 157 pounds of TPH-g and 62 pounds of MtBE have been removed during the operation of the treatment system, over its entire life to date.
- 15. As of August 26, 2002, the VES has removed 398.43 pounds of petroleum hydrocarbons from the vadose zone beneath the Site.

## 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.

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# **TABLES**

Table 1
Groundwater Elevation Data, July 30, 2002
3609 International Boulevard, Oakland, California

Monitoring Well	Top of Casing Elevation <sup>1</sup> (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Free Product
MW-1	40.11	12.80	27.31	ND
MW-2	40.71	12.70	28.01	ND
MW-3	40.91	13.25	27.66	ND
MW-4	40.01	12.62	27.39	ND
MW-5	41.16	12.94	28.22	ND
MW-6	40.92	13.28	27.64	ND
MW-7	39.94	12.15	27.79	ND
MW-8	39.38	11.79	27.59	ND
MW-10	36.71	10.93	25.78	ND
MW-11	NM	12.39	NM	ND
MW-12	36.84	10.93	25.91	ND
F.D. Center	39.35	11.93	27.42	ND
F.D. East	40.06	12.81	27.25	ND
F.D. West	39.16	11.79	27.37	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.

1 Top of casing elevations were re-surveyed to comply with the EDF requirements for electronic reporting of data to the State Water Resources Control Board Database on August 9, 2002.

NM: MW-11 was not surveyed due to obstacles around the well which prevented the use of survey equipment

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

		Monitoring Wells								French Drain				
Date	MW≅1	MW-2	- MW-3-	- MW4	*MW-5	MW-6	MW•7	MINVE	MW-10	MW-11	: MW=12	FDC	FDE	FDW
Jul-02 <sup>1</sup>	27.31	28.01	27.66	27.39	28.22	27.64	27.79	27.59	25.78	NM	25.91	27.42	27.25	27.37
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.	NΑ
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	NÁ	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	ŇΑ	NA	NA						
Oct.94	82.60	83.22	81.99	NA	NA	NA	NA	NA NA						

#### Notes:

<sup>1</sup>Top of casing elevations were re-surveyed to comply with the EDF requirements for electronic reporting of data to the State Water Resources Control Board Database on August 9, 2002.

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, July 30, 2002
3609 International Blvd., Oakland, CA

Monitoring Well	рН	Temp (°C)	EC (uS/cm)
MW-1	6.93	19.93	984
MW-2	6.88	20.19	881
MW-3	6.68	19.97	1250
MW-4	6.79	18.85	834
MW-5	6.93	20.30	920
MW-6	6.83	19.46	926
MW-7	7.12	20.62	757
MW-8	9.03	19.56	932
MW-10	6.62	20.03	920
MW-11	6.78	18.92	945
MW-12	6.43	19.36	940

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

		Dissolved Oxygen	Turbidity	Redox Potential	Ferrous Iron	Sulfate	Nitrate
Well	Date	(mg/L)	(NTU)	(m <b>V</b> )	(mg/L)	(mg/L)	(mg/L)
MW-1	July 30, 2002	2.37	24.8	-102	2.13	0	0.0
	May 7, 2002	0.00	287	-81	3.09	0	0.0
1	February 21, 2002	0.00	1				
	-		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 December 30, 1997	0.14 0.50	NM	NM	3.17	1	0.
Sala Sever	December 30, 1997	0.30	NM	NM	3.04	<1	<0.1
MW-2	July 30, 2002	0.37	111.0	57	I 0.43	50.0	0.0
	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	0.09	25.0	0.0
	March 13, 2001	0.89	24.15	117.9	0.71		
	November 2, 2000	1.35	24.15 ND	117.9	0.10	80.0 7.9	6.8
	August 9, 2000	0.76	1,000	-74	0.69	0.0	0.0 5.4
	May 31, 2000	0.80	30.9	-74 -55	0.18	54.0	2.5
	February 7, 2000	1.12	NM	-33 -20	0.16	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
	The same of the sa	See a See See See See See See See See Se			ery also regeration		
MW-3	July 30, 2002	0.31	40.1	-125	3.30	0	0.0
	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	NΑ	NA
	August 8, 2001	1.17	28	-54	7.00	11	0.7
	May 22, 2001	80.0	98	-32	6.72	16	0.2
	March 13, 2001	0.62	2 <b>6</b> .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	Ō	0.0
	June 10, 1999	0.42	NM	NM	3.10	Ō	0.0
	June 30, 1998	2.00	NM	MM	0.37	77	0.1
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Table 4
Groundwater Biodegradation Parameters
3609 International Boulevard, Oakland, California

		Dissolved		Redox	Ferrous Iron	Sulfate	Nitrate
Well	Date	Oxygen (mg/L)	Turbidity (NTU)	Potential (mV)	(mg/L)	(mg/L)	(mg/L)
MW-4	July 30, 2002	4.47	6.3	-34	0.16		0.7
	May 7, 2002	0.00	9.7	-34 -26	1.05	38	0.7
	February 21, 2002	1.12	707	-26 -26	3.90	30 4	
	November 19, 2001	0.56	58.7		1		0.0
l	August 8, 2001	1.54		-108	3.20	37	0.0
l			320	320	0.09	30	- 6.0
	May 22, 2001 March 13, 2001	1.27	50	193.9	0.47	31	0.1
ł	1	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
Andrew Company	December 30, 1997	<0.1	NM	NM	0.39	42	4.5
MW-5	July 30, 2002	0.07	07.5		1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	A =	
14144-3		0.37	27.5	-43	0.28	38	0.8
	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	4 <del>9</del>	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
Authoritation	December 30, 1997	<0.1	NM	NM	0.94	18	0.3
	1 00 0000	er (Ne German 1971), by year or on	Particular and a second second		and the second second	and the second of the	
MW-6	July 30, 2002	1.39	127.0	-58	3.30	36	11.0
	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

		Dissolved		Redox	Ferrous Iron	Sulfate	Nitrate
Well	Data	Oxygen	Turbidity	Potential			
MW-7	Date	(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)
MINA-1	July 30, 2002	1.15	16.6	-64	0.68	28	0.0
	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 NA	0.78	4	0.5
	December 30, 1997	1.20	NM	NM	0.23	32	0.2
MW-8	July 30, 2002	0,18	457.0	404	T 420	4	0.0
11144-0	May 7, 2002	0.00	157.0	-124 443	1.38	1 2	<b>0.0</b>
	February 21, 2002	0.00	308 567	-113	0.80	0	0.0
	November 19, 2001		567	-64	3.08	1	0.0
	·	0.46	53.5	-142	>3.3	•	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	- <del>9</del> 1	3.30	7	0.0
	May 31, 2000	0.45	13	- <del>9</del> 5	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 June 30, 1998	0.10 1.30	NM NM	NM	4.70	0	0.0
	December 30, 1997	2.50	NM NM	NM NM	2.82 3.35	3 <1	<0.1 0.1
Secretal Marghrey	December 30, 1991	2.00	INIV	INIVI	_ 3.33		U.1
MW-10	July 30, 2002	0.09	12.7	34	0.18	25	0.0
	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	0.10	0	0.0
	November 2, 2000	0.53	ND	26.7	0.42	13	1.3
	August 9, 2000	0.33	116	19	0.42	0	0.0
	May 31, 2000	0.40	22.4	17	0.40	0	0.0
	February 7, 2000	0.40	22.4 NM	. 55	0.00	0	0.0
	November 9, 1999	0.44	NM	. JG NM	0.37	12	0.0
	August 23, 1999	0.50	NM	NM	0.52	9	0.0
	June 10, 1999	0.50	NM NM	NM	0.52	0	0.0
	June 30, 1998	0.20	NM NM	NM NM	0.25	۰ <1	<0.1
	December 30, 1997	<0.1	NM	NM	2.21	<1	0.3
Vinisely (SSE) WF	Dede(11001 00, 1001	<b>70.1</b>	1141	7 41VI	2.21		0.5

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

Well	Date	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Redox Potential (mV)	Ferrous Iron	Sulfate	Nitrate
MW-11	July 30, 2002				(mg/L)	(mg/L)	(mg/L)
19144-11	May 7, 2002	<b>0.21</b> 0.00	6.8 155	-22	0.18	<b>31</b> 28	6.7
	February 21, 2002	2.52	168	-29 31	0.49 0.00	28 40	4.6
	November 19, 2001	0.72					0.0
			8.4	-18	2.30	30	1.0
	August 8, 2001	NA 2.43	NA 22.2	NA In -	NA n=1	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
				13.62 / 149			Later to Care to Associate
MW-12	July 30, 2002	0.29	1.7	-60	2.37	0	3.3
	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	Ö	0.0
	November 2, 2000	0.60	19	12	1.93	6	0.0
	August 9, 2000	0.31	56	-48	2.84	ŏ	0.0
	May 31, 2000	0.29	7.7	-54	2.11	Ö	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

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

OL: Outside the Limits of the measuring instrumentation

Table 5
Groundwater Analytical Data, July 30, 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 <sup>1</sup> (μg/L) 8260B/8021B
MW-1	29,000	2,400	2,500	920	4,400	13,000/15,000
MW-2	180	11	6.3	9.4	27	<2.0
MW-3	45,000	8,900	1,700	1,600	5,600	2,600/3,200
MW-4	450	20	24	19	74	<2.0
MW-5	110	<0.5	<0.5	0.77	<0.5	<0.5/4.1
MW-6	24,000	1,000	410	1,400	3,770	<20
MW-7	270	5.3	1.3 C	2.3	8.1	46 / 35
MW-8	8,400	340	78	530	517	1,200/1,400
MW-10	160	26°	0.55	8.1	1	72 / 63
MW-11	120	5.6	<0.5	0.61	0.53	<2.0
MW-12	2,200	57	<0.5	11	2.6	100 / 110

Not detected above laboratory reporting limits.

 $<sup>^{\</sup>mathrm{c}}$  : Presence confirmed, but confirmation concentration differed by more than a factor of two.

<sup>&</sup>lt;sup>1</sup> MtBE was analyzed using the EPA Method 8021B and confirmed using 8260B.

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

Monitoring	_	TPH-g	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE 1 (µg/L)
Well	Date	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	8260B/8021B
MW-1	17/30/02	29,000	2,400	2,500	920	4,400	13,000/15,000
	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	4,7
	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.	N/A	NA	NA	NA
	12/9/96	NA	ΝA	NA	NA	NA	NA
,	4/3/96	31,000	98	120	63	170	NÁ
	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
إر	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
	10/5/94	320,000	24,000	21,000	2,600	15,000	NA
₩-2	10/5/94 7/30/02	320,000 180	24,000 11	21,000	2,600 9,4	Compression Cognifica (#0000004)	NA <2.0
VIW-2	7/30/02	180			9,4	<b>College</b> Service	
VIW-2	<b>7/30/02</b> 5/7/02	180 1,800	11 31	<b>6.3</b> 140	<b>9.4</b> 110	27 348	<2.0
VIW-2	<b>7/30/02</b> 5/7/02 2/21/02	180 1,800 1,700	11 31 26	6.3 140 180	9.4 110 95	27 348 360	<2.0 <2
WW-2	<b>7/30/02</b> 5/7/02 5/21/02 11/19/01	180 1,800 1,700 470	11 31 26 13	6.3 140 180 64	9.4 110 95 22	27 348 360 83	<2.0 <2 <2 <2 14
WW-2	<b>7/30/02</b> 5/7/02 2/21/02 11/19/01 8/8/01	180 1,800 1,700 470 125	11 31 26 13 4	6.3 140 180 64 4	9.4 110 95 22 3	27 348 360 83 11	<2.0 <2 <2 <2 14 ND
VW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01	180 1,800 1,700 470 125 870	11 31 26 13 4 37	6.3 140 180 64 4 75	9.4 110 95 22 3 55	27 348 360 83 11 179	<2.0 <2 <2 <2 14 ND 2.7
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01	180 1,800 1,700 470 125 870 932	11 31 26 13 4 37 18	6.3 140 180 64 4 75 34	9.4 110 95 22 3 55 1.3	27 348 360 83 11 179 225	<2.0 <2 <2 <2 14 ND 2.7 ND
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00	180 1,800 1,700 470 125 870 932 ND	11 31 26 13 4 37 18 ND	6.3 140 180 64 4 75 34 ND	9.4 110 95 22 3 55 1.3 ND	27 348 360 83 11 179 225 ND	<2.0 <2 <2 <2 14 ND 2.7 ND ND
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00	180 1,800 1,700 470 125 870 932 ND <50	11 31 26 13 4 37 18 ND <5	6.3 140 180 64 4 75 34 ND <5	9.4 110 95 22 3 55 1.3 ND <5	27 348 360 83 11 179 225 ND <5	<2.0 <2 <2 <14 ND 2.7 ND ND <5
MW-2	7/30/02 5/7/02 2/21/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00	180 1,800 1,700 470 125 870 932 ND <50 2,930	11 31 26 13 4 37 18 ND <5	6.3 140 180 64 4 75 34 ND <5 330	9.4 110 95 22 3 55 1.3 ND <5 130	27 348 360 83 11 179 225 ND <5	<2.0 <2 <2 <14 ND 2.7 ND ND <5 <5
W-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400	11 31 26 13 4 37 18 ND <5 130 372	6.3 140 180 64 4 75 34 ND <5 330 639	9.4 110 95 22 3 55 1.3 ND <5 130 46	27 348 360 83 11 179 225 ND <5 570	<2.0 <2 <2 <14 ND 2.7 ND ND <5 <5 <8
VVV-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50	11 31 26 13 4 37 18 ND <5 130 372 <5	6.3 140 180 64 4 75 34 ND <5 330 639 <5	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5	27 348 360 83 11 179 225 ND <5 570 134 <5	<2.0 <2 <2 <14 ND 2.7 ND ND <5 <5 8
W-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60	11 31 26 13 4 37 18 ND <5 130 372 <5 6	6.3 140 180 64 4 75 34 ND <5 330 639 <5	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5	27 348 360 83 11 179 225 ND <5 570 134 <5	<pre>&lt;2.0 &lt;2 &lt;2 &lt;14 ND 2.7 ND ND &lt;5 &lt;5 8 &lt;5 ND</pre>
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744	<2.0 <2 <2 <2 14 ND 2.7 ND ND <5 <5 8 <5 ND ND
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900	<2.0 <2 <2 <14 ND 2.7 ND ND <5 <5 ND ND 55
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/8/99 8/23/99 6/10/99 3/16/99 12/16/98	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500	\$\frac{2.0}{2}\$ \$\frac{2}{2}\$ \$\frac{14}{2}\$ \$\text{ND}\$ \$\text{ND}\$ \$\frac{5}{5}\$ \$\text{ND}\$ <p< td=""></p<>
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360	42.0 42.0 42 44 ND 2.7 ND 45 5 8 5 7 ND 55 55 6 5 6 7 8 8 8 8 8 9 8 8 8 9 8 8 8 8 8 8 8 8 9 8<
W-2	7/30/02 5/7/02 2/21/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300	\$\frac{\squares 2.0}{\squares 2.0}\$ \$\squares 2.7 \$\text{ND}\$ \$\squares 5.7 \$\text{ND}\$ \$\squares 5.5 \$\squares 0.5 \$\text{NA}\$
viw-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/8/99 8/23/99 6/10/99 3/16/98 9/29/98 6/30/98 12/30/97	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 25,000 35,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000	<2.0 <2.0 <2 <2 14 ND 2.7 ND <5 8 <5 ND ND 55 <0.5 NA NA
VIW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/89 6/10/99 3/16/98 9/29/98 6/30/98 12/30/97 4/10/97	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000 35,000 53,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	<ul> <li>\$\frac{1}{2}\$.0</li> <li>\$\frac{2}{2}\$</li> <li>\$\frac{1}{2}\$</li> <li>\$\frac{1}{4}\$</li> <li>\$\text{DD}\$</li> <li>\$\frac{1}{5}\$</li> <li>\$\text{ND}\$</li> <li>\$\frac{1}{5}\$</li> <li>\$\text{ND}\$</li> <li>\$\frac{1}{5}\$</li> <li>\$\text{NA}\$</li> <li>\$\text{ND}\$</li> </ul>
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 3/16/99 12/16/98 9/29/98 6/30/97 4/10/97 12/9/96	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000 35,000 6,200	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,600 37 2	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	<ul> <li>\$\frac{1}{2}\$.0</li> <li>\$\frac{2}{2}\$.0</li> <li>\$\frac{2}{2}\$.14</li> <li>\$\text{ND}\$.2.7</li> <li>\$\text{ND}\$.0</li> <li>\$\frac{5}{2}\$.8</li> <li>\$\frac{5}{2}\$.5</li> <li>\$\text{ND}\$.0</li> <li>\$\text{ND}\$.0</li> <li>\$\text{ND}\$.0</li> <li>\$\text{ND}\$.0</li> </ul>
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98 12/30/97 4/10/97 12/9/96 4/3/96	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 25,000 25,000 53,000 6,200 27,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 2,000 4,900 150 11 0	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	\$\frac{\cup 2.0}{\cup 2}\$ \$\frac{\cup 2}{\cup 4}\$ \$\frac{\cup 14}{\cup ND}\$ \$\cup 5\$ \$\cup 8\$ \$\cup 50\$ \$\cup 50\$ \$\cup 50\$ \$\cup 50\$ \$\cup 8\$ \$\cup 90\$ </td
WW-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98 12/30/97 4/10/97 12/9/96 4/3/96	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 25,000 35,000 6,200 27,000 46,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 2,900 4,900 150 11 0	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7 92 130	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44 93	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0 14 13 240	\$\frac{\cappa_2.0}{\cappa_2.0}\$ \$\frac{\cappa_2}{\cappa_2.7}\$ \$\cappa_2.7 \$\cappa_2.
viw-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/97 4/10/97 12/9/96 4/3/96 1/3/96 10/2/95	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000 35,000 6,200 27,000 46,000 46,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11 0 160 160	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7 92 130 130	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44 93 93	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0 14 13 240 240	\$\frac{2.0}{2.2}\$ \$\frac{2}{2}\$ \$\frac{14}{2}\$ \$\frac{14}{2}\$ \$\frac{14}{2}\$ \$\frac{14}{2}\$ \$\frac{1}{2}\$ <
viw-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/8/99 8/23/99 6/10/99 8/16/99 12/16/98 9/29/98 6/30/98 12/30/97 4/10/97 12/9/96 4/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96 1/3/96	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 25,000 35,000 6,200 27,000 46,000 48,000 8,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11 0 160 160 220	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7 92 130 130 330	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44 93 93 93 350	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0 14 13 240 240 660	<ul> <li>2.0</li> <li>2.1</li> <li>2.2</li> <li>2.4</li> <li>ND 2.7</li> <li>ND 55</li> <li>ND 555</li> <li>ND ND 555</li> <li>ND ND N</li></ul>
viw-2	7/30/02 5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/97 4/10/97 12/9/96 4/3/96 1/3/96 10/2/95	180 1,800 1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000 35,000 6,200 27,000 46,000 46,000	11 31 26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11 0 160 160	6.3 140 180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7 92 130 130	9.4 110 95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44 93 93	27 348 360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0 14 13 240 240	\$\frac{2.0}{2.2}\$ \$\frac{2}{2}\$ \$\frac{14}{2}\$ \$\frac{14}{2}\$ \$\frac{14}{2}\$ \$\frac{14}{2}\$ \$\frac{1}{2}\$ <

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 <sup>1</sup> (µg/L) 8260B/8021E
MW-3	7/30/02	45,000	8,900	1,700	1,600	5,600	2,600/3,200
	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	NΑ	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.
						ALC: U.S.	
VIVV-4	The second secon		The second second second second	000100000000000000000000000000000000000	ALC: A PROPERTY OF THE PROPERT	A CONTRACTOR OF THE PERSON NAMED IN	The state of the s
	1 7/30/02	450	I 20	24	19	74	<2.0
	<b>7/30/02</b> 5/7/02	<b>45</b> 0 570	20 72	<b>24</b> 29		74 74	<2.0 <2
	5/7/02	570	72	29	27		
	5/7/02 2/21/02	570 450	72 63	29 4.1	27 22	74 28.7	<2 <2
	5/7/02 2/21/02 11/19/01	570 450 670	72 63 180	29 4.1 5	27 22 17	74 28.7 53	<2 <2 ND
	5/7/02 2/21/02 11/19/01 8/8/01	570 450 670 133	72 63 180 12	29 4.1 5 2.2	27 22 17 3.9	74 28.7 53 9	<2 <2 ND ND
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01	570 450 670 133 80	72 63 180 12 12	29 4.1 5 2.2 1.9	27 22 17 3.9 4.1	74 28.7 53 9 9.8	<2 <2 ND ND ND
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01	570 450 670 133 80 62	72 63 180 12 12 ND	29 4.1 5 2.2 1.9 ND	27 22 17 3.9 4.1 3.2	74 28.7 53 9 9.8 8.7	₹2 ₹2 ₹2 ₹2 ₹2 ₹2
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00	570 450 670 133 80 62 ND	72 63 180 12 12 ND 5.30	29 4.1 5 2.2 1.9 ND ND	27 22 17 3.9 4.1 3.2 ND	74 28.7 53 9 9.8 8.7 8	2 2 2 ND ND ND ND ND ND ND ND
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00	570 450 670 133 80 62 ND 370	72 63 180 12 12 ND 5.30 5.08	29 4.1 5 2.2 1.9 ND ND	27 22 17 3.9 4.1 3.2 ND	74 28.7 53 9 9.8 8.7 8	V2 V2 V3 V4 V4 V5
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00	570 450 670 133 80 62 ND 370 552	72 63 180 12 12 12 ND 5.30 5.08	29 4.1 5 2.2 1.9 ND ND <5	27 22 17 3.9 4.1 3.2 ND <5	74 28.7 53 9 9.8 8.7 8 <5	V2 V2 ND ND ND ND V5 V5
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00	570 450 670 133 80 62 ND 370 552 7,800	72 63 180 12 12 ND 5.30 5.08 42 1,200	29 4.1 5 2.2 1.9 ND ND 5 19	27 22 17 3.9 4.1 3.2 ND <5 16	74 28.7 53 9 9.8 8.7 8 <5 67	2 2 NO
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99	570 450 670 133 80 62 ND 370 552 7,800 <50	72 63 180 12 12 ND 5.30 5.08 42 1,200 <5	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5	27 22 17 3.9 4.1 3.2 ND <5 16 <5	74 28.7 53 9 9.8 8.7 8 <5 67 781	V V D D D D D S 5 5 5 5
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99	570 450 670 133 80 62 ND 370 552 7,800 <50 660	72 63 180 12 12 12 ND 5.30 5.08 42 1,200 <5 497	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41	27 22 17 3.9 4.1 3.2 ND <5 16 <5 <5	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5	2 2 20 20 20 20 20 20 20 20 20 20 20 20
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000	72 63 180 12 12 12 ND 5.30 5.08 42 1,200 <5 497 298	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44	27 22 17 3.9 4.1 3.2 ND <5 16 <5 <5 54	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5 145	2 2 20 20 20 20 20 20 20 20 20 20 20 20
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000	72 63 180 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35	27 22 17 3.9 4.1 3.2 ND <5 16 <5 54 19	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5 145 64 56	2 2 NO
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000 600	72 63 180 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590	29 4.1 5 2.2 1.9 ND ND V5 19 61 V5 41 44 35 33	27 22 17 3.9 4.1 3.2 ND <5 16 <5 54 19 19 28	74 28.7 53 9 9.8 8.7 8 <55 67 781 <55 145 64 56 94	V2 V2 ND ND ND ND V5 V6 V6 V7 V7 V8 V8<
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/98 9/29/98	570 450 670 133 80 62 ND 370 552 7.800 <50 660 1,000 6,200	72 63 180 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590 910	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35 33 77	27 22 17 3.9 4.1 3.2 ND <5 16 <5 54 19 19 28 68	74 28.7 53 9 9.8 8.7 8 <55 67 781 <55 145 64 56 94 200	V2 V2 ND ND ND ND V5 V5 V5 V5 E 13 11 24 18
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000 6,200 1,700	72 63 180 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590 910 780	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35 33 77 160	27 22 17 3.9 4.1 3.2 ND <5 16 <5 5 41 19 19 28 68 54	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5 145 64 56 94 200 200	V2 V2 ND ND ND ND V5 V6 V8 V8<
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98 12/30/97	570 450 670 133 80 62 ND 370 552 7.800 <50 660 1,000 6,200 1,700 2,300	72 63 180 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590 910 780 410	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35 33 77 160 270	27 22 17 3.9 4.1 3.2 ND <5 16 <5 54 19 19 28 68 54 100	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5 145 64 56 94 200 200 1,500	V2 V2 ND ND ND ND V5 V6 V7 V8 V8<
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98 12/30/97 4/10/97	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000 600 1,400 6,200 1,700 2,300 ND	72 63 180 12 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590 910 780 410 ND	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35 33 77 160 270 ND	27 22 17 3.9 4.1 3.2 ND <5 16 <5 <5 54 19 19 28 68 54 100 ND	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5 145 64 56 94 200 200 1,500 ND	2
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98 12/30/97 4/10/97 12/9/96	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000 600 1,400 6,200 1,700 2,300 ND 4,000	72 63 180 12 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590 910 780 410 ND	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35 33 77 160 270 ND 6	27 22 17 3.9 4.1 3.2 ND <5 16 <5 54 19 19 28 68 54 100 ND 4	74 28.7 53 9 9.8 8.7 8 <55 67 781 <55 145 64 56 94 200 200 1,500 ND 12	2
	5/7/02 2/21/02 11/19/01 8/8/01 5/22/01 3/13/01 11/2/00 8/9/00 5/31/00 2/7/00 11/9/99 8/23/99 6/10/99 3/16/99 12/16/98 9/29/98 6/30/98 12/30/97 4/10/97	570 450 670 133 80 62 ND 370 552 7,800 <50 660 1,000 600 1,400 6,200 1,700 2,300 ND	72 63 180 12 12 12 ND 5.30 5.08 42 1,200 <5 497 298 200 590 910 780 410 ND	29 4.1 5 2.2 1.9 ND ND <5 19 61 <5 41 44 35 33 77 160 270 ND	27 22 17 3.9 4.1 3.2 ND <5 16 <5 <5 54 19 19 28 68 54 100 ND	74 28.7 53 9 9.8 8.7 8 <5 67 781 <5 145 64 56 94 200 200 1,500 ND	2

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 <sup>1</sup> (µg/L) 8260B/8021B
MW-5	7/30/02	110	<0.5	<0.5	0.77	<0.5	<0.5/4.1
	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	NΑ	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 NA
MW-6	7/30/02	24,000	1,000	410	1,400	3,770	<20
	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 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 NA

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Historical Groundwater Analytical Data
3609 International Boulevard, Oakland, California

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Tolueπe (μg/L)	Ethyl-Benzene (μg/L)	Total Xylenes (μg/L)	MtBE <sup>1</sup> (µg/L 8260B/8021i
MW-7	7/30/02	270	5.3	1,3 C	2,3	B.1	46 / 35
	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	4.5 <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
	3						160
	12/16/98	990	5	10	5	20	
	9/29/98 6/30/98	1,800 620	. 4	1 <5	1 9	2 <10	68 NA
	)			-		-	Ī
	12/30/97	1,400	130	98	75	200	NA NA
	4/10/97	NA	NA 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 A A A A
and an extension	10/2/95	NA	10	12	17	NA	3,300
	11/9/04	20 Sec. 1	1 many 1 m	1, 10,			
WV-8	7/30/02	8,400	340	78	530	517	1,200/1,400
	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 NA
	1/3/96	94,000	310	250	180	480	NA NA
	1/3/30	. 34,000	310	· 200	100	40V	1375

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

	<u> </u>	<u> </u>	1			Total	I
Monitoring	ł	TPH-g	Benzene	Toluene	Ethyl-Benzene	Xylenes	MtBE 1 (µg/L)
Well	Date	(μg/L)	(jig/L)	(µg/L)		(μg/L)	8260B/8021B
MW-10	7/30/02	160	26	0.55	8.1	1.0	72 / 63
	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
M CO Conta Adamentos servicios	4/10/97	1,000	21	9	3	3	ND
			\$1.500				
MW-11	7/30/02	120	5.6	<0.5	0.61	0.53	<2.0
	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	<b>&lt;</b> 5	<5	<5	<5
	8/23/99	170	4	4	NĐ	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	ΥΡΗ-g (μg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	Total Xylenes (μg/L)	MtBE <sup>1</sup> (μg/L) 8260B/8021B
MW-12	7/30/02	2,200	57	<0.5	11.0	2.6	100 / 110
	5/7/02	2,700	74	<0.5	20.0	5.1	94
	2/21/02	2,500	77	<0.5	5.7	7.4	95
	11/19/01	3,000	81	69	13	73	120
	8/8/01	2,090	71	1.8	3	4	142
	5/22/01	31,000	1,200	ND	95	165	1,900
	3/13/01	1,517	13	5.6	5.5	11	214
	11/2/00	1,010	9.3	19.0	ND	7.40	215
	8/9/00	1,730	15.4	12.4	<5	<5	185
	5/31/00	3,930	230	10	34	12	200
	2/7/00	4,000	351	37	<5	24	513
	11/9/99	80	<5	<5	<5	<5	229

MtBE was analyzed using the EPA Method 8021B and confirmed using 8260B.

ND, <: Not Detected above laboratory reporting limits.

NA: c Not Analyzed

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

		Meter Reading			ults For Eff			
Month	Date	(gallons)	MtBE 2	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
11. E. W. 15. M.	WAR STANK		2002	a and	医牙形线	* 4.		1.00
<u>August</u>	8/23/2002	1,641,650	1.0	< 50	< 0.5	< 0.5	< 0.5	< 0.5
			< 0,5	< 50	< 0.5	< 0.5	< 0.5	< 0.5
July	7/23/2002	1,632,834	<5.0	< 50	<5.0	<5.0	<5.0	<5.0
			< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0
<u>June</u>	6/24/2002	1,610,050	1.7	< 50	< 0.5	< 0.5	< 0.5	< 0.5
			< 0.5	< 50	< 0.5	< 0.5	< 0.5	< 0.5
<u>May</u>	5/30/2002	1,571,630	< 0.5	< 50	< 0.5	< 0.5	< 0.5	< 0.5
			< 0.5	< 50	< 0.5	< 0.5	< 0.5	< 0.5
<u>April</u>	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 1.1	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
			1.,	V 50	V 0.5	V 0.5	~ U.J	V 0.5
<u>January</u>	1/22/2002	1,381,370	< 2.0 < 2.0	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
er is institute	8.51.0		2200		100			<b>第</b> 24年
December	12/12/2001	1,311,340	ND	ND	ND	ND	ND	ND
			<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>
November	11/2/2001	1,272,660	ND	ND	ND	ND	ND	ND
			<u>Q.6</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	ΝD
September	9/28/2001	NA	ND	ND	ND	ND	ND	ND
			ND	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND
<u>August</u>	8/22/2001	1,243,100	ND AVD	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	ND
			<u>ND</u>	<u>ND</u>	N₽	<u>ND</u>	ND	ΝD
<u>July</u>	7/26/2001	1,227,270	ND AID	ND ND	ND ND	<u>ND</u>	ND ND	ND ND
	7/11/2001	1,226,730	ND NA	<u>ND</u>	<u>ND</u> NA	ND NA	<u>ND</u> NA	ND NA
	7711/2001	1,220,730	<u>NA</u> <u>NA</u>	NA NA	NA NA	NA NA	<u>NA</u>	<u>NA</u>
<u>June</u>	6/29/2001	1,224,600	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<del>_</del>		1,224,600	ND	ND	ND ND	<u>ND</u>	ND	ND
	6/16/2001	1,216,580	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	NA NA	<u>NA</u>
	6/7/2001	1,216,580 1,216,580	<u>NA</u> NA	<u>NA</u> <u>NA</u>	NA NA	<u>NA</u> NA	<u>NA</u> NA	<u>NA</u> NA
	0.7/2001	1,216,580	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
	1	.,	l <u></u>				_	_

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

	T	Meter		Lab Res	ults For Eff	fluent <sup>1</sup> and	I GAC-1	
		Reading			concentration			
							Ethyl	Total
Month	Date	(gallons)	MtBE 2	TPH-g	Benzene	Toluene	benzene	Xylenes
May	5/30/2001	1,205,198	NA.	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,205,198	NA ·	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	5/23/2001	1,194,390	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,194,390	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	5/17/2001	1,182,360	ND	<u>ND</u>	ND	ND .	<u>ND</u>	ND
		1,182,360	ND	ND	<u>00</u>	ND	ND	ND.
	5/10/2001	1,166,850	NA	NA	<u>NA</u>	NA.	<u>NA</u>	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.	NA
		, . ,	_			_	_	_
April	4/28/2001	1,135,690	NA .	NA.	NA.	NA.	NA	NA
<u> </u>		1,135,690	NA	NA	NA NA	NA.	NA.	NA NA
	4/21/2001	1,113,570	NA	NA	NA NA	NA.	NA NA	NA
	WZ 172001	1,113,570	NA.	NA.	NA	NA	NA	NA.
	4/11/2001	1,082,700	NA	ND ND	ND ND	ND	ND	ND
	411172001	1,082,700	ND ND	ND	ND	ND	ND.	ND
	4/6/2001	1,065,540	NA	NA NA	NA NA	NA	NA	NA
	47072001	1,065,540	NA	NA	NA NA	NA NA	NA	NA NA
	1	1,000,040	LIC		132	1	<u> </u>	<u> </u>
March	3/29/2001	1,036,330	NA	NA	NA.	NA.	<u>NA</u>	<u>NA</u>
marcii	3/23/2001	1,030,330	NA	NA NA	NA NA	NA NA	NA.	NA
	3/21/2001	1,036,070	NA NA	NA NA	NA NA	NA NA	NA.	NA
	3/2/1/2001	1,036,070	NA NA	NA NA	NA NA	NA NA	NA.	NA.
	3/17/2001		_		NA NA	NA NA	NA NA	NA NA
	3/1//2001	1,035,100	<u>NA</u>	NA NA	. —	. —	_	NA NA
	014010004	1,035,100	NA ND	<u>NA</u>	NA NB	<u>NA</u> ND	NA ND	ND ND
	3/13/2001	1,032,500	<u>ND</u>	ND NIA	<u>ND</u>	NA ND	NA NA	NA NA
	3/2/2001	1,032,500	<u>NA</u>	NA NA	NA NA	_	NA NA	NA NA
	3/2/2001	996,520	<u>NA</u> NA	NA NA	NA NA	<u>NA</u> NA	NA NA	NA NA
		996,520	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>INA</u>	<u>INA</u>	INA I
 	2/10/2001	075 400	۵.	l estorm objet	j down for ma	j intenance :	 and cleaning	<u>;</u>
February	2/10/2007	975,490	2)	/518111 5110C	uowii ioi ma	interiance i	and Geariing	i l
January	1/29/2001	957,880	ND	ND	ND	ND	ND	ND
yanual Y	1/29/2001	957,880	ND ND	ND	ND ND	ND	ND	ND
	1/25/2001		2000					
Section - Market Control -	TANKS OF THE PARTY							
<u>December</u>	12/5/2000	883,000	ND ND	ND ND	ND	ND ND	ND ND	ND ND
	12/5/2000	883,000	ND	ND	ND	ND	NO	ן אט
I			1	ı	l .	1	•	1

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

		Meter			ults For Eff			-
		Reading		(0	oncentratio	ons in µg/L		r
Month	Date	(gallons)	MtBE <sup>2</sup>	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
November	11/24/2000		ND	ND	ND	<u>ND</u>	ND	<u>ND</u>
	11/24/2000		ND	ND	ND	ND	ND	ND
	11/1/2000	842,000	ND	N <u>D</u>	ND	<u>ND</u>	ND	ND
	11/1/2000	842,000	ND	ND	ND	ND	ND	ND
<u>October</u>	10/1/2000	809,000	<u>ND</u>	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>	ND.
	10/1/2000	809,000	ND	МD	ND	ND	ND	ND
<u>August</u>	8/24/2000	778,000	ND	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	ND
July	7/26/2000	726,000	<u>ND</u>	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>	ND.
	7/19/2000	718,000	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND
	7/13/2000	712,000	<u>QN</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND
	7/7/2000	706,000	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>
<u>June</u>	06/29/00	700,000	ND	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	<u>ND</u>
	06/21/00	682,220	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND
	06/16/00	669,720	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>	ND	ND.
	06/10/00	651,200	<u>ND</u>	ND	<u>ND</u>	ND	<u>ND</u>	ND ND
<u>May</u>	05/31/00	629,000	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>
	05/23/00	603,700	<u>ND</u>	<u>ND</u>	ND	ND	<u>ND</u>	ND ND
	05/18/00	570,000	ND	ND	ND	ND	ND	ND
	05/10/00	530,400	ND	ND	ND	ND	ND	ND
<u>April</u>	04/30/00	488,300	ND	ND	ND	ND	ИD	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	<u>GN</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>
<u>March</u>	03/24/00	388,000	ND	ND	ND	ND	ND	ND
	03/17/00	357,100	ND	ND	מא	ПD	ND	ND
	03/10/00	329,000	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND
	03/03/00	300,000						
<u>February</u>	02/25/00	274,000	ND.	ND	<u>ND</u>	<u>ND</u>	<u> </u>	<u>ND</u>
	02/18/00	233,000	ND	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>	<u>ND</u>
	02/11/00	190,000	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	<u>ND</u>	<u>ND</u>
	02/04/00	160,800	<u>ND</u>	ND	ND	<u>ND</u>	ND	ND
<u>January</u>	01/28/00	130,600	ND	ND	ND	ND	ND	ND
	01/21/00	103,435 83,500	<u>ND</u> 185	ND ND	ND ND	ND ND	ND ND	ND ND
J. Delpharta.					1. 44		30 5 A	
<u>December</u>	12/23/99	51,680	1486	NA.	ND	ND	ND	ND
	12/23/99	51,680	<u>ND</u>	<u>NA</u>	<u>ND</u>	ND	<u>ND</u>	ND
	12/16/99	30,450	963	NA	ND	ND	ND	ND
	12/16/99 12/09/99	30,450 9,000	<u>ND</u> 230	NA ND	ND ND	ND 1	ND ND	ND ND
	12/03/33		began on D			1,10		

Notes:

<sup>1</sup> Effluent is equivalent to PSP#1.

<sup>2</sup> 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

		PID ( <sub>l</sub>	ppmv)	Flow Rate	Time Elapsed	Air Flow	Mass Removed 1
Date	Time	Influent	Effluent	· (cfm)	(Hours)	(Liters)	(Pounds)
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 <sup>2</sup>	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

Table 8

Total Mass of Petroleum Hydrocarbons Removed by Vapor Extraction System

3609 International Boulevard, Oakland, California

		PID (ppmv)		Flow Rate	Time Elapsed	Air Flow	Mass Removed 1		
Date	Time	Influent	Effluent	(cfm)	(Hours)	(Liters)	(Pounds)		
9/18/00	4:30 <sup>3</sup>	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 <sup>4</sup>	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		
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	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 <sup>5</sup>	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 <sup>6</sup>					4,344	0	0		
10/12/01 <sup>7</sup>					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 <sup>8</sup>	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 <sup>9</sup>	12:00	85	72	87	5,011	17,294,231	9.94		
2/15/02 <sup>10</sup>	16:30	49	0	80	5,011.5	67,960	0.02		

Table 8

Total Mass of Petroleum Hydrocarbons Removed by Vapor Extraction System

3609 International Boulevard, Oakland, California

		PID (	opmv)	Flow Rate	Time Elapsed	Air Flow	Mass Removed 1
Date	Time	Influent	Effluent	(cfm)	(Hours)	(Liters)	(Pounds)
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 <sup>11</sup>	12:20	10		80	5,488	26,429,812	1.79
6/12/2002 <sup>12</sup>	16:15	· 53	2	75	NA	NA	NA
6/17/02	11:00	28	2	80 ·	114.75	15,593,148	0.96
6/24/02	11:20	24	3.1	80	168.33	22,866,400	1.21
7/5/02	13:25	20	5	80	264.09	35,873,552	1.58
7/11/02	15:30	26	8.0	80	144.09	19,572,752	1.12
7/23/02	10:10	28	7.5	83	287.78	40,557,673	2.50
8/9/02	12:20	7.5	0	80	408.09	55,434,983	0.91
8/15/2002 11	15:00	7.0	1	80	144.11	19,575,902	0.30
8/23/2002 13	15:20	NA	NA	NA	NA	NĄ	NA .
8/26/02	11:15	14.0	2.0	80	71.83	9,757,387	0.30
<b>_</b>			Tota	al Mass of Petro	leum Hydrocarb	ons Removed =	398.43
				Average Dail	y Removal Rate (	pounds / day)≔	0.52

<sup>&</sup>lt;sup>1</sup> 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.

<sup>&</sup>lt;sup>2</sup> System accidentally shut down from main box, readings taken 30 minutes after startup.

<sup>3</sup> GAC Replaced

<sup>&</sup>lt;sup>4</sup> GAC-1 removed, new GAC installed at effluent end

<sup>&</sup>lt;sup>5</sup> SVE System turned off for rainy season due to low influent concentrations

<sup>&</sup>lt;sup>6</sup> system down, hoses disconnected and GAC moved for replacement

<sup>&</sup>lt;sup>7</sup> system down for electrical repair

<sup>&</sup>lt;sup>8</sup> Carbon change-out of three drums, moved new effluent drum on 10/25/01 to GAC-1

<sup>&</sup>lt;sup>9</sup> system shut-down due to high effluent value

<sup>&</sup>lt;sup>10</sup> System re-started (since November 21, 2001), installed new 4-55 gallon vapor phase carbon vessels repaired blower

<sup>11</sup> System was shut-down due to low influent reading

<sup>&</sup>lt;sup>12</sup> System was restarted on 6/12/02

<sup>&</sup>lt;sup>13</sup> System was re-started but no readings were taken

# **FIGURES**



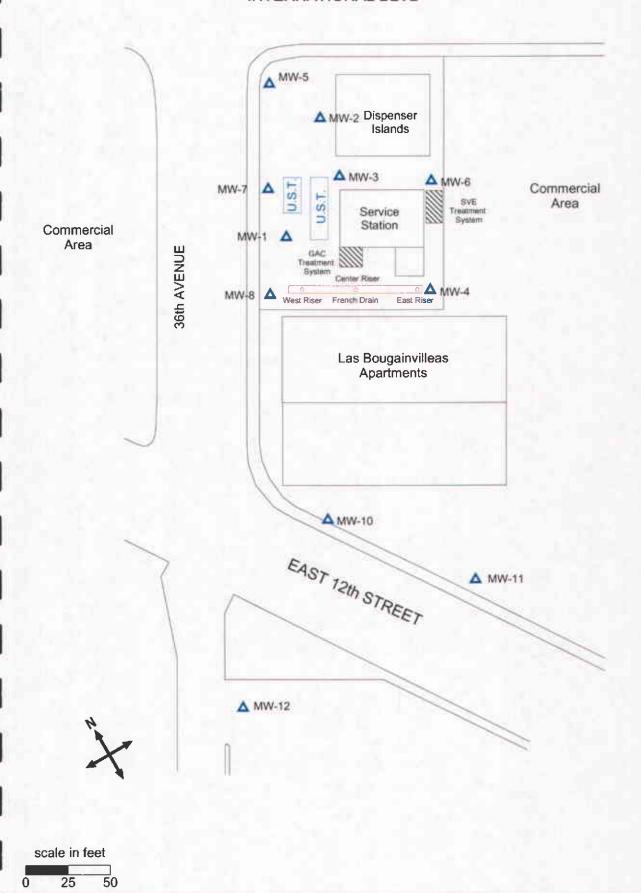


Figure 2: Site map showing location of groundwater monitoring wells and french drain.



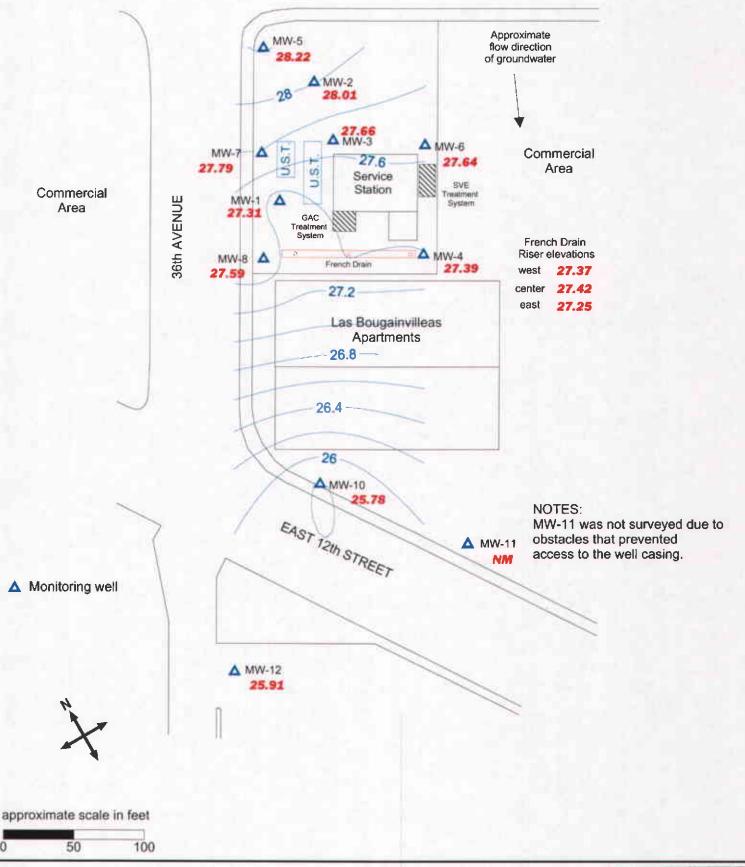


Figure 3: Groundwater elevation contour map in feet, July 30, 2002.



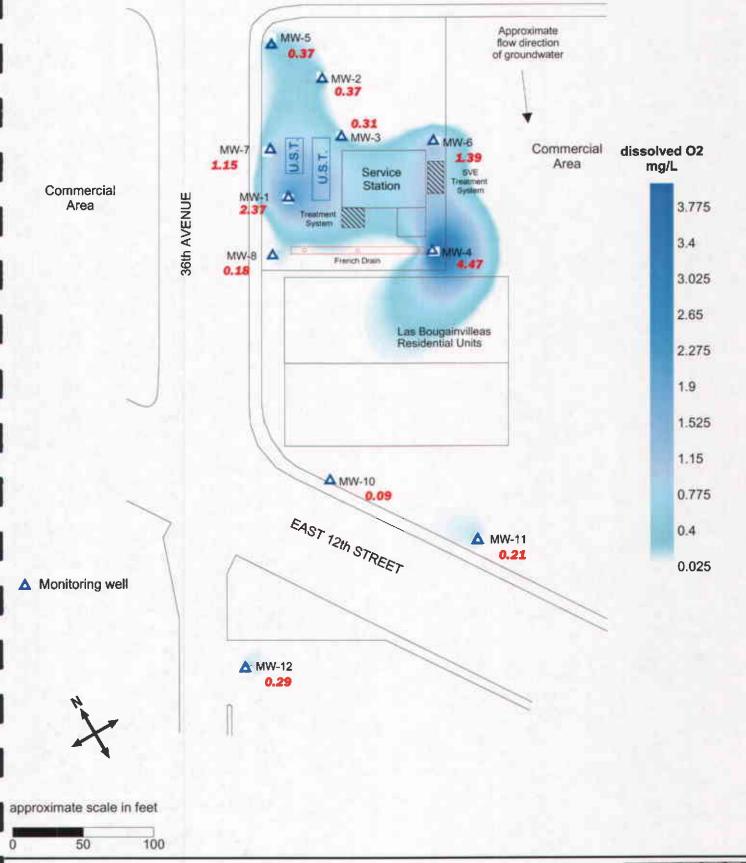


Figure 4: Contour map of Dissolved Oxygen concentrations in groundwater. July 30, 2002.



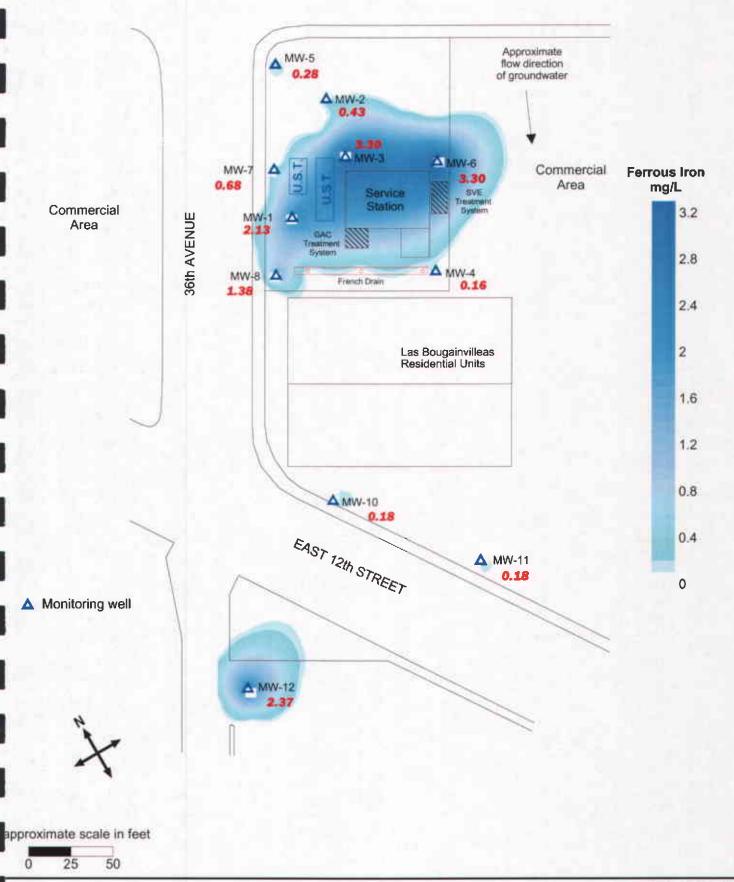


Figure 5: Contour map of Ferrous Iron concentrations in groundwater.

July 30, 2002.



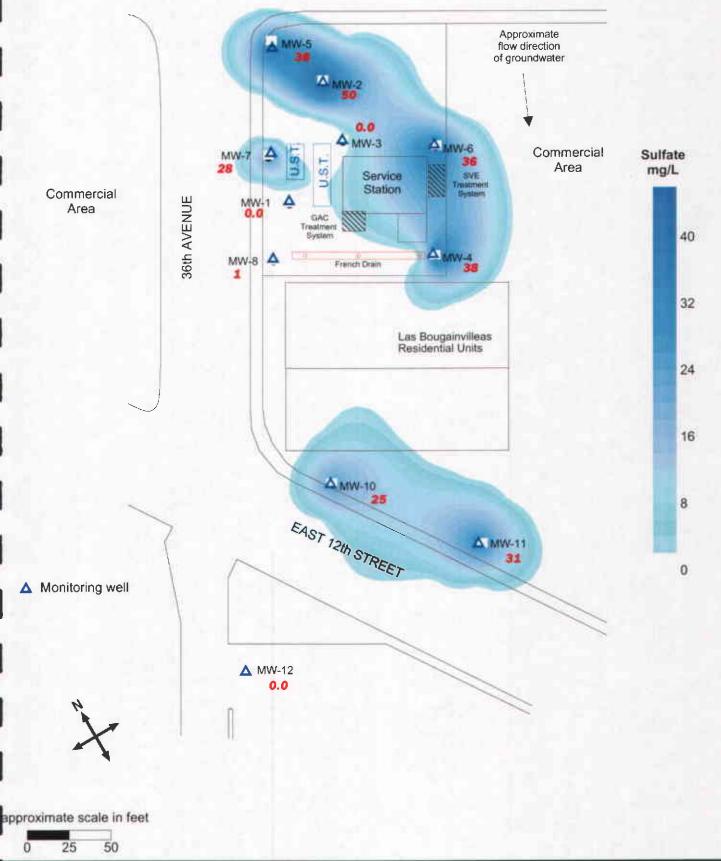


Figure 6: Contour map of Sulfate concentrations in groundwater. July 30, 2002.



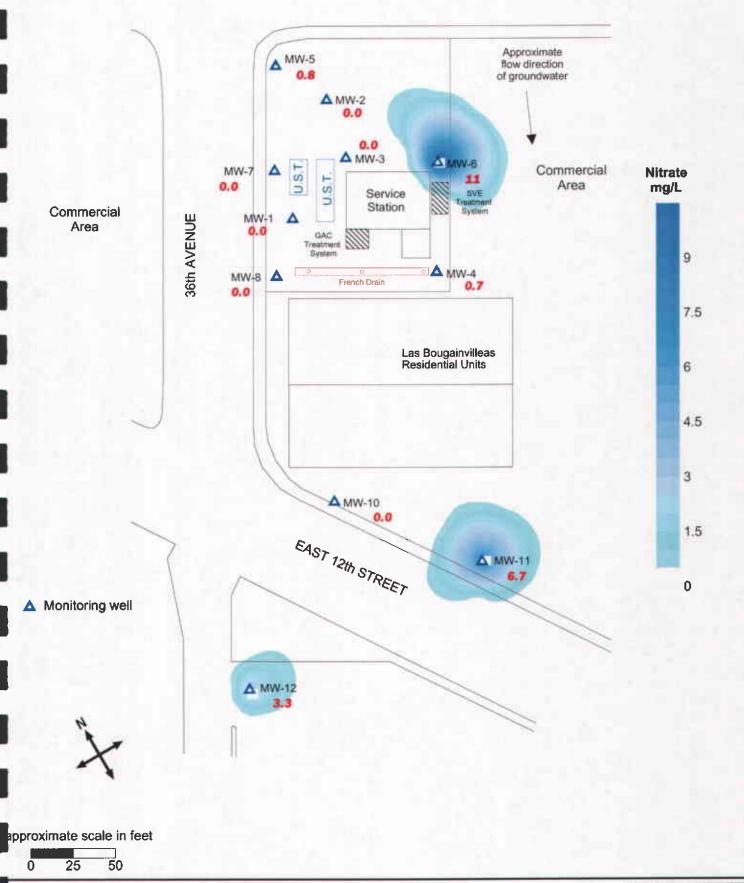


Figure 7: Contour map of Nitrate concentrations in groundwater. July 30, 2002.



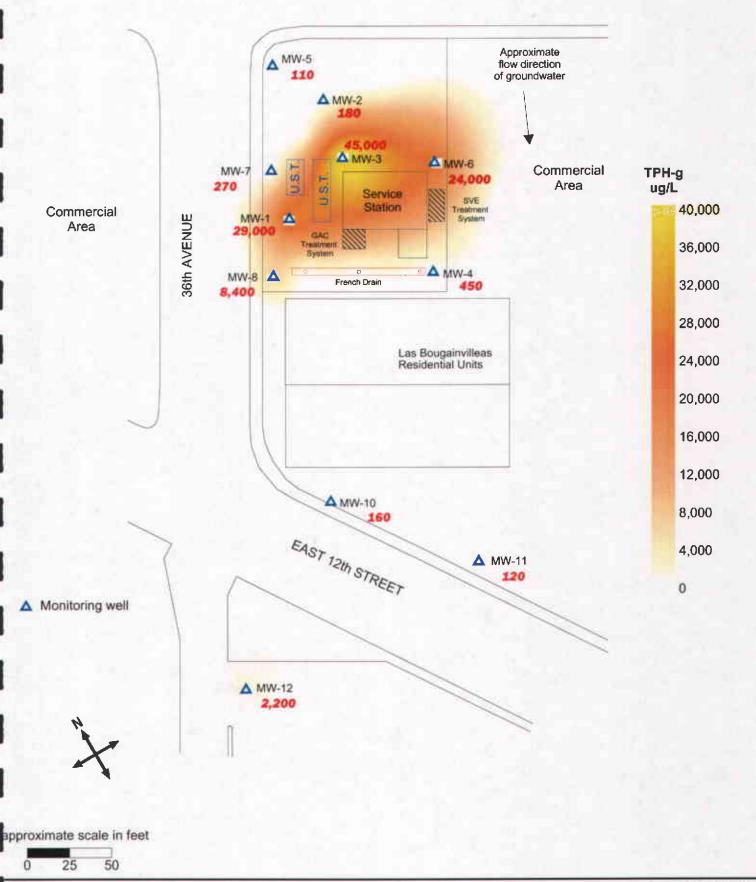


Figure 8: Contour map of TPH-g concentrations in groundwater. July 30, 2002.



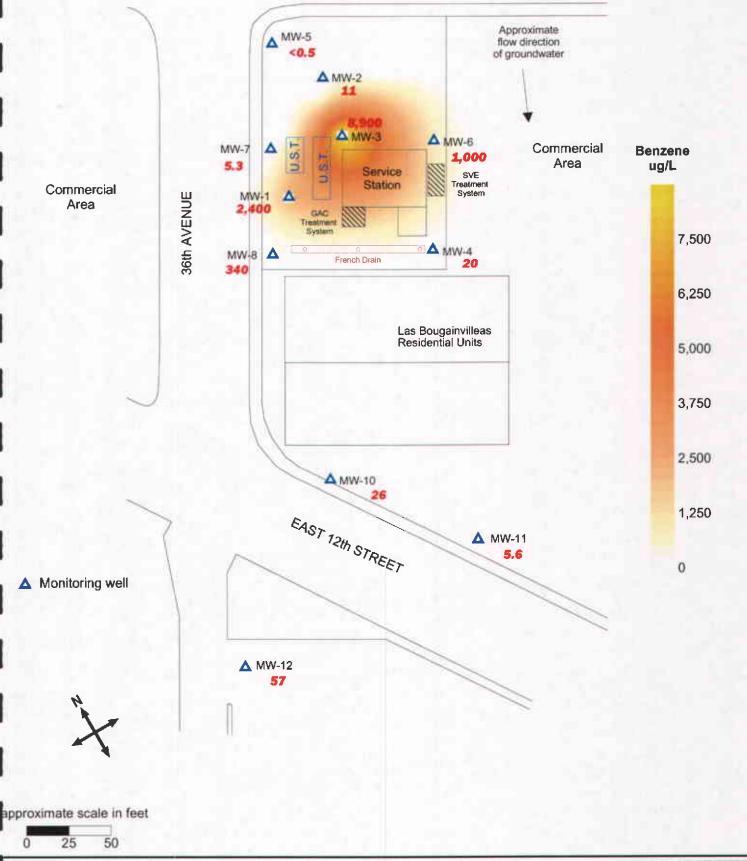


Figure 9: Contour map of Benzene concentrations in groundwater. July 30, 2002.



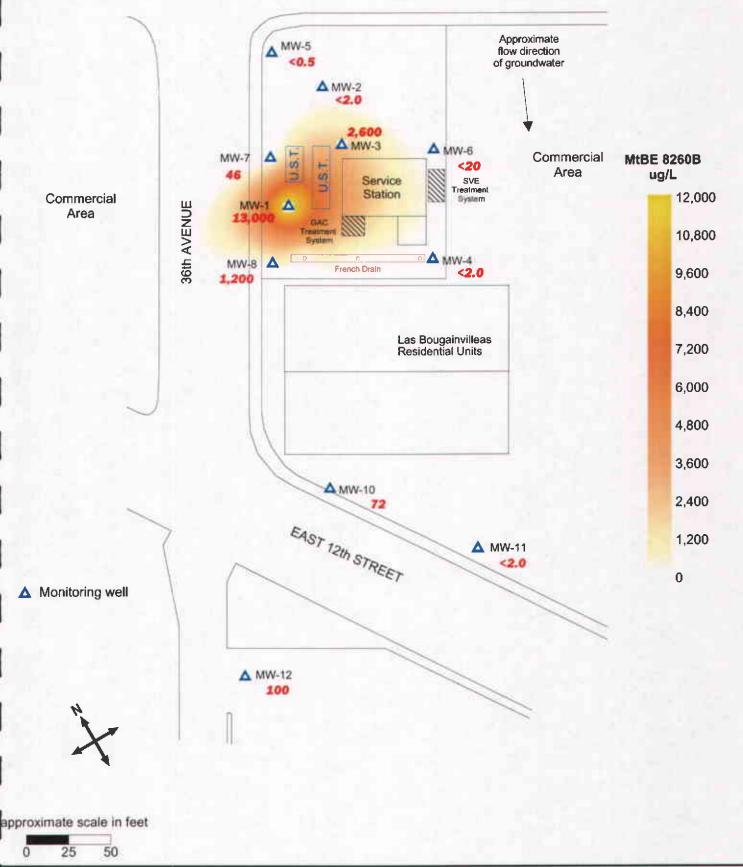


Figure 10: Contour map of MtBE concentrations in groundwater (8260B). July 30, 2002.



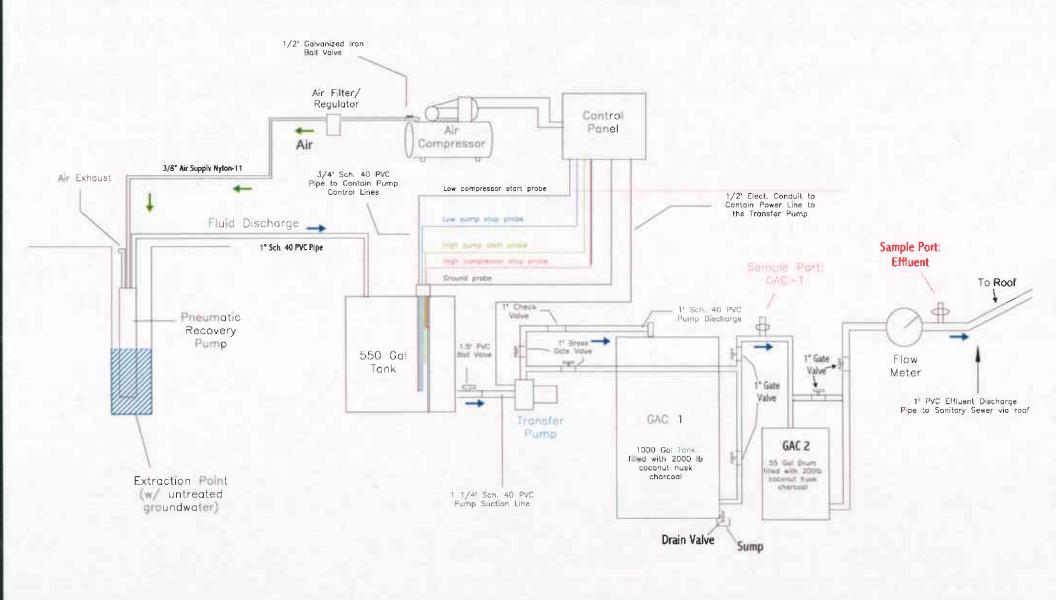
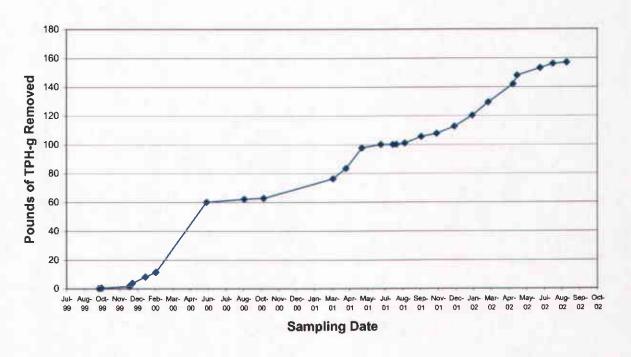
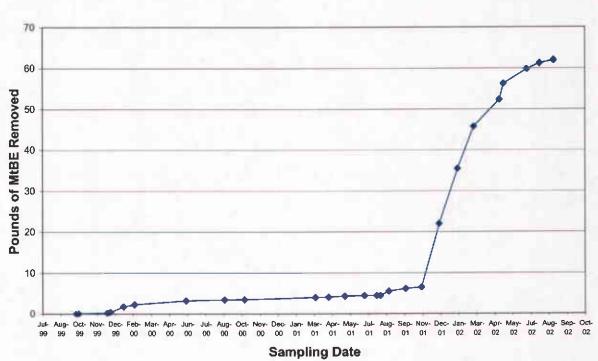


Figure 11: Schematic Diagram of the Groundwater Remediation System.



Figure 12
Cumulative Weight of TPH-g and MtBE Extracted from Groundwater
Since Installation of the Treatment System
3609 International Boulevard, Oakland, California





## **APPENDIX A**

Table of elevations & coordinates on monitoring wells measured by Kier Wright Civil Engineers Surveyors, Inc., and

field measurements of physical, chemical, and biodegradation parameters of groundwater samples

DATE: JOB# 08/27/02 A02576

# TABLE OF ELEVATIONS & COORDINATES ON MONITORING WELLS

SOMA ENVIRONMENTAL
Oakland-E. 14 the St. "International Blvd"

WELL NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
FD-C	2109299.85	6064039.85	39.35 40.25	Notch on north side of PVC Punch north rim of box
FD-E	2109281.13	6064067.87	40.06 40.55	Notch on north side of PVC Punch north rim of box
FD-W	2109314.99	6064017.59	39.16 39.95	Notch on north side of PVC Punch north rim of box
MW-1	2109338.74	6064025.97	40.11 40.76	Notch on north side of PVC Punch north rim of box
MW-2	2109383.20	6064073.06	40.71 41.61	Notch on north side of PVC Punch north rim of box
MW-3	2109351.11	6064064.63	40.91 41.68	Notch on north side of PVC Punch north rim of box
MW-4	2109278.18	6064076.40	40.01 40.67	Notch on north side of PVC Punch north rim of box
MW-5	2109410.84	6064058.46	41.16 41.60	Notch on south side of PVC Punch south rim of box
MW-6	2109320.46	6064105.06	40.92 41.52	Notch on north side of PVC Punch north rim of box
MW-7	2109368.19	6064025.54	39.94 40.54	Notch on north side of PVC Punch north rim of box
MW-8	2109321.68	6064000.46	39.38 39.72	Notch on north side of PVC Punch north rim of box

Kier Wright Civil Engineers Surveyors, Inc.

1233 Quarry Lane, Suite 145, Pleasanton, CA 94566 (925) 249-6555 (925) 249-6563

DATE: 08/27/02 JOB# A02576

# TABLE OF ELEVATIONS & COORDINATES ON MONITORING WELLS

SOMA ENVIRONMENTAL
Oakland-E. 14 the St. "International Blvd"

WELL NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
MW-10	2109193.97	6063957.39	36.71 37.70	Notch on north side of PVC Punch north rim of box
MW-11	2109125.26	6064007.52	XXXX	NO ELEVATION , BOAT ON TOP
MW-12	2109121.85	6063865.00	36.84 36.87	Notch on north side of PVC

Bench mark: NGS Bench mark No.M 554. To reach the station from the intersection of Interstate Highway 880 and Hegenberger Rd in South Oakland go northeast on Hegenberger Rd for 0.5 MI to a side road right Baldwin St. Turn right and go south on Baldwin St for 0.35 MI to a T-intersection, 85th Ave. for 0.1 MI to a side road right, Railroad Ave. Turn right and go south on Railroad Ave. for 0.1 MI to the station on the left, east, side of the road in a large concrete headwall for a culvert.

Elevation = 14.20 NAVD88 Datum

Coordinate values are based on the California Coordinate System, Zone III NAD 83 Datum.



Well No.:	mu-l	Project No.:	2331
Casing Diameter:	Z inches	<del>-</del>	3609 International Blvd.
Depth of Well:	30-5 feet		Oakland, CA
Top of Casing Elevation:	97.99 feet	• .	
Depth to Groundwater:	n go feet	Date:	July 30, 2002
Groundwater Elevation:	85, 19 feet	Sampler:	Roger Pappler
Water Column Height:		0,17 = 3,04/ww	Tony Perini
Purged Volume:		9.0g = 2 WW	•
		,	
Purging Method:	Bailer □	Pump 🗹	
Sampling Method:	Bailer 🗹	Pump 🗆	
Color:	Yes 🗹 No 🗆	Describe:	cloudy
Sheen:	Yes 🕱 No	Describe:	Slight
Odor:	Yes S No E	Describe:	Retroleum Hydroarbon

#### Field Measurements:

Time	Vol (gallons)	Нq	Temp (°C)	E.C.	D.O. (mg/L)	Turbidity (NTU)	ORP (mV)	Fe <sup>+2</sup> (mg/L)	SO <sub>4</sub> -2 (mg/L)	NO <sub>3</sub> -1
5:07 PM	0-5	7.21	22,23	0.890	8.07	179	19	(mg/L)	(ing/L)	(mg/L)
5:09 PM	2.5		20.98		2.01	101	-72		<del>                                     </del>	
5:12 PM	5.5	6.95	20.61	0.927	8.32	33	-89			
5:14 em	8.5	6.93	19.93	0.984	8.86	24.8	-102			
7,100								-		
-10- e	10									
530p Fampled >3	Ver	<u>,</u>						2 12	0-0	$\Theta$

notes: also taking pump from MW-1, and with water stabilized D.O. was 2.37 mg/L

\* LLD flashed "LIMIT"



•	Casing Diameter:			4	_inch	es	Addres	s:	3609 International Blvd.	
	Depth of Well:			31.5	feet		•		Oakland, CA	
	Top of Casing Elevation:			98.58	feet					
	Depth to Groundwater:			12,7	v feet		Date:		July 30, 2002	-
-	<b>Groundwater Elevation:</b>	·		85,81	g feet		Sample	er:	Roger Pappler	
•	Water Column Height:	•					100-12	4g Incv	Tony Perini	
	Purged Volume:						3 F. g =			
	Purging Method:	÷		Bailer			Pump			
	Sampling Method:			Bailer	₫		Pump			
	Color:	Yes	Ġ		No	ď	,	Describe:		
	Sheen:	Yes			No	6	•	Describe:		
	Odor:	Yes			No	4		Describe:		

Project No.:

2331

### Field Measurements:

Well No.:

Time	Vol	рH	Temp	E.C.	D.O.	Turbidity	ORP	Fe <sup>+2</sup>	SO <sub>4</sub> -2	NO <sub>3</sub> -1
	(gallons)		(°C)	(as/cm)	(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)
3:23 PM	16	7.36	20.17	0.881	0.23	101	78			
3:26 PM	56	6.95	20.11	0.880	0.21	44.2	73			
3:30 PM	11	6.92	20.25	0.889	0.74	39.6	80	-		
3:36 PM	18	6.89	20,23	0,883	0.39	79.1	104			
3:38 PM	21	6.88	20,19		0.37	111	57			
400 P Sampled >	3 VOA	)						0.43	50.	<b>8</b> ,0



Casing Diameter:			_4	_inche	s <b>Addres</b>	88:	3609 International Blvd.
Depth of Well:			32-	feet			Oakland, CA
Top of Casing Elevation:			97.78	feet		•	
Depth to Groundwater:			13,25		Date:	•	July 30, 2002
Groundwater Elevation:			84,5	5 feet	Sample	er:	Roger Pappler
Water Column Height:					0000=1		Tony Perini
Purged Volume:					is 37g =		
Purging Method:			Bailer	0 .	Pump	₽.	
Sampling Method:	•		Bailer	<b>S</b>	Pump		
Color:	Yes	o de la companya de l		No		Describe:	tight black
Sheen:	Yes			No		Describe:	
Odor:	Yes			No		Describe:	stight pelos
	•						

Project No.:

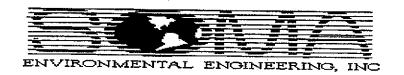
2331

### Field Measurements:

Well No.:

Time	Vol (gallons)	рН	Temp (°C)	E.C. (#S/cm)	D.O. (mg/L)	Turbidity (NTU)	ORP (m)()	Fe <sup>+2</sup>	SO <sub>4</sub> -2	NO <sub>3</sub> -1
1:41 PM		6,92.					(mV)	(mg/L)	(mg/L)	(mg/L)
1:44 PM		6.79		1.22	0.23	30.9	-/23			
1:48 Pm	- <del> </del>		20.05		0.18	44.0	-/41		<del>   </del>	-
1:53 pm	15	6.69		1.28	0.18	111	-139			
1:58 PM			19.96	1.27	0,27	51.7	-129			
2 PM	25	6.68	19.97	1,25	0.31	40.1	-125	a		
225 Pu Gampled	3 VOI							3,30	93×	0,0

\* LCD Pagned "LIMIT"



Casing Diameter:		_ Z inches	Address:	3609 International Blvd.
Depth of Well:		26.5 feet		Oakland, CA
Top of Casing Elevation:	•	97.85 feet		,
Depth to Groundwater:		n 42 feet	Date:	July 30, 2002
<b>Groundwater Elevation:</b>		\$5,23 feet	Sampler:	Roger Pappler
Water Column Height:			0,1 = 2,36g/ww	
Purged Volume:			7. 9 = 3 WW	
		. '	<i>C.</i> 3	
Purging Method:		Baller □	Pump 🗹	
Sampling Method:		Bailer 🗹	Pump	
Color:	Yes ⊠	No	□ Describe	e: light black
Sheen:	Yes 🗆	No	☐ Describe	e:
Odor:	Yes 🗷	No 1	□ Describe	=: strant petro
				J /

Project No.:

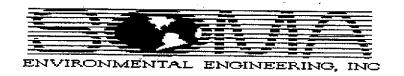
2331

#### Field Measurements:

Well No.:

Time	Vol (gallons)	рĦ	Temp (°C)	E.C. (#S/cm)	D.O. (mg/L)	Turbidity (NTU)	ORP (mV)	Fe <sup>+2</sup> (mg/L)	SO <sub>4</sub> -2 (mg/L)	NO <sub>3</sub> ·1 (mg/L)
6:06 PM	0.5	6.60	18.88	0.812		99	58			
6:08 PM	2.5	6.69		0.832	8.12	18.3	41	-		
6:10 PM	5	6.86	18.99	0.828	7.32	72.6	-6			•
6:13 pm	7.5	6.79	18.85	0.834	8.52	6.3	-34			
,		.,,,,,								
·										
65 PM Sampled	-> 3 VO	<u> </u>						0.10	38	<i>D</i> .7

notes: after pulling from mw-4, and stabiliting the water in the well D.O was 4.47



Well No.:			1	nu-	۲.	Project	No.:	2331				
Casing Diam	eter:		_	2	inche	es Addres	S:	3609 Internation	nal Blvd.			
Depth of We	eli:		2	6.5	feet			Oakland, CA				
Top of Casin	g Elevation:	٠	99	9.04	feet							
Depth to Gro	undwater:		i	2014	- feet	Date:		July 30, 2002				
Groundwater	r Elevation:			86. IL	ラ feet	Sample	er:	Roger Pappler	-			
Water Colum	Water Column Height:					×0.17=2	3a INCV	Tony Perini				
Purged Volu	ıme:			8.5	gallo	ns 6.4 =	2 No V		·			
·	•		•				٠.					
Purging Meth	hod:		В	ailer		Pump	<b>)32</b> (					
Sampling Me	thod:		В	ailer	<b>X</b>	Pump		•	•			
Color:		Yes			No		Describe:	• • • • • • • • • • • • • • • • • • •		•		
Sheen:		Yes			No		Describe:		<u></u>			
Odor:		Vaa				~		<del>, , , , , , , , , , , , , , , , , , , </del>	<del></del>			
Quoi.		Yes	u		No	₽ E	Describe:					

#### Field Measurements:

Well No.:

Time	Vol (gallons)	pН	Temp (°C)	E.C. (#S/cm)	D.O. (mg/L)	Turbidity (NTU)	ORP (mV)	Fe <sup>+2</sup> (mg/L)	SO <sub>4</sub> -2 (mg/L)	NO <sub>3</sub> -1 (mg/L)
12:35 . BM	1.0	8.87	20.64	0.92	6.69	254	210			· · · · · · · ·
12:38 PM	3.0		20.61	0.92	6.69	49.8	30			
13:40 PM	6.0	6.98	20.36	0.94	0.80	18.2	-28		"	· <del></del> •
12:43 PM	8.5	6.93		0.92	0.37	22.5	-43			
										- '
		···								
2										
1950P Gempled 7	3/01	~						028	38	0.8

notes: p.o. net stuck initially at 6.69, reset meter



Well No.:	Mw-6	Project No.:	2331
Casing Diameter:	2- inches	Address:	3609 International Blvd.
Depth of Well:	<u> 25</u> feet	•	Oakland, CA
Top of Casing Elevation:	<u>98.77</u> feet		
Depth to Groundwater:	13,28 feet	Date:	July 30, 2002
Groundwater Elevation:	85. <sup>41</sup> feet	Sampler:	Roger Pappler
Water Column Height:		1, 17 = 1,99 3/WOV	Tony Perini
Purged Volume:	子 <sup>0</sup> gallons	veg. 3 ww	
Purging Method:	Bailer □	Pump 🗹	
Sampling Method:	Bailer 🗷	Pump □	
Color:	Yes   ✓ No D	Describe:	179ht black
Sheen:	Yes □ No □	Describe:	
Odor:	Yes ☑ No □	Describe:	slight petro

### Field Measurements:

Time	Vol	рH	Temp	E.C.	D.O.	Turbidity	ORP	Fe <sup>+2</sup>	SO <sub>4</sub> -2	NO <sub>3</sub> -1
<del>-</del> ,	(gallons)		(°C)	(US/cm)	(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)
1:06 PM	1.5	7.0	1937	1.110	2.21	820	-106			`
1:09 Pm	3.0	6.81	19.31	0.970	2.01	3/3	-106	·		
1:11 PM	5.0	6.91	19.47	0.908	0.86	205	-56			
1:13 PM	7.0	6.83	19.46	0.926		127	-58			
					. "			-		
320 Sampled > 2	VOm							330	360	ILO



Well No.:			Mw-	7		Projec	t No.:	2331		÷
Casing Diameter:				inch	es	Addres		3609 Internations	al Bivd	
Depth of Well:			26.1	– feet				Oakland, CA		
Top of Casing Elevation:						•				
Depth to Groundwater:			12.15	feet		Date:		July 30, 2002		
Groundwater Elevation:			85-68	_ } feet		Sample	er:	Roger Pappler		
Water Column Height:			13.95					Tony Perini	•	100
Purged Volume:			11	_ _gallo	ons			,		
		-	•		٠					
Purging Method:		٠	Bailer	<i>'</i>		Pump	<b>⊠</b> ^	· ·		
Sampling Method:			Bailer			Pump				
Color:	Yes	œ		No		•	Describe:	cloudy		
Sheen:	Yes	_		No	<b>12</b>		Describe:			 
Odor:	Yes			No	₽	^	Describe:	· -		 

# Field Measurements:

(gallons)		(°C)	E.C. (vS/cm)	D.O.	Turbidity	ORP	Fe <sup>+2</sup>	SO <sub>4</sub> <sup>2</sup>	NO <sub>3</sub> -1
				(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L
	<del></del>		0,517	0,47	161	-62		<u>L</u>	
				5.98	77.9	-57			
5.5	7.16	20.95	0.771	0.47	76.8	-65			
7.0	7.10	20,57	0.773	1.00		-79			
//	7.12	20.62	0.757	1.15	16,6	-64	<del></del>		
	ļ								
VERVE							068	4.02	00
	7.0	2.5 7.23 5.5 9.16 7.0 7.10 11 7.12	2.5 7.23 20.80 5.5 7.16 20.95 7.0 7.10 20.57 // 7.12 20.62	2.5 7.23 20.80 0.626 5.5 7.16 20.95 0.771 7.0 7.10 20.57 0.773 11 7.12 20.62 0.757	2.5 7.23 20.80 0.626 5.98 5.5 7.16 20.95 0.771 0.47 7.0 7.10 20.57 0.773 1.00 11 7.12 20.62 0.757 1.15	2.5 7.23 20.80 0.626 5.98 77.9 5.5 1.16 20.95 0.771 0.47 76.8 7.0 7.10 20.57 0.773 1.00 31.5 11 7.12 20.62 0.757 1.15 16.6	2. 5 7.23 20.80 0.626 5.98 77.9 -57 5.5 7.16 20.95 0.771 0.47 76.8 -65 7.0 7.10 20.57 0.773 1.00 31.5 -79 11 7.12 20.62 0.757 1.15 16.6 -64	1.0 7.69 20.76 0,577 0.47 161 -62  2.5 7.23 20.80 0.626 5.98 77.9 -57  5.5 9.16 20.95 0.771 0.47 76.8 -65  7.0 7.10 20.57 0.773 1.00 31.5 -79  11 7.12 20.62 0.757 1.15 16.6 -64	1.0 7.69 20.76 0,577 0.47 161 -62  2.5 7.23 20.80 0.626 5.98 77.9 -57  5.5 9.16 20.95 0.771 0.47 76.8 -65  7.0 7.10 20.57 0.773 1.00 31.5 -79  11 7.12 20.62 0.757 1.15 16.6 -64



Well No.:	MW-8	Project I	No.: 2331
Casing Diameter:	_ Z	inches Address	s: 3609 International Blvd
Depth of Well:	27	feet	Oakland, CA
Top of Casing Elevation:	97.25	feet	
Depth to Groundwater:	11, 79	feet Date:	July 30, 2002
Groundwater Elevation:	85,461	feet Sampler	
Water Column Height:	15.21	feet x 0.17 = 2.	
Purged Volume:		gallons 7.75	
Purging Method:	Bailer [	□ Pump	s s
Sampling Method:	Baller <sup>[</sup>	₹ Pump	
Color:	Yes 🗹	No 🗆	Describe: 5/194+ 6/ack
Sheen:	Yes 🗹 🕦	No 🗆	Describe: 5/194+
Odor:	Yes 🗹 🕦	No 🗀	Describe: set a low

#### Field Measurements:

Time	Vol (galions)	pН	Temp (°C)	E.C. (#S/cm)	D.O. (mg/L)	Turbidity (NTU)	ORP (mV)	Fe <sup>+2</sup> (mg/L)	SO <sub>4</sub> ·² (mg/L)	NO <sub>3</sub> -1 (mg/L)
5:38 pm	0.5	9.03	19.56	0.932	0.18	157	-/24	,		
5:39 PM 51 40 PM	2.0					<b>1</b>		·	<del>  </del>	·····
· · · · · · · · · · · · · · · · · · ·										* ***
							·			
obs semula	= 2 VOA	ָר ב				<u> </u>		1,38	1	4)8



Depth of Well:	•	23.5 fe	eet		Oakland, CA		
Top of Casing Elevation:		94.54 fe	eet	•	•		•
Depth to Groundwater:		10,93 fe	eet Date:		July 30, 2002		
<b>Groundwater Elevation:</b>		83.61 fe	eet Sample	r:	Roger Pappler	•	
Water Column Height:		12.00 fe	eet y co. 1 = 2.	14 1ww	Tony Perini	4	
Purged Volume:		8 9	iallons U. 4	3 WW		**.	-
		<del></del>		~			•
		*					
Purging Method:		Bailer 🗆	] Pump				
Sampling Method:		Bailer 🛭	Pump				
Color:	Yes 🕱	N	lo 🗆 -	Describe:	cloudy		
Sheen:	Yes 🗆	N	lo 🗷	Describe:			
Odor:	Yes 🗆	N	lo 🗹	Describe:			

Project No.:

Address:

2 inches

2331

3609 International Blvd.

#### Field Measurements:

Well No.:

Casing Diameter:

Time	Vol	рН	Temp	E.C.	D.O.	Turbidity	ORP	Fe <sup>+2</sup>	SO <sub>4</sub> -2	NO <sub>3</sub> -1
	(gailons)		(°C)	(uS/cm)	(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)
10:53 AM	1	8.69	20.15	0.99	0.20	999	-60			
10:55 AM 10:57 AM				0.93		66.4	-3			
				0.93		15.2	16			
11 Am	8	6.62	20.03	0.92	0.09	12.7	34			
· · · · · · · · · · · · · · · · · · ·										
	ļ									
. 60		-								
1150 & Sampled -	* 3 VOR	?						P. 18	25	80



Well No.:		Mud	7	Project	No.:	2331	
Casing Diameter:		2	inches	Addres	s:	3609 International Blvd.	
Depth of Well:		25.50	feet			Oakland, CA	
Top of Casing Elevation:		95.94	feet		•		
Depth to Groundwater:		12.39	feet	Date:		July 30, 2002	
<b>Groundwater Elevation:</b>		83,65	feet	Sample	er:	Roger Pappler	
Water Column Height:		13,11	feet			Tony Perini	
Purged Volume:		70	gallons				
Purging Method:	-	Bailer		Pump			
Sampling Method:		Bailer		Pump		·	
Color:	Yes 🗵	ſ'	No E	<b>3</b>	Describe:	doudy	
Sheen:	Yes 🗆	1	No ş		Describe:		
Odor:	Yes □	1	No E		Describe:		
•							

#### Field Measurements:

Well No.:

Time	Vol	рH	Temp	E.C.	D.O.	Turbidity	ORP	Fe <sup>+2</sup>	SO <sub>4</sub> -2	NO <sub>3</sub> -1
	(gallons)		(°C)	(µS/cm)	(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)
11:33 AM	1.0	9.43	19.34	0.917	1.08	150	59			
11:35 AM	2.5	7.07	19.51	0.946	1-18	69.2	65			
11:37 Am	4.0	6.88	19.19	0.922	0.64	20.2	14			
11:41 Am	7.0	6.78		0.945		6.8	-22			
									-	
101500										
1215 PM Sampled	<u> </u>	140			<u> </u>	<u> </u>		B18	3	67



Well No.:	Mu-12	Project No.:	2331
Casing Diameter:	inches	Address:	3609 International Blvd.
Depth of Well:	3/ feet		Oakland, CA
Top of Casing Elevation:	94.84 feet		
Depth to Groundwater:	10,43 feet	Date:	July 30, 2002
Groundwater Elevation:	83,41 feet	Sampler:	Roger Pappler
Water Column Height:	20.01 feet x	0,66 132g/WW	Tony Perini
Purged Volume:		-40 gal = 3 WW	•
Purging Method:	Bailer 🗖	Pump 🗷	
Sampling Method:	Bailer 🖾	Pump □	
Color:	Yes 🗹 No 🛚	Describe:	doudy
Sheen:	Yes □ No □	Describe:	
Odor:	Yes 🗹 No 🛚	Describe:	stylet petro oda

#### Field Measurements:

Time	Vol (gallons)	рН	Temp (°C)	E.C. (µS/cm)	D.O.	Turbidity	ORP	Fe <sup>+2</sup>	SO <sub>4</sub> -2	NO <sub>3</sub> -1
1 / 4	(galloris)			(HO/CIII)	(mg/L)	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)
10.11 AM	5	632	19.18	095	0,56	825	-56	_		
10:17 AM	9	6.44	19.35	0.94	0.43	6.3	-61		_	<del></del>
10.22 AM	16	6.42	19.46		0.38	2.7	-60			
10:30 Am 10:45	28	6.43	19.36	0.94	0.29	1.7	-60			
10:45	Sas	nples	7		_		,			
·										
,					• •			2.37	0	3,3

# **Appendix B**

Chain of Custody Form and Laboratory Report of Third

Quarter 2002 Monitoring Event



# Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 9471O, Phone (510) 486-0900

#### ANALYTICAL REPORT

Prepared for:

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

Date: 15-AUG-02 Lab Job Number: 159959 Project ID: 2331

Location: 3609 Int'l 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:

Project Manager

Reviewed by:

s Manager

This package may be reproduced only in its entirety.

NELAP # 01107CA

# **CHAIN OF CUSTODY FORM**

Page \_\_/\_of \_\_/

**Analyses** 

<b>Curtis &amp; Tomp</b>	kins. Ltd

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

Project No:	233	L	
Project Name	Tonus	11/ Dak	Int'l

Project	P.O.:	

C&T	1	59959
LOGIN#		1 ()(

Sampler: T. Pevini	/ KW Papler
--------------------	-------------

report to:	Tonu Yeru	11/Mangour	41xeh
	,		- 7
Company:	SOMA Env.	Ena.	

	-	2
Telephone:	(a2.5)	244-101-00

Turnaround Time:	Standard-	Fax:	(925) 244-6401

				Ma	atrix		14	res	erv	ativ	/e					1						ı
1	Laboratory Number			Soil	Waste	# of Containers	HCL	H <sub>2</sub> SO	HNO3	ICE		Field Notes	TPH . 9	l GN	14 25	<b>S</b>		!				
		MW-1	20 Jul 0 530p	×		3	×			×		Mon Well MW-1	ኦ	V		1				$\top$	+	†
		MW. 2	100 p	<u> </u>		3	x			×		1 MW-2	×						$\top$		1	Т
3	<u> </u>	MW. 3	225 P	×		3	×			×		MW. 3	X			ŀ			$\Box$		1	Ţ
4	<b>3</b>	Mw/·4	6557	l×		3	×			×		MW-A	×	'n								T
5	0	141/1-5	50	<u> </u>		3	ኢ			· <b>X</b>			×	×						$\top$	$\top$	Τ
ا ت	<u>r</u> ↔ 0	141/16	3300			3	×			Х		MW·C	×	X			$\Box$				1	Τ
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Notes: Pla confirm positive MTBE results
of EPA 8260B.

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DATE/TIME

Signature

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Curtis & Tompkins Laboratories Analytical Report 3609 Int'l Blvd., Oakland EPA 5030B Lab #: 159959 Location: SOMA Environmental Engineering Inc. Client: Prep: Project# Matrix: Water Sampled: 07/30/02 uq/L Received: <u>07/31/02</u> Units:

ield ID: уре:

MW-1

SAMPLE

Lab ID:

159959-001

Analyte	Result	RL	Dilm Fac	: Batch#	Analyzed	Analysis
Gasoline C7-C12	29,000	250	5.000	74241	08/04/02	8015B(M)
MTBE	15,000	100	50.00	74275	08/06/02	EPA 8021B
Benzene	2,400	25	50.00	74275	08/06/02	EPA 8021B
_ Toluene	2,500	25	50.00	74275	08/06/02	EPA 8021B
Ethylbenzene	920	25	50.00	74275	08/06/02	EPA 8021B
m,p-Xylenes	3,200	25	50.00	74275	08/06/02	EPA 8021B
To-Xylene	1,200	25	50.00	74275	08/06/02	EPA 8021B

Surrogate	*REC	Limits	Diln	eac Batch#	Maria yyziejo	Analysis
Trifluorotoluene (FID)	128	68-145	5.000	74241	08/04/02	8015B(M)
Bromofluorobenzene (FID)	115	66-143	5.000	74241	08/04/02	8015B(M)
Trifluorotoluene (PID)	98	53-143	50.00	74275	08/06/02	EPA 8021B
Bromofluorobenzene (PID)	105	52-142	50.00	74275	08/06/02	EPA 8021B

Field ID:

Гуре :

āb ID:

MW-2 SAMPLE 159959-002 Diln Fac:

1.000

Batch#: Analyzed: 74232 08/03/02

	Analyte	Result	RL	Analysis
	Gasoline C7-C12	180	50	8015B(M)
	MTBE	ND	2.0	EPA 8021B
	Benzene	11	0.50	EPA 8021B
-	Toluene	6.3	0.50	EPA 8021B
ı	Ethylbenzene	9.4	0.50	EPA 8021B
	m,p-Xylenes	20	0.50	EPA 8021B
	o-Xylene	7.0	0.50	EPA 8021B

Surrogate	% REC	Limits	Analysis
Trifluorotoluene (FID)	97	68-145	8015B(M)
Bromofluorobenzene (FID)	113	66-143	8015B(M)
Trifluorotoluene (PID)	98	53-143	EPA 8021B
Bromofluorobenzene (PID)	108	52-142	EPA 8021B

C= Presence confirmed, but confirmation concentration differed by more than a factor of two ND= Not Detected RL= Reporting Limit Page 1 of 7

Fample Name : 159959-001,74241 Sample #: b1 Page 1 of 1 : G:\GC07\DATA\215A049.raw FileName Date: 8/5/02 08:00 AM Method : TVHBTXE Time of Injection: 8/4/02 08:29 PM Start Time : 0.00 min End Time : 26.00 min Low Point : -37.11 mV High Point: 1068.25 mV Scale Factor: 1.0 Plot Offset: -37 mV Plot Scale: 1105.4 mV MW-1 Response [mV] C-6 -3.86C-7 -4.52-5.01 TRIFLUO -5:33 -6.63-7.14-7,71C-8 -8.36 -8.85 -9.12 -9.49 -9.91 -10.3 -10.5 -10.8 -11.6 -12.0 -13.2-14.2**BROMOF** --14.7C-10 -15.2 -15.5 -16.3 -16.6 -17.0 -17.5 -17.8 -18.2 -18.5 -19.1C-12 -20.0\_20.6

Sample #: a1

Page 1 of 1

Sample Name : 159959-002,74232

Date: 8/3/02 05:19 AM : G:\GC07\DATA\214A021.raw Method : TVHBTXE Time of Injection: 8/3/02 04:53 AM Start Time : 0.00 min End Time : 26,00 min Low Point : 10.32 mV High Point : 114.31 mV Scale Factor: 1.0 Plot Offset: 10 mV Plot Scale: 104.0 mV MW-2 Response [mV] \_1.77 \_2.16 -2:38 C-6 -2.90**-3.63** C-7 -4.51 TRIFLUO ---5.99-8.35-11.9 -13.2-14.2 BROMOF --14.7C-10 -15.2 -15.5 -16.3 -16.6 -17.5 -17.8 -18.5-19.0-19.4 -19.7 --20.0 \_20.6 -21.7 -22.1 -22.7-23.1-23.7-24.9-25.4



		Curtis & T	ompkins Labora	itories Analyti	cal Report
٦	Lab #:	159959		Location:	3609 Int'l Blvd., Oakland
	Client:	SOMA Environmental E	Ingineering Inc.	Prep:	EPA 5030B
4		2331			
	Matrix:	Water		Sampled:	07/30/02
	Units:	ug/L		Received:	07/31/02

ield ID: Type: Lab ID:

MW-3 SAMPLE 159959-003 Diln Fac: Batch#: Analyzed:

50.00 74241 08/04/02

Analota	Regult	pr.	Analvsis	
Gasoline C7-C12	45,000	2,500	8015B(M)	
MTBE	3,200	100	EPA 8021B	
Benzene	8,900	25	EPA 8021B	
Toluene	1,700	25	EPA 8021B	
Ethylbenzene	1,600	25	EPA 8021B	
m,p-Xylenes	4,000	25	EPA 8021B	
o-Xylene	1,600	25	EPA 8021B	

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	104	68-145	8015B(M)
Bromofluorobenzene (FID)	109	66-143	8015B(M)
Trifluorotoluene (PID)	102	53-143	EPA 8021B
Bromofluorobenzene (PID)	104	52-142	EPA 8021B

Field ID: 'ype: .ab ID:

MW-4 SAMPLE 159959-004 Diln Fac: Batch#: Analyzed:

1.000 74232 08/03/02

┙	Analyte	Result	RL	Analysis	
	Gasoline C7-C12	450	50	8015B(M)	
	MTBE	ND	2.0	EPA 8021B	
٦	Benzene	20	0.50	EPA 8021B	
ı	Toluene	24	0.50	EPA 8021B	
ه	Ethylbenzene	19	0.50	EPA 8021B	
	m,p-Xylenes	53	0.50	EPA 8021B	
	o-Xylene	21	0.50	EPA 8021B	

	Surrogate	&RE(	Limite	Analysis
	Trifluorotoluene (FID)	106	68-145	8015B(M)
	Bromofluorobenzene (FID)	114	66-143	8015B(M)
•	Trifluorotoluene (PID)	105	53-143	EPA 8021B
	Bromofluorobenzene (PID)	108	52-142	EPA 8021B
_	· · · · · · · · · · · · · · · · · · ·			

C= Presence confirmed, but confirmation concentration differed by more than a factor of two ND= Not Detected RL= Reporting Limit Page 2 of 7

Sample #: b1

Date: 8/4/02 11:55 PM

Page 1 of 1

Sample Name : 159959-003,74241

: G:\GC07\DATA\215A047.raw

FileName

Method

: TVHETXE Time of Injection: 8/4/02 07:20 PM Start Time : 0.00 min End Time : 26.00 min Low Point: 4.39 mV High Point: 235.61 mV Scale Factor: 1.0 Plot Offset: 4 mV Plot Scale: 231.2 mV MM-3 Response [mV] +CB <u>-</u>1.78 C-6 -3.63 -3.66 C-7 -4.52 -4.99TRIFLUO --5.99-6.62-7.13C-8 -8.36-9.90\_11.9 -13.2-14.2BROMOF --14.7C-10 -15.2 -15.5 -16.3 -16.6 -17.5 -18.5-19.0 **-18:4** -20.0-20.6C-12 -21.7 -22.1-22.7-23.1 -23.7-24.9-25.4

βample Name : 159959-004,74232 Page 1 of 1 Sample #: a1 : G:\GC07\DATA\214A022.raw Date: 8/3/02 05:53 AM Method : TVHBTXE Start Time : 0.00 min Time of Injection: 8/3/02 05:27 AM End Time : 26.00 min Low Point : 10.49 mV High Point: 113.98 mV Scale Factor: 1.0 Plot Offset: 10 mV Plot Scale: 103.5 mV Response [mV] +CB C-6 -3.86C-7 -4.51TRIFLUO --5.99-6.60 -7.12C-8 -8.35-9.90\_11.9 -13.2-14.2BROMOF --14.7C-10 -15.2 -15.5 -16.3-18.5-19.1**-18:4** -20.0 \_20.6 -21.7 -22.1-22.7-23.1-23.7-24.9



Curtis & Tompkins Laboratories Analytical Report 3609 Int'l Blvd., Oakland Lab #: 159959 Location: EPA 5030B Client: SOMA Environmental Engineering Inc. Prep: 2331 Project# 07/30/02 07/31/02 Matrix: Water Sampled: <u>Units:</u> ug/L <u>Received:</u>

ield ID: ype: Lab ID:

SAMPLE 159959-005 Diln Fac:

Batch#: Analyzed: 1.000 74232 08/03/02

Analyte	Result	RL	Analysis	
Gasoline C7-C12	110	50	8015B(M)	
MTBE	4.1	2.0	EPA 8021B	
Benzene	ND	0.50	EPA 8021B	
Toluene	ND	0.50	EPA 8021B	
Ethylbenzene	0.77	0.50	EPA 8021B	
m,p-Xylenes	ND .	0.50	EPA 8021B	
o-Xylene	ND	0.50	EPA 8021B	

Analysis 8015B(M) Surrogate %REC Limits 111 68-145 Trifluorotoluene (FID) Bromofluorobenzene (FID) 114 66-143 8015B(M) EPA 8021B Trifluorotoluene (PID) 100 53-143 Bromofluorobenzene (PID) 107 52-142 EPA 8021B

Field ID: Туре:

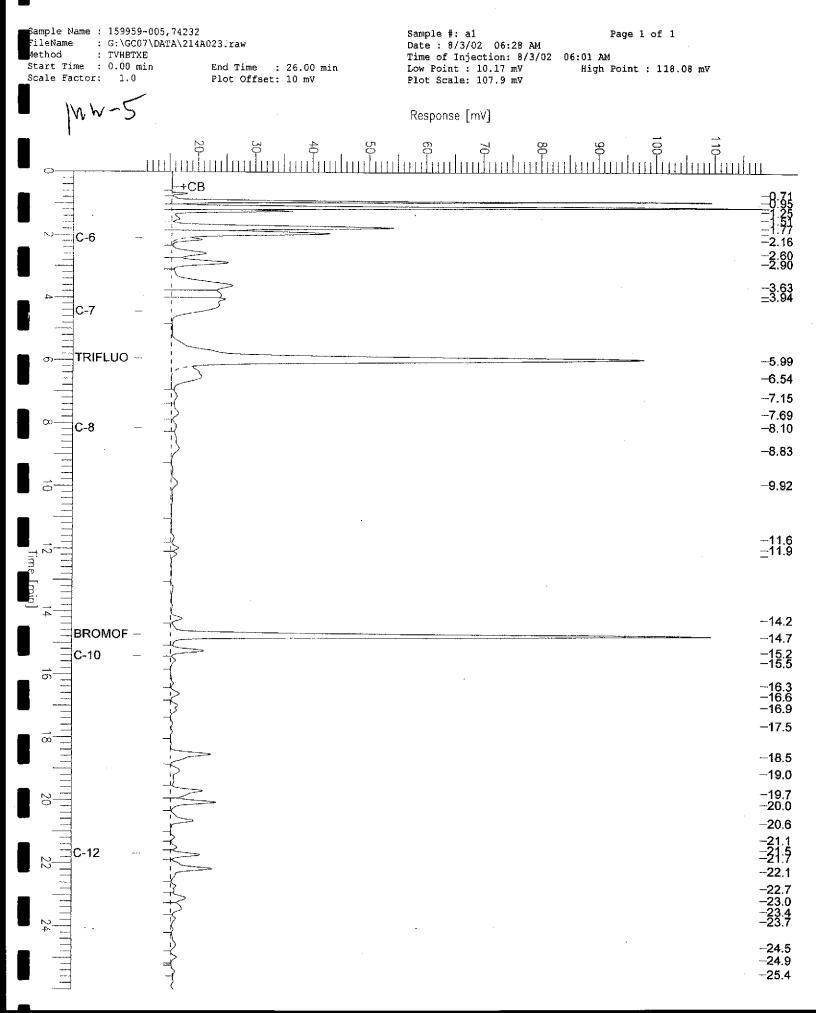
MW-6 SAMPLE Lab ID:

159959-006

		•				A real real	***********
Gasoline C7-C12	24,000	250	5.000	74241	08/04/02	8015B(M)	
MTBE	ND	20	10.00	74275	08/06/02	EPA 8021B	
Benzene	1,000	5.0	10.00	74275	08/06/02	EPA 8021B	
Toluene	410	5.0	10.00	74275	08/06/02	EPA 8021B	
Ethylbenzene	1,400	5.0	10.00	74275	08/06/02 08/06/02	EPA 8021B EPA 8021B	
m,p-Xylenes	2,800 970	5.0	10.00 10.00	74275 74275	08/06/02 08/06/02	EPA 8021B	
o-Xylene	310	3.0	10.00	14213	00/00/02	2211 0022	

Surrogate	%REC	Limits	Didin.	ac Batch#		
Trifluorotoluene (FID)	126	68-145	5.000	74241	08/04/02	
Bromofluorobenzene (FID)	113	66-143	5.000	74241	08/04/02	8015B(M)
Trifluorotoluene (PID)	111	53-143	10.00	74275	08/06/02	EPA 8021B
Bromofluorobenzene (PID)	107	52-142	10.00	74275	08/06/02	EPA 8021B

C= Presence confirmed, but confirmation concentration differed by more than a factor of two ND= Not Detected RL= Reporting Limit Page 3 of 7



Page 1 of 1

Sample Name : 159959-006,74241

: G:\GC07\DATA\215A050.raw

FileName

Sample #: b1 Date: 8/5/02 08:01 AM Method : TVHBTXE Time of Injection: 8/4/02 09:03 PM Start Time : 0.00 min End Time : 26.00 min High Point: 852.25 mV Low Point : -26.21 mV Scale Factor: 1.0 Plot Offset: -26 mV Plot Scale: 878.5 mV MW-6 Response [mV] \_+СВ =1.26 =1.78 =2.16 =2.39 =2.90 C-6 \_3.63 C-7 -4.51-5.03=5:33 TRIFLUO --6.66-7.14-7.87C-8 -8.36-8:86 -8:12 -9.49-9.90=11:3 -12.7-13.2-14.2BROMOF ---14.7C-10 -15.2 -15.5 -16.3 -16.6 -17.0 --17.5 --17.8 --18.2 --18.5 -19.0 **-18:4** -20.0 \_20.6 <u>-</u>21.1 -21.7 -24.5



		Curtis &	Tompkins Labor	ratories Analyt	ical Report
Lab Cli	#: 159 ent: SOM		Engineering Inc.	Location: Prep:	3609 Int'l Blvd., Oakland EPA 5030B
	<u>ject#: 233</u>		<u> </u>	•	
	rix:	Water		Sampled:	07/30/02
₹ Uni	ts:	ug/L		Received:	07/31/02

ield ID: Type: Lab ID:

MW-7 SAMPLE

159959-007

Diln Fac: Batch#: Analyzed:

1.000 74232 08/03/02

Analyte	Result	RL	Analysis	
Gasoline C7-C12	270	50	8015B(M)	
MTBE	35	2.0	EPA 8021B	
Benzene	5.3	0.50	EPA 8021B	
Toluene	1.3 C	0.50	EPA 8021B	
Ethylbenzene	2.3	0.50	EPA 8021B	
m,p-Xylenes	5.8	0.50	EPA 8021B	
o-Xylene	2.3	0.50	EPA 8021B	

Surrogate	%RKC	Limits	Analysis
Trifluorotoluene (FID)	123	68-145	8015B(M)
Bromofluorobenzene (FID)	116	66-143	8015B(M)
Trifluorotoluene (PID)	106	53-143	EPA 8021B
Bromofluorobenzene (PID)	105	52-142	EPA 8021B

'ield ID: Type: Lab ID:

8 - WM SAMPLE 159959-008 Diln Fac: Batch#: Analyzed:

10.00 74232 08/03/02

Analyte	Result	RL	Analysis	
Gasoline C7-C12	8,400	500	8015B(M)	
MTBE	1,400	. 20	EPA 8021B	
T Benzene	340	5.0	EPA 8021B	
Toluene	78	5.0	EPA 8021B	
<b>=</b> Ethylbenzene	530	5.0	EPA 8021B	
m,p-Xylenes	460	5.0	EPA 8021B	
o-Xylene	57	5.0	EPA 8021B	

Surrogate	%REC	Linits	Analysis
Trifluorotoluene (FID)	138	68-145	8015B(M)
Bromofluorobenzene (FID)	111	66-143	8015B(M)
Trifluorotoluene (PID)	122	53-143	EPA 8021B
Bromofluorobenzene (PID)	105	52-142	EPA 8021B

C= Presence confirmed, but confirmation concentration differed by more than a factor of two ND= Not Detected RL= Reporting Limit Page 4 of 7

Sample Name: 159959-007,74232 Sample #: al Page 1 of 1 FileName : G:\GC07\DATA\214A031.raw Date: 8/3/02 11:00 AM Method : TVHBTXE Time of Injection: 8/3/02 10:34 AM Start Time : 0.00 min End Time : 26.00 min Low Point : 9.17 mV High Point : 138.36 mV Scale Factor: 1.0 Plot Offset: 9 mV Plot Scale: 129.2 mV Response [mV] \_0.71 \_0.75 \_1.26 \_1.77 C-6 -2.60 -2.89 -3.62-4.07C-7 -5.10TRIFLUO --5.99-6.56-7.15-7.71C-8 -8.36-8.85 -9.13 -9.49 -9.89-10.5-10.9<u>=</u>11:3 -12.8 -13.2 **BROMOF** --14.7 -15.2 -15.5 C-10 -16.3 -16.6 -17.0 -17.8-18.5-19.0-19:<del>4</del> -19:<del>7</del> -20.0 -20.6-21.1 -21.5 -21.7 C-12 -22.1**-22.7** -24.5 -24.9

-25.4 -25.7

ample Name : 159959-008,74232 Page 1 of 1 Sample #: al ileName : G:\GC07\DATA\214A035.raw Date: 8/3/02 01:16 PM lethod : TVHBTXE Time of Injection: 8/3/02 12:50 PM Start Time : 0.00 min End Time : 26.00 min Low Point : 5.66 mV High Point: 202.80 mV Scale Factor: 1.0 Plot Offset: 6 mV Plot Scale: 197.1 mV MW-8 Response [mV] \_1.77 C-6 <u>-</u>3.64 C-7 -4.50-5.01TRIFLUO --5.99-6.63-7.14-7.71C-8 -8.36-8.86 -9.13 -9.49 -9.91-10.5 -10.8 -11.6 -11.9 -13.2-14.2**BROMOF-**-14.7-15.2 -15.5 C-10 -16.3-16.6 -17.0 -17.5 -17.8 -18.5-19.0-18<del>:4</del> --20.0 \_20.6 C-12 -24.9



Curtis & Tompkins Laboratories Analytical Report 3609 Int'l Blvd., Oakland EPA 5030B Lab #: 159959 Location: Client: SOMA Environmental Engineering Inc. Prep: Project#: 2331 Water 07/30/02 Matrix: Sampled: 07/31/02 uq/L Units: Received:

ield ID: ype:

Lab ID:

MW-10 SAMPLE 159959-009 Diln Fac: Batch#: Analyzed:

1.000 74232 08/03/02

Analure	Result	RT	Analysis
Gasoline C7-C12	160	50	8015B(M)
MTBE	63	2.0	EPA 8021B
Benzene	26	0.50	EPA 8021B
Toluene	0.55	0.50	EPA 8021B
Ethylbenzene	8.1	0.50	EPA 8021B
m,p-Xylenes	1.0	0.50	EPA 8021B
o-Xylene	NDND	0.50	EPA 8021B

Surrogate	*REC	Limits	Analysis
Trifluorotoluene (FID)	108	68-145	8015B(M)
Bromofluorobenzene (FID)	115	66-143	8015B(M)
Trifluorotoluene (PID)	101	53-143	EPA 8021B
Bromofluorobenzene (PID)	108	52-142	EPA 8021B

Field ID: Type: Lab ID:

MW-11 SAMPLE 159959-010 Diln Fac: Batch#:

Analyzed:

1.000 74232 08/03/02

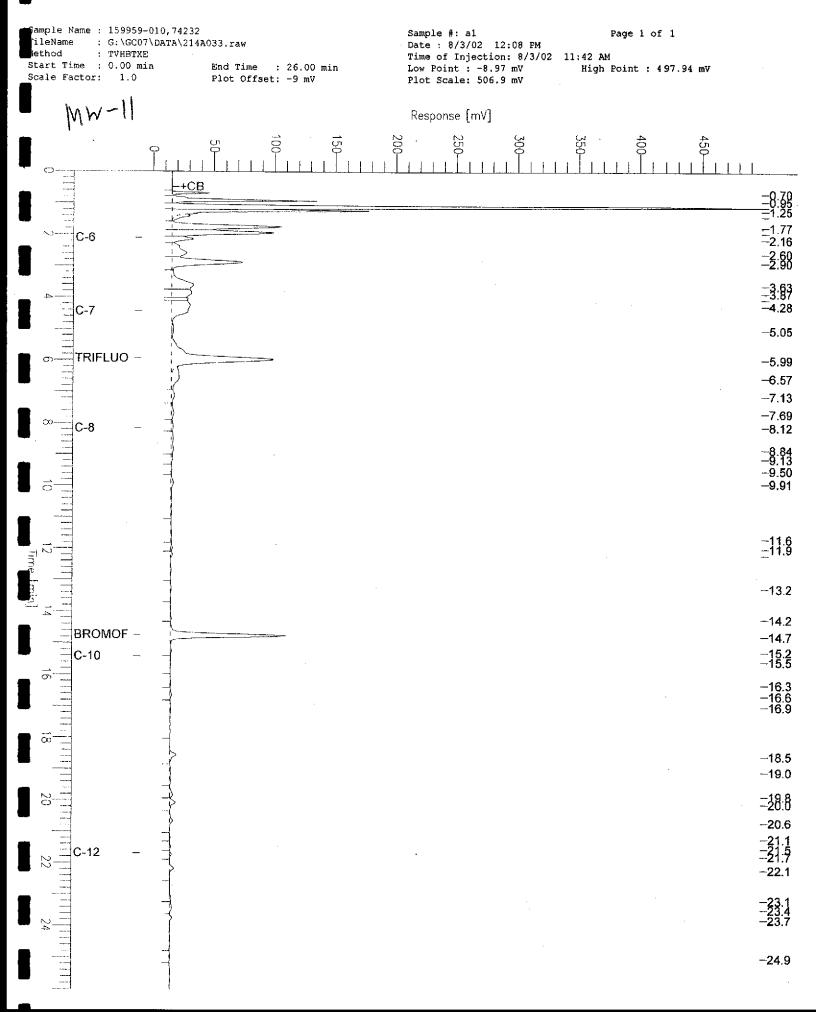
┙	Analyte	Result	RL	Analysis
Н	Gasoline C7-C12	120	50	8015B(M)
	MTBE	ND	2.0	EPA 8021B
•	Benzene	5.6	0.50	EPA 8021B
-	Toluene	ND	0.50	EPA 8021B
	Ethylbenzene	0.61	0.50	EPA 8021B
	m,p-Xylenes	0.53	0.50	EPA 8021B
	o-Xylene	ND	0.50	EPA 8021B

_	Surrogate	*REC	Limits	Analysis
	Trifluorotoluene (FID)	120	68-145	8015B(M)
	Bromofluorobenzene (FID)	117	66-143	8015B(M)
_	Trifluorotoluene (PID)	106	53-143	EPA 8021B
- 1	Bromofluorobenzene (PID)	110	52-142	EPA 8021B

C= Presence confirmed, but confirmation concentration differed by more than a factor of two ND= Not Detected RL= Reporting Limit Page 5 of 7

Bample Name : 159959-009,74232 Sample #: al Page 1 of 1 FileName : G:\GC07\DATA\214A032.raw Date: 8/3/02 11:34 AM dethod : TVHETXE Time of Injection: 8/3/02 11:08 AM Start Time : 0.00 min End Time : 26.00 min Low Point : 9.56 mV High Point: 129.60 mV Scale Factor: 1.0 Plot Offset: 10 mV Plot Scale: 120.0 mV MW-10 Response [mV] +CB C-6 **-3.64** C-7 <del>-4</del>.51 TRIFLUO --5.99-7.13-7.71<sup>--</sup>C-8 -8.35-9.92\_11.9 -13.2-14.2BROMOF --14.7C-10 -15.2 -15.5 -16.3 -16.6 -17.1-17.8-18.5-19.0-19.7 -20.0 -20.6-21.1 -21.5 C-12 -22.1-22.7-23.1 -23.4 -23.7 -24.9

-25.4





Curtis & Tompkins Laboratories Analytical Report Lab #: 159959 3609 Int'l Blvd., Oakland Location: Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B 2331 Project# Matrix: Water Sampled: 07/30/02 Units: ug/L Received: 07/31/02

field ID: Type: Lab ID: MW-12 SAMPLE 159959-011 Diln Fac: Batch#: Analyzed:

1.000 74232 08/03/02

Analyte Result RL Analysis Gasoline C7-C12 50 8015B(M) 2,200 MTBE EPA 8021B 110 2.0 Benzene 57 0.50 **EPA 8021B** 0.50 Toluene ND EPA 8021B 0.50 Ethylbenzene 11 EPA 8021B m,p-Xylenes EPA 8021B 2.6 0.50 o-Xylene ND 0.50 EPA 8021B

Surrogate	\$ REF	alo ank lees	Ana. 9818
Trifluorotoluene (FID)	141	68-145	8015B(M)
Bromofluorobenzene (FID)	123	66-143	8015B(M)
Trifluorotoluene (PID)	124	53-143	EPA 8021B
Bromofluorobenzene (PID)	110	52-142	EPA 8021B

Type: Lab ID: Diln Fac: BLANK QC185929 1.000 Batch#: Analyzed: 74232 08/02/02

_	Analyte	Result	RL	Analysis	
	Gasoline C7-C12	ND	50	8015B(M)	٦
	MTBE	ND	2.0	EPA 8021B	- 1
٦	Benzene	ND	0.50	EPA 8021B	- 1
	Toluene	ND	0.50	EPA 8021B	- 1
	Ethylbenzene	ND	0.50	EPA 8021B	1
	m,p-Xylenes	ND	0.50	EPA 8021B	- 1
щ	o-Xylene	ND	0.50	EPA 8021B	┙

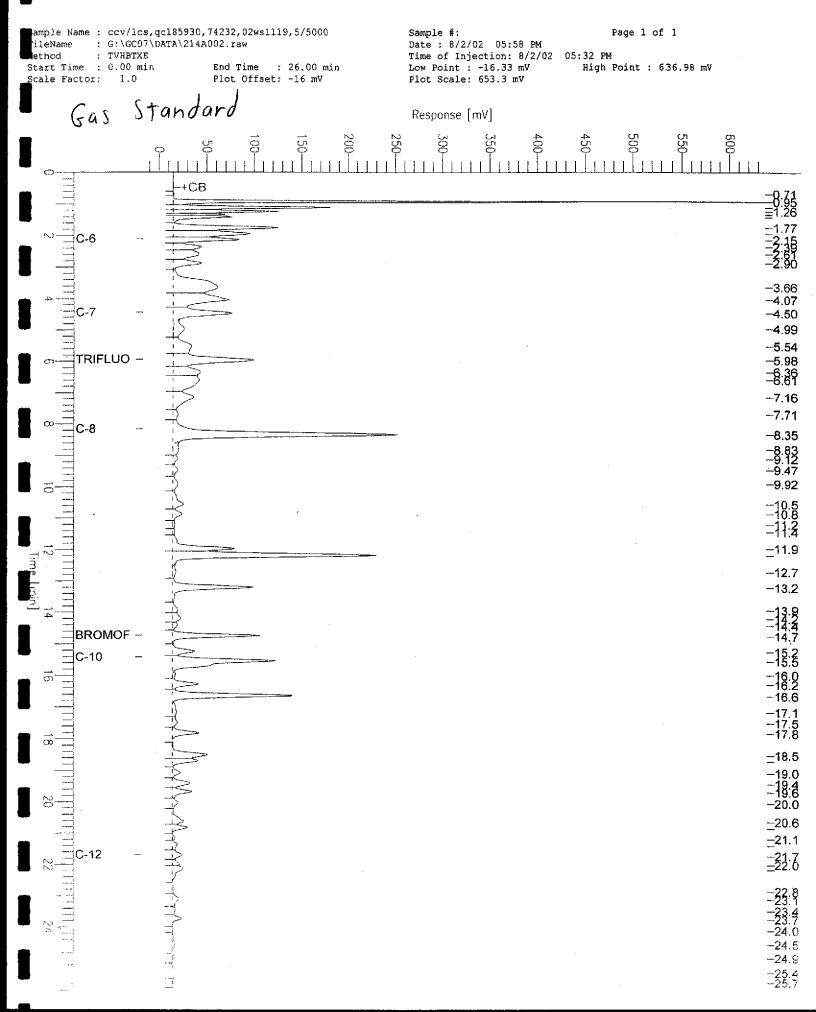
Surrogate	%REC	Limits	Analysie
Trifluorotoluene (FID)	92	68-145	8015B(M)
Bromofluorobenzene (FID)	104	66-143	8015B(M)
Trifluorotoluene (PID)	91	53-143	EPA 8021B
Bromofluorobenzene (PID)	95	52-142	EPA 8021B
		-	

C= Presence confirmed, but confirmation concentration differed by more than a factor of two ND= Not Detected

ND= Not Detected RL= Reporting Limit Page 6 of 7

1.1

ample Name : 159959-011,74232 Page 1 of 1 Sample #: al ileName : G:\GC07\DATA\214A034.raw Date: 8/3/02 12:42 PM iethod Time of Injection: 8/3/02 12:16 PM Low Point: -21.77 mV High F : TVHBTXE Start Time : 0.00 min End Time : 26,00 min High Point : 751.63 mV Scale Factor: 1.0 Plot Offset: -22 mV Plot Scale: 773.4 mV Response [mV] +CB =8:31 =1:26 =1:77 C-6 -2.61 -2.90 -3.65 <u>-4.98</u> C-7 -5.08<del>-</del>5:35 TRIFLUO --6.59-7.14 -7.71-8.12 -8.52 -8.86 -9.13 C-8 -9.49-9.91 -18:<del>2</del> -10.9\_11.6 \_11.9 -12.6-13.3-13.8\_14.2 BROMOF --14.7 -15.2 -15.5 C-10 <u>-</u>16.1 -16.6 <u>-</u>16.9 **=17:8** --18.2 --18.5 -19.0-19.7 -20.0 -20.6C-12





Curtis & Tompkins Laboratories Analytical Report Lab #: 159959 Location: 3609 Int'l Blvd., Oakland Client: SOMA Environmental Engineering Inc. **EPA 5030B** Prep: Project# Matrix: Water Sampled: Received: 07/30/02 07/31/02 Units: ug/L

ype: ab ID: Diln Fac: BLANK QC185968  $\tilde{1}.000$ 

Batch#: Analyzed: 74241 08/04/02

Analyte	Result	RL.	Analysi	
Gasoline C7-C12	ND	50	8015B(M)	
MTBE	ND	2.0	EPA 8021B	
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	

Trifluorotoluene (FID)	\$инонорда (се	*REC	Limits	Analysis
Trifluorotoluene (PID) 93 53-143 EPA 8021B	I TETETOS OCOTUCINO (PID)	92	68-145	8015B(M)
D	Bromofluorobenzene (FID)	108	66-143	8015B(M)
Bromofluorobenzene (PID) 99 52-142 EPA 8021B	Trifluorotoluene (PID)	93	53-143	EPA 8021B
	Bromofluorobenzene (PID)	99	52-142	EPA 8021B

ab ID: iln Fac:

BLANK QC186106 1.000

Batch#: Analyzed: Analysis:

74275 08/06/02 EPA 8021B

Analyte	Result	PL	8888
MTBE	ND	2.0	
Benzene	ND	0.50	ſ
<b>T</b> oluene	ND	0.50	I
Ethylbenzene	ND	0.50	- 1
<b>ሐ</b> m,p-Xylenes	ND	0.50	
o-Xylene	ND	0.50	ı
			_

Surrogate		EC Limits	
Trifluorotoluene (PID)	89	53-143	
Bromofluorobenzene (PID)	97	52-142	
•			<u> </u>

C= Presence confirmed, but confirmation concentration differed by more than a factor of two D= Not Detected L= Reporting Limit Page 7 of 7



	Total Volati	le Hydrocarb	one
		Ť	
Lab #:	159959	Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental Engineering Inc	. Prep:	EPA 5030B
Project#:	2331	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC185930	Batch#:	74232
Matrix:	Water	Analyzed:	08/02/02
Units:	ug/L		

Analyte		Pagn H	%REC	Limite	
Gasoline C7-C12	2,000	2,160	108	79-120	

Bromofluorobenzene	(FID)	112	66-143
	FID)	110	68-145
Surrogat	,e	%REC	Limits



Total Volatile Hydrocarbons Lab #: 159959 Location: 3609 Int'l Blvd., Oakland Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2331 Analysis: 8015B(M) Type: LCS Diln Fac: 1.000 Lab ID: QC185969 Batch#: 74241 Matrix: Water Analyzed: 08/04/02

Analyte	Spiked	Result		BC Limits	
Gasoline C7-C12	2,000	1,899	95	79-120	

Surroga	te	%REC	Limits
Trifluorotoluene	(FID)	104	68-145
Bromofluorobenzen	e (FID)	108	66-143

Units:

ug/L



	Benzene, Toluene, I	Sthylbenzene,	Kylenes
Lab #:	159959	Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Туре:	BS	Diln Fac:	1.000
Lab ID:	QC185931	Batch#:	74232
Matrix:	Water	Analyzed:	08/02/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	
MTBE	20.00	17.53	88	59-135	
Benzene	20.00	20.93	105	65-122	
Toluene	20.00	21.08	105	67-121	
Ethylbenzene	20.00	21.55	108	70-121	
m,p-Xylenes o-Xylene	40.00	37.83	95	72-125	
o-Xylene	20.00	21.37	107	73-122	

888	Surrogate	RREC	Limits
	Trifluorotoluene (PID)	95	53-143
	Bromofluorobenzene (PID)	100	52-142



Benzene, Toluene, Ethylbenzene, Kylenes

Lab #: 159959 Location: 3609 Int'l Blvd., Oakland

Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2331 Analysis: EPA 8021B

Type: BSD Diln Fac: 1.000 Lab ID: QC185953 Batch#: 74232

Matrix: Water Analyzed: 08/02/02

Units: ug/L

Analyte	Spiked	Result	%REC	Limits	RPD	Lin
MTBE	20.00	18.37	92	59-135	5	20
Benzene	20.00	21.75	109	65-122	4	20
Toluene	20.00	22.10	110	67-121	5	20
Ethylbenzene	20.00	21.53	108	70-121	0	20
m,p-Xylenes	40.00	39.78	99	72-125	5	20
o-Xylene	20.00	22.23	111	73-122	4	20

	Surrogate	AREC	Limits	
1	Trifluorotoluene (PID)	98	53-143	
	Bromofluorobenzene (PID)	102	52-142	 · .



Benzene, Toluene, Ethylbenzene, Kylenes Lab #: 159959 3609 Int'l Blvd., Oakland Location: Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2331 EPA 8021B Analysis: Type: LCS Diln Fac: 1.000 Lab ID: QC185970 Batch#: 74241 Matrix: 08/04/02 Water Analyzed: Units: ug/L

Analyte	Spiked	Result	*REC	Limits
MTBE	20.00	17.64	88	59-135
Benzene	20.00	21.39	107	65-122
Toluene	20.00	21.35	107	67-121
Ethylbenzene	20.00	20.89	104	70-121
m,p-Xylenes o-Xylene	40.00	37.42	94 .	72-125
o-Xylene	20.00	21.51	108	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	53-143
Bromofluorobenzene (PID)	101	52-142



	Benzene, Toluene, E	thylbenzene,	Xylenes
Lab #:	159959	Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	74275
Units:	ug/L	Analyzed:	08/06/02
Diln Fac:	1.000		

Type:

BS

Lab ID:

QC186108

Analyte	Spiked	Result	%REC	Limita	
MTBE	20.00	20.00	100	59-135	
Benzene	20.00	21.44	107	65-122	
Toluene	20.00	21.45	107	67-121	
Ethylbenzene	20.00	21.33	107	70-121	
m,p-Xylenes	40.00	40.63	102	72-125	
o-Xylene	20.00	22.14	111	73-122	

Bromofluorobenzene (PID)	104	52-142
Trifluorotoluene (PID)	94	53-143
Surrogate	%REC	Limite

Type:

BSD

Lab ID:

QC186109

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	17.84	89	59-135	11	20
Benzene	20.00	19.66	98	65-122	9	20
Toluene	20.00	19.41	97	67-121	10	20
Ethylbenzene	20.00	19.51	·9 <b>8</b>	70-121	9	20
m,p-Xylenes	40.00	36.85	92	72-125	10	20
o-Xylene	20.00	20.16	101	73-122	9	20

	%RE	C Limits
Trifluorotoluene (PID)	88	53-143
Bromofluorobenzene (PID)	97	52-142
		· · · · · · · · · · · · · · · · · · ·



	Total Volati	le Hydrodarbons	
Lab #: 159959		Location:	3609 Int'l Blvd., Oakland
Client: SOMA E	nvironmental Engineering Inc	. Prep:	EPA 5030B
Project#: 2331		Analysis:	8015B(M)
Field ID:	ZZZZZZZZZ	Batch#:	74232
MSS Lab ID:	159901-004	Sampled:	07/25/02
Matrix:	Water	Received:	07/26/02
Units:	ug/L	Analyzed:	08/02/02
Diln Fac:	1.000		

MS

Lab ID:

QC185951

Analyte	MSS R	esult	Spiked	Result	%REC	Limits
Gasoline C7-C12	2	65.7	2,000	2,474	110	67-120
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	121	68-145				
Bromofluorobenzene (FID)	113	66-143				İ

MSD

Analyte

Lab ID:

QC185952

Result %REC

Gasoline C7-C12		. 2	2,000	2,478	111	67-120	0	20
							~~	
Surrogs		RREC	Limits					
Trifluorotoluene	(FID)	122	68-145					

Spiked

Bromofluorobenzer	ne (FID)	114	66-143
Trifluorotoluene	(FID)	122	68-145
Surroga	ite	*REC	Limits

Limits RPD Lim



Lab #: 159959       Location: 3609 Int'l Blvd., Oakland         Client: SOMA Environmental Engineering Inc.       Prep: EPA 5030B         Project#: 2331       Analysis: EPA 8021B         Field ID: ZZZZZZZZZZ       Batch#: 74241         MSS Lab ID: 159956-002       Sampled: 07/30/02         Matrix: Water       Received: 07/30/02         Units: ug/L       Analyzed: 08/04/02         Diln Fac: 1.000       1.000		Benze	ane, Toluene, E	thylbenzene	, Xylenes
Project#: 2331       Analysis:       EPA 8021B         Field ID:       ZZZZZZZZZZ       Batch#:       74241         MSS Lab ID:       159956-002       Sampled:       07/30/02         Matrix:       Water       Received:       07/30/02         Units:       ug/L       Analyzed:       08/04/02	Lab #:	159959		Location:	3609 Int'l Blvd., Oakland
Field ID:       ZZZZZZZZZZ       Batch#:       74241         MSS Lab ID:       159956-002       Sampled:       07/30/02         Matrix:       Water       Received:       07/30/02         Units:       ug/L       Analyzed:       08/04/02	Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
MSS Lab ID:       159956-002       Sampled:       07/30/02         Matrix:       Water       Received:       07/30/02         Units:       ug/L       Analyzed:       08/04/02	Project#: .	2331		Analysis:	EPA 8021B
Matrix: Water Received: 07/30/02 Units: ug/L Analyzed: 08/04/02	Field ID:	ZZZZZZZZZZ	, · · · · · · · · · · · · · · · · · · ·	Batch#:	74241
Units: ug/L Analyzed: 08/04/02	MSS Lab ID	: 159956-002		Sampled:	07/30/02
	Matrix:	Water		Received:	07/30/02
Diln Fac: 1.000	Units:	ug/L		Analyzed:	08/04/02
	Diln Fac:	1.000			

Type:

MS

Lab ID:

QC185971

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.2800	20.00	17.43	87	56-146
Benzene	<0.2400	20.00	20.60	103	52-149
Toluene	<0.2300	20.00	20.48	102	69-130
Ethylbenzene	<0.2400	20.00	20.58	103	70-131
m,p-Xylenes	<0.4400	40.00	35.87	90	68-137
o-Xylene	<0.2600	20.00	21.02	105	73-133

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	53-143
Bromofluorobenzene (PID)	103	52-142

Type:

MSD

Lab ID:

QC185972

						<del></del>	
_	Analyte	Spiked	Result	*REC	Limits	RPD	Lim
	MTBE	20.00	17.33	87	56-146	1	30
	Benzene	20.00	20.21	101	52-149	2	30
	Toluene	20.00	20.23	101	69-130	1	30
	Ethylbenzene	20.00	20.44	102	70-131	1	30
	m,p-Xylenes	40.00	35.29	88	68-137	2	30
	m,p-Xylenes o-Xylene	20.00	20.76	104	73-133	1	30

Surrogate	*REC	- Gimits
Trifluorotoluene (PID)	95	53-143
Bromofluorobenzene (PID)	104	52-142
	· , · · · · · · · · · · · · · · · · · ·	



Purgeable Arcmatics by GC/MS								
Lab #:	159959		Location:	3609 Int'l Blvd., Oakland				
	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B				
	2331		Analysis:	EPA 8260B				
Field ID:	MW - 1		Batch#:	74341				
Lab ID:	159959-001		Sampled:	07/30/02				
Matrix:	Water		Received:	07/31/02				
Units:	ug/L		Analyzed:	08/08/02				
Diln Fac:	100.0		4					

MTBE		13,000	50	
Surrogate	& DW/I			
1,2-Dichloroethane-d4	100	77-130		
Toluene-d8	99	80-120		}
Bromofluorobenzene	90	80-120	•	



		Purgeable Arc	omatics by GC/M	n
Lab #:	159959		Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-3		Batch#:	74341
Lab ID:	15,9959-003		Sampled:	07/30/02
Matrix:	Water		Received:	07/31/02
Units:	ug/L		Analyzed:	08/08/02
Diln Fac:	25.00		_	

M	TBE	2	2,600	13	···
L.					
	Surrogate	*REC	Limits		
1	,2-Dichloroethane-d4	94	77-130		
T	oluene-d8	100	80-120		
В	romofluorobenzene	88	80-120		



		Purgeable Aro	matics by GC/M	S
Lab #:	159959		Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-5		Batch#:	74341
Lab ID:	159959-005		Sampled:	07/30/02
Matrix:	Water		Received:	07/31/02
Units:	ug/L		Analyzed:	08/08/02
Diln Fac:	1.000			

MTBE	N	ID	0.5	
				<u> </u>
Surrogate	REC	' Limits		
1,2-Dichloroethane-d4	104	77-130		
Toluene-d8	105	80-120		•
Bromofluorobenzene	110	מר חמ		



		Purgeable Arc	matics by GC/M	S
Lab #:	159959		Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:			Analysis:	EPA 8260B
Field ID:	MW - 7		Batch#:	74341
Lab ID:	159959-007		Sampled:	07/30/02
Matrix:	Water		Received:	07/31/02
Units:	ug/L	•	Analyzed:	08/09/02
Diln Fac:	1.000		-	

MTBE		46	0.5	
	···			
Surrogate	%REC	Limits		
1,2-Dichloroethane-d4	97	77-130		
Toluene-d8	102	80-120		
Bromofluorobenzene	92	80-120		



			Purgeable	Aro	matics by	GC/MS		
Lab #:	1599	59			Location:		3609 Int'l Blvd.	, Oakland
		Environmental	Engineering :	Inc.	Prep:		EPA 5030B	
Project#:	2331				Analysis:		EPA 8260B	
Field ID:		MW - 8	<u></u>		Batch#:		74341	····
Lab ID:		159959-008			Sampled:		07/30/02	
Matrix:		Water	,		Received:		07/31/02	
Units:		ug/L			Analyzed:		08/08/02	
Diln Fac:		10.00			-		, ,	

MTBE		1,200	5.0	
Surrogate	*REC	' Limits		
1,2-Dichloroethane-d4	93	77-130		
Toluene-d8	100	80-120		
Bromofluorobenzene	87	80-120		



		Purgeable	Aro	matics by GC/MS	\$
Lab #:	159959			Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental	Engineering	Inc.	Prep:	EPA 5030B
Project#:	2331			Analysis:	EPA 8260B
Field ID:	MW-10			Batch#:	74341
Lab ID:	159959-009			Sampled:	07/30/02
Matrix:	Water			Received:	07/31/02
Units:	ug/L			Analyzed:	08/08/02
Diln Fac:	1.000	<u>.</u>		<u>-</u>	

Analyte		Result	RL	
MTBE		72	0.5	********
Surrogate	%REC	Limits		
1,2-Dichloroethane-d4	101	77-130		*********
Toluene-d8 Bromofluorobenzene	99	80-120		l
Bromofluorobenzene	90	80-120		ŀ



		Purgeable Aro	matics by (	GC/MS
	159959		Location:	3609 Int'l Blvd., Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-12		Batch#:	74341
Lab ID:	159959-011		Sampled:	07/30/02
Matrix:	Water		Received:	07/31/02
Units:	ug/L		Analyzed:	08/09/02
Diln Fac:	1.000		•	

	200000000000000000000000000000000000000	***************************************		
Analyte		Result	RL	
MTBE		100	0.5	
		-		
Surrogate	%REC	Limits		
1,2-Dichloroethane-d4	92	77-130		
Toluene-d8	102	80-120		i
Bromofluorobenzene	9.0	90-120		



Purgeable Aromatics by GC/MS Lab #: 159959 Location: 3609 Int'l Blvd., Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2331 Analysis: EPA 8260B Type: BLANK Diln Fac: 1.000 Lab ID: QC186332 Batch#: 74341 Matrix: Water Analyzed: 08/08/02 Units: ug/L

Analy	rte Result	RL	
MTBE	<u>N</u> D	0.5	\

Surrogate	*REC	Limits
1,2-Dichloroethane-d4	104	77-130
Toluene-d8	102	80-120
Bromofluorobenzene	118	80-120



Purgeable Aromatics by GC/MS Lab #: 159959 Location: 3609 Int'l Blvd., Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2331 Analysis: **EPA 8260B** Type: BLANK Diln Fac: 1.000 Lab ID: QC186333 Batch#: 74341 Matrix: Water Analyzed: 08/08/02 Units: ug/L

Analyte	Result	RL	
MTBE	ND	0.5	

Surrogate	%REC	Limite	
1,2-Dichloroethane-d4	106	77-130	
Toluene-d8	105	80-120	
Bromofluorobenzene	87	80-120	ĺ



Purgeable Aromatics by GC/MS Lab #: 159959 Location: 3609 Int'l Blvd., Oakland Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2331 Analysis: EPA 8260B Matrix: Water 74341 Batch#: Units: ug/L Analyzed: 08/08/02 Diln Fac: 1.000

Гуре:

BS

Lab ID:

QC186330

Analyte	Spiked	Result	%RE		
MTBE	50.00	55.94	112	54-131	

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	104	77-130	
Toluene-d8	102	80-120	
Bromofluorobenzene	98	80-120	

Туре :

BSD

Lab ID:

						*****	200000000000000000000000000000000000000
MTBE		50.00	49.96	100	54-131	11	20
		•					
Surrogate	%REC	Limits					
1,2-Dichloroethane-d4	99	77-130				****************	**********
m_1 30	104	80-120					
Toluene-d8							

# **Appendix C**

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

#### ANALYTICAL REPORT

Prepared for:

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

Date: 30-AUG-02 Lab Job Number: 160367 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:

Project Manager

Reviewed by:

Operations Manager

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NELAP # 01107CA

Page 1 of 4

# **CHAIN OF CUSTODY**

Page	1	of	1	

**Analyses** 

## Curtis & Tompkins, Ltd.

**Analytical Laboratory Since 1878** 2323 Fifth Street Berkeley, CA 94710 (510)486-0900 Phone (510)486-0532 Fax

Project No: 2333

C&T LOGIN#

Sampler:

Report To:

Mansour Sepehr,

			- Itopo				- Wallour Co	PCI	" /		270	100	1												- 1
Projec	t Name:3609 International	Blvd., Oaklan	(Comp	any	<i>ı</i> :		SOMA Envir	oni	mer	ıtal				GCMS											
Turna	round Time: 5 tanks	heb .	Telep	hon	e:		925-244-660	00						8260 G			i								
			Fax:				925-244-660	)1						E 82											
				M	atri	ix		F	res	erv	ativ	e	5	/TB											
Lab No.	Sample ID.	Sampling Time	Date	Soil	Waste	200	# of Containers	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO3	ICE		TPHg 8015	BTEX & MTBE											į
_	Influent	8/23/02	4:15PM	6	1		3		1		1		1			+	7						-	+	┪
-2	GAC-1		4:10 PM	_			3						<b>Z</b>	1										十	٦
- 3	PSP#1	8/23/02	4:05/4	/	1	L	3						$\overline{Z}$												٦
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											DAT	E/TIMI	<b>E</b>				-						DATE	E/TIM	E



Total Volatile Hydrocarbons

Lab #: 160367 Location: 3609 International Blvd.

Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2333 Analysis: 8015B(M)

Matrix: Water 08/23/02 Sampled: Units: ug/L Received: 08/23/02

Field ID:

Lab ID:

Type:

INFLUENT SAMPLE

160367-001

Diln Fac:

Batch#:

Analyzed:

10.00

74791 08/27/02

Analyte Result RL Gasoline C7-C12 12,000 500

Surrogate %REC Limits Trifluorotoluene (FID) 90 68-145 Bromofluorobenzene (FID) 78 66-143

ield ID:

Гуре:

Lab ID:

GAC-1

SAMPLE

160367-002

Diln Fac:

Batch#:

1.000 74733

Analyzed: 08/26/02

Analyte Result Gasoline C7-C12 ND 50

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

Field ID:

'ype: Lab ID: PSP#1

SAMPLE

Diln Fac:

1.000

Batch#: 160367-003

Analyzed:

74733 08/26/02

Analyte Result RL Gasoline C7-C12 ND50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	68-145
Bromofluorobenzene (FID)	108	66-143

ND= Not Detected kL= Reporting Limit Page 1 of 2

#### Chromatogram

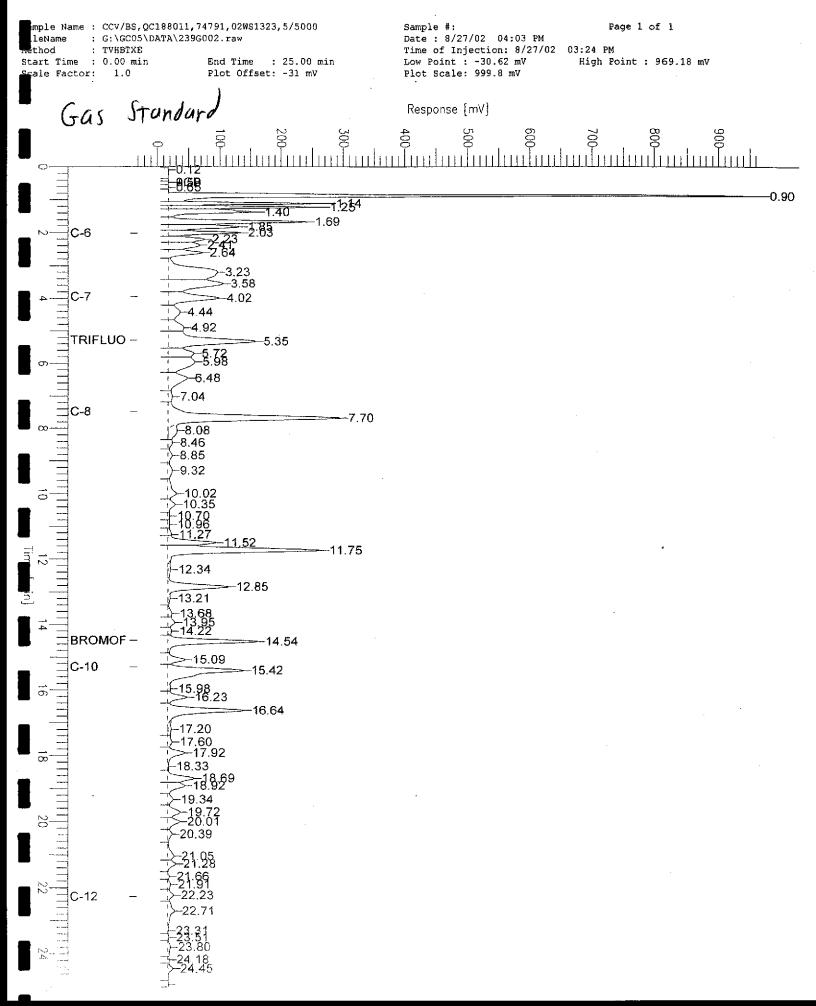
Sample #: C1

Page 1 of 1

Sample Name: 160367-001,74791,TVH ONLY

FileName : G:\GC05\DATA\239G007.raw Date: 8/27/02 07:06 PM lethod : TVHBTXE Time of Injection: 8/27/02 06:41 PM Start Time : 0.00 min End Time : 25.00 min Low Point : -30.67 mV High Point: 972.56 mV Scale Factor: 1.0 Plot Offset: -31 mV Plot Scale: 1003.2 mV Influent Response [mV] ±5:6₹ -0.92= 1.34 1124 = 1.655 1.85 C-6 -2.63 3.19 > 3.42 C-7 4.02 4.42 TRIFLUO --5.98 6.46 -7.00 C-8 7.68 -8.07-9.65 -9.94 -10.36 -10.85 -11.16 <del>≥</del>11.51 -11.73 -12.84 -13.95 -14.28 BROMOF --14.52 -15.07 C-10 --15.41 16.22 =--16.62 -17.16 17.60 >-17.91 <del>≥18</del>18,69 -19.30 -19.70 -20.00 -20.38C-12 -22.70 -23.78 -24.92

#### Chromatogram





Total Volatile Hydrocarbons Lab #: 160367 3609 International Blvd. Location: Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2333 Analysis: 8015B(M) Matrix: Water Sampled: 08/23/02

ype:

Units:

BLANK

ug/L

Lab ID:

Piln Fac:

QC187805

1.000

Batch#:

Received:

74733

Analyzed:

08/26/02

08/23/02

	Anal	yte	R	esult	RL		
1	Gasoline C7-C12		ND		50		
7	Surro	gate	#REC	Limits			
- 1	Trifluorotoluen	- (DTD)	100	68-145		 	

66-143

ype:

BLANK

Bromofluorobenzene (FID)

Lab ID:

QC188010

101

Batch#:

74791

Analyzed:

08/27/02

Diln Fac:

1.000

Analyte		RL	
Gasoline C7-C12	ND	50	

Surrogate	%RBC	Limits
Trifluorotoluene (FID)	104	68-145
Bromofluorobenzene (FID)	109	66-143



Total Volatile Hydrocarbons Lab #: 160367 3609 International Blvd. Location: Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2333 Analysis: 8015B(M) Type: LCS Diln Fac: 1.000 Lab ID: QC187806 74733 Batch#: Matrix: 08/26/02 Water Analyzed: Units: ug/L

Analyte	Spiked	Result	*REC	Limits	
Gasoline C7-C12	2,000	2,106	105	79-120	

Surrogate	%R	EC Limits	
Trifluorotoluene (FI		68-145	
Bromofluorobenzene (	(FID) 104	66-143	



Total Volatile Hydrocarbons

Lab #: 160367 Client:

SOMA Environmental Engineering Inc.

EPA 5030B Prep:

3609 International Blvd.

Project#: 2333

Analysis:

Location:

Water

8015B(M)

Matrix:

Batch#:

74791

Units: Diln Fac:

ug/L 1.000 Analyzed:

08/27/02

Type:

BS

Lab ID:

QC188011

Analyte	Spiked	Result	Control of the Contro	Limits	
Gasoline C7-C12	2,000	1,919	96	79-120	

Surrogate	%RE	C Limits	
Trifluorotoluene (FID)	127	68-145	
Bromofluorobenzene (FID)	119	66-143	

'ype:

BSD

Lab ID:

Analyte	Spiked	Result	FREC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,862	93	79-120	3	20
Surrogate	%REC Limits					

L	Surrogate	%REC	Limits	
	Trifluorotoluene (FID)	100	68-145	
f	Bromofluorobenzene (FID)	85	66-143	



		Total Volatil	e Hydrocarbons	
Lab #: 1	60367		Location:	3609 International Blvd.
Client: S	OMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#: 2	333		Analysis:	8015B(M)
Field ID:	GAC-1		Batch#:	74733
MSS Lab ID:	160367-002		Sampled:	08/23/02
Matrix:	Water		Received:	08/23/02
Units:	ug/L		Analyzed:	08/27/02
Diln Fac:	1.000			

туре:

MS

Lab ID:

QC187875

Analyte M	SS Result	Spiked	Result		l Limits
Gasoline C7-C12	<33.00	2,000	1,968	98	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	68-145
Bromofluorobenzene (FID)	106	66-143

Type:

MSD

Lab ID:

Analyte	Spiked		ERBC	Limits		est and time i
Gasoline C7-C12	2,000	1,995	100	67-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	111	68-145
Bromofluorobenzene (FID)	105	66-143



		Purgeable	Aro	matics by GC/M	S
Lab #:	160367			Location:	3609 International Blvd.
	SOMA Environmental	Engineering	Inc.	Prep:	EPA 5030B
Project#:	2333	_		Analysis:	EPA 8260B
Field ID:	INFLUENT			Batch#:	74746
Lab ID:	160367-001			Sampled:	08/23/02
Matrix:	Water			Received:	08/23/02
Units:	ug/L			Analyzed:	08/26/02
Diln Fac:	71.43			_	

Analyte	Result	RL	
MTBE	9,200	36	
Benzene	1,300	36	
Toluene	690	36	
Chlorobenzene	ND	36	
Ethylbenzene	82	36	
m,p-Xylenes	1,400	36	
o-Xylene	390	36	
1,3-Dichlorobenzene	ND	36	
1,4-Dichlorobenzene	ND	36	
1,2-Dichlorobenzene	ND	36	

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	102	77-130	
Toluene-d8	97	80-120	
Bromofluorobenzene	80	80-120	



		Purgeable Aro	matics by GC/M	7
Lab #:	160367		Location:	3609 International Blvd.
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	GAC-1		Batch#:	74746
Lab ID:	160367-002		Sampled:	08/23/02
Matrix:	Water		Received:	08/23/02
Units:	ug/L		Analyzed:	08/27/02
Diln Fac:	1.000		<del>-</del>	

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	J Limits
1,2-Dichloroethane-d4	103	77~130
Toluene-d8	98	80-120
Bromofluorobenzene	80	80-120
· ·		



		Purgeable Aro	matics by GC/M	s
Lab #:	160367		Location:	3609 International Blvd.
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	_	Analysis:	EPA 8260B
Field ID:	PSP#1		Batch#:	74746
Lab ID:	160367-003		Sampled:	08/23/02
Matrix:	Water		Received:	08/23/02
Units:	ug/L		Analyzed:	08/27/02
Diln Fac:	1.000		<u>-</u>	

Analyte	Result	RLi	
MTBE	1.0	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	

1,2-Dichloroethane-d4 107 77-130 Toluene-d8 99 80-120	Surrogate	%REC	Limits	
	1,2-Dichloroethane-d4	107	77-130	
Description of the second seco	Toluene-d8	99	80-120	[
Bromorruoropenzene 80 80-120	Bromofluorobenzene	80	80-120	



	Purgeable Arc	omatics by G	C/MS
Lab #:	160367	Location:	3609 International Blvd.
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Туре:	BLANK	Diln Fac:	1.000
Lab ID:	QC187850	Batch#:	74746
Matrix:	Water	Analyzed:	08/26/02
Units:	ug/L	<u>-</u>	

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ИD	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	103	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	82	80-120



#### Purgeable Aromatics by GC/MS

Lab #: 160367

Client: SOMA Environmental Engineering Inc. Location: Prep:

3609 International Blvd.

Project#: 2333

Analysis:

EPA 5030B

Matrix:

Water

Batch#:

EPA 8260B

Units:

ug/L

74746

Diln Fac:

1.000

Analyzed:

08/26/02

Type:

BS

Lab ID:

QC187848

Analyte	Spiked	Result	%RE(	C Limits
Benzene	50.00	47.74	95	76-120
Toluene	50.00	46.41	93	79-120
Chlorobenzene	50.00	49.15	98	80-120

Surrogate	*RBC	Limits
1,2-Dichloroethane-d4	102	77-130
Toluene-d8	94	80-120
Bromofluorobenzene	101	80-120

Type:

BSD

Lab ID:

Analyte	Spiked	Result	%REC	Limits	RPB	i si m
Benzene	50.00	47.71	95	76-120	0	20
Toluene	50.00	45.73	91	79-120	1	20
Chlorobenzene	50.00	48.71	97	80-120	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4 Toluene-d8	100	77-130
Toluene-d8	95	80-120
Bromofluorobenzene	99	80-120
	· · · · · · · · · · · · · · · · · · ·	



### Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 9471O, Phone (51O) 486-O9OO

#### ANALYTICAL REPORT

Prepared for:

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

Date: 30-JUL-02 Lab Job Number: 159823 Project ID: 2333

Location: Tony's Auto Express-Oak

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:

Project Manager

Reviewed by:

Opexatijons Manager

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NELAP # 01107CA

Page 1 of 9

# **CHAIN OF CUSTODY FORM**

Page \_\_\_\_of \_\_\_

**Analyses** 

<b>Curtis</b>	& -	<b>Tomp</b>	kins.	Ltd

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

Project No:	2337		
Project Name:	Razi / Oak	3604	Int'l

Project	P.O.:	·

Turnaround Time:	Standard

C&T LOGIN#_	159823
	-

Samplerz	Tony Perini / Roger Papier
	Tony Perini / Reger Paples

Company:	500MA	Env. Ena
		Q

Telephone:	915	) 144-106-100
	-	<del>,</del>

Project P.O					relephone: (a15) 144-tologo						0.05	ν. 17.	1		-		ļ		l		
Turnaround	I Time: 4	andard			Fax:	Fax: (925) 244-1000						80	MT PST								
				atrix	<b>7</b>	F	res	serv	ativ	e				-							
Laboratory Number	Sample ID.	Time	Soil	Waste	# of Containers	HC	H <sub>2</sub> SO	HNO3	ICE		Field Notes	म्प्रा - व	(' ')	,							
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Notes:			RELINQUISHED BY:					RECEIVED BY:													
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DATE/TIME

DATE/TIME DATE/TIME DATE/TIME

DATE/TIME Signature



Total Volatile Hydrocarbons

159823 Lab #:

Client: SOMA Environmental Engineering Inc. Prep: Project#: 2333

Matrix: Water Units: uq/L

Location: Tony's Auto Express-Oak

EPA 5030B 8015B(M) Analysis:

Sampled: 07/23/02 07/23/02 Received:

rield ID:

lab ID:

Type:

PSP-1 SAMPLE

159823-001

Diln Fac:

Batch#:

1.000 73985

07/24/02 Analyzed:

Analyte Result RL 50 Gasoline C7-C12 ND

Surrogate %REC Limits Trifluorotoluene (FID) 98 68-145 Bromofluorobenzene (FID) 112 66-143

rield ID:

'ype:

Lab ID:

GAC-1 SAMPLE

159823-002

Diln Fac:

Batch#: Analyzed: 73985 07/25/02

1.000

Analyte Result RE Gasoline C7-C12 ND 50

Surrogate %REC Limits

68-145 Trifluorotoluene (FID) 99 Bromofluorobenzene (FID) 66-143 111

Field ID:

INFLUENT SAMPLE

Diln Fac:

25.00

l'ype: Lab ID:

159823-003

Batch#: Analyzed: 74055 07/26/02

Analyte Result RL

Gasoline C7-C12 15,000 1,300

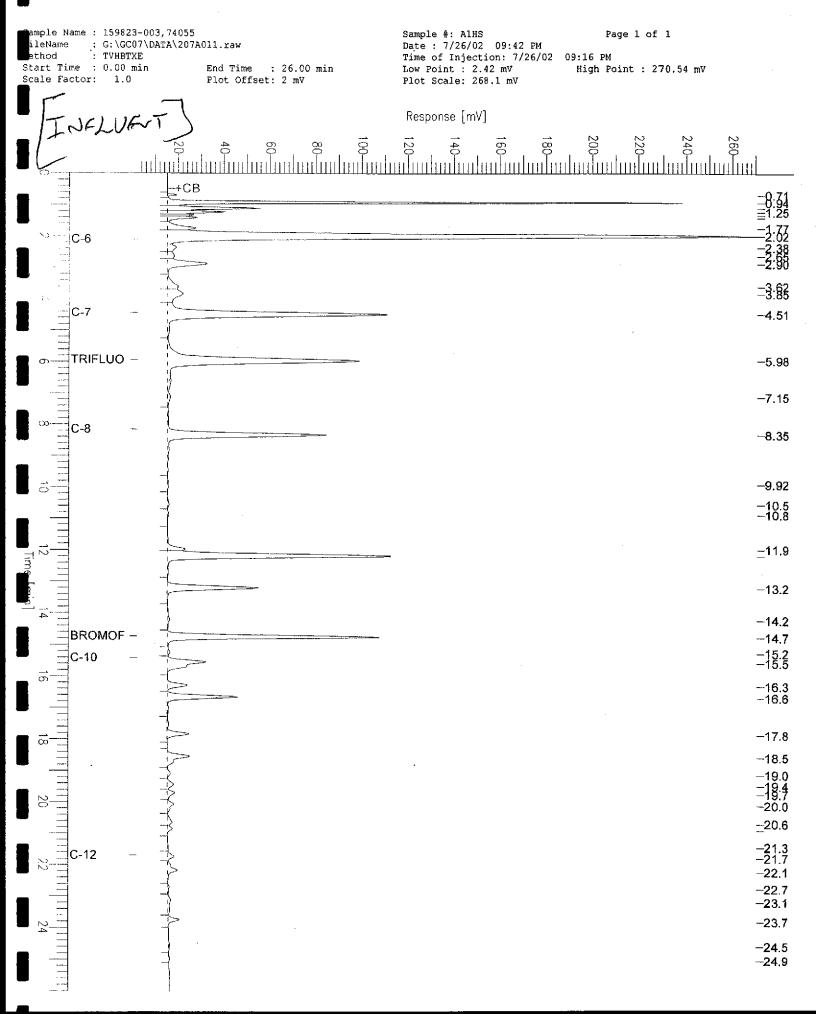
Surrogate %REC Limits Trifluorotoluene (FID) 106 68-145 Bromofluorobenzene (FID) 110 66-143

ND= Not Detected

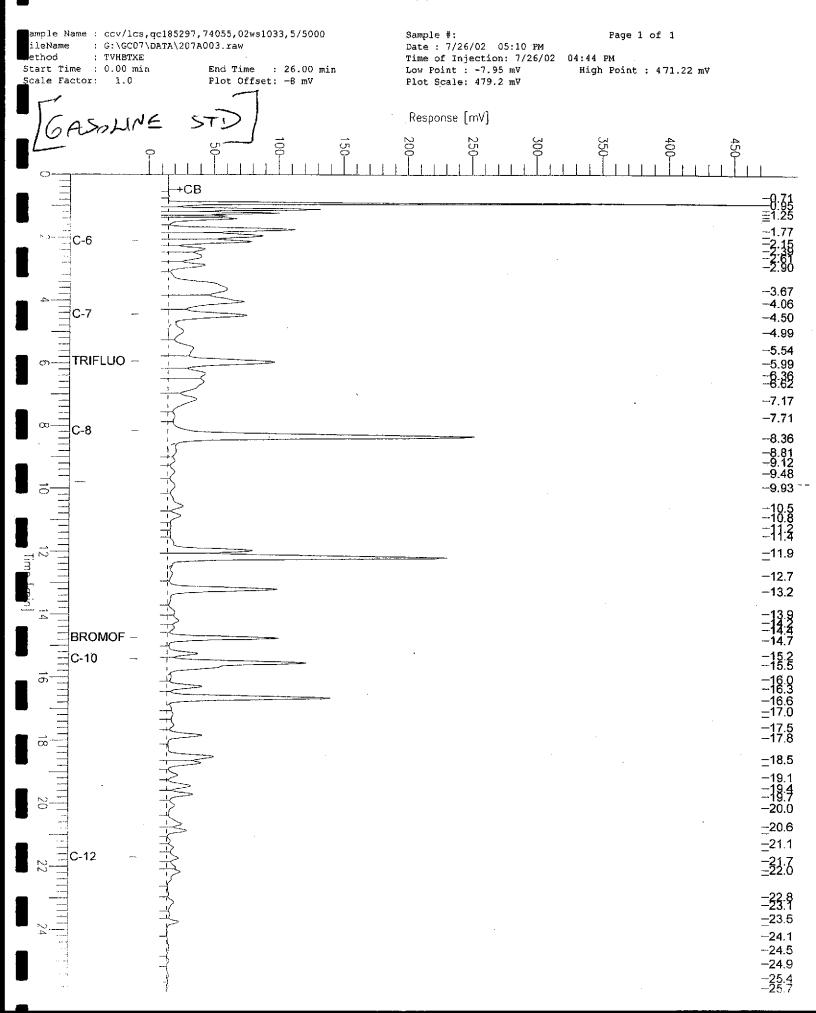
L= Reporting Limit

Page 1 of 2

### GC07 TVH 'A' Data File RTX 502



### GC07 TVH 'A' Data File RTX 502





Total Volatile Hydrocarbons

Lab #: 159823 Location: Tony's Auto Express-Oak

Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2333 Analysis: 8015B(M)

 Matrix:
 Water
 Sampled:
 07/23/02

 Units:
 ug/L
 Received:
 07/23/02

Гуре:

BLANK

Lab ID: QC185018

Diln Fac: 1.000

Batch#: Analyzed: 73985 07/24/02

Analyte Result RL

Gasoline C7-C12 ND 50

Surrogate %REC Limits
Trifluorotoluene (FID) 99 68-145
Bromofluorobenzene (FID) 109 66-143

Type:

BLANK

Lab ID: QC185296 Diln Fac: 1.000 Batch#:

74055

Analyzed:

07/26/02

Analyte Result Ri Gasoline C7-C12 ND 50

Surrogate %REC Limits
Trifluorotoluene (FID) 89 68-145
Bromofluorobenzene (FID) 101 66-143

ND= Not Detected RL= Reporting Limit Page 2 of 2



Total Volatile Hydrocarbons Lab #: 159823 Location: Tony's Auto Express-Oak EPA 5030B Client: SOMA Environmental Engineering Inc. Prep: 8015B(M) Project#: 2333 Analysis: Туре: LCS Diln Fac: 1.000 Lab ID: QC185019 Batch#: 73985 07/25/02 Matrix: Water Analyzed: Units: ug/L

Analyte		Result	*REC	Limits
Gasoline C7-C12	3,000	3,278	109	79-120

Surrogate	%RE	C Limits	
Trifluorotoluene (FID)	123	68-145	
Bromofluorobenzene (F	ID) 114	66-143	



Total Volatile Hydrocarbons Lab #: 159823 Location: Tony's Auto Express-Oak Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2333 Analysis: 8015B(M) Type: LCS Diln Fac: 1.000 Lab ID: QC185297 Batch#: 74055 Matrix: Water Analyzed: 07/26/02 Units: ug/L

	Analyte	Spiked	Result	%REC		
┒	Gasoline C7-C12	2,000	2,189	109	79-120	

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



		Total Volati	le Hydrocarbons	
Lab #: 1598	23		Location:	Tony's Auto Express-Oak
Client: SOMA	Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#: 2333			Analysis:	8015B(M)
Field ID:	ZZZZZZZZZ		Batch#:	73985
MSS Lab ID:	159827-001		Sampled:	07/22/02
Matrix:	Water		Received:	07/23/02
Units:	ug/L		Analyzed:	07/25/02
Diln Fac:	1.000	<u> </u>		

Type:

MS

Lab ID:

QC185020

Analyte	THE PARTY OF THE P	Spiked	Result	%REC	l Limits
Gasoline C7-C12	<33.00	2,000	2,301	115	67-120

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

Type:

MSD

Lab ID:

Gasoline C7-C12	2,000	2,282	114	67-120	1	20
				XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	966080000000000000000000000000000000000	50000000000000000000000000000000000000

	Surrogate	%REC	Limits
	Trifluorotoluene (FID)	114	68-145
٦	Bromofluorobenzene (FID)	117	66-143



			Total Volatil	e Hydrocarbons	
Lab #:	15982	!3		Location:	Tony's Auto Express-Oak
Client:	SOMA	Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333			Analysis:	8015B(M)
Field ID:		ZZZZZZZZZ		Batch#:	74055
MSS Lab II	):	159878-002		Sampled:	07/24/02
Matrix:		Water		Received:	07/25/02
Units:		ug/L		Analyzed:	07/26/02
Diln Fac:		1.000			

Type:

MS

Lab ID:

QC185298

Analyte	e M	ISS: Res	ult	Spiked	Result	%REC	Limits
Gasoline C7-C12		104	. 7	2,000	2,275	109	67-120
						·	
Surrogs	ite	%REC	Limits				
Trifluorotoluene	(FID) 1	0.77	68-145				

66-143

117

vpe:

MSD

Bromofluorobenzene (FID)

Lab ID:

Gasoline C7-C12	2,000	2,241	107	67-120	1	20
				- '		
Surrogate	%REC Limits					

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	108	68-145	1
Bromofluorobenzene (FID)	119	66-143	



		Purgeable Org	anics by GC/MS	
		1	*	
Lab #:	159823		Location:	Tony's Auto Express-Oak
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	PSP-1		Batch#:	74006
Lab ID:	159823-001		Sampled:	07/23/02
Matrix:	Water		Received:	07/23/02
Units:	ug/L	•	Analyzed:	07/25/02
Diln Fac:	1.000		<del>-</del>	

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ИD	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene .	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ИD	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

D= Not Detected L= Reporting Limit Page 1 of 2



		Purgeable Org	anics by GC/MS	
Lab #:	159823		Location:	Tony's Auto Express-Oak
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	PSP-1		Batch#:	74006
Lab ID:	159823-001		Sampled:	07/23/02
Matrix:	Water		Received:	07/23/02
Units:	ug/L		Analyzed:	07/25/02
Diln Fac:	1.000		-	

Analyte	Result	RL	
Dibromochloromethane	ND	5.0	
1,2-Dibromoethane	ND	5.0	İ
Chlorobenzene	ND	5.0	Į
1,1,1,2-Tetrachloroethane	ND	5.0	
Ethylbenzene	ND	5.0	
m,p-Xylenes	ND	5.0	
o-Xylene	ND	5.0	
Styrene	ND	5.0	
Bromoform	ND	5.0	
Isopropylbenzene	ND	5.0	
1,1,2,2-Tetrachloroethane	ND	5.0	
1,2,3-Trichloropropane	ND	5.0	
Propylbenzene	ND	5.0	
Bromobenzene	ND	5.0	
1,3,5-Trimethylbenzene	ND	5.0	
2-Chlorotoluene	ND	5.0	
4-Chlorotoluene	ND	5.0	
tert-Butylbenzene	ND	5.0	1
1,2,4-Trimethylbenzene	ND	5.0	
sec-Butylbenzene	ND	5.0	i
para-Isopropyl Toluene	ND	5.0	
1,3-Dichlorobenzene	ND	5.0	
1,4-Dichlorobenzene	ND	5.0	
n-Butylbenzene	ND	5.0	
1,2-Dichlorobenzene	, ND	5.0	
1,2-Dibromo-3-Chloropropane	ND	5.0	
1,2,4-Trichlorobenzene	ND	5.0	
Hexachlorobutadiene	ND	5.0	
Naphthalene	ND	5.0	ļ
1,2,3-Trichlorobenzene	ND	5.0	<u> </u>

Bromofluorobenzene	106	80-120
Toluene-d8	103	80-120
1,2-Dichloroethane-d4	111	77-130
Dibromofluoromethane	100	80-121
Surrogate	%REC	Limits

D= Not Detected L= Reporting Limit Page 2 of 2



Purgeable Organics by GC/MS						
Lab #:	159823		Location:	Tony's Auto Express-Oak		
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B		
Project#:	2333	_	Analysis:	EPA 8260B		
Field ID:	GAC-1		Batch#:	74006		
Lab ID:	159823-002		Sampled:	07/23/02		
Matrix:	Water		Received:	07/23/02		
Units:	ug/L		Analyzed:	07/25/02		
Diln Fac:	1.000					

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND .	. 50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
Tcis-1,2-Dichloroethene	ND	5.0
12,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
T1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ИD	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
T1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0



		Purgeable Or	ganies by GC/MS	
Lab #:	159823		Location:	Tony's Auto Express-Oak
Client:	SOMA Environmental	Engineering Inc	. Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	GAC-1		Batch#:	74006
Lab ID:	159823-002		Sampled:	07/23/02
Matrix:	Water		Received:	07/23/02
Units:	ug/L		Analyzed:	07/25/02
Diln Fac:	1.000		<del>-</del>	

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
To-Xylene	ND	. 5.0
Styrene	ND	5.0
Bromoform	ND	5.0
➡ Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
П-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	: ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-121
1,2-Dichloroethane-d4	109	77-130
_Toluene-d8	102	80-120
Bromofluorobenzene	102	80-120



			Purgeable	e Org	anics by GC/MS	
Lab #:	15982	23			Location:	Tony's Auto Express-Oak
Client:	SOMA	Environmental	Engineering	Inc.	Prep:	EPA 5030B
Project#:	2333				Analysis:	EPA 8260B
Field ID:		INFLUENT			Batch#:	74006
Lab ID:		159823-003			Sampled:	07/23/02
Matrix:		Water			Received:	07/23/02
Units:		ug/L			Analyzed:	07/25/02
Diln Fac:		40.00			•	<u> </u>

Analyte	Result	RL	
Freon 12	ND	400	
Chloromethane	ND	400	•
Vinyl Chloride	ND	400	
Bromomethane	ND	400	
Chloroethane	ND	400	
Trichlorofluoromethane	ND	200	
Acetone	ND	800	
Freon 113	ND	200	
1,1-Dichloroethene	ND	200	
Methylene Chloride	ND	800	
Carbon Disulfide	ND	200	
MTBE	7,500	200	
trans-1,2-Dichloroethene	ND	200	
Vinyl Acetate	ND	2,000	
1,1-Dichloroethane	ND	200	
2-Butanone	ND	400	
cis-1,2-Dichloroethene	ND	200	
2,2-Dichloropropane	ND .	,200	
Chloroform	ND	200	
Bromochloromethane	ND	400	
1,1,1-Trichloroethane	ND	200	İ
1,1-Dichloropropene	ND	200	
Carbon Tetrachloride	ND	200	
1,2-Dichloroethane	ND	200	
Benzene	1,400	200	
Trichloroethene	ND	200	
1,2-Dichloropropane	ND ·	200	
Bromodichloromethane	ND	200	
Dibromomethane	ND	200	
4-Methyl-2-Pentanone	ND	400	
cis-1,3-Dichloropropene	ND	200	
Toluene	970	200	
trans-1,3-Dichloropropene	ND	200	
1,1,2-Trichloroethane	ND	200	,
2-Hexanone	ND	400	
1,3-Dichloropropane	ND	200	į
Tetrachloroethene	ND	200	



		Purgeable Org	anics by GC/MS	
Lab #:	159823		Location:	Tony's Auto Express-Oak
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	INFLUENT		Batch#:	74006
Lab ID:	159823-003		Sampled:	07/23/02
Matrix:	Water		Received:	07/23/02
Units:	ug/L		Analyzed:	07/25/02
Diln Fac:	40.00			

Analyte	Result	RL	
Dibromochloromethane	ND	200	3333
1,2-Dibromoethane	ND	200	
Chlorobenzene	ND	200	
1,1,1,2-Tetrachloroethane	ND	200	
Ethylbenzene	ND	200	
m,p-Xylenes	1,200	200	
o-Xylene	400	200	
Styrene	ND	200	
Bromoform	ND	200	
- Isopropylbenzene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
1,2,3-Trichloropropane	ND	200	- 1
Propylbenzene	ND	200	
Bromobenzene	ND	200	
1,3,5-Trimethylbenzene	ND	200	
2-Chlorotoluene	ND	200	ļ
4-Chlorotoluene	ND	200	ı
tert-Butylbenzene	ND	200	
1,2,4-Trimethylbenzene	270	200	
sec-Butylbenzene	ND	200	
para-Isopropyl Toluene	ND	200	
1,3-Dichlorobenzene	<b>N</b> D	200	
1,4-Dichlorobenzene	ND	200	
n-Butylbenzene	ND	200	ļ
1,2-Dichlorobenzene	ND	200	
1,2-Dibromo-3-Chloropropane	ND	200	ŀ
1,2,4-Trichlorobenzene	ND	200	
Hexachlorobutadiene	ND	200	-
Naphthalene	ND	200	
1,2,3-Trichlorobenzene	ND	200	ĺ

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-121
1,2-Dichloroethane-d4	105	77-130
_Toluene-d8	100	80~120
Bromofluorobenzene	99	80-120



	Purgeable Or	ganics by GC	PMV <sup>2</sup>
Lab #:	159823	Location:	Tony's Auto Express-Oak
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC185098	Batch#:	74006
Matrix:	Water	Analyzed:	07/25/02
Units:	ug/L	•	, ' '

Analyte	Result	RL	
Freon 12	ND	10	
Chloromethane	ND	10	
Vinyl Chloride	ND	10	
Bromomethane	ND	10	
Chloroethane	ND	10	
Trichlorofluoromethane	ND	5.0	
Acetone	ND	20	
Freon 113	ND	5.0	
1,1-Dichloroethene	ND	5.0	
Methylene Chloride	ND	20	
Carbon Disulfide	ND	5.0	
MTBE	ND	5.0	
trans-1,2-Dichloroethene	ND	5.0	
Vinyl Acetate	ND	50	
T1,1-Dichloroethane	ND	5.0	
2-Butanone	ND	10	
cis-1,2-Dichloroethene	ND	5.0	
72,2-Dichloropropane	ND	5.0	ĺ
_ Chloroform	ND	5.0	1
Bromochloromethane	ND	10	
1,1,1-Trichloroethane	ND	5.0	
1,1-Dichloropropene	ND	5.0	
Carbon Tetrachloride	NĐ	5.0	
1,2-Dichloroethane	ND	5.0	
Benzene	ND	5.0	
Trichloroethene	ND	5.0	
1,2-Dichloropropane	ND	5.0	
Bromodichloromethane	ND	5.0	· · ·
Dibromomethane	ND	5.0	
4-Methyl-2-Pentanone	ND	10	
cis-1,3-Dichloropropene	ND	5.0	
Toluene	ND .	5,0	
trans-1,3-Dichloropropene	ND	5.0	Ì
1,1,2-Trichloroethane	ND	5.0	
2-Hexanone	ND	10	
_1,3-Dichloropropane	ND	5.0	
Tetrachloroethene	ND	5.0	
Dibromochloromethane	ND	5.0	1



			Purgeable	Organics by	GC/MS
Lab #:	15982	3		Location	: Tony's Auto Express-Oak
		Environmental	Engineering In	ıc. Prep:	EPA 5030B
Project#:	2333			Analysis	: EPA 8260B
Туре:	•	BLANK		Diln Fac	: 1.000
Lab ID:		QC185098		Batch#:	74006
Matrix:		Water		Analyzed	: 07/25/02
Units:		ug/L	<del>-</del>		

Analyte	Result	RL
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	MD	5.0
1,2,3-Trichloropropane	<b>M</b> D	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
T1,2,4-Trimethylbenzene	ND	5.0
_sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	<b>N</b> D	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND .	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	91	80-121
1,2-Dichloroethane-d4	103	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	. 101	80-120



#### Purgeable Organics by GC/MS Lab #: 159823 Location: Tony's Auto Express-Oak SOMA Environmental Engineering Inc. Client: EPA 5030B Prep: Project#: 2333 Analysis: EPA 8260B Matrix: Water Batch#: 74006 Units: ug/L Analyzed: 07/25/02 Diln Fac: 1.000

type:

BS

Lab ID:

QC185096

Analyte	Spiked	Result	*REC	Limits
1,1-Dichloroethene	50.00	49.79	100	71-131
Benzene	50.00	51.23	102	76-120
Trichloroethene	50.00	49.65	99	78-120
Toluene	50.00	52.02	104	79-120
Chlorobenzene	50.00	52.46	105	80-120

Bromofluorobenzene	92	80-120
Toluene-d8	103	80-120
1,2-Dichloroethane-d4	101	77-130
Dibromofluoromethane	90	80-121
Surrogate	%REC	Limits

rvpe:

BSD

Lab ID:

QC185097

Analyte	Spiked	Result	%REC	Limits	RPL	Lim
-1,1-Dichloroethene	50.00	49.11	98	71-131	1	20
Benzene	50.00	49.46	99	76-120	4	20
Trichloroethene	50.00	48.40	97	78-120	3	20
Toluene	50.00	50.16	100	79-120	4	20
Chlorobenzene	50.00	50.83	102	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-121
1,2-Dichloroethane-d4	101	77-130
Toluene-d8	101	80-120
Bromofluorobenzene	94	80-120



## 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: 03-JUL-02 Lab Job Number: 159338 Project ID: 2333

Location: Oakland - Tony's

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:

Project Manager

Reviewed by:

Operations Manager

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NELAP # 01107CA

# **CHAIN OF CUSTODY FORM**

Page \_\_\_\_\_ of \_\_\_\_\_

Analyses

Curtis & Tompkins, Ltd. Analytical Laboratory Since 1878 2323 Fifth Street Berkeley, CA 94710	<b>c&amp;t</b> 159338 LOGIN#	200
(510)486-0900 Phone (510)486-0532 Fax	Sampler: TONY PERINI	80,
Project No: 2333	Report To: Mansour Sepen	120
Project Name: Paklaus- Tony's	Company: SOMA	12 3
roject P.O.:	Telephone: 925-244-6600	Z 2
urnaround Time: Stanland	Fax: 925-244-6601	130
Matrix	Preservative	1

			M	atrix		F	?res	serv	/ati	Ve	<u> </u>					1	.					1		
Laboratory Number	Sample ID.	Sampling Date Time	Soil	Waste	# of Containers	HCL	HzSO	HNO3	핑			Fiel	d No	tes	TOTA	137EX								
	PSP#1	6/24/02 121	1		4	/	:		Z		Gras	San	mpl	er		/								
	GAL-1	6/24/02 1220	L	4	4	/			/	1	6/al	Sa	me	dec	/	1	1	Ш	Ш	_		$\perp$		
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ı														DATE/TIME							ſ	DATE	-/TIM	Λ <del>Ε</del>

Signature



Total Volatile Hydrocarbons

Lab #: 159338 Location: Oakland - Tony's

Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2333 Analysis: 8015B(M)

Matrix: Water 06/24/02 . Sampled:

Units: · ug/L Received: 06/24/02

Field ID:

Lab ID:

PSP#1

Туре: SAMPLE

159338-001

Diln Fac:

Batch#:

1.000 73277

Analyzed:

06/26/02

Analyte Result RL Gasoline C7-C12 ND 50

Surrogate %REC Limits Trifluorotoluene (FID) 88 68-145 Bromofluorobenzene (FID) 77 66-143

rield ID:

GAC-1

Гуре: Lab ID: SAMPLE

159338-002

Diln Fac:

1.000

Batch#:

73277

Analyzed:

06/25/02

Analyte Result RL Gasoline C7-C12 50 ND

Surrogate	%RE	C Limits	
Trifluorotoluene (FID)	89	68-145	
Bromofluorobenzene (FID)	79	66-143	

ield ID:

'ype:

Lab ID:

INFLUENT

159338-003

SAMPLE

Diln Fac:

5.000

Batch#:

73306

Analyzed:

06/27/02

	Analyte	Result	RL	
۳	Gasoline C7-C12	16,000	250	

Surrogate	\$	REC Limit	
Trifluorotoluene (F)		2 68-14	5
Bromofluorobenzene	(FID) 79	66-14	3

## GC19 TVH 'X' Data File (FID)

Sample Name : 159338-003,73306

: G:\GC19\DATA\177X025.raw

FileName : TVHBTXE Method

Start Time : 0.00 min Scale Factor: 1.0

End Time

Plot Offset: -31 mV

: 26.80 min

Sample #: c1

Date: 6/27/02 06:47 AM

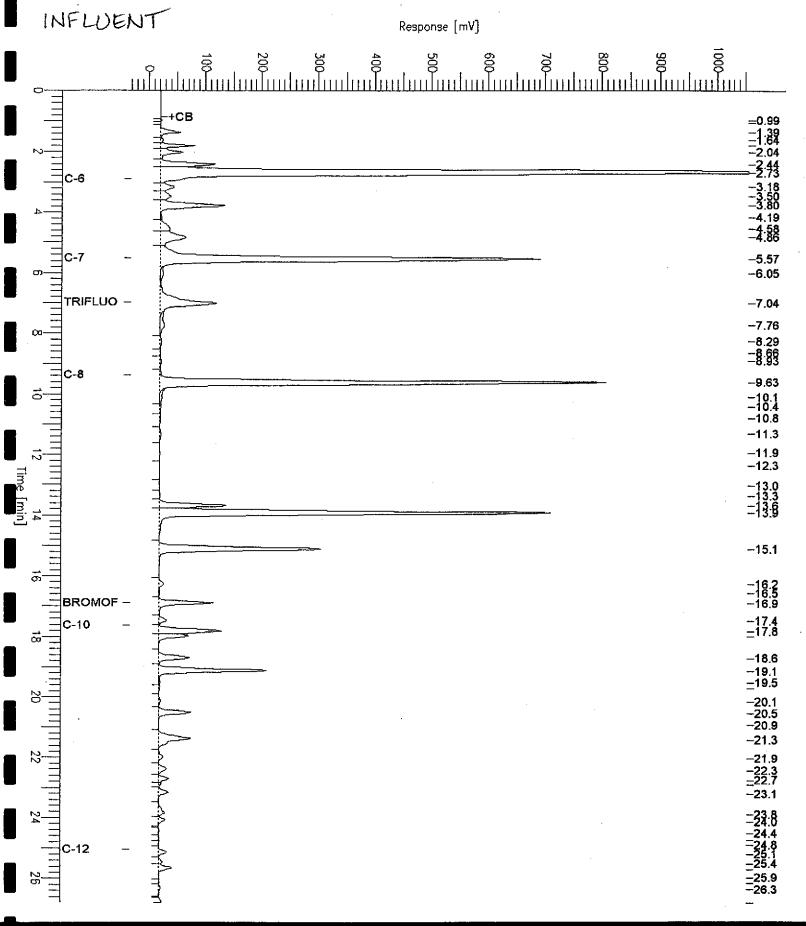
Time of Injection: 6/27/02 06:20 AM Low Point : -31.24 mV

High Point : 1055.41 mV

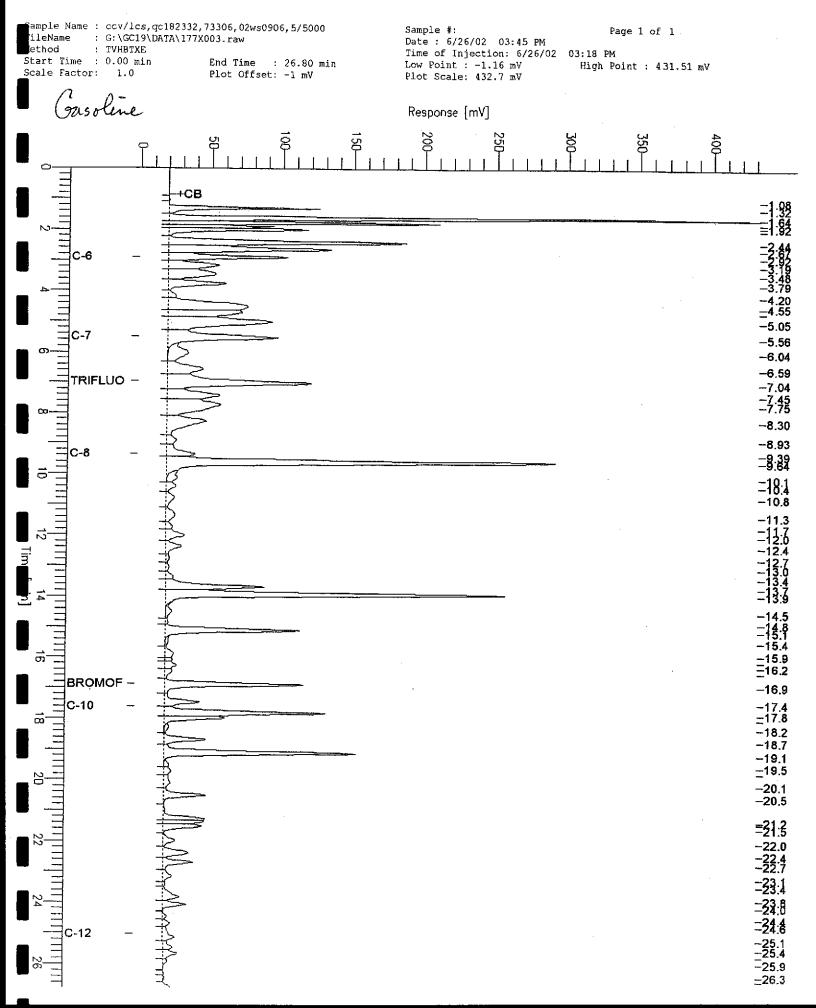
Page 1 of 1

Plot Scale: 1086.6 mV





## GC19 TVH 'X' Data File (FID)





Total Volatile Hydrocarbons Lab #: 159338 Location: Oakland - Tony's Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2333 8015B(M) Analysis: Matrix: Water Sampled: 06/24/02 Units: ug/L Received: 06/24/02

Гуре: Lab ID: BLANK QC182213

Batch#:

73277

Diln Fac:

1.000

Analyzed:

06/25/02

Analyte	Result	RL	
Gasoline C7-C12	ND	50	

	Surrogate	%RE	C Limits	
Bromofluorobenzene (FID) 75 66-143	Trifluorotoluene (FID)	88	68-145	
	Bromofluorobenzene (FID)	75	66-143	

јуре: ab ID: BLANK QC182331

Batch#: Analyzed: 73306 06/26/02

Diln Fac: 1.000

Analyte Result RL Gasoline C7-C12 ND 50

	Surroga	te	%REC	Limits
7	Trifluorotoluene	(FID)	90	68-145
ŀ	Bromofluorobenzen	e (FID)	78	66-143



Total Volatile Hydrocarbons Lab #: 159338 Location: Oakland - Tony's Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2333 Analysis: 8015B(M) LCS Туре: Diln Fac: 1.000

Type: LCS Diln Fac: 1.000
Lab ID: QC182214 Batch#: 73277
Matrix: Water Analyzed: 06/25/02
Units: ug/L

Analyte	Spiked	Result	*REC	Limits	
Gasoline C7-C12	2,000	1,775	89	79-120	

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	68-145
Bromofluorobenzene (FID)	75	66-143



Total Volatile Hydrocarbons Lab #: 159338 Oakland - Tony's Location: Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2333 Analysis: 8015B(M) LCS Type: Diln Fac: 1.000 Lab ID: QC182332 Batch#: 73306 Matrix: Water 06/26/02 Analyzed: Units: ug/L

Analyte	Spiked		%REC	limits	
Gasoline C7-C12	2,000	1,715	86	79-120	

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	68-145
Bromofluorobenzene (FID)	81	66-143



			Total Volati	le Mydrocarbons	
Lab #:	15933	38		Location:	Oakland - Tony's
Client:	AMOR	Environmental	Engineering Inc.	. Prep:	EPA 5030B
Project#:	2333			Analysis:	8015B(M)
Field ID:		ZZZZZZZZZ		Batch#:	73277
MSS Lab ID	):	159329-006		Sampled:	06/20/02
Matrix:		Water		Received:	06/21/02
Units:		ug/L		Analyzed:	06/26/02
Diln Fac:		1.000			
	-	• • • •			

 $ext{Гуре}$  :

MS

Lab ID:

QC182216

Gasoline C7-C12	<20.00	2,000	1,652	83	67-120
Analyte	MSS Result	Spiked			EC Limits

Bromofluorobenze	ne (FID)	78	66-143
Trifluorotoluene		112	68-145
Surrog	ate	%rec	Limits

Type:

MSD

Lab ID:

QC182217

Gasoline C7-C12	2,000	1,673	84	67-120	1	20

Surrogate	*REC	Limita
Trifluorotoluene (FID)	111	68-145
Bromofluorobenzene (FID)	78	66-143



		Total Vol	atile	s Hydrocarbons		
Lab #: 159338				Location:	Oakland -	Tony's
Client: SOMA E	nvironmental	Engineering	Inc.	Prep:	EPA 5030B	
Project#: 2333				Analysis:	8015B(M)	
Field ID:	ZZZZZZZZZZ			Batch#:	73306	
MSS Lab ID:	159369-001			Sampled:	06/25/02	
Matrix:	Water			Received:	06/25/02	
Units:	ug/L			Analyzed:	06/27/02	
Diln Fac:	1.000				·	

Гуре:

MS

Lab ID:

QC182333

Analyte	MSS Re	sult	Spiked	Result	%RE(	2 Limits
Gasoline C7-C12	<2	0.00	2,000	1,828	91	67-120
		_				
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	117	68-145		İ		
Bromofluorobenzene (FID)	83	66-143				

type:

MSD

Lab ID:

QC182334

Result %REC Limits RPD Lim

Gasoline C7-C12	2,000	1,812	91	67-120 1	. 20
Surrogate	%REC Limits				

	60000000000000000000000000000000000000	Limits
ifluorotoluene (FID)	117	68-145
omofluorobenzene (FID)	82	66-143



			Purgeable	Aro	matics by	GC/MS	
Lab #:	<b>1</b> 5933	38			Location:	Oakland	- Tony's
		Environmental	Engineering	Inc.	Prep:	EPA 50301	3
Project#:	2333				Analysis:	EPA 82601	3
Field ID:		PSP#1			Batch#:	73335	
Lab ID:		159338-001			Sampled:	06/24/02	
Matrix:		Water			Received:	06/24/02	
Units:		ug/L			Analyzed:	06/27/02	
Diln Fac:		1.000	<u></u>				

MTBE	Result	RI.	
	1.7	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	

Bromofluorobenzene	109	80-120	
Toluene-d8	102	80-120	
1,2-Dichloroethane-d4	107	77-130	
Surrogate	\$REC	Limits	



		Purgeable Aro	matics by GC/MS	5	
Lab #:	159338		Location:	Oakland -	Tonyla
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B	·
Project#:		55	Analysis:	EPA 8260B	
Field ID:	GAC-1		Batch#:	73335	
Lab ID:	159338-002		Sampled:	06/24/02	
Matrix:	Water		Received:	06/24/02	•
Units:	ug/L		Analyzed:	06/27/02	
Diln Fac:	1.000				

Analyte	Regult	RL
MTBE	ND	<b>RI</b> . 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	05
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	102	80-120
Bromofluorobenzene	107	80-120



		Purgeable Aro	matics by GC/MM	3
Lab #:	159338		Location:	Oakland - Tony's
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	INFLUENT		Batch#:	73335
Lab ID:	159338-003		Sampled:	06/24/02
Matrix:	Water		Received:	06/24/02
Units:	ug/L		Analyzed:	06/27/02
Diln Fac:	83.33			

Analyte	Result	RL	
MTBE	11,000	42	
Benzene	1,600	42	
Toluene	1,400	42	
Chlorobenzene	ND	42	
Ethylbenzene	ND	42	
m,p-Xylenes	1,500	42	
o-Xylene	690	42	
1,3-Dichlorobenzene	ИD	42	
1,4-Dichlorobenzene	ND	42	
1,2-Dichlorobenzene	ND	42	

					_
1,2-Dichloroethane-d4 112 77-130	mofluorobenzene	102	80-120		1
	uene-d8	106	80-120	•	ı
	-Dichloroethane-d4	112	77-130		٦
	Surrogate	%REC	Limits		



-		Purgeable Arc	omatics by GC/M	to to
_[	Lab #:	159338	Location:	Oakland - Tony's
	Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
7	Project#:	2333	Analysis:	EPA 8260B
ſ	Type:	BLANK	Diln Fac:	1.000
	Lab ID:	QC182446	Batch#:	73335
	Matrix:	Water	Analyzed:	06/27/02
l	Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ИD	0.5
Toluene	ND	0.5
Chlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes o-Xylene	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
	<del></del>	

1,2-Dichloroethane-d4 106 77-130 Toluene-d8 99 80-120	Surrogate	RREC	Limite	
T · · · · · · · · · · · · · · · · · · ·		106		
	Toluene-d8	99	80-120	
Bromofluorobenzene 108 80-120	Bromofluorobenzene	108	80-120	



		Purgeable Aro	matics by GC	/MS
Lab #:	159338		Location:	Oakland - Tony's
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Matrix:	Water		Batch#:	73335
Units:	ug/L		Analyzed:	06/27/02
Diln Fac:	1.000			

Гуре

BS

Lab ID:

QC182443

Analyte	Spiked	Result	#REC	Limits
Benzene	50.00	52.38	105	76-120
Toluene	50.00	49.83	100	79-120
Chlorobenzene	50.00	49.63	99	80-120

Surrogate	% RBC	Limits	
1,2-Dichloroethane-d4	107	77-130	
Toluene-d8	103	80-120	
Bromofluorobenzene	103	80-120	1

Type:

BSD

Lab ID:

QC182444

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	· 50.00	51.82	104	76-120	1	20
Toluene	50.00	49.08	98	79-120	2	20
Chlorobenzene	50.00	47.80	96	80-120	4	20

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	107	77-130	
Toluene-d8	105	80-120	
Bromofluorobenzene	103	80-120	