

April 9, 2002

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

APR 1 1 YOU

Subject: StID#3337

Site Address: 3609 International Blvd., Oakland, California

Dear Mr. Chan:

A copy of SOMA's "First 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



First Quarter 2002 Groundwater Monitoring And Remediation System Operation Report Tony's Express Auto Service

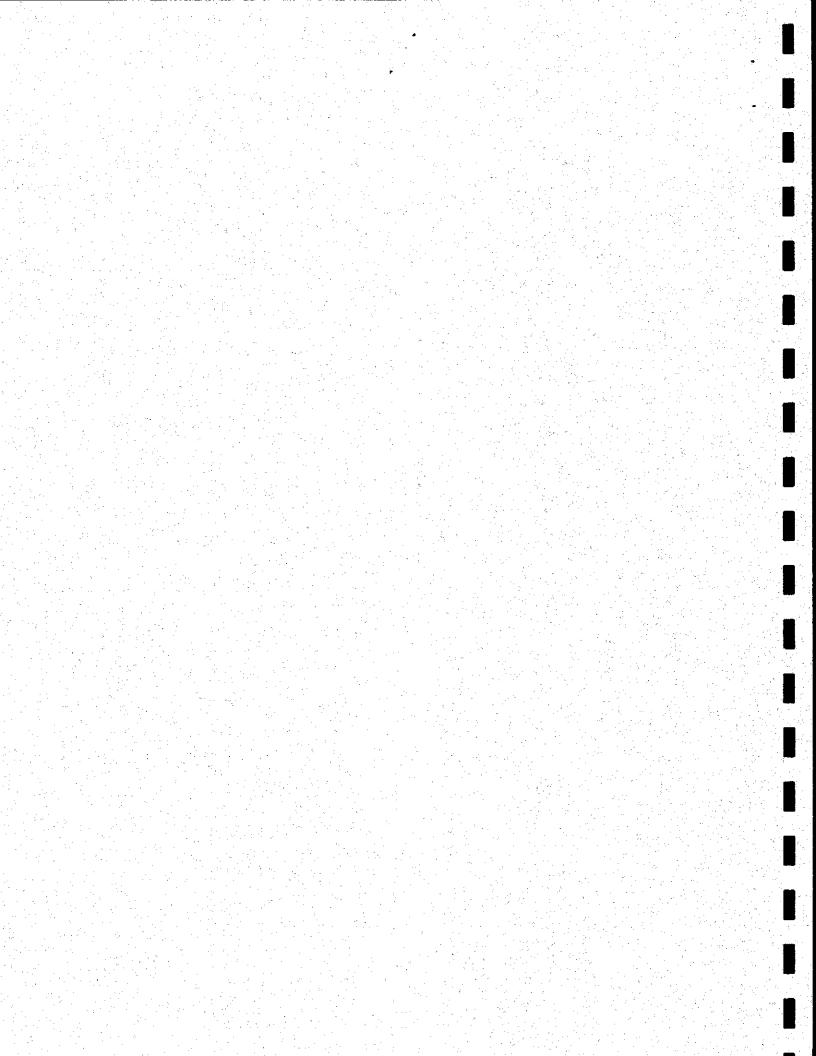
3609 International Boulevard
Oakland, California

April 8, 2002

Project 99-2331

Prepared for
Tony's Express Auto Service
3609 International Boulevard
Oakland, California

Prepared by
SOMA Environmental Engineering, Inc.
2680 Bishop Drive, Suite 203
San Ramon, California



Certification

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

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

Principal Hydrogeologist



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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 the property. The property, Tony's Express Auto Service, is located at 3609 International Boulevard at the intersection of 36th Avenue in Oakland, California (the "Site"), as shown in Figure 1. The Site is located in an area consisting primarily of commercial and residential uses.

This report summarizes the results of the First Quarter 2002 groundwater monitoring event conducted on February 21, 2002 at the Site, including the results of the laboratory analysis on groundwater samples, which were analyzed for:

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

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

This report also describes the operation of the groundwater and vapor extraction and treatment systems installed by SOMA in December 1999 and July 2000, respectively.

1.1 Background

Currently, the Site is used as a gasoline service station. The environmental investigation at the subject property started in 1992, when Mr. Razi, the property

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

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

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

In April 1999, Mr. Razi retained SOMA to conduct groundwater monitoring, risk based corrective action (RBCA), a corrective action plan (CAP) and soil and groundwater remediation at the Site. The results of the RBCA study indicated that the Site is a high-risk groundwater site, therefore, the soil and groundwater in on-and off-site areas needed to be remediated. 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 the approval from the ACEHS, SOMA installed a vapor extraction system as recommended in our CAP document dated July 1, 1999.

The Site is located at the intersection of 36th Avenue and International Boulevard (formerly known as East 14th Street), Oakland, California. It currently houses a gasoline service station and mechanic shop. The Site is relatively flat, and the surrounding properties are primarily commercial businesses and residential housing. Figure 2 shows the location of the main building, fuel tank areas, and the on-site and off-site groundwater monitoring wells. The groundwater monitoring wells are currently monitored on a quarterly basis. Past groundwater monitoring events have indicated elevated levels of petroleum hydrocarbons in the groundwater beneath the Site. The source of the petroleum hydrocarbons in the groundwater is believed to be the former USTs, which were used to store gasoline at the Site. This report includes the results of the historical groundwater monitoring events, as well as the results of the First Quarter 2002 groundwater monitoring event.

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, the groundwater was found to flow from the north to the south with an average gradient of 0.014 ft/ft. When the groundwater extraction system is in operation, the groundwater flows from all directions toward the French drain. The capture zone of the drain has extended down gradient 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 velocity ranges from 22 to 267 feet per year.

2.0 Field Activities

Field activities were performed in accordance with the procedures and guidelines of the California Regional Water Quality Control Board, San Francisco Bay Region.

On February 21, 2002, SOMA's field crew measured the depths to groundwater in the monitoring wells from the top of casings to the nearest 0.01 feet using an electrical sounder. The depth to groundwater and top of casing elevation data at each groundwater monitoring well were used to calculate the groundwater elevation. A total of 11 groundwater monitoring wells (on-site wells and off-site wells MW-10, MW-11, and MW-12) and three risers of the French drain were monitored during this event. Table 1 presents the groundwater elevations for the first quarter monitoring event. Table 2 shows the historical groundwater elevation data. Appendix A presents a detailed summary of the field notes for each groundwater monitoring well.

Prior to collecting the groundwater samples, each well was purged of at least three casing volumes of water, and field measurements of pH, temperature, electrical conductivity (EC), and bioremediation parameters were recorded onsite. Table 3 shows the field measurements of physical and chemical properties at the time of sampling. A 2-inch diameter submersible pump (model ES-60 DC) was used to purge each well. Groundwater samples were then collected using disposable bailers. Each groundwater sample was transferred into four 40-mL VOA vials and sealed properly to prevent the development of any air bubbles within the headspace area. The vials were placed in an ice chest and delivered on the next day to Curtis and Tompkins Laboratories, Ltd. of Berkeley, California

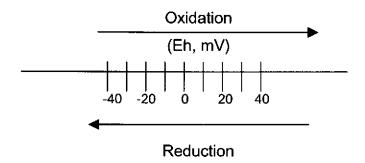
for analysis. For field measurements, samples were transferred into 500-mL polyethylene containers.

The groundwater samples that were kept in polyethylene bottles were immediately used for on-site biodegradation parameter measurements of nitrate- $N (NO_3^--N)$, sulfate (SO_4^{-2}) , and ferrous iron (Fe^{+2}) . Table 4 shows the on-site measurements for these biodegradation parameters.

In order to obtain accurate measurements of other groundwater parameters and especially to avoid the intrusion of oxygen from ambient air in the groundwater samples, these measurements were conducted in-situ (i.e., down-hole inside each monitoring well). The dissolved oxygen (DO), temperature and other groundwater parameters such as pH, turbidity, EC, and Oxidation Reduction Potential were measured in-situ using a Horiba, Model U-22 multi-parameter instrument. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer.

The Horiba U-22 portable microprocessor-based turbidity probe provides labgrade accuracy, even in the field. The unit of measure adopted by the ISO Standard is the FTU (Formazine Turbidity Unit), which is identical to the NTU (Nephelometric Turbidity Unit). The instrument was calibrated at two points, 0 FTU and 10 FTU, using the two calibration solutions of primary standard AMCO-AEPA-1 at 0 FTU and 10 FTU that were supplied with the meter. Suspended materials cause the cloudy appearance of water or turbidity. Turbidity is one of the most important parameters used to determine the quality of drinking water. It has been found that there is a strong correlation between the turbidity level and the biological oxygen demand of the 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 ORP electrode was used to measure the Oxidation-Reduction Potential 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 Oxidation Reduction Potential, 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 O₂ in water is low (9 mg/L at 25 °C and 11 mg/L at 5 °C), and because the rate of O2 replenishment in subsurface environments is limited, oxidation of only a small amount of petroleum hydrocarbons can result in the consumption of all the DO. When all the dissolved O2 in the groundwater is consumed, oxidation of petroleum hydrocarbons can still occur, but the oxidizing agents (i.e., the constituents that undergo reduction) are NO₃, MnO₂, Fe(OH)₃, SO₄²⁻ 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 very strongly reduced, and the petroleum hydrocarbons may undergo anaerobic degradation, possibly resulting in the production of methane gas and carbon dioxide. The concept of oxidation and reduction in terms of changes in the oxidation states is illustrated below:



Fe⁺², NO₃-N and SO₄-² were measured colorimetrically using the Hach Model

DR/850 colorimeter (Hach Company World Headquarters, P.O. Box 389, Loveland, Colorado 80539-0389). The Hach DR/800 Series Colorimeter is a microprocessor-controlled photometer suitable for colorimetric testing in the laboratory or the field. The required reagents for each specific test are provided in AccuVac ampuls.

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

SO₄-2 was measured colorimetrically using Method 8051 of Sulfa Ver 4 Method. Sulfate ions in the sample react with Sulfa Ver 4 Sulfate Reagent to form insoluble barium sulfate. The amount of turbidity formed is proportional to the sulfate concentration. The Sulfa Ver 4 also contains a stabilizing agent to hold the barium sulfate in suspension.

NO₃-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 the nitrate-N concentration in the sample.

2.1 Laboratory Analysis

Curtis and Tompkins Laboratories analyzed the groundwater samples. The measured constituents included TPH-g, BTEX and MtBE.

TPH-g was measured using EPA Method 5030B/8015B(M). EPA Method 8260B

was used to measure BTEX and MtBE levels in the groundwater. The results of the laboratory analyses are presented in Table 5 and discussed below.

3.0 Results

Table 1 presents the measured groundwater elevations at different groundwater monitoring wells and the risers of the French drain. At each location, depth to watertable and the elevation of the top of casing were used to calculate the watertable elevation relative to the assumed datum. Depths to the watertable in the monitoring wells and the risers of the French drain ranged from 8.28 feet below ground surface (bgs) in MW-10 to 16.74 feet bgs measured at the center of the French drain. The corresponding watertable elevations ranged from 79.28 feet at the center of the French drain to 90.0 feet at MW-5.

During the recent monitoring event, the groundwater flow was found to be in two different directions towards the center of the French drain, from the north towards the south on-site, and from the south towards the north off-site. The on-site flow was consistent with the findings of the previous monitoring events that were conducted prior to the installation of the French drain. The on-site and off-site groundwater gradients towards the French drain were found to be 0.0893 ft/ft and 0.0582 ft/ft, respectively. The groundwater elevation contour map is shown in Figure 3.

Table 2 displays the historical static water level elevations measured at the monitoring wells and the center riser of the French drain. During the recent monitoring event, in comparison with the previous monitoring event, the groundwater elevations rose in the range of 1.08 feet in the center riser to 4.68 feet in MW-5. This rise in the water levels is attributed to the on-set of the rainy season.

The field measurements of some physical and chemical parameters in the groundwater samples at the time of sampling are presented in detail in the field notes in Appendix A, and are summarized in Table 3. Water temperatures ranged from 18.58° C in MW-4 to 21.03° C in MW-11. The variation in temperature may reflect the changes in air temperature during sampling, see the field notes in Appendix A. The pH measurements ranged from 5.93 in MW-4 to 6.4 in MW-7. EC ranged from $500~\mu$ S/cm in MW-7 to $1,250~\mu$ S/cm in MW-12.

The groundwater biodegradation parameters for this monitoring event, as well as, previous monitoring events, are shown in Table 4. The DO concentrations in the groundwater samples ranged from 0.0 mg/L in wells MW-1, MW-3 and MW-8 to 2.65 mg/L in well MW-5. The low oxygen contents may suggest the presence of anaerobic biodegradation processes in this groundwater system. All DO measurements in most of the contaminated wells were below the previous monitoring event. Figure 4 shows the concentration contour map of DO concentrations in the groundwater. As Table 4 and Figure 4 show the DO has been completely consumed in the vicinity of the most polluted wells.

The turbidity of the groundwater samples ranged from 0.3 NTU in MW-3 to 707 NTU in MW-4. The Redox potential in the groundwater samples ranged from –64 mV in well MW-8 to +131 mV in well MW-12. Monitoring wells MW-1, MW-3, MW-4, MW-6, MW-7, MW-8, and MW-12 showed strongly reduced conditions, while monitoring wells MW-2, MW-5, MW-10 and MW-11 showed strongly oxidized conditions. The low oxygen levels in wells MW-2, MW-5, MW-10 and MW-11, in combination with the positive redox potentials, suggest the presence of weak aerobic oxidation of the petroleum hydrocarbons in these wells. However, the other monitoring wells impacted by petroleum show strongly reduced conditions. In these oxygen-depleted environments, anaerobic processes utilizing alternate electron acceptors for oxidation of petroleum hydrocarbons may be responsible for the reduced conditions. Possible alternate

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

During this monitoring event, nitrate was only detected in well MW-2. As discussed earlier, the concentrations of DO in all wells were quite low, and because the replenishment of oxygen in the subsurface environments is limited, oxidation of only a small amount of petroleum hydrocarbons depletes the oxygen. Under this condition, oxidation of petroleum hydrocarbons can still occur, but the oxidizing agents (i.e., constituents that undergo reduction) are NO-3, MnO2, Fe(OH)3, SO4²⁻ and others (Lovley *et. al.*, 1994). The disappearance of DO and nitrate in many of the wells may suggest that, under the observed anaerobic conditions, nitrate may have been consumed as a source of terminal electron acceptors by microorganisms (Lovley *et. al.*, 1994). Figure 5 shows the contour map of nitrate concentrations in the groundwater.

Sulfate was also depleted in five of the wells and was detected with low concentrations in the other wells, ranging from 4 mg/L in well MW-4 and MW-10 to 67 mg/L in well MW-5. Sulfate-depleted subsurface contaminated environments may reveal a strong demand by microorganisms for a source of terminal electron acceptor for oxidizing contaminant hydrocarbons (Lovley *et. al.*, 1994). Figure 6 shows the groundwater sulfate concentration contour map, as measured on February 21, 2002.

Ferrous iron concentrations were detected in all the wells, which were monitored, except MW-11. The concentrations ranged from 0.0 mg/L in MW-11 to 6.8 mg/L in well MW-3. High concentrations of ferrous iron in the groundwater is a good indication of biological activities. Figure 7 shows the groundwater ferrous iron concentration contour map, as measured on February 21, 2002. The presence of

high ferrous iron concentrations in combination with low concentrations of other electron receptors, such as nitrogen, sulfate and DO, is indicative of an anaerobic biodegradation beneath the Site.

As discussed before, in this contaminated groundwater system, most of the electron receptors have been consumed by microorganisms and methanogenesis may be the only remaining route of natural biodegradation which is much slower than the other routes. 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.

Table 5 displays the results of the laboratory analyses of the groundwater samples. TPH-g was detected in every sample, with concentrations ranging from 290 μ g/L in monitoring well MW-5 to 260,000 μ g/L in monitoring well MW-1. Figure 8 displays the contour map of TPH-g in the groundwater.

Benzene concentrations ranged from less than 0.5 μ g/L in monitoring well MW-7 to 6,000 μ g/L in MW-3. Figure 9 displays the contour map of benzene in the groundwater. MtBE concentrations ranged from less than 0.5 μ g/L in monitoring wells MW-5 and MW-11 to 23,000 μ g/L in well MW-1. Figure 10 displays the contour map of MtBE in the groundwater.

Table 6 presents the historical data of the groundwater contamination. During this event, in comparison with the previous event, contaminant concentrations did not follow a uniform pattern of fluctuation. Benzene concentrations increased in five of the wells and decreased in four of the wells, which were sampled during the last two monitoring events. Two wells (MW-3 and MW-6) were not sampled during the previous monitoring event. MtBE concentrations increased in two wells and decreased in five wells, while remaining below the detection limit of the

laboratory in wells MW-4 and MW-11. MtBE in MW-3 reached a historical peak during this sampling event. TPH-g concentrations increased in five of the wells and decreased in four of the wells during this quarter. MW-8 showed the greatest increase in TPH-g concentration since the previous sampling event.

4.0 Groundwater Treatment System Operation

The treatment system began operation on December 9, 1999. Since that time, 1,449,830 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 February 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. From August 2000 onward, maintenance of the system continued weekly, but sampling was performed on a monthly basis. The results from the first effluent testing was used to acquire a discharge permit from EBMUD.

Table 7 presents the total volume and chemical composition of the Granulated Active Carbon (GAC)-1 and effluent treated at the Site. Table 7 shows that all of the effluent samples have maintained compliance with the permit, having concentrations below the laboratory detection limits for the effluent. The laboratory's reports are included in Appendix A of this report. A total of 138,490 gallons of chemically impacted groundwater was treated since the last reporting date of December 12, 2001. As discussed in the previous monitoring reports, the effluent passing both GAC units is regularly being collected for chemical analysis. The schedule for re-furbishing the GAC units is based on the analytical results of the samples. The first GAC unit was re-furbished as soon as traces of chemicals broke through the unit. A carbon change-out was performed on the first GAC unit

on November 26, 2001 (2,000 pounds of carbon was replaced). 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.

Figure 11 displays the cumulative weight of TPH-g and MtBE extracted from the subsurface by the groundwater treatment system. As Figure 11 shows, an approximate total of 129.39 pounds of TPH-g and 45.7 pounds of MtBE have been removed during the operation of the treatment system, over its entire life to date. The total mass of MtBE removed increased greatly during last three monitoring events.

5.0 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 working days the system extracted and treated more than 3,000,000 liters/day of soil gas. When the system first began to operate, the influent had a concentration of 394 parts per million on volumetric basis (ppmv) petroleum hydrocarbons, but this gradually dropped, and after 31 days of operation decreased to 68 ppmv. 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 found that all four GACs were not in good condition to start the system. On October 25, 2001, one of the four GACs was replaced with a new one, and on October 29, 2001 three of the remaining GAC units were replaced. Since then, the system was under continuous operation and extracted over 80 cubic feet per minute (CFM) of contaminated air from the vadose zone. On November 21, 2001 due to the low concentration of contaminants in the influent (i.e., less than 10 ppmv of

hydrocarbons) the system was turned off. In February 2002, the system was inspected for operation and found that the blower was not functioning. The blower was repaired and installed on February 15, 2002. On the same day four old GACs were replaced with four new ones and the system was turned on. Based on the statistics that are presented in Table 8, the VES has removed 389.55 pounds of petroleum hydrocarbons from the vadose zone beneath the Site since it was installed.

6.0 Conclusions and Recommendations

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

- 1. The on-site and off-site groundwater gradients towards the French drain were found to be 0.0893 ft/ft and 0.0582 ft/ft, respectively.
- 2. In comparison with the previous monitoring event, the water level elevations increased in all wells and center riser of the French drain. This result is attributable to the on-set of the rainy season.
- 3. DO has been completely consumed in the vicinity of the most polluted wells. During this monitoring event, nitrate was only detected in well MW2. Sulfate was depleted in five of the wells and was detected in low concentrations in the other wells, ranging from 4 mg/L in well MW-4 and MW-10 to 67 mg/L in well MW-5. In this contaminated groundwater system most of the electron receptors have been consumed by microorganisms and methanogenesis which may be the only remaining route of natural biodegradation, which is much slower than the other routes. Therefore, to enhance the biodegradation processes we highly recommend the injection of concentrated solutions of terminal electron

receptors into the groundwater in the vicinity of the contaminated wells.

- 4. Benzene was detected in ten wells with a peak concentration of 6,000 $\mu g/L$ in MW-1.
- MtBE concentrations increased in two wells and decreased in five wells, while remaining below the detection limit of the laboratory in wells MW-4 and MW-11.
- TPH-g concentrations increased in five of the wells and decreased in four of the wells during this quarter. MW-8 showed the greatest increase in the TPH-g concentration since the previous sampling event.
- So far, more than 1,449,800 gallons of groundwater has been treated and discharged to the East Bay Municipal Utility District (EBMUD) under the existing discharge permit (as of February 27, 2002).
- 8. All effluent samples have maintained compliance with the permit, with all contaminant concentrations remaining below the laboratory detection limit.
- An estimated total of 129.39 pounds of TPH-g and 45.7 pounds of MtBE have been removed since the installation of the groundwater treatment system.
- 10. As of March 7, 2002 the VES has removed over 389 pounds of petroleum hydrocarbons from the vadose zone beneath the Site since it was installed,. Due to the very low concentrations of petroleum hydrocarbons in the influent, the system was shut down on March 7, 2002.

7.0 Report Limitations

This report is the summary of work done by SOMA including observations and descriptions of the Site conditions. It includes the analytical results produced by Curtis and 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, February 21, 2002
3609 International Boulevard, Oakland, California

Monitoring	Depth to	Top of Casing	Groundwater	Free Product
Well	Water (ft.)	Elevation (ft.)	Elevation (ft.)	
MW-1	10.11	97.99	87.88	ND
MW-2	8.99	98.58	89.59	ND
MW-3	10.01	97.78	87.77	ND
MW-4	9.97	97.85	87.88	ND
MW-5	9.04	99.04	90.00	ND
MW-6	9.92	98.77	88.85	ND
MW-7	8.91	97.83	88.92	ND
MW-8	9.88	97.25	87.37	ND
MW-10	8.28	94.54	86.26	ND
MW-11	9.69	95.94	86.25	ND
MW-12	8.78	94.84	86.06	ND
F.D. Center	16.74	97.10	80.36	ND
F.D. East	13.18	97.90	84.72	ND
F.D. West	12.78	96.90	84.12	ND

Notes:

ND (not detected in monitoring well)

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

Date	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-10	MW-11	MW-12	French Drain
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
Nov-01	83.98	85.15	83.46	84.17	85.32	-	85.00	84.06	82.48	82.46	82.08	79.28
Aug-01	84.48	85.05	83.68	84.05	85.25	-	84.81	84.28	82.90	82.90	82.60	83.80
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
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
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
Aug-00	84.63	85.55	84.05	84.5	85.82	84.99	85.2	84.38	83.02	81.07	82.77	81.4
May-00	86.50	87.70	86.10	86.39	88.01	87.07	87.31	86.10	85.09	82.14	84.36	81.50
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
Nov-99	83.54	84.48	83.08	83.75	84.74	84.02	84.58	83.60	82.04	82.09	81.64	_
Aug.99	84.64	85.08	83.93	84.65	85.49	84.87	85.03	84.50	82.94	83.19	-	-
Jun.99	86.89	87.34	85.98	86.55	87.54	86.87	87.13	86.45	84.59	84.44	-	-
Mar.99	88.08	90.98	89.34	89.39	91.31	90.37	90.83	89.67	87.24	87.13	-	<u>-</u>
Dec.98	86.89	87.64	86.23	86.72	87.84	87.17	87.31	86.50	84.35	84.36	-	-
Sep.98	84.41	85.00	83.10	84.21	85.22	84.67	84.74	84.23	82.61	82.70	-	-
Dec.97	88.69	89.54	-	88.42	89.89	89.47	89.18	88.30	85.76	85.54	-	-
Apr.97	86.85	87.18	86.05	86.62	87.69	87.01	84.88	84.30	84.47	84.47	-	-
Dec.96	86.32	86.91	85.76	86.27	87.56	86.73	86.86	86.12	84.10	83.95	-	-
Apr.96	89.70	90.45	89.02	89.50	90.80	90.01	90.08	89.27	-	_	-	
Jan.96	87.92	88.65	87.23	87.74	89.01	88.22	88.26	87.46	-	-	-	-
Oct.95	84.70	85.16	84.87	-	85.47	84.83	84.88	84.39	-	-	-	-
Jun.95	88.46	88.99	87.53	-	-	-	-	-	_	-	-	-
Mar.95	89.92	90.90	89.09	<u>-</u>	-	-		-	_	-	-	-
Dec.94	88.67	89.98	87.99	-	-	-	-	-	-	-	-	-
Oct.94	82.60	83.22	81.99	-	-	-	-	-	-	-		-

Table 3
Field Measurements of Physical and Chemical Properties at Time of Sampling, February 21, 2002

3609	International	Blvd.,	Oakland,	CA

Monitoring Well	pН	Temp (°C)	E.C. (uS/cm)
MW-1	6.23	18.94	706
MW-2	6.06	20.56	671
MW-3	6.17	20.1	935
MW-4	5.93	18.58	527
MW-5	6.15	20.07	670
MW-6	5.98	18.77	920
MW-7	6.3	20.48	500
MW-8	6.27	19.43	693
MW-10	6.4	19.6	1210
MW-11	6.13	21.03	717
MW-12	6.21	19.27	1250

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

	-	Nitrate	Sulfate	Ferrous	Dissolved	Redox	
		Milate	Cunate	Iron	Oxygen	Potential	Turbidity
Well	Date	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mV)	(NTU)
MW-1	February 21, 2002	0	0	3.06	0.00	-16	153
	November 19, 2001	0.6	41	1.89	0.36	-54	17
	August 8, 2001	0.0	23	2.18	1.71	-35	200
	May 22, 2001	0.0	21	0.34	1.36	32:5	40.9
	March 13, 2001	4.4	80	0.50	0.53	-4.70	66
	November 2, 2000	0.0	33	1.14	0.56	-39.40	18
1	August 9, 2000	0.0	0	1.70	0.32	-40	219
	May 31, 2000	2.8	0	0.57	0.30	-37	30
	February 7, 2000	0.0	1	3.30	0.77	-74	-
	November 9, 1999	0.0	26	5.10	0.20	-	-
	August 23, 1999	0.0	8	2.67	1.40	-	-
	June 10, 1999	0	1	3.17	0.14	-	•
	December 30, 1997	<0.1	<1	3.04	0.50	<u>-</u>	-
海边运动				STATE OF STATE			· in the said
MW-2	February 21, 2002	0.8	45	0.36	1.46	131	41
	November 19, 2001	0.0	33	1.18	0.78	13	105
	August 8, 2001	7.4	51	0.09	2.03	160	0
	May 22, 2001	0.0	25	0.71	0.80	274	160
	March 13, 2001	6.8	80	0.10	0.89	117.9	24.15
	November 2, 2000	0.0	7.9	0.69	1.35	111	ND
	August 9, 2000	5.4	0	0.72	0.76	-74	1000
	May 31, 2000	2.5	54	0.18	0.80	-55	30.9
	February 7, 2000	6.2	55	0.15	1.12	-20	-
	November 9, 1999	0.9	55	1.00	0.80	-	-
	August 23, 1999	1.0	60	0.62	0.70	-	-
	June 10, 1999	0.7	40	0.55	0.44	-	-
	June 30, 1998	<0.1	14	0.50	3.20	-	-
	December 30, 1997	<0.1	<1	3.35	<0.1	-	-
19.	POR DESCRIPTION		4方在學院主要		17.1		Mark Services
MW-3	February 21, 2002	0	0	6.8	0	-61	0.3
ĺ	11/19/2001*	NA	NA	NA	NA	NA	NA
	August 8, 2001	0.7	11	7.00	1.17	-54	28
	May 22, 2001	0.2	16	6.72	80.0	-32	98
	March 13, 2001	0	0	2.66	0.62	-60	26.91
	November 2, 2000	0	28	4.10	0.83	-94	4,816
	August 9, 2000	0	0	6.10	0.40	-72	123
	May 31, 2000	0	4	7.80	0.45	-117	188
	February 7, 2000	0	140	3.60	0.70	-82	-
	November 9, 1999	0	0	3.50	0.61	-	-
	August 23, 1999	0	0	3.90	0.80	-	-
	June 10, 1999	0	0	3.10	0.42	-	-]
	June 30, 1998	0.10	77	0.37	2.00	-	-

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

Well Date (mg/L) (mg/L		Redox	Dissolved	Ferrous	Sulfate	Nitrate		
NW-4 February 21, 2002 0	al Turbidit	Potential	Oxygen	Iron	Sunate	muate		
MW-4 February 21, 2002 0 4 3.9 1.12 -26 November 19, 2001 0.00 37 3.20 0.56 -108 August 8, 2001 0.10 31 0.47 1.27 193.9 March 13, 2001 3.20 48 0.51 0.72 9.4 November 2, 2000 4.50 45 0.00 0.60 -39 August 9, 2000 1.00 14 0.32 0.46 -50 May 31, 2000 0.50 40 0.25 0.50 -40 February 7, 2000 0.50 40 0.25 0.50 -40 February 7, 2000 0.50 23 0.99 0.12 -1 August 23, 1999 0.50 23 0.99 0.12 -1 August 23, 1999 0.50 28 0.67 0.15 -1 June 10, 1999 0.40 10 0.81 0.15 -1 June 30, 1998 0.90 7 0.93 1.30 -1 -2 June 30, 1998 0.90 7 0.93 1.30 -1 -2 June 30, 1998 0.90 7 0.93 1.30 -1 -2 June 30, 1998 0.90 7 0.93 1.35 103 May 22, 2001 14.80 13 1.10 1.20 167 March 13, 2001 0.20 37 0.73 1.35 103 May 22, 2001 14.80 13 1.10 1.20 167 March 13, 2001 0.00 50 0.35 0.48 -25 February 7, 2000 0.00 26 0.00 1.97 80 May 31, 2000 0.00 50 0.35 0.48 -25 February 7, 2000 0.00 47 0.64 0.90 18 November 9, 1999 2.50 33 0.34 -25 -2 June 30, 1998 0.50 0.35 0.48 -25 -2 June 30, 1998 0.50 0.30 18 0.94 -0.1 -2 -2	(NTU)	(mV)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	Date	Well
August 8, 2001	707	-26	1.12	3.9	4	0	February 21, 2002	MW-4
May 22, 2001	58.7	-108	0.56	3.20	37	0.00	November 19, 2001	
March 13, 2001 3.20 48 0.51 0.72 9.4 November 2, 2000 4.50 45 0.00 0.60 -39 August 9, 2000 1.00 14 0.32 0.46 -50 May 31, 2000 0.50 40 0.25 0.50 -40 February 7, 2000 0.00 1 1.56 1.30 -31 November 9, 1999 0.50 23 0.99 0.12 -4 August 23, 1999 0.50 28 0.67 0.15 -5 June 10, 1999 0.40 10 0.81 0.15 -5 June 30, 1998 0.90 7 0.93 1.30 -5 December 30, 1997 4.50 42 0.39 <0.1 -5 MW-5 February 21, 2002 0 67 0.69 2.65 104 November 19, 2001 3.50 27 1.05 1.10 -33 August 8, 2001 0.20 37 0.73 1.35 103 May 22, 2001 14.80 13 1.10 1.20 167 March 13, 2001 1.00 45 0.33 1.01 34.2 November 2, 2000 6.50 31 1.02 0.56 49 August 9, 2000 0.00 26 0.00 1.97 80 May 31, 2000 0.00 50 0.35 0.48 -25 February 7, 2000 0.00 47 0.64 0.90 18 November 9, 1999 2.50 33 0.34 0.25 -5 June 10, 1999 2.50 33 0.34 0.25 -5 June 10, 1998 1.60 6 0.50 0.60 -5 December 30, 1997 0.30 18 0.94 <0.1 -5 MW-6 February 21, 2002 0 41 6.2 0.54 -40 March 13, 2001 0.00 17 1.30 0.12 -9.5 March 13, 2001 1.30 79 2.63 0.75 -42.1 November 2, 2000 0.00 16 2.65 0.80 -34.0 August 9, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -5	320	320	1.54	0.09	30	6.00	August 8, 2001	
November 2, 2000	50	193.9	1.27	0.47	31	0.10	May 22, 2001	
August 9, 2000	190	9.4	0.72	0.51	48	3.20	March 13, 2001	
May 31, 2000	ND	-39	0.60	0.00	45	4.50	November 2, 2000	
February 7, 2000	83	-50	0.46	0.32	14	1.00	August 9, 2000	
November 9, 1999	26.8	-40	0.50	0.25	40	0.50	May 31, 2000	
August 23, 1999	-	-31	1.30	1.56	1	0.00	February 7, 2000	
MW-5 February 21, 2002 November 2, 2000 November 9, 1999 2.40 A5 A1 November 9, 1999 2.40 A5 A1 November 30, 1999 A5 A1 A1 A2 A1 A2 A3 A1 A2 A3 A1 A2 A3 A1 A3 A3 A3 A3 A3 A3	-	-	0.12	0.99	23	0.50	November 9, 1999	
MW-5 February 21, 2002 November 9, 2001 November 9, 2000 November 9, 2000 November 9, 2000 November 1, 2000 November 2, 2000 November 9, 2000 November 2, 2000 November 2, 2000 November 9, 2000 November 2, 2000 November 2, 2000 November 2, 2000 November 9, 2000 Nov	=	-					•	
December 30, 1997	-	-						
MW-5 February 21, 2002 November 19, 2001 3.50 27 1.05 1.10 -33 August 8, 2001 0.20 37 0.73 1.35 103 May 22, 2001 14.80 13 1.10 1.20 167 March 13, 2001 1.00 45 0.33 1.01 34.2 November 2, 2000 6.50 31 1.02 0.56 49 August 9, 2000 0.00 26 0.00 1.97 80 May 31, 2000 0.00 50 0.35 0.48 -25 February 7, 2000 0.00 47 0.64 0.90 18 November 9, 1999 2.00 32 0.72 0.27 -	-	-						
MW-5 February 21, 2002 November 19, 2001 3.50 27 1.05 1.10 -33 3.50 3.42 3.50	-	-	<0.1	0.39	42	4.50		
November 19, 2001								
August 8, 2001	34.2						• •	MW-5
May 22, 2001 14.80 13 1.10 1.20 167 March 13, 2001 1.00 45 0.33 1.01 34.2 November 2, 2000 6.50 31 1.02 0.56 49 August 9, 2000 0.00 26 0.00 1.97 80 May 31, 2000 0.00 50 0.35 0.48 -25 February 7, 2000 0.00 47 0.64 0.90 18 November 9, 1999 2.00 32 0.72 0.27 - August 23, 1999 2.40 45 1.19 0.75 - June 10, 1999 2.50 33 0.34 0.25 - June 30, 1998 1.60 6 0.50 0.60 - December 30, 1997 0.30 18 0.94 <0.1 - MW-6 February 21, 2002 0 41 6.2 0.54 -40 11/19/2001*** NA NA NA NA NA NA August 8, 2001 NA NA NA NA	8.5			1.05			,	:
March 13, 2001 1.00 45 0.33 1.01 34.2 November 2, 2000 6.50 31 1.02 0.56 49 August 9, 2000 0.00 26 0.00 1.97 80 May 31, 2000 0.00 50 0.35 0.48 -25 February 7, 2000 0.00 47 0.64 0.90 18 November 9, 1999 2.00 32 0.72 0.27 - August 23, 1999 2.40 45 1.19 0.75 - June 10, 1999 2.50 33 0.34 0.25 - June 30, 1998 1.60 6 0.50 0.60 - December 30, 1997 0.30 18 0.94 <0.1 - MW-6 February 21, 2002 0 41 6.2 0.54 -40 11/19/2001*** NA NA NA NA NA August 8, 2001 NA NA NA NA NA May 22, 2001 0.00 17 1.30 0.12 -9.5	300					0.20		
November 2, 2000	593	167	1.20	1.10	13	14.80	May 22, 2001	
August 9, 2000	35.36	34.2	1.01	0.33	45	1.00	March 13, 2001	
May 31, 2000	ND						· ·	
February 7, 2000	490						_	
November 9, 1999 August 23, 1999 June 10, 1999 June 30, 1998 December 30, 1997 MW-6 February 21, 2002 The state of t	27.2						-	
August 23, 1999	-	18					•	
June 10, 1999 2.50 33 0.34 0.25 − June 30, 1998 1.60 6 0.50 0.60 − December 30, 1997 0.30 18 0.94 <0.1 − MW-6 February 21, 2002 0 41 6.2 0.54 -40 11/19/2001** NA NA NA NA NA NA August 8, 2001 NA NA NA NA NA NA March 13, 2001 0.00 17 1.30 0.12 -9.5 March 13, 2001 1.30 79 2.63 0.75 -42.1 November 2, 2000 0.00 16 2.65 0.80 -34.0 August 9, 2000 2.50 0 4.10 0.65 -33.0 May 31, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	-	-						
June 30, 1998 1.60 6 0.50 0.60 - December 30, 1997 0.30 18 0.94 <0.1	-	-					•	
December 30, 1997 0.30 18 0.94 <0.1	-	-						
MW-6 February 21, 2002 0 41 6.2 0.54 -40 11/19/2001*** NA	-	-					•	
MW-6 February 21, 2002 0 41 6.2 0.54 -40 11/19/2001** NA	-	-	<0.1	0.94	18			Barry Corporation 2002
11/19/2001** NA		4.0		A CONTRACTOR OF THE PARTY OF TH			Section 1	
August 8, 2001 NA NA <th>149</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th><u>-</u> '</th> <th>MIAA-D</th>	149						<u>-</u> '	MIAA-D
May 22, 2001 0.00 17 1.30 0.12 -9.5 March 13, 2001 1.30 79 2.63 0.75 -42.1 November 2, 2000 0.00 16 2.65 0.80 -34.0 August 9, 2000 2.50 0 4.10 0.65 -33.0 May 31, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	NA							
March 13, 2001 1.30 79 2.63 0.75 -42.1 November 2, 2000 0.00 16 2.65 0.80 -34.0 August 9, 2000 2.50 0 4.10 0.65 -33.0 May 31, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	NA 110						÷	
November 2, 2000 0.00 16 2.65 0.80 -34.0 August 9, 2000 2.50 0 4.10 0.65 -33.0 May 31, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	413						-	
August 9, 2000 2.50 0 4.10 0.65 -33.0 May 31, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	83						•	
May 31, 2000 0.00 0 3.27 0.72 -62.0 February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	618						•	
February 7, 2000 0.00 0 3.02 1.25 -51.0 November 9, 1999 0.00 0 7.00 0.22 -	1000						•	
November 9, 1999 0.00 0 7.00 0.22 -	111						-	
	_	-51.0						
I August 22 4000 I 0.00 0 2.20 0.55	-	-					-	
August 23, 1999 0.00 9 3.30 0.55 - June 10, 1999 0.00 23 2.52 0.61 -	-	-					-	
·	- .	-						
June 30, 1998 0.70 4 0.40 2.50 - December 30, 1997 <0.1 5 0.30 <0.1 -	<u>-</u>	-						

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

Well	Date	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous Iron (mg/L)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
MW-7	February 21, 2002	0.00	0.00	1.77	0.26	-6.0	118
	November 19, 2001	0.00	21	1.14	0.28	-0.0 -14.0	
	August 8, 2001	0.00	13	0.51	1.62		8.9
	May 22, 2001	0.00	12	0.51	1.02 1.71	-18.0 56.0	140 49.8
	March 13, 2001	0.00	40	3.30	0.79	-10.4	
	November 2, 2000	3.50	30	0.27	0.79 0.58	-10.4 -11.6	110 ND
	August 9, 2000	0.00	17	0.27	0.36	-33.0	131
	May 31, 2000	0.00	28	0.93	0.20	-53.0 -52.0	34.9
	February 7, 2000	0.00	41	0.72	0.30	-32.0 -19.0	34.9
	November 9, 1999	0.00	25	0.99	0.51	-13.0	_
	August 23, 1999	0.00	20	1.40	0.14	-	-
	June 10, 1999	0.00	22	0.19	0.05	-	-
	June 30, 1998	0.50	4	0.19	1.00	_	_
	December 30, 1997	0.20	32	0.23	1.20	_	-
			78		Water State of the Control	o to the state of the state of	A. S. Was
MW-8	February 21, 2002	0.00	0.00	3.08	0.00	-64	567
	November 19, 2001	0.00	1	>3.3	0.46	-142	53.5
	August 8, 2001	0.80	25	1.50	1.24	-62	990
	May 22, 2001	0.00	5	3.30	1.16	-8.8	179
	March 13, 2001	2.10	12	3.30	0.48	-76	110
	November 2, 2000	_	16	7.33	-	-104.9	350
	August 9, 2000	0.00	7	3.30	0.50	-91	94
	May 31, 2000	0.00	0	3.30	0.45	-95	13
	February 7, 2000	0.00	0	3.46	0.65	-90	_
	November 9, 1999	0.00	0	8.90	0.38	-	-
	August 23, 1999	0.00	13	8.20	0.20	-	-
	June 10, 1999	0.00	0	4.70	0.10	=	-
	June 30, 1998	<0.1	3	2.82	1.30	-	_
	December 30, 1997	0.10	<1	3.35	2.50	-	-
THE TOTAL	Andrew Commencer - Management	***************************************	And the control of the second	A Section of the second			
MW-10	February 21, 2002	0.00	4.00	0.49	0.15	85.0	12.6
	November 19, 2001	2.7	12	0.99	0.89	45	3
	August 8, 2001	0.0	11	0.00	1.56	52	19.6
	May 22, 2001	1.7	13	0.10	1.76	105	19.56
	March 13, 2001	0.0	0	0.23	0.65	28	32.11
	November 2, 2000	1.3	13	0.42	0.53	26.7	ND
	August 9, 2000	0.0	0	0.40	0.45	19	116
	May 31, 2000	0.0	0	0.29	0.40	17	22.4
	February 7, 2000	0.0	0	0.00	0.82	55	•
	November 9, 1999	0.0	12	0.37	0.44	-	-
	August 23, 1999	0.0	9	0.52	0.50	-	-
	June 10, 1999	0.0	0	0.25	0.20	-	-
	June 30, 1998	<0.1	<1	0.38	0.90	-	-
	December 30, 1997	0.3	<1	2.21	<0.1	~	-

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

Well	Date	Nitrate	Sulfate	Ferrous Iron	Dissolved Oxygen	Redox Potential	Turbidity (NTU)
MW-11	February 21, 2002	(mg/L) 0.00	(mg/L) 40.00	(mg/L) 0.00	(mg/L) 2.52	(mV) 31.0	168
IAIAA-II	November 19, 2001	1.0	40.00 30		2.32 0.72	-18	8.4
	,	-		2.30		- -	=
	August 8, 2001	NA 0.0	NA	NA 0.50	NA 0.40	NA 10.5	NA 00.0
	May 22, 2001	0.0	20	0.53	2.13	40.5	32.3
	March 13, 2001	0.0	78	0.34	0.79	114.7	111
	November 2, 2000	1.5	21	0.44	0.60	17	ND
	August 9, 2000	1.5	0	0.80	0.48	10	42
	May 31, 2000	5.2	10	0.69	0.50	-15	12
	February 7, 2000	0.0	24	0.75	1.10	-14	-
	November 9, 1999	0.0	21	0.06	0.22	-	-
	August 23, 1999	0.0	52	0.92	0.60	-	-
	June 10, 1999	0.0	0	0.28	0.19	-	-
	June 30, 1998	1.2	6	0.15	2.20	-	-
	December 30, 1997	3.5	35	0.32	<0.1	-	-
e Mentalse		diam'n din		un la contra	Contract of St	on the Art	
MW-12	February 21, 2002	0.00	0.00	1.43	0.56	-6.0	4.9
	November 19, 2001	0.0	2	2.29	0.92	-72	20
	August 8, 2001	0.0	0	2.46	1.66	3	72
	May 22, 2001	1.9	0	2.38	1.76	-18. 9	6.28
	March 13, 2001	0.0	0	1.44	0.64	-5.6	8.42
	November 2, 2000	0.0	6	1.93	0.60	12	19
	August 9, 2000	0.0	Ö	2.84	0.31	-48	56
	May 31, 2000	0.0	0	2.11	0.29	-54	7.7
	February 7, 2000	0.0	Õ	1.53	0.62	-42	-
	November 9, 1999	3.1	9	2.21	0.34	-	-

(*): MW-3 not analyzed on November 19, due to free product

(**): MW-6 not analyzed on November 19, 2001, well was inaccessible due to property obstacles NA: Not Analyzed

ND: Not Detected

Table 5
Groundwater Analytical Data, February 21, 2002
3609 International Boulevard, Oakland, California

Monitoring Well	Benzene (µg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	Total Xylenes (μg/L)	MtBE * (μg/L)	TPH-g (μg/L)
MW-1	3,700	12,000	3,700	19,200	23,000	260,000
MW-2	26	180	95	360	<2	1,700
MW-3	6,000	7,600	1,900	9,200	12,000	62,000
MW-4	63	4.1	22	28.7	<2	450
MW-5	3.5	2.00	6.2	6.2	< 0.5	290
MW-6	440	180	750	1,020	<10	14,000
MW-7	<0.5	2.5	2.0	3.8	78	380
MW-8	1,400	<25	4,200	6,560	<100	240,000
MW-10	1,100	20	370	63.7	500	4,700
MW-11	34	20	32	37.3	< 0.5	560
MW-12	77	< 0.5	5.7	7.4	95	2,500

Notes:

MTBE concentratios were confirmed with EPA Method 8260B

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

Well	Date	Benzene (μg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	Xylenes (μg/L)	MtBE* (μg/L)	TPH-g (μg/L)
MW-1	2/21/2002	3,700	12,000	3700	19,200	23,000	260,000
	11/19/2001	2,700	5,100	1,000	4,570	74,000	41,000
	8/8/2001	852	342	568	1,606	2,000	14,820
	5/22/2001	310	81	82	388	150	4.900
	3/13/2001	1,005	440	108	2,030	16	14,570
	11/2/2000	435	52	ND	689	10	7,050
	8/9/2000	638	<5	<5	<5	17.1	11,000
	5/31/2000	610	350	310	1,400	<5	15,610
	2/7/2000	2,280	1,380	8	6,130	47	40,000
	11/9/1999	693	15	<5	3,471	50	10,000
	8/23/1999	678	463	893	2,938	38	19,750
	6/10/1999	1,110	1,460	1,330	5,265	77	25,000
	3/16/1999	480	860	850	3,000	190	17,000
	12/16/1998	2,500	2,400	2,300	9,500	160	65,000
	12/30/1997	2,300	2.100	1,400	5,100	NA	27,000
	4/10/1997	NA	NA	NA	NA	NA	NA
	12/9/1996	NA	NA	NA	NA	NA	NA
	4/3/1996	98	120	63	170	NA	31,000
	1/3/1996	71	73	50	120	NA	30,000
	10/2/1995	140	130	140	390	NA	59,000
	6/5/1995	950	650	570	150	NA	21,000
	3/6/1995	190	160	150	490	NA	32,000
	12/2/1994	3,800	6,600	2,300	11,000	NA	80,000
	40/6/4004	24,000		· ·		NA	
	10/5/1994	24,000	21,000	2,600	15,000		320,000
340	10/5/1994	24,000					320,000
MW-2			180				A STATE OF THE PARTY OF THE PAR
	THE MAG	the Alleria	400		F. a & FOR V		THE STATE
	2/21/2002	26	180	95	360	<2	1,700
	2/21/2002 11/19/2001	26 13	1 80 64	95 22	360 83	<2 14	1,700 470
	2/21/2002 11/19/2001 8/8/2001	26 13 4	1 80 64 4	95 22 3	360 83 11	<2 14 ND	1, 700 470 125
	2/21/2002 11/19/2001 8/8/2001 5/22/2001	26 13 4 37	1 80 64 4 75	95 22 3 55	360 83 11 179	<2 14 ND 2.7	1,700 470 125 870
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001	26 13 4 37 18	180 64 4 75 34	95 22 3 55 1.3	360 83 11 179 225	<2 14 ND 2.7 ND	1,700 470 470 125 870 932
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000	26 13 4 37 18 ND	180 64 4 75 34 ND	95 22 3 55 1.3 ND	360 83 11 179 225 ND	<2 14 ND 2.7 ND ND	1,700 470 470 125 870 932 ND
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000	26 13 4 37 18 ND <5	180 64 4 75 34 ND <5	95 22 3 55 1.3 ND <5	360 83 11 179 225 ND <5	<2 14 ND 2.7 ND ND ND	1,700 470 125 870 932 ND <50
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000	26 13 4 37 18 ND <5 130 372 <5	180 64 4 75 34 ND <5 330 639 <5	95 22 3 55 1.3 ND <5	360 83 11 179 225 ND <5	<2 14 ND 2.7 ND ND <5 <5	1,700 470 125 870 932 ND <50 2,930
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000	26 13 4 37 18 ND <5 130 372	180 64 4 75 34 ND <5 330 639	95 22 3 55 1.3 ND <5 130 46	360 83 11 179 225 ND <5 570	<2 14 ND 2.7 ND ND <5 <5	1,700 470 125 870 932 ND <50 2,930 6,400
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999	26 13 4 37 18 ND <5 130 372 <5 6 290	180 64 4 75 34 ND <5 330 639 <5	95 22 3 55 1.3 ND <5 130 46 <5	360 83 11 179 225 ND <5 570 134 <5	<2 14 ND 2.7 ND ND <5 <5 <5	1,700 470 125 870 932 ND <50 2,930 6,400 <50
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 8/23/1999	26 13 4 37 18 ND <5 130 372 <5 6	180 64 4 75 34 ND <5 330 639 <5	95 22 3 55 1.3 ND <5 130 46 <5 4	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900	<2 14 ND 2.7 ND ND <5 <5 8 <5 ND	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 8/23/1999 6/10/1999	26 13 4 37 18 ND <5 130 372 <5 6 290	180 64 4 75 34 ND <5 330 639 <5 9 428	95 22 3 55 1.3 ND <5 130 46 <5 4 211	360 83 11 179 225 ND <5 570 134 <5 11 744	<2 14 ND 2.7 ND ND <5 <5 8 <5 ND ND	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 8/23/1999 6/10/1999 3/16/1999	26 13 4 37 18 ND <5 130 372 <5 6 290 730	180 64 4 75 34 ND <5 330 639 <5 9 428 830	95 22 3 55 1.3 ND <5 130 46 <5 4 211 610	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900	<2 14 ND 2.7 ND ND <5 <5 8 <5 ND ND 55	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 8/23/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000	95 22 3 555 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <0.5 NA	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 8/23/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180	95 22 3 555 1.3 ND <5 130 46 <55 4 211 610 880 160	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <5 <0.5	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110	95 22 3 555 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <5 ND ND 55 <0.5 NA NA ND	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 26,000 29,000 25,000
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997 12/9/1996	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7	95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <0.5 NA NA	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
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997 12/9/1996 4/3/1996	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110	95 22 3 555 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <5 ND ND 55 <0.5 NA NA ND	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
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997 12/9/1996	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7	95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <0.5 NA NA ND ND ND ND 55 <0.5 NA ND	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 29,000 25,000 35,000 53,000 6,200
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997 12/9/1996 4/3/1996	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	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	95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44	360 83 11 179 225 ND <5 570 134 <5 11 744 1,900 9,500 360 4,300 7,000 0 14 13	<2 14 ND 2.7 ND <5 <5 8 <5 ND ND 55 <0.5 NA NA ND N	1,700 470 125 870 932 ND <50 2,930 6,400 <50 60 3,500 7,600 29,000 25,000 35,000 53,000 6,200 27,000
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997 12/9/1996 4/3/1996 1/3/1996	26 13 4 37 18 ND <5 130 372 <5 6 290 730 1,400 290 2,000 4,900 150 11 0 160	180 64 4 75 34 ND <5 330 639 <5 9 428 830 1,600 180 2,000 4,900 110 7 92 130	95 22 3 55 1.3 ND <5 130 46 <5 4 211 610 880 160 1,300 1,600 37 2 44 93	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	<2 14 ND 2.7 ND <5 <5 ND ND 55 <0.5 NA NA ND NA	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
	2/21/2002 11/19/2001 8/8/2001 5/22/2001 3/13/2001 11/2/2000 8/9/2000 5/31/2000 2/7/2000 11/9/1999 8/23/1999 6/10/1999 3/16/1999 12/16/1998 9/29/1998 6/30/1998 12/30/1997 4/10/1997 12/9/1996 4/3/1996 1/3/1996 1/3/1996	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	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	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	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	<2 14 ND 2.7 ND <5 <5 ND 55 <0.5 NA NA ND NA ND NA	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 6,200 27,000 46,000 46,000

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

		Benzene	Toluene	Ethyl-Benzene	Xylenes	MtBE*	TPH-g
Weil	Date	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μ g/L)	(μ g/L)
MW-3	2/21/2002	6,000	7,600	1,900	9,200	12,000	62,000
	11/19/2001	NA	NA	NA	NA	NA	NA
	8/8/2001	3,485	2,670	1,255	5,420	52	41,750
	5/22/2001	5,400	3,100	1,400	6,400	200	44,000
	3/13/2001	2,250	140	ND	1,284	110	14,754
	11/2/2000	6,789	4,816	676	7,258	83	48,000
	8/9/2000	8,900	5,636	883	7,356	176	76,000
	5/31/2000	15,000	8,900	1,500	7,400	<5	68,000
	2/7/2000	6,090	3,360	<5	5,780	276	44,000
	11/9/1999	3,218	1,319	<5	6,697	126	26,000
	8/23/1999	7,484	8,052	1,744	9,749	141	64,000
	6/10/1999	8,245	6,425	1,015	7,173	274	46,000
	3/16/1999	4,100	6,400	1,000	6,100	470	45,000
	12/16/1998	5,700	3,900	1,200	6,300	410	51,000
	1/3/1996	510	410	210	650	NA	150,000
	10/2/1995	510	410	210	65	NA	150,000
	6/5/1995	20,000	42,000	5,800	36,000	NA	350,000
	3/6/1995	20,000	42,000	5,800	36,000	NA	350,000
	12/2/1994	19,000	22,000	4,400	28,000	NA	250,000
	10/5/1994	190,000	740,000	310,000	130,000	NA NA	3,000,000
36. 24 % 5	(4) 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	高特性的物					1460年1460年
MW-4	2/21/2002	63	4.1	22	28.7	<2	450
	11/19/2001	180	5	17	53	ND	670
	8/8/2001	12	2.2	3.9	9	ND	133
	5/22/2001	12	1.9	4.1	9.8	ND	80
	3/13/2001	ND	ND	3.2	8.7	ND	62
	11/2/2000	5.30	ND	ND	8	ND	ND
	8/9/2000	5.08	<5	<5	<5	<5	370
	5/31/2000	42	19	16	67	<5	552
	2/7/2000	1,200	61	<5	781	<5	7,800
	11/9/1999	<5	<5	<5	<5	<5	<50
	8/23/1999	497	41	54	145	6	660
	6/10/1999	298	44	19	64	13	1,000
	3/16/1999	200	35	19	56	11	600
	12/16/1998	590	33	28	94	24	1,400
	9/29/1998	910	77	68	200	18	6,200
	6/30/1998	780	160	54	200	NA	1,700
	12/30/1997	410	270	100	1,500	NA	2,300
	4/10/1997	ND	ND	ND	ND	ND	ND
	12/9/1996	14	6	4	12	ND	4,000
	4/3/1996	12	8	5	14	NA	1,900
	1/3/1996	230	110	10	29	NA	9,300

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

		Benzene	Toluene	Ethyl-Benzene	Xylenes	MtBE*	TPH-g
Well	Date	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)
MW-5	2/21/2002	3.5	2	6.2	6.2	< 0.5	290
	11/19/2001	17	160	26	135	40	920
	8/8/2001	1	1.1	3.4	7.3	1.4	258
	5/22/2001	ND	ND	2.1	0.57	4.4	180
	3/13/2001	6.1	1.9	6.6	5.9	ND	382
	11/2/2000	ND	ND	ND	ND	ND	ИD
	8/9/2000	<5	<5	<5	<5	<5	<50
	5/31/2000	7.4	24	12	32.4	<5	627.4
	2/7/2000	<5	<5	<5	7	<5	70
	11/9/1999	<5	<5	<5	<5	<5	<50
	8/23/1999	ND	4	ND	4	ND	120
	6/10/1999	4	3	6	4	ND	270
	3/16/1999	3	1	16	2	10	650
	12/16/1998	1	1	ND	2	ND	1,400
	9/29/1998	2	1	3	3	<.5	270
	6/30/1998	<5	<5	15	<10	NA	400
	12/30/1997	82	66	59	160	NA	790
	4/10/1997	NA	NA	NA	NA	NA	NA
	12/9/1996	NA	NA	NA	NA	NA	NA
	4/3/1996	1	1	5	4	NA	780
	1/3/1996	1	1	4	5	NA	1,500
	10/2/1995	1	1	4	5	NA	1,500
Mary of the	1722 25 25 25	• 1	2.000	LAND MICHELL	1. 17. 19.	de l'Arte (a)	Jacob C
MW-6	2/21/2002	440	180	750	1,020	<10	14,000
	11/19/2001	NA	NA	NA	NA	NA	NA
	8/8/2001	440	180	750	1,020	<10	14,000
	5/22/2001	760	450	1,600	4,270	ND	27,000
	3/13/2001	713	459	238	2,363	ND	15,637
	11/2/2000	1,387	618	ND	5,250	ND	19,000
	8/9/2000	1,306	870	<5	5,162	<5	24,000
	5/31/2000	1,700	1,200	17	3,600	<5	21,700
	2/7/2000	1,360	521	<5	4,150	6	17,000
	11/9/1999	1,084	130	<5	10,940	<5	40,000
	8/23/1999	3,806	3,649	1,554	7,996	10	42,000
	6/10/1999	2,060	1,650	735	3,170	ND	18,500
	3/16/1999	3,900	4,300	1,600	7,000	180	37,000
	1/3/1996	350	310	200	610	NA	120,000
	10/2/1995	350	310	200	610	NA	120,000

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

Well	Date	Benzene (μg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	Xylenes (μg/L)	MtBE* (μg/L)	TPH-g (μg/L)
MW-7	2/21/2002	<0.5	2.5	2	3.8	78	380
	11/19/2001	24	220	41	205	69	1,700
	8/8/2001	3.7	3	6.2	18.9	10	610
	5/22/2001	ND	9.1	1.3	2.3	28	370
	3/13/2001	0.97	ND	0.76	ND	78	82
•	11/2/2000	ND	ND	ND	ND	9.1	50
	8/9/2000	<5	<5	<5	<5	11.7	80
	5/31/2000	4.9	22	4.2	21.9	29	494.9
	2/7/2000	<5	<5	<5	<5	23	80
	11/9/1999	<5	9	<5	<5	12	290
	8/23/1999	5	10	ND	ND	ND	570
	6/10/1999	3	7	4	3	26	320
	3/16/1999	3	1	1	1	62	300
	12/16/1998	5	10	5	20	160	990
	9/29/1998	1	1	1	2	68	1,800
	6/30/1998	4	<5	9	<10	NA	620
	12/30/1997	130	98	75	200	NA	1,400
	4/10/1997	NA	NA	NA	NA	NA	NA
	12/9/1996	NA	NA	NA	NA	NA	NA
	4/3/1996	2	3	5	7	NA	1,900
	1/3/1996	9	12	17	45	NA	3,300
	10/2/1995	10	12	17	NA	3,300	NA
100	建筑设施	Mark of the last	P44 / 44 A				NEW ALCOHOLD
MW-8	2/21/2002	1,400	<25	4,200	6,560	<100	240,000
	11/19/2001	600	270	750	1,200	400	13,000
	8/8/2001	153	46	373	345	174	5,620
	5/22/2001	110	28	140	194	410	3,100
	3/13/2001	81	16	71	270	221	2,360
	11/2/2000	278	350	209	980	21	3,000
	8/9/2000	632	5.38	<5	2,686	37.3	22,000
	5/31/2000	940	130	1,600	3,960	75	25,940
	2/7/2000	1,080	617	<5	4,160	240	44,200
	11/9/1999	92	<5	<5	3,414	769	10,500
	8/23/1999	5,379	2,438	3,001	6,960	639	58,000
	6/10/1999	3,610	1,635	2,175	5,913	988	39,500
	3/16/1999	1,800	470	2,000	2,000	820	22,000
	12/16/1998	6,300	1,700	2,200	4,400	1,300	61,000
	6/30/1998	4,600	2,800	3,500	7,300	NA	54,000
	12/30/1997	6,000	1,600	2,100	4,700	NA	28,000
	4/10/1997	86	55	50	100	ND	24,000
	12/9/1996	88	43	44	80	ND	27,000
	4/3/1996	250	170	140	330	NA	58,000
	1/3/1996	310	250	180	480	NA	94,000
	10/2/1995	310	250	180	480	NA	94,000

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

Well	Date	Benzene (μg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	Xylenes (μg/L)	MtBE* (μg/L)	TPH-g (μg/L)
MW-10	2/21/2002	1,100	20	370	63.7	500	4,700
	11/19/2001	900	260	310	258	410	3,500
	8/8/2001	35	1	11	2	64	242
	5/22/2001	630	11	200	31	270	2,900
	3/13/2001	969	18	41	72	630	4,935
	11/2/2000	ND	ND	ND	ND	145	ND
	8/9/2000	1,055	26	54	53.8	1,283	6,800
	5/31/2000	1,500	25	390	107.1	580	4,400
l	2/7/2000	<5	<5	<5	<5	448	<50
	11/9/1999	1,134	20	<5	70	652	2,950
	8/23/1999	2,135	97	600	248	1,800	3,250
Ì	6/10/1999	1,168	34	264	154	1,195	4,200
	3/16/1999	15	28	420	250	2,800	4,100
	12/16/1998	3,800	51	790	420	1,800	8,700
	9/29/1998	5,400	66	970	620	2,600	9,900
	12/30/1997	5,300	76	1,100	780	NA	10,000
	4/10/1997	21	9	3	3	ND	1,000
100 ST 1975	第21年,學也群			电影 位于 数数数	数的影響等的		100
MW-11	2/21/2002	34	20	32	37.3	< 0.5	560
	11/19/2001	7.9	26	5.1	28.9	ND	300
	8/8/2001	NS	NS	NS	NS	NS	NS
	5/22/2001	12	8.3	3.3	9.8	12	280
	3/13/2001	8.6	2.1	10	14	ND	273
	11/2/2000	ND	ND	ND	ND	ND	60
	8/9/2000	10.5	5.94	<5	7.75	<5	590
	5/31/2000	27	13	9.5	29.0	<5	477
	2/7/2000	20	15	<5	35	<5	700
	11/9/1999	<5	<5	<5	<5	<5	<50
	8/23/1999	4	4	ND	6	ND	170
	6/10/1999	1,240	35	290	159	1,291	4,600
	3/16/1999	30	6	53	84	8	710
	12/16/1998	27	4	25	33	>0.5	650
	9/29/1998	7	1	4	9	22	170
	6/30/1998	45	24	71	100	NA	1,100
	12/30/1997	66	97	59	190	NA	710
	4/10/1997	ND	ND	ND	ND	ND	ND

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

Well	Date	Benzene (µg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	Xylenes (μg/L)	MtBE* (μg/L)	TPH-g (μg/L)
MW-12	21/21/02	77	<0.5	5.7	7.4	95	2,500
	11/19/2001	81	69	13	73	120	3,000
	8/8/2001	71	1.8	3	4	142	2,090
	5/22/2001	1,200	ND	95	165	1,900	31,000
	3/13/2001	13	5.6	5.5	11	214	1,517
	11/2/2000	9.3	19.0	ND	7.40	215	1,010
	8/9/2000	15.4	12.4	<5	<5	185	1,730
	5/31/2000	230	10	34	12	200	3,930
	2/7/2000	351	37	<5	24	513	4,000
	11/9/1999	<5	<5	<5	<5	229	80

Notes:

*: MTBE was detected using the EPA Method 8260B.
ND: Not Detected

NA: Not Analyzed

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

		Meter		ffluent*	•			
		Reading	<u> </u>	. (4	concentration	ons in µg/L		
Month	Date	(gallons)	MtBE**	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
February	2/27/2002	1,449,830	< 0.5	< 50	< 0.5	< 0.5	< 0.5	< 0.5
1 GOIGGIA	2/2//2002	1,448,030	1.1	< 50	< 0.5	< 0.5	< 0.5	< 0.5
	i		'''	-30	- 0.0	- 0.0	- 0.0	10.0
<u>January</u>	1/22/2002	1,381,370	< 2.0	< 50	< 0.5	< 0.5	< 0.5	< 0.5
<u>oundary</u>	1122/2002	1,301,370	< 2.0	< 50	< 0.5	< 0.5	< 0.5	< 0.5
	1000				140 194	i i yang 🛊		1.7 S 2.5
December	12/12/2001	1,311,340	ND	ND	ND	ND	ND	ND
		.,,	ND	ND	ND	ND	<u>ND</u>	<u>ND</u>
			-	_	_		_	
November	11/2/2001	1,272,660	ND	ND	ND	ND	ND	ND
			<u>0.6</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>
<u>September</u>	9/28/2001	NA	ND	ND	ND	ND	ND	ND
			<u>ND</u>	<u>ND</u>	ND	ND	<u>ND</u>	<u>ND</u>
August	8/22/2001	1,243,100	ND	<u>ND</u>	ND	<u>ND</u>	ND	ND
			ND	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND	ND
July	7/26/2001	1,227,270	ND	ND	<u>ND</u>	<u>ND</u>	<u>ND</u>	ND
		, ,	ND	ND	ND	ND	ND	ND
	7/11/2001	1,226,730	NA	NA NA	NA	NA	NA	NA
		.,	<u>NA</u>	NA	NA	NA.	<u>NA</u>	NA
			1111	<u> </u>	1.44.	1.24.2	1.12.	<u> </u>
<u>June</u>	6/29/2001	1,224,600	<u>NA</u>	<u>NA</u>	NA	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,224,600	ND	ND	ND	ND	ND	ND
	6/16/2001	1,216,580	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,216,580	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	6/7/2001	1,216,580	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,216,580	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<u>May</u>	5/30/2001	1,205,198	<u>NA</u>	<u>NA</u>	<u>NA</u>	NA NA	<u>NA</u>	<u>NA</u>
	E(22/2004	1,205,198	NA NA	NA NA	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	5/23/2001	1,194,390 1,194,390	<u>NA</u> NA	<u>NA</u> <u>NA</u>	NA NA	<u>NA</u> NA	<u>NA</u> <u>NA</u>	<u>NA</u> NA
	5/17/2001	1,194,390	ND ND	ND ND	NA ND	ND ND	<u>NA</u> ND	ND ND
	JATAZOOT	1,182,360	ND ND	ND ND	ND ND	ND ND	ND	ND
	5/10/2001	1,166,850	NA	NA	NA	<u>NA</u>	NA	NA.
	5,15,2551	1,166,850	NA	NA	<u>NA</u>	<u>NA</u>	NA	NA.
	5/5/2001	1,151,600	NA	NA !	NA	<u>NA</u>	<u>NA</u>	NA
		1,151,600	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	NA	<u>NA</u>
<u>April</u>	4/28/2001	1,135,690	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,135,690	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	4/21/2001	1,113,570	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
		1,113,570	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	4/11/2001	1,082,700	<u>NA</u>	ND ND	ND ND	ND ND	ND ND	ND
	Albinona	1,082,700	ND NA	ND I	ND NA	ND NA	ND NA	ND NA
	4/6/2001	1,065,540	<u>NA</u>	NA NA	<u>NA</u>	<u>NA</u> NA	<u>NA</u>	<u>NA</u> NA
		1,065,540	<u>NA</u>	<u>ŅA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

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

		Meter Reading		Lab Results F (conce				
Month	Date	(gallons)	MtBE**	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
<u>March</u>	3/29/2001	1,036,330	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	3/21/2001	1,036,070	<u>NA</u> <u>NA</u>	<u>NA</u> NA	<u>NA</u> <u>NA</u>	NA NA	<u>NA</u> <u>NA</u>	<u>NA</u> <u>NA</u>
	3/17/2001	1,036,070 1,035,100	<u>NA</u> <u>NA</u>	<u>NA</u> <u>NA</u>	<u>NA</u> NA	<u>NA</u> NA	NA NA	<u>NA</u> <u>NA</u>
	3/13/2001	1,035,100 1,032,500	NA ND	NA ND	NA ND	NA ND	NA ND	NA ND
	3/2/2001	1,032,500 996,520 996,520	<u>NA</u> <u>NA</u> NA	NA NA NA	NA NA NA	<u>NA</u> NA NA	NA NA NA	NA NA NA
<u>February</u>	2/10/2001	975,490	Sy	rstern shut (l down for ma I	intenance a	 and cleaning 	
January	1/29/2001 1/29/2001	957,880 957,880	<u>ND</u> ND	ND ND	ND ND	<u> </u>	ND ND	<u>ND</u> ND
Christian Company	A Charles	74.5 00 0000000000000000000000000000000000	STEPHEN SE	JOS XIII	11465	- Vac-18	D1 04 04	
<u>December</u>	12/5/2000 12/5/2000	883,000 883,000	ND ND	ND ND	ND ND	<u>ND</u> ND	<u>ND</u> ND	ND ND
<u>November</u>	11/24/2000 11/24/2000 11/1/2000 11/1/2000	842,000 842,000	ND ND ND NO	2 2 2 2 2 2 2 2 2	<u>ND</u> ND ND ND	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20 20 20 20 20	<u>ND</u> ND <u>ND</u> ND
<u>October</u>	10/1/2000 10/1/2000	809,000 000,608	<u>ND</u> NO	ND ND	ND ND	ND ND	ND ND	<u>00</u> ND
<u>August</u>	8/24/2000	778,000	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>
<u>July</u>	7/26/2000 7/19/2000 7/13/2000 7/7/2000	726,000 718,000 712,000 706,000	2222	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20 20 20 20 20	<u> </u>	<u>ND</u> ND ND ND
June	06/29/00 06/21/00 06/16/00 06/10/00	700,000 682,220 669,720 651,200	2222	2 2 2 2 2 2 2 2 2 2 2 3 2 3 2 3 2 3	20 20 20 20 20 20 20 20 20 20 20 20 20 2	20 20 20 20 20	<u> </u>	ND ND ND ND
<u>May</u>	05/31/00 05/23/00 05/18/00 05/10/00	629,000 603,700 570,000 530,400	<u> </u>	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 3 2 3 3 4 3 4	20 20 20 20 20	<u> </u>	<u> </u>	<u>ND</u> NO ND ND
<u>April</u>	04/30/00 04/18/00 04/10/00 04/04/00	488,300 485,300 440,200 390,100	2	20 20 20 20 20	20 20 20 20 20	ND ND ND	2 2 2 2 0 0 0 2 0 0	ND 0.51 ND <u>ND</u>

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

		Meter Reading			sults For GA concentration	_		
Month	Date	(gallons)	MtBE**	TPH-g	Benzene	Toluene	Ethyl benzene	Total Xylenes
March	03/24/00	388.000	ND	ND	ND	ND	ND	ND
indici:	03/17/00	357,100	ND	ND	ND	ND	ND	ND
	03/10/00	329.000	ND	ND	ND	ND	ND	ND
	03/03/00	300,000		3.5	··· ·	110		<u> </u>
February	02/25/00	274,000	ND	NQ.	<u>ND</u>	<u>ND</u>	ND	ND
	02/18/00	233,000	ND	ND	ND	ND	ND	ND
	02/11/00	190,000	ND	ND	ND	ND	ND	ND
	02/04/00	160,800	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>
January	01/28/00	130,600	ND	ND	ND	<u>ND</u>	<u>ND</u>	<u>ND</u>
	01/21/00	103,435	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>
	01/14/00	83,500	185	ND	ND	ND	ND	ND
				Sand Jan	3.50			
<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	ND	<u>ND</u>
	12/16/99	30,450	963	NA	ND	ND	ND	ND
	12/16/99	30,450	<u>ND</u>	<u>NA</u>	<u>ND</u>	<u>ND</u>	ND.	ND
	12/09/99	9,000	230	ND	ND	ND	ND	ND
		Pumping	began on E)ecember (6, 1999			

Notes:
*: Effluent is equivalent to PSP#1
**: MTBE was detected using the EPA Method 82608
ND: Not Detected

NA: Not Analyzed

Table 8

Total Mass of Petroleum Hydrocarbons Removed by Vapor Extraction System
3609 International Boulevard, Oakland, California

		PID (r	opmv)	Flow Rate	Time Elapsed	Air Flow	Mass Removed 1
Date	Time	Influent	Effluent	(cfm)	(Hours)	(Liters)	(Pounds)
7/24/2000	5:00	394	0	85	0	0	0.00
7/25/2000	5:15	38	2	95	24	3,914,096	1.01
7/26/2000	5:05	207	1	80	48	3,228,121	4.52
7/27/2000	9:00	160	5	92	64	2,500,944	2.71
7/28/2000	4:30	141	7	87	96	4,656,139	4.44
7/29/2000	1:30	225	8	85	117	3,032,734	4.62
7/30/2000	9:00	226	12	85	136	2,816,110	4.31
7/31/2000	3:00	141	5	85	166	4,332,478	4.13
8/1/2000	5:00	135	4	80	192	3,533,942	3.23
8/2/2000	4:00	80	4	80	215	3,126,180	1.69
8/3/2000	5:00	60	5	85	240	3,610,398	1.47
8/4/2000	3:00	57	4	85	262	3,177,150	1.23
8/5/2000	2:00	97	8	87	285	3,399,721	2.23
8/6/2000	12:00	114	8	80	307	2,990,259	2.31
8/7/2000	12:00	93	9	85	331	3,465,982	2.18
8/8/2000	4:30	152	10	85	360	4,115,854	4.23
8/10/2000	10:00	173	1	85	377	2,527,279	2.96
8/11/2000	7:00	78	4	70	410	3,924,715	2.07
8/12/2000	9:00	100	6	70	424	1,665,031	1.13
8/13/2000	5:00	107	9	70	456	3,805,784	2.75
8/14/2000	12:30	122	5	70	476	2,319,150	1.91
8/15/2000	6:00	103	12	70	505	3,508,457	2.44
8/16/2000	12:30	112	0	70	524	2,200,219	1.67
8/18/2000	9:00	90	0	75	568	5,670,449	3.45
8/21/2000	12:00	74	5	80	643	10,194,065	5.10
8/24/2000	12:00	68	13	80	712	9,378,540	4.31
8/27/2000	12:30	68.5	2	80	785	9,854,263	4.57
8/31/2000	1:30	52	6	80	882	13,184,324	4.64
9/4/2000	12:30	54	5	80	977	12,912,482	4.72
9/7/2000	12:00	55	3	80	1,048	9,718,342	3.62
9/11/2000	$4:30^{2}$	141	0	80	1,149	13,660,047	13.03
9/14/2000	9:30	56	5	80	1,214	8,834,856	3.35
9/18/2000	2:00	46	9.5	80	1,314	13,660,047	4.25
9/18/2000	4:30 ³	34	0	80	1,317	339,802	0.08
9/21/2000	4:30	43	1	80	1,389	9,786,302	2.85
9/25/2000	5:30	55	6	80	1,486	13,184,324	4.91
9/28/2000	9:00	47.5	7.5	80	1,550	8,766,896	2.82
10/1/2000	1:00	38.5	6	80	1,626	10,329,986	2.69
10/5/2000	3:00 ⁴	28.5	3	80	1,724	13,320,245	2.57
10/5/2000	5:00	36	o o	80	1,726	271,842	0.07
10/8/2000	3:00	28.5	3	80	1,796	9,514,460	1.83
10/14/2000	3:00	24.5	2.5	80	1,940	19,572,604	3.24
10/17/2000	2:00	36.5	3.5	80	2,011	9,650,381	2.38
10/20/2000	8:30	18.5	3.5	80	2,078	9,038,737	1.13

Table 8

Total Mass of Petroleum Hydrocarbons Removed by Vapor Extraction System

3609 International Boulevard, Oakland, California

PID (ppmv)			Flow Rate	Time Elapsed	Air Flow	Mass Removed 1	
Date	Time	Influent	Effluent	(cfm)	(Hours)	(Liters)	(Pounds)
10/25/2000	2:00	38	3.7	80	2,203	17,058,068	4.39
10/29/2000	10:00	35	4	80	2,295	12,504,719	2.96
11/2/2000	4:00	30.5	4	80	2,397	13,863,928	2.86
11/7/2000	4:00	30	6	80	2,517	16,310,504	3.31
11/19/2000	12:00	92.7	5.5	80	2,801	38,601,525	24.20
11/24/2000	13:30	25	6.5	80	2,923	16,514,385	2.79
11/29/2000	15:00	14.5	3.5	80	3,044	16,514,385	1.62
12/4/2000	16:30	10.7	1	80	3,190	19,776,486	1.43
12/13/2000	15:30	24	3	80	3,405	29,222,986	4.74
12/28/2000	14:30	10	6	85	3,764	51,845,314	3.51
1/4/2001 ⁵	14:00	8.7	3.7	85	3,907	20,723,684	1.22
8/8/2001	15:00	217	0	85	3,907	0	0
9/6/2001	12:00	85	0	85	4,048	20,362,644	11.71
9/13/2001	16:00	186	8	85	4,220	24,839,538	31.26
9/18/2001	15:00	184	9	85	4,344	17,907,574	22.29
9/21/2001 6					4,344	0	0
10/12/01 ⁷					4,344	0	0
10/23/2001	17:00	114	58	87	4,344	0	0
10/25/01 4	15:00	133	0	85	4,390	6,643,132	5.98
10/29/2001 ⁸	13:20	569	0	85	4,485	13,647,304	52.53
11/7/2001	15:30	177	0	87	4,679	28,675,904	34.34
11/16/2001	15:00	117	0	87	4,894	31,853,904	25.21
11/21/01 ⁹	12:00	85	72	87	5,011	17,294,231	9.94
2/15/02 ¹⁰	16:30	49	0	80	5,011.5	67,960	0.02
2/16/2002	15:45	50	Ō	80	5,035	3,160,160	1.07
2/21/2002	16:00	37	4	80	5,155	16,344,484	4.09
2/27/2002	10:30	11	0	83	5,294	19,530,979	1.45
3/7/02 ¹¹	12:20	10		80	5,488	26,429,812	1.79
			Tot		leum Hydrocarb		
				Average Dail	y Removal Rate (pounds / day)=	2.38

Notes:

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

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

³ GAC Replaced

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

⁶ SVE System turned off for rainy season due to low influent concentrations

⁶ system down, hoses disconnected and GAC moved for replacement

⁷ system down for electrical repair

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

⁹ system shut-down due to high effluent value

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

¹¹ System was shut-down due to low influent reading

FIGURES

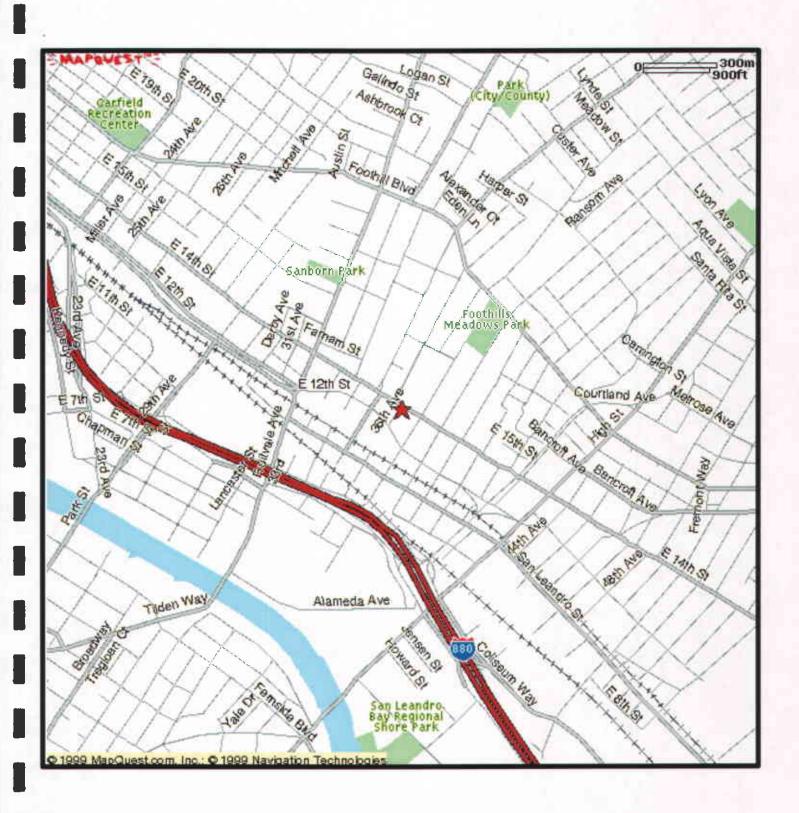


Figure 1: Site Location Map



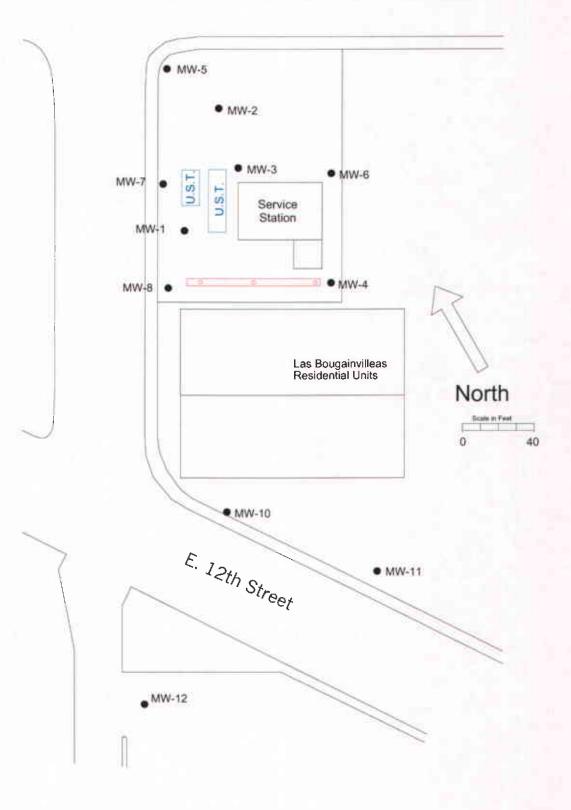


Figure 2: Location of Groundwater Monitoring Wells



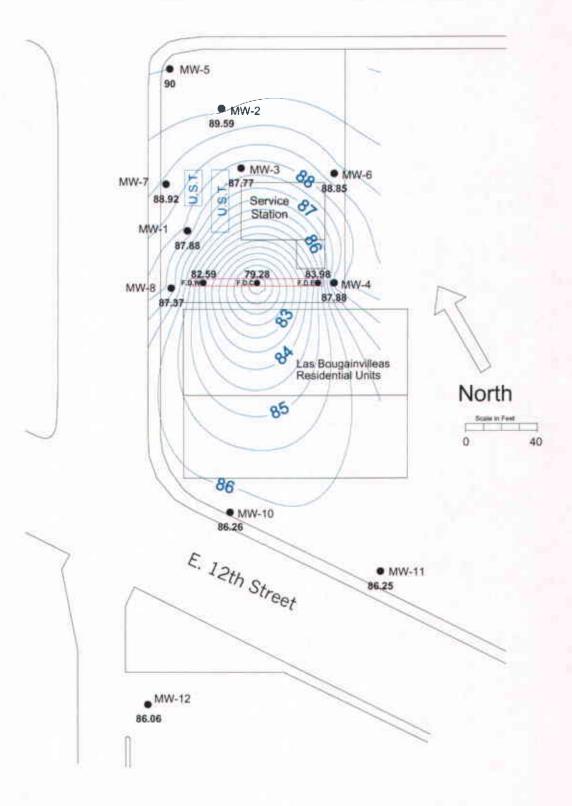


Figure 3: Groundwater Elevation Contour Map, February 21, 2002



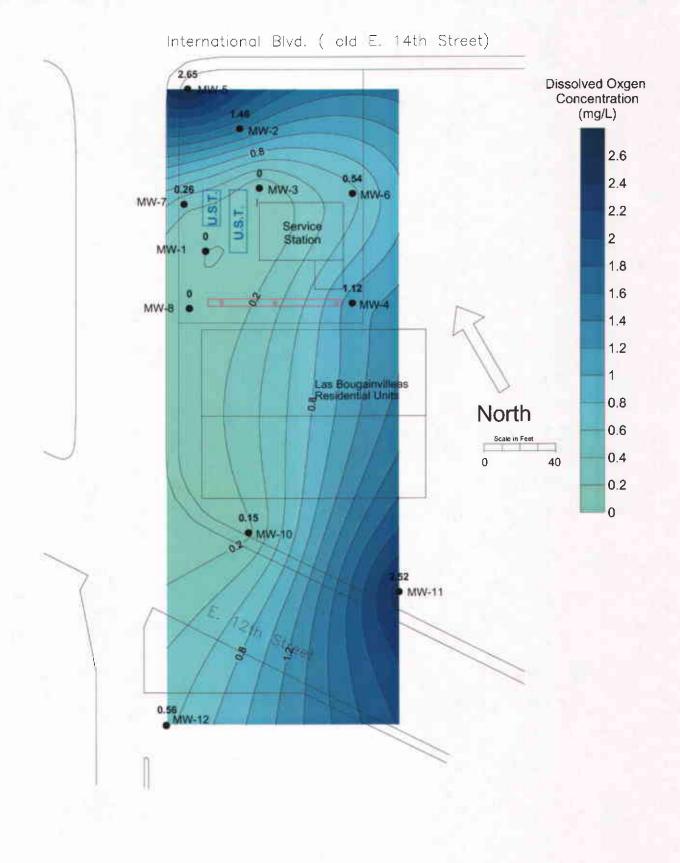


Figure 4: Dissolved Oxygen Concentration in Groundwater, February 21, 2002



International Blvd.

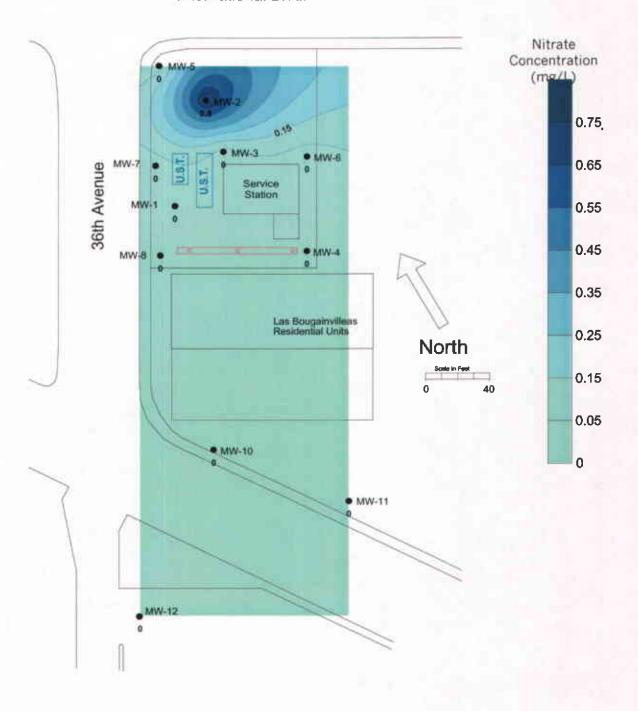


Figure 5: Nitrate Concentration Contour Map in Groundwater, February 21, 2002



International Blvd.

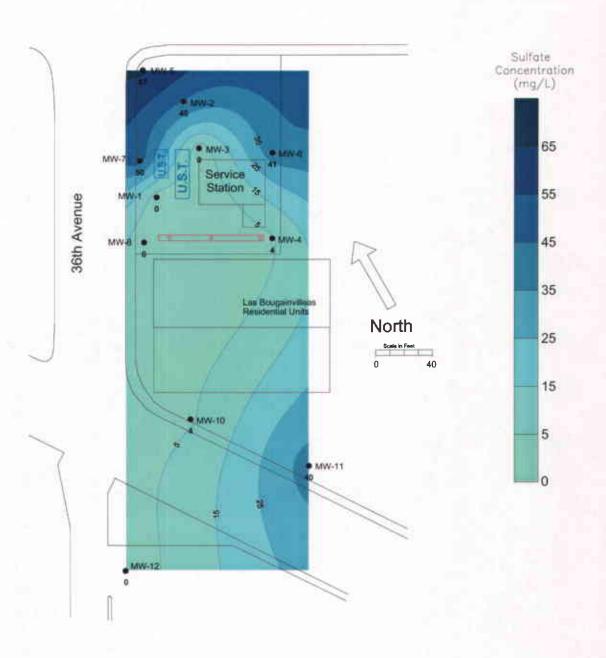


Figure 6: Sulfate Concentration Contour Map in Groundwater, February 21, 2002



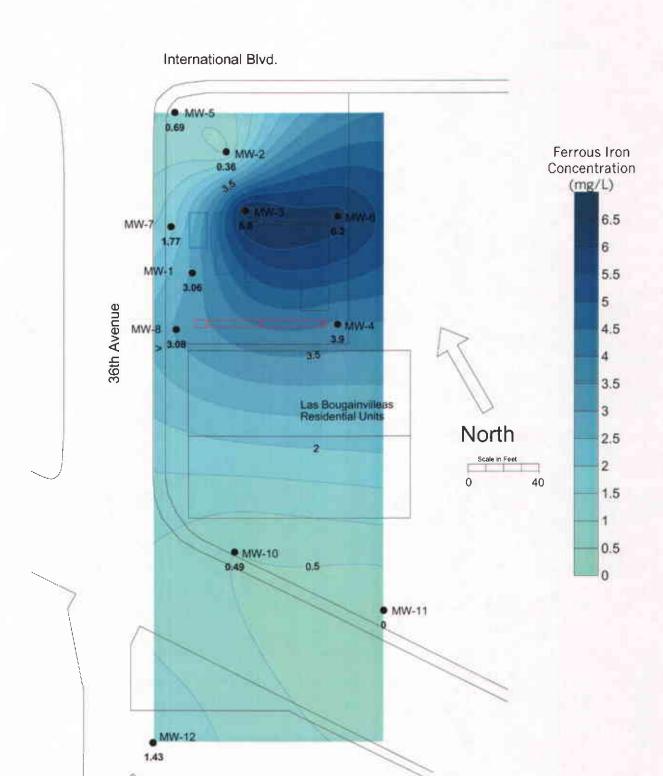


Figure 7: Ferrous Iron Concentration Contour Map in Groundwater, February 21, 2002



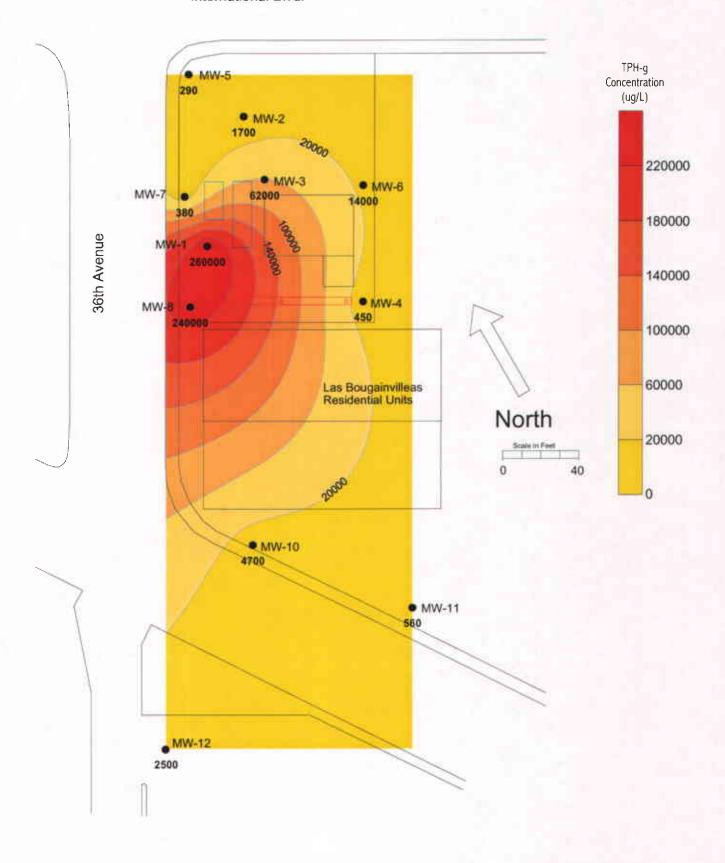


Figure 8: TPH-g Concentration Contour Map in Groundwater, February 21, 2002



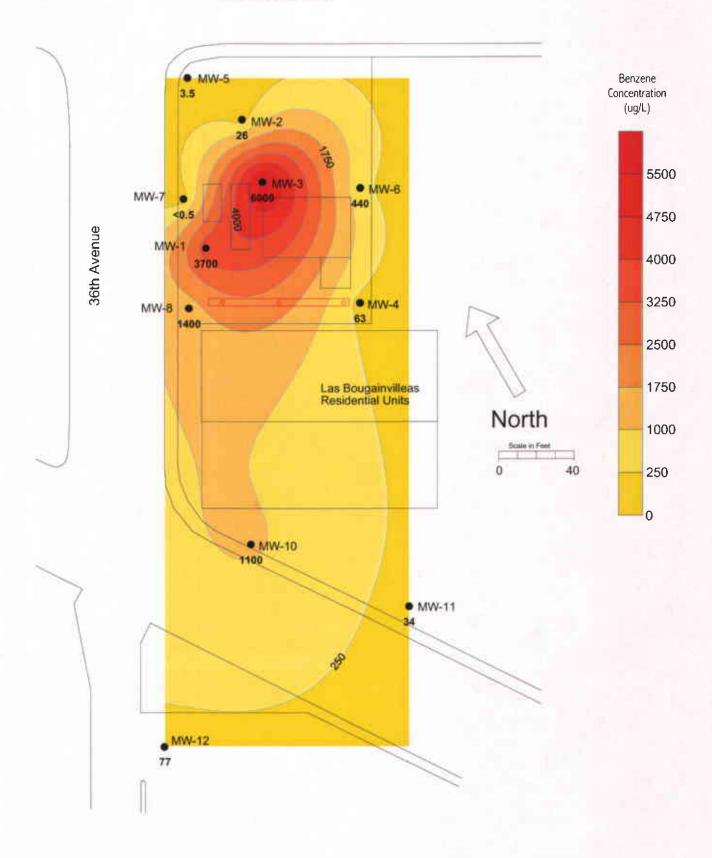


Figure 9: Benzene Concentration Contour Map in Groundwater, February 21, 2002



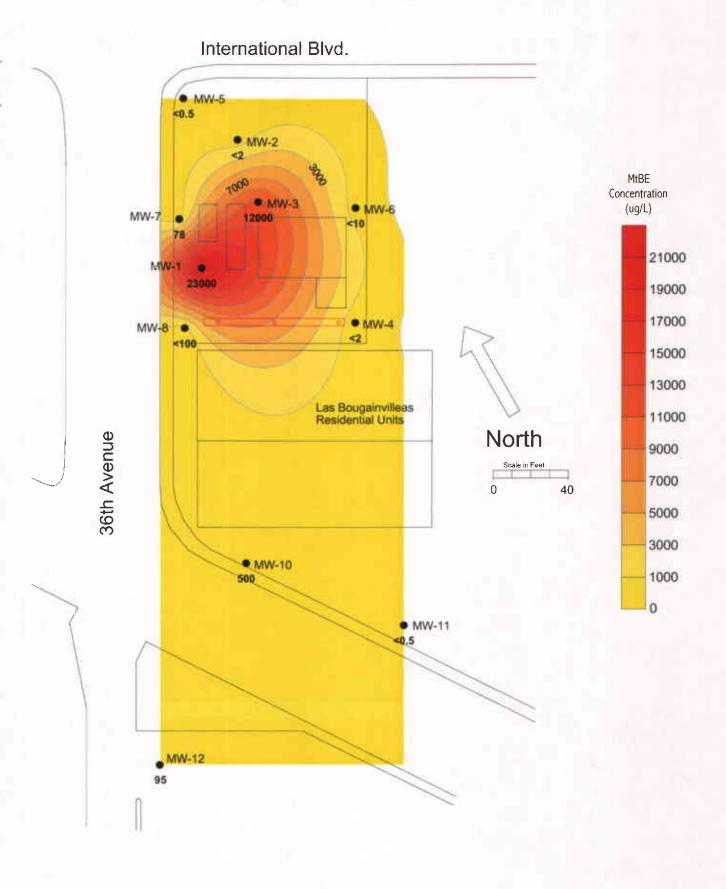
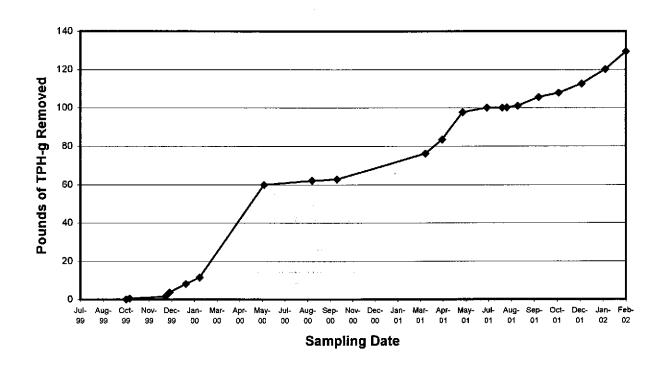
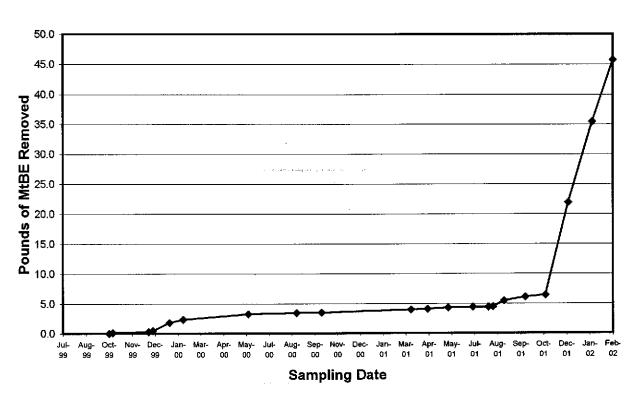


Figure 10: MtBE Concentration Contour Map in Groundwater, February 21, 2002



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





APPENDIX A

FIELD NOTES, CHAIN OF CUSTODY FORMS,
LABORATORY REPORTS



ļ	Casing Diameter:	inche	s Addres :	s: 36	609 International Blvd.
	Depth of Well:	29.7 feet		Oa	akland, CA
Ì	Top of Casing Elevation:	47.99 feet			
ļ	Depth to Groundwater:	10 · il feet	Date:	Fe	ebruary 21,2002
	Groundwater Elevation:	§ 2.88 feet	Sample	r: Na	aser Pakrou
	Height of Water Column:	q.cq feet		To	ony Perini
•	Purged Volume:	8.0 gallor	ns		
1	Purging Method:	Bailer □	Pump	□	
	Sampling Method:	Bailer □	Pump		
ì	Color:	Yes ☑ No		Describe	Cloudy
ı	Sheen:	Yes ☑ No		Describe	sheen
	Odor:	Yes 🗹 No		Describe	strong.
•					•

Project No.:

2331

Field Measurements at time of sampling:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	рН	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
1:30	8.0	0.0	0.0	0.0	3.06	6.23	18.94	- /		-16



MWZ

<u>ு⊬</u>″ inches

Depth of Well: Top of Casing Elevation: Depth to Groundwater:	30 feet 98.58feet 8.49 feet	Date:	Oakland, CA February 21,2002
Groundwater Elevation: Height of Water Column: Purged Volume:	Sq.50 feet feet feet gallons	Sampler:	Naser Pakrou Tony Perini
Purging Method:	Bailer 🗀	Pump □	· .
Sampling Method:	Bailer □	Pump . □	
Color:	Yes □ No 🖼	Describe	
Sheen:	Yes □ No 🖸	Describe	
Odor:	Yes □ No 🛱	Describe	<u> </u>

Project No.:

Address:

2331

3609 International Blvd.

Field Measurements at time of sampling:

Well No.:

Casing Diameter:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	Hq	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
10:10 AM	16	1.46	0.8	45	0.36	6.06	20.56	671	41	131



Well No.: Casing Diameter: Depth of Well:	<u>MW-3</u> <u><u></u>#" inches 2<u>9.75</u> feet</u>	Project Addres:	
Top of Casing Elevation: Depth to Groundwater: Groundwater Elevation: Height of Water Column:	97.7% feet 10.01 feet 87.7% feet 19.74 feet	Date: Sample	February 21,2002 r: Naser Pakrou Tony Perini
Purged Volume:	<u> 6</u> gallons		
Purging Method:	Bailer 🗆	Pump	
Sampling Method:	Bailer 🗆	Pump	
Color:	Yes □ No	/	Describe
Sheen:	Yes ⊠ No ⊠		Describe Rainbow Theen
Odor:	Yes ™ No 🗹		Describe strong Petroleum odor.

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	Нq	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
1:00 P.M.	16	0.0	0.0	0.0	6.8	6.17	20.10	935	0.3	-61



Well No.:	MW-4 P	roject No.:	2331
Casing Diameter:	2 " inches A	ddress:	3609 International Blvd.
Depth of Well:	2 6.5 feet		Oakland, CA
Top of Casing Elevation:	97-85 feet		
Depth to Groundwater:	<u>9.97</u> feet D	ate:	February 21,2002
Groundwater Elevation:	<u>87.8%</u> feet s	ampler:	Naser Pakrou
Height of Water Column:	(6.53 feet		Tony Perini
Purged Volume:	gallons	e.	·
Purging Method:	Bailer □ Pı	ump ⊠	
Sampling Method:	Bailer 🖾 Pı	ump 🗆	•
Color:	Yes □ No 🗹	Describe	
Sheen:	Yes □ No ☑	Describe	
Odor:	Yes No L	Describe	Shight Perroleum color

Tìme	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	Hq	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
12:40 PM	8	1012	0.0	4.0	3.9	5.93	18.58			



Well No.:	MW-5	Project	No.:	2331
Casing Diameter:	inches	Address	s:	3609 International Blvd.
Depth of Well:	26.40 feet			Oakland, CA
Top of Casing Elevation:	qq. D4 feet			
Depth to Groundwater:	9.04 feet	Date:		February 21,2002
Groundwater Elevation:	90 feet	Sample	:	Naser Pakrou
Height of Water Column:	17-36 feet			Tony Perini
Purged Volume:	gallons			
	•		•	
Purging Method:	Bailer 🗆	Pump		
Sampling Method:	Bailer 🗆	Pump	D	
Color:	Yes □ No 🗹		Describe	
Sheen:	Yes □ No ☑	<i>/</i>	Describe	
Odor:	Yes □ No 🗹	/	Describe	<u>. </u>

	Time	Vol	DO	NO ₃ -1	SO ₄ -2	Fe ⁺²	pН	Temp	EC	Turbidity	ORP
Ì		G	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(°C)	(uS/cm)	(NTU)	(mV)
	11:00 AM	8	2.65	0.0	67	0.69	6.15	20.07	670	34.2	104



MW-6

Well No.:	MW-6	Project No.:	2331
Casing Diameter:	2" inches	Address:	3609 International Blvd.
Depth of Well:	2 <u>4.45</u> feet		Oakland, CA
Top of Casing Elevation:	98.77 feet		
Depth to Groundwater:	9.92 feet	Date:	February 21,2002
Groundwater Elevation:	8 <u>8.85</u> feet	Sampler:	Naser Pakrou
Height of Water Column:	1 <u>4.53</u> feet		Tony Perini
Purged Volume:	gallons		
Purging Method:	Bailer □	Pump □	
Sampling Method:	Bailer 🗆	Pump 🛘	
Color:	Yes ⊠ No □	Desc	ribe Black
Sheen:	Yes ₽ No □	Desc	ribe Rainbow Sheen
Odor	Von Wale of	_	

Field Measurements at time of sampling:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	\$O ₄ -2 (mg/L)	Fe ⁺² (mg/L)	Нq	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
10:50 AM	8	0.54	0.0	41	6.2	5.98	18.77	920	149	-40



Death of W. II	inches	Addres	ss:	3609 International Blvd.
Depth of Well:	24.60 feet			Oakland, CA
Top of Casing Elevation:	9 <u>7 - 83</u> feet			
Depth to Groundwater:	8-91 feet	Date:		February 21,2002
Groundwater Elevation:	88.92 feet	Sample	er:	Naser Pakrou
Height of Water Column:	1 5.6 q feet	•		Tony Perini
Purged Volume:	₩ gallons	;		, 5/1 9
Purging Method:	Bailer □	Pump		
Sampling Method:	Bailer D	Pump		
Color:	Yes □ No 1		Describe	
Sheen:	Yes 🗆 No 🏻	ÍZ/	Describe	
Odor:	Yes □ No □		Describe	

Project No.:

2331

Field Measurements at time of sampling:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	рН	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
11:45 AM	8	0.26	0.0	0.0	1-77	6.30	20.48		118	-6



Well No.: Casing Diameter: Depth of Well: Top of Casing Elevation: Depth to Groundwater: Groundwater Elevation: Height of Water Column: Purged Volume:		Project No.: Address: Date: Sampler:	2331 3609 International Blvd. Oakland, CA February 21,2002 Naser Pakrou Tony Perini
Purging Method:	Bailer □	Pump	
Sampling Method:	Bailer 🗹	Pump 🗆	
Color:	Yes ☑ No □	Describ	pe Black
Sheen:	Yes ☑ No □	Describ	e Sheen
Odor:	Yes ☑ No □	l Describ	e STrong Potalium and

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ ⁻² (mg/L)	Fe ⁺² (mg/L)	рH	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
12:10 PM	8	0.0	0.0	0.0	3 .0 8	6.27	19.43	693	567	-64



Well No.:

Casing Diameter:	2" inches	Addres	s:	3609 International Blvd.
Depth of Well:	23.5 feet			Oakland, CA
Top of Casing Elevation:	9 <u>4.54</u> feet			
Depth to Groundwater:	8.28 feet	Date:		February 21,2002
Groundwater Elevation:	86.26 feet	Sample	er:	Naser Pakrou
Height of Water Column:	15.22 feet			Tony Perini
Purged Volume:	gallons			
Purging Method:	Bailer 🗆	Pump		
Sampling Method:	Bailer □	Pump		
Color:	Yes □ No 🗓	1	Describe	
Sheen:	Yes □ No ፲		Describe	
Odor:	Yes □ No Ø	1	Describe	·

Project No.:

2331

Field Measurements at time of sampling:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ ⁻² (mg/L)	Fe ⁺² (mg/L)	рH	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	
3.0 PM	8	0.15	0.0	4.0	0.49	6.40	19.60		12.60	(mV)



MW-11

Casing Diameter:	<u> </u>	Address:	3609 International Blvd.
Depth of Well:	25.52 feet		Oakland, CA
Top of Casing Elevation:	95.94 feet		
Depth to Groundwater:	9.69 feet	Date:	February 21,2002
Groundwater Elevation:	8625 feet	Sampler:	Naser Pakrou
Height of Water Column:	5 · § ? feet	-	Tony Perini
Purged Volume:	gallons		
	0		
		/	
Purging Method:	Bailer 🖽 /	Pump 🖽	
Sampling Method:	Bailer 🗹	Pump □	
,		rump 🗆	
Color:	Yes □ No 🗗	Describe	•
Sheen:	Yes □ No 🖾	/ Donoville	
	169 ⊃ MO 15	Describe)
Odor:	Yes □ No 🗗	Describe	

Project No.:

2331

Field Measurements at time of sampling:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	Нq	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
2:30 pM	8	2-52	0.0	40.0	٥٠٥	6.13	21.03	717	168	31



MW-12

Casing Diameter:	<u> </u>	Addres	s:	3609 International Blvd.
Depth of Well:	29.92 feet			Oakland, CA
Top of Casing Elevation:	94.84 feet			
Depth to Groundwater:	§•ጉፍ feet	Date:		February 21,2002
Groundwater Elevation:	86.06 feet	Sample	r:	Naser Pakrou
Height of Water Column:	21-14 feet			Tony Perini
Purged Volume:	16 gallons			
•				
Purging Method:	Bailer 🗆	Pump		
Sampling Method:	Bailer 🗆	Pump		·
, -		/ Gp	_	
Color:	Yes □ No	ſ	Describe	
Sheen:	Yes □ No É	1	Describe	
	. 30 – 110 –	/	Describe	
Odor:	Yes □ No d	ļ	Describe	

Project No.:

2331

Field Measurements at time of sampling:

Time	Vol G	DO (mg/L)	NO ₃ -1 (mg/L)	SO ₄ -2 (mg/L)	Fe ⁺² (mg/L)	рН	Temp (°C)	EC (uS/cm)	Turbidity (NTU)	ORP (mV)
3:30 P.M.	16	0.56	0.0	0.0	1.43	6.21	19.27	1250	4.9	-6



Well No.: Casing Diameter: Depth of Well: Top of Casing Elevation: Depth to Groundwater: Groundwater Elevation: Height of Water Column:		inches feet 771 feet 16.74 feet 80.36 feet feet			Project Addres Date: Sample	s:	2331 3609 Inte Oakland, February Naser Pa				
Purged Volume:			_gallon	IS.			Tony Per	n ii			
Purging Method:		Bailer			Pump						
Sampling Method:		Bailer			Pump						
Color:		Yes □	No			Describe		·			
Sheen:		Yes 🗆	No			Describe					
Odor:		Yes 🗆	No			Describe					
Field Measurements at time o	of samp	iling:									
Time	Vol	DO	NO ₃	i	SO ₄ -2	Fe ⁺²	рH	Temp	EC	Turbidity	ORP
	G	(mg/L)	(mg/L	<u>.) </u>	(mg/L)	(mg/L)		(°C)	(uS/cm)	(NTU)	(mV)
		1	ſ	.]		j l		1	I		



G

(mg/L) (mg/L)

•	Well No.:	East Ri	seV	Project	No.;	2331	•			
	Casing Diameter:		inches	Address	s:	3609 Interi	national Bi	vd.		
,	Depth of Well:		feet			Oakland, C	CA			
l	Top of Casing Elevation:	97.9	feet							
	Depth to Groundwater:	13.18	feet	Date:		February 2	1,2002			
	Groundwater Elevation:	84.72	feet	Sampler	**	Naser Pak	rou			
	Height of Water Column:		feet			Tony Perin	i			
İ	Purged Volume:	<u></u>	gallons							
İ			. •							
	Purging Method:	Bailer 1		Pump						
	Sampling Method:	Bailer I	_ 	Pump						-
	Color:	Yes 🗆	No 🗆		Describe					
ļ	Sheen:	Yes □ :	No 🗆		Describe			,		
Ì	Odor:	Yes □ I	No 🗆		Describe	<u></u>				
i					•					
	Field Measurements at time	of sampling:								
	Time	Vol DO	NO ₃ -1	SO ₄ -2	Fe ⁺²	pН	Temp	EC	Turbidity	ORP

(mg/L)

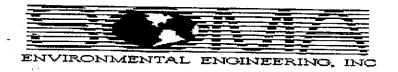
(mg/L)

(°C)

(uS/cm)

(NTU)

(mV)



Well No.:	Wes	51 K.AS	CV.	Project	No.:	2331				
Casing Diameter:			_ _inches	Address	s:	3609 Inter	rnational E	Blvd.		
Depth of Well:			feet			Oakland,				
Top of Casing Elevation:	a	6.90	feet			,				
Depth to Groundwater:		12.78	feet	Date:		February 2	21.2002			
Groundwater Elevation:	•	84.12	feet	Samplei	**	Naser Pak				
Height of Water Column:			- feet	•		Tony Perir				
Purged Volume:			- gallons							
						*				
Purging Method:		Bailer	□	Pump						
Sampling Method:		Bailer		Pump						
Color:		Yes □	No 🗆	2	Describe	<u>. </u>				
Sheen:		Yes □	No E	3	Describe					
Odor:		Yes D	No 🗆	נ	Describe					
,										
Field Measurements at time	of samp	ling:		a.						
Time	Vol	DO	NO ₃ -1	SO ₄ -2	Fe ⁺²	рН	Temp	EC	Turbidity	ORP
	G	(mg/L)	(mg/L)	(mg/L)	(mg/L)	•	(°C)	(uS/cm)	(NTU)	(mV)
<i>,</i> 1										<u> </u>



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: 14-MAR-02 Lab Job Number: 157168 Project ID: 2331

Location: Oakland

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

Reviewed by:

roject Manager

Reviewed by:

Operations Manager

This package may be reproduced only in its entirety.

CA ELAP # 1459

Page 1 of 26



Laboratory Number:

157168

Client:

Soma Environmental Engineering, Inc.

Project Name:

Oakland - Tony's

Project #:

2331

Receipt Date:

02/22/02

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for eleven water samples received from the above referenced project on February 22nd, 2002. The samples were received cold and intact.

TVH/BTXE/MTBE (EPA 8015B(M)/8021B):

The recoveries for the trifluorotoluene surrogates were over the acceptable QC limits for client ID's MW-1 (C&T ID 157168-001), MW-6 (C&T ID 157168-006), MW-8 (C&T ID 157168-008) and MW-12 (C&T ID 157168-011) for batch number 70433 due to coelution of sample hydrocarbons with this surrogate. No other analytical problems were encountered.

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

No other analytical problems were encountered.

CHAIN OF CUSTODY FORM

Page __/_of __/_

Analyses

Curtis	& Tomp	kins, Ltd														Anal	yse:	S		
Analytica	-	y Since 1878 street A 94710 900 Phone			Sampler: /	la se	ea-	lat		C&T LOGIN# 1			20	à						
roject No:		702. T UX								Sepehr			8	0						
		110-101	74 C	.	Company:	Sor	nA	1 6	57 P	V ENG		30.00	۱۷,							
Project P.O.		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Telephone:					. \$ °.	-	a	<i>\</i>							
	Time: 5 /2	MOARD				25-						The state of the s	240	7 1/2						
	7.7		Ма	trix		Pre	ser	vativ	/e			75	,							
.aboratory Number	Sample ID.	Sampling Date Time	Soil	Waste	# of Containers	T TO		실		Fie	ld Notes	1	0	à						
1	mw-1	1/21/02 1330	1/		Yan'	<u> </u>		X		Grab:	samples	V	1	4					$\vdash \vdash$	
- 2	MULL	2/21/02 1010			wed Light		_	41	<u> </u>		*		₩	+-	+-+		╂┷╂		┝┼	-
	mw-3	421102 N300	9 14	1 REV	Ambient D	11	4	11					#		1		╁		 	-
	MW-4	2/21/02 12/1	<u> 4 10 </u>	Top		╁╁╁╴		+	ļ	oreservation Co	rock.	- -	Н	+	┿╫	+-	╂╼╂	+	╁╌┼╴	_
	MW-5	2/21/12 110				+++	+	-	1	TO TOP SALE	OW	7	4	+	╆┪	-	1 1	+	\vdash	-
- + -Q		2/21/02 105			 	+++		4	-	01020	. 41	- 	╁	\vdash	++	+-	╅	-	 	7
0 0-0		2/21/02 1143		} -	 \	╂╂╂	1	\ 	-	Q No.			+	H	1 - 1		11	\dashv	$\dagger \dagger$	\dashv
T - 5		2/21/02 1214	$\neg \neg$	_	 	╅╅╂	-	1			<u> </u>		+	#	1	_	† †		1 1	7
	MW-10	4711 PZ 1500		/- -	 	╂╅╂		-14-	f	 			T	-	+	-	1		1	7
		2/21/02 1431		↓ 	├ ─₩	╂╋╂	+	- +	 	· · · · · ·			4	∀ -			1 1			
	MW-12	2/21/02/53	9 16	4-1-	 	1-	+						†			T	111		Π	
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noies: Cont SIA	65M 1. 8260 B	MHBE P	real	ks i	rith	56	m	11	114	2 ini 2/221	/ 1330 02 DAT	E/TIME		1	FIN	MU	-	BY: / DATE/		ጣ፣ ንፈ
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									,		DAT	E/TIME						DATE/	TIME	
					Signature					at a second		ne.	4	(ol	0	ĸ	سر ہذ	9.0	1 e c



Curtis & Tompkins Laboratories Analytical Report Lab #: 157168 Location: Oakland SOMA Environmental Engineering Inc. Client: EPA 5030B Prep: Project#: 2331 Water Matrix: Sampled: 02/21/02 uq/L Units: Received: 02/22/02

ield ID:

ype: SAMPLE Lab ID: 157168-001 Diln Fac:

50.00

Batch#: Analyzed: 70433 02/28/02

Analyte	Result	RE	Anelysis
Gasoline C7-C12	260,000	2,500	8015B(M)
MTBE	29,000	100	EPA 8021B
Benzene	3,700	25	EPA 8021B
Toluene	12,000	25	EPA 8021B
Ethylbenzene	3,700	25	EPA 8021B
m,p-Xylenes	14,000	25	EPA 8021B
o-Xylene	5,200	25	EPA 8021B

Surrogate Limits Analysis Frifluorotoluene (FID) 142 * 59-135 8015B(M) Bromofluorobenzene (FID) 118 60-140 8015B(M) Trifluorotoluene (PID) 152 * 56-142 EPA 8021B Bromofluorobenzene (PÍD) 55-149 <u> 101</u> EPA 8021B

Field ID: pe: ab ID:

MW - 2

SAMPLE 157168-002 Diln Fac:

1.000

Batch#: Analyzed: 70433 02/28/02

Analyte	Result	RI	Analysis	
Casoline C7-C12	1,700	50	8015B(M)	***************************************
ITBE	ND	2.0	EPA 8021B	
Benzene	26	0.50	EPA 8021B	ŀ
Toluene	180	0.50	EPA 8021B	1
Ethylbenzene	95	0.50	EPA 8021B	
n, p-Xylenes	250	0.50	EPA 8021B	1
-Xylene	110	0.50	EPA 8021B	

Surrogate	*REC	Limits	Analy	;k	
rifluorotoluene (FID)	113	59-135	8015B(M)		
romofluorobenzene (FID)	115	60-140	8015B(M)		
rifluorotoluene (PID)	100	56-142	EPA 8021B		
Bromofluorobenzene (PID)	105	55-149	EPA 8021B		İ

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

Reporting Limit Page 1 of 7



Curtis & Tompkins Laboratories Analytical Report Lab #: 157168 Location: Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project# 2331 Matrix: Water 02/21/02 02/22/02 Sampled: <u> Units:</u> uq/LReceived:

leld ID:

MW - 3

SAMPLE

Diln Fac:

40.00

ype: ab ID:

157168-003

Batch#: Analyzed: 70480 03/01/02

Ana. vee	Result	RE	Analysis
Gasoline C7-C12	62,000	2,000	8015B(M)
MTBE	15,000	80	EPA 8021B
Benzene	6,000	20	EPA 8021B
LToluene	7,600	20	EPA 8021B
Ethylbenzene	1,900	20	EPA 8021B
m,p-Xylenes	6,500	20	EPA 8021B
To-Xylene	2,700	20	EPA 8021B

Limits Surrogate Analysis Frifluorotoluene (FID) B015B(M) 116 59-135 Bromofluorobenzene (FID) 114 60-140 8015B(M) Trifluorotoluene (PID) 103 56-142 EPA 8021B <u> Bromofluorobenzene (PID)</u> 103 <u>55-149</u> EPA 8021B

Field ID:

MW-4

SAMPLE 157168-004 Diln Fac:

1.000

Batch#: Analyzed:

70480 03/01/02

Analyte	Result	27.	Analveie
Gasoline C7-C12	450	50	8015B(M)
ITBE	ND	2.0	EPA 8021B
Benzene Toluene	63	0.50	EPA 8021B
Ethylbenzene	4.1 22	0.50	EPA 8021B
n, p-Xylenes	24	0.50 0.50	EPA 8021B EPA 8021B
o-Xvlene	4.7	0.50	EPA 8021B

20000000000000000000000000000 000000000	*************		
Swwogate	*REC	Limits	Analysis
Trifluorotoluene (FID)	113	59-135	8015B(M)
Bromofluorobenzene (FID)	116	60-140	8015B(M)
rifluorotoluene (PID)	100	56-142	EPA 8021B
Bromofluorobenzene (PID)	102	55-149	EPA 8021B

^{*=} Value outside of QC limits; see narrative C= Presence confirmed, but confirmation concentration differed by more than a factor of two Not Detected

⁼ Reporting Limit ige 2 of 7



	Curtis &	Tompkins Labor	atories An	alytical Report
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331			
Matrix:	Water		Sampled:	02/21/02
Units:	ug/L		Received:	02/22/02

ield ID:

MW-5 SAMPLE Diln Fac:

1.000

ype: Lab ID:

157168-005

Batch#: Analyzed: 70433 02/28/02

Analyte	Result	RIL	Analysis	
Gasoline C7-C12	290	50	8015B(M)	Ü
MTBE	11	2.0	EPA 8021B	
Benzene	3.5 C	0.50	EPA 8021B	
Toluene	2.0 C	0.50	EPA 8021B	
Ethylbenzene	6.2	0.50	EPA 8021B	
m,p-Xylenes	4.5	0.50	EPA 8021B	
o-Xylene	1.7	0.50	EPA 8021B	

Surrogate	*REC	Limits	Analysis
Trifluorotoluene (FID)	131	59-135	8015B(M)
Bromofluorobenzene (FID)	116	60-140	8015B(M)
Trifluorotoluene (PID)	102	56-142	EPA 8021B
Bromofluorobenzene (PID)	99	55-149	EPA 8021B

Field ID:

MW-6 SAMPLE Diln Fac:

5.000

ype: ab ID:

157168-006

Batch#:
Analyzed:

70480 03/01/02

Anial yte	Result	RL	Analysis
Gasoline C7-C12	14,000	250	8015B(M)
MTBE	ND	10	EPA 8021B
Benzene	440	2.5	EPA 8021B
Toluene	180	2.5	EPA 8021B
Ethylbenzene	750	2.5	EPA 8021B
m,p-Xylenes	780	2.5	EPA 8021B ·
o-Xylene	240	2.5	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	172 *	59-135	8015B(M)
Bromofluorobenzene (FID)	114	60-140	8015B(M)
Trifluorotoluene (PID)	127	56-142	EPA 8021B
Bromofluorobenzene (PID)	104	55-149	EPA 8021B

^{*=} Value outside of QC limits; see narrative C= Presence confirmed, but confirmation concentration differed by more than a factor of two

D= Not Detected L= Reporting Limit age 3 of 7



Curtis & Tompkins Laboratories Analytical Report 157168 Lab #: Location: Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project# Matrix: Water Sampled: 02/21/02 <u>Units:</u> ug/L Received: 02/22/02

ield ID: ype: Lab ID:

MW-7

SAMPLE 157168-007 Diln Fac: Batch#:

1.000

Analyzed:

70433 02/27/02

Analyte	7(11) (Analysis
Gasoline C7-C12	380	50	8015B(M)
MTBE	95	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	2.5 C	0.50	EPA 8021B
Ethylbenzene	2.0	0.50	EPA 8021B
m,p-Xylenes	2.0	0.50	EPA 8021B
o-Xylene	1.8	0.50	EPA 8021B

Surrogate	*REC	Limits	Analysis
Frifluorotoluene (FID)	115	59-135	8015B(M)
Bromofluorobenzene (FID)	117	60-140	8015B(M)
Trifluorotoluene (PID)	105	56-142	EPA 8021B
Bromofluorobenzene (PID)	105	55-149	EPA 8021B

Field ID:

8-WM SAMPLE 157168-008 Diln Fac:

50.00

Batch#: Analyzed: 70433 02/28/02

<u>Analyte</u>	Result	RL	Analvsis	
Gasoline C7-C12	240,000	2,500	8015B(M)	
MTBE	ND	100	EPA 8021B	
Benzene	1,400	25	EPA 8021B	
Toluene	ND	25	EPA 8021B	
Ethylbenzene	4,200	25	EPA 8021B	
n,p-Xylenes	5,700	25	EPA 8021B	
o-Xylene	860	25	EPA 8021B	

Surrogate	S.R.	6	Limits	Analysis
Trifluorotoluene (FID)	160	*	59-135	8015B(M)
Bromofluorobenzene (FID)	122		60-140	8015B(M)
Trifluorotoluene (PID)	157	*	56-142	EPA 8021B
Bromofluorobenzene (PID)	107		55-149	EPA 8021B

*= Value outside of QC limits; see narrative C= Presence confirmed, but confirmation concentration differed by more than a factor of two

= Not Detected = Reporting Limit age 4 of 7



Curtis & Tompkins Laboratories Analytical Report Lab #: 157168 Location: Oakland SOMA Environmental Engineering Inc. Client: Prep: **EPA 5030B** Project#: 2331 Matrix: Water 02/21/02 02/22/02 Sampled: <u> Units:</u> uq/L <u>Received:</u>

ield ID: pe:

Lab ID:

MW-10

SAMPLE 157168-009 Diln Fac:

5.000

Batch#: Analyzed: 70480 03/01/02

ASIG) SVIPE	Result	R.	Analysis
Gasoline C7-C12	4,700	250	8015B(M)
MTBE	670	10	EPA 8021B
Benzene Toluene	1,100	2.5	EPA 8021B
Ethylbenzene	20 370	2.5	EPA 8021B
n, p-Xylenes	59	2.5 2.5	EPA 8021B EPA 8021B
o-Xylene	4.7	2.5	EPA 8021B

Surrogate	%.R13(6	le imples	Analysis
Frifluorotoluene (FID)	128	59-135	8015B(M)
Bromofluorobenzene (FID)	115	60-140	8015B(M)
Trifluorotoluene (PID)	110	56-142	EPA 8021B
Bromofluorobenzene (PID)	101	55-149	EPA 8021B

Field ID:

MW-11

SAMPLE 157168-010 Diln Fac: Batch#:

1.000

Analyzed:

70433 02/28/02

Analyte	Result	RA	Analysis
Casoline C7-C12	560	50	8015B(M)
ITBE	11	2.0	EPA 8021B
B enzene	34	0.50	EPA 8021B
Toluene	20	0.50	EPA 8021B
Ethylbenzene	32	0.50	EPA 8021B
, p-Xylenes	30	0.50	EPA 8021B
p-Xylene		0.50	EPA 8021B

Surrogate	%REC	Lamets	Analysis
Trifluorotoluene (FID)	125	59-135	8015B (M)
romofluorobenzene (FID)	113	60-140	8015B(M)
rifluorotoluene (PID)	106	56-142	EPA 8021B
Bromofluorobenzene (PID)	103	55-149	EPA 8021B

^{*=} Value outside of QC limits; see narrative C= Presence confirmed, but confirmation concentration differed by more than a factor of two

⁼ Not Detected = Reporting Limit age 5 of 7



Curtis & Tompkins Laboratories Analytical Report Lab #: 157168 Location: Oakland Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2331 Matrix: Water Sampled: 02/21/02 Units: uq/L Received: 02/22/02

ield ID:

MW-12

ype: ab ID:

SAMPLE 157168-011 Diln Fac:

1.000

Batch#: Analyzed: 70433 02/28/02

Analyte	Result	RI.	Ana vsis
Gasoline C7-C12	2,500	50	8015B(M)
MTBE	140	2.0	EPA 8021B
Benzene	77	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	5.7	0.50	EPA 8021B
m,p-Xylenes	5.2	0.50	EPA 8021B
	2.2 C	0.50	_ EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	175 *	59-135	8015B(M)
Bromofluorobenzene (FID)	120	60-140	8015B(M)
Trifluorotoluene (PID)	163 *	56-142	EPA 8021B
Bromofluorobenzene (PID)	105	55- 14 9	EPA 8021B

Type: lln Fac: BLANK QC171438 1.000

Batch#: Analyzed:

70433 02/27/02

Analyte	Result	RL	Analysis	
Gasoline C7-C12	ND	50	8015B(M)	
ITBE	ND	2.0	EPA 8021B	
Benzene	ND	0.50	EPA 8021B	
Toluene	ND	0.50	EPA 8021B	
Ethylbenzene	ND	0.50	EPA 8021B	
n,p-Xylenes	ND	0.50	EPA 8021B	
-Xvlene	ND	0.50	EPA 8021B	

Surrogaçe	373BG	Firm of S	Analysis
Trifluorotoluene (FID)	105	59-135	8015B(M)
romofluorobenzene (FID)	102	60-140	8015B (M)
rifluorotoluene (PID)	95	56-142	EPA 8021B
Bromofluorobenzene (PID)	95	55-149	EPA 8021B

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

= Reporting Limit ge 6 of 7



	Curtis &	Tompkins Labor	atories An	alytical Report
Lab #: Client: Project#:	157168 SOMA Environmental 2331	Engineering Inc.	Location: Prep:	Oakland EPA 5030B
Matrix: Units:	Water ug/L		Sampled: Received:	02/21/02 02/22/02

ype: ab ID: Diln Fac:

BLANK QC171605 1.000

Batch#: Analyzed: 70480 02/28/02

Analyte	Result	RL	Analys	(F
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	
To-Xylene	ND	0.50	EPA 8021B	

Surrogate	#RANC	Limite	Analysis
Trifluorotoluene (FID)	103	59-135	8015B(M)
Bromofluorobenzene (FID)	101	60-140	8015B (M)
Trifluorotoluene (PID)	92	56-142	EPA 8021B
Bromofluorobenzene (PID)	93	55-149	EPA 8021B

^{*=} Value outside of QC limits; see narrative C= Presence confirmed, but confirmation concentration differed by more than a factor of two D= Not Detected L= Reporting Limit rage 7 of 7



Gasoline by GC/FID CA LUFT Lab #: 157168 Location: Oakland Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: Analysis: 8015B(M) Type: LCS Diln Fac: 1.000 Lab ID: QC171439 Batch#: 70433 Matrix: Water Analyzed: 02/27/02 Units: ug/L

Analyte	Spiked		*KEC	Limits	
Gasoline C7-C12	2,000	2,051	103	79-120	

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	68-145
Bromofluorobenzene (FID)	105	66-143



Gasoline by GC/FID CA LUFT Lab #: 157168 Location: Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: Analysis: 8015B(M) LCS Type: Diln Fac: 1.000 Lab ID: QC171606 Batch#: 70480 Matrix: Water Analyzed: 02/28/02 Units: ug/L

	Spiked	Result	%RBC	Limits
Gasoline C7-C12	2,000	2,182	109	79-120
6				

Surrogate Frifluorotoluene (FID)	7 1 7	
<u>-</u>	T T /	68-145
Bromofluorobenzene (FID)	105	66-143



Benzene, Toluene, Ethylbenzene, Xylenes _Lab #: 157168 Location: Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: Analysis: EPA 8021B Type: LCS Diln Fac: 1.000 Lab ID: QC171442 Batch#: 70433 Matrix: Water Analyzed: 02/27/02 Units: ug/L

Analyte	Spiked	Result	%REC	Limits	*****
MTBE	20.00	23.06	115	51-125	
Benzene	20.00	19.99	100	65-122	
Toluene	20.00	21.34	107	67-121	
Ethylbenzene	20.00	21.44	107	70-121	
m,p-Xylenes	40.00	42.30	106	72-125	
p-Xylene	20.00	21.50	108	73-122	

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	53-143
Bromofluorobenzene (PID)	98	52-142



	Benzene, Toluene,	Ethylbenzene	, Xylenes
Lab #:	157168	Location:	Oakland
Client:	SOMA Environmental Engineering Inc	. Prep:	EPA 5030B
Project#:	2331	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID: Matrix:	QC171607	Batch#:	70480
Matrix:	Water	Analyzed:	02/28/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	22.47	112	51-125
Benzene	20.00	19.36	97	65-122
roluene	20.00	21.01	105	67-121
Ethylbenzene	20.00	20.98	105	70-121
m,p-Xylenes	40.00	41.27	103	72-125
p-Xylene	20.00	20.38	102	73-122

Bromofluorobenzene (PID)	94	52-142
Trifluorotoluene (PID)	93	53-143
Surrogate	%REC	Limits



		Gasoline by	GC/FID CA L	JFT	
Lab #:	157168		Inonties	Ochland	
	SOMA Environmental	Engineering Inc.	Location: Prep:	Oakland EPA 5030B	
Project#:	2331		Analysis:	8015B(M)	
Field ID:	ZZZZZZZZZZ		Batch#:	70433	
MSS Lab ID	157169-001		Sampled:	02/22/02	
Matrix:	Water		Received:	02/22/02	
Units:	ug/L		Analyzed:	02/27/02	
Diln Fac:	1.000		•	•	

MS

Lab ID: QC171440

Analyte	MSS R	esult	Spiked	Result	%REC	Limits
Gasoline C7-C12		53.67	2,000	2,308	113	67-120
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	126	68-145				
Bromofluorobenzene (FID)	118	66-143				

MSD

Analyte

Lab ID:

QC171441

%REC Limits

Result

Gasoline C7-C12		2,000	2,311	113	67-120	0	20
			- ······				
Surrogate	%REC	Limits					
Trifluorotoluene (FID)	127	68-145				*****************	
Bromofluorobenzene (FID)	119	66-143					

Spiked



		Gasoline by	GC/FID CA	LUFT
	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ		Batch#:	70480
MSS Lab ID	: 157093-003		Sampled:	02/19/02
Matrix:	Water		Received:	02/20/02
Units:	ug/L		Analyzed:	02/28/02
Diln Fac:	1.000		<u> </u>	

уре:

MS

Lab ID:

QC171608

	-		aparr	Shrven	xesult	SKEL	Limits
Gasoline C7-C12		<	33.00	2,000	2,270	113	67-120
Surregi		%REC				000000000000000000000000000000000000000	***************************************
		91411	DAMADES				
Trifluorotoluene	(FID)	124					

66-143

Spiked

119

ље:

MSD

Bromofluorobenzene (FID)

Lab ID:

QC171609

MAGOLINE C/ CIZ		2,000	2,285	114	67-120	_1_	20
Surrogate	% R R C	Limits					
	124	68-145					
Bromofluorobenzene (FID)	119	66-143					



		Purgeable Aro	matics by G	C/ME
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-1		Batch#:	70575
Lab ID:	157168-001		Sampled:	02/21/02
Matrix:	Water		Received:	02/22/02
Units:	ug/L		Analyzed:	03/05/02
Diln Fac:	400.0			03/03/02

i	Analyte	Result	RL	
	MTBE	23,000	200	
4				
	Surrogate	%REC Limits		
	1 2 2 - 1 - 1 - 1			

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	101	77-130	
Toluene-d8	100	80-120	,
Bromofluorobenzene	106	80-120	



		Purgeable Aro	matics by GO	e/ms
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-3		Batch#:	70575
Lab ID:	157168-003		Sampled:	02/21/02
Matrix:	Water		Received:	02/22/02
Units:	ug/L		Analyzed:	03/05/02
			· ·	

Analyte	Result	RL	
MTBE	12,000	100	

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	101	77-130	
Toluene-d8	100	80-120	
Bromofluorobenzene	107	80-120	

Diln Fac:

200.0



		Purgeable Aro	matics by G	C/MS
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-5	 	Batch#:	70575
Lab ID:	157168-005		Sampled:	02/21/02
∕latrix:	Water		Received:	02/22/02
Units:	ug/L		Analyzed:	03/05/02
Diln Fac:	1.000		<i>,</i> 200.	03/03/02

Analyte	Result	RL	
MTBE	ND	0.5	
Surrogate	%REC Limits		

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	105	77-130	
Toluene-d8	101	80-120	
romofluorobenzene	108	80-120	



Purgeable Aromatics by GC/MS Lab #: 157168 Location: Oakland Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2331 Analysis: EPA 8260B Field ID: MW-7 Batch#: 70575 Lab ID: 157168-007 Sampled: 02/21/02 Matrix: Water Received: 02/22/02 Units: ug/L Analyzed: 03/05/02 Diln Fac: 1.429

Analyte	Result	RL	
MTBE	78	0.7	

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	77-130
Toluene-d8	101	80-120
Bromofluorobenzene	108	80-120



		Purgeable Aro	matics by G	C/MS
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-10		Batch#:	70575
Lab ID:	157168-009		Sampled:	02/21/02
Matrix: Units:	Water		Received:	02/22/02
Units:	ug/L		Analyzed:	03/05/02
Diln Fac:	8.333			03, 03, 02

	Kesult	RL	
MTBE	500	4.2	
		· · · · · · · · · · · · · · · · · · ·	
Surrogate	%REC Limits		
1,2-Dichloroethane-d4	DARK DIMILES		

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	99	77-130	
_Toluene-d8	99	80-120	
3romofluorobenzene	111	80-120	



		Purgeable Arc	matics by G	9C/MS
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
<u>Project#:</u>	2331		Analysis:	EPA 8260B
Field ID:	MW-11		Batch#:	70575
Lab ID:	157168-010		Sampled:	02/21/02
Matrix:	Water		Received:	02/22/02
Units:	ug/L		Analyzed:	03/05/02
Diln Fac:	1.000		4	10, 10, 10

Analyte		Result	RL	
MTBE	N		0.5	
Surrogate	%REC	Limits		
1,2-Dichloroethane-d4	103	77-130		
Toluene-d8	100	80-120		
Bromofluorobenzene	107	80-120		



		Purgeable Aro	matics by	GC/MS
Lab #:	157168		Location:	Oakland
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2331		Analysis:	EPA 8260B
Field ID:	MW-12		Batch#:	70575
Lab ID:	157168-011		Sampled:	02/21/02
Matrix:	Water		Received:	02/22/02
Units:	ug/L		Analyzed:	03/05/02
Diln Fac:	2.000		*	1-,,

MTBE	·	95	1.0
Surrogate			
1,2-Dichloroethane-d4	100	77-130	

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	77-130
Toluene-d8	104	80-120
Bromofluorobenzene	104	80-120



Purgeable Aromatics by GC/MS Lab #: 157168 Location: Oakland SOMA Environmental Engineering Inc. Client: Prep: EPA 5030B Project#: 2331 Analysis: EPA 8260B Type: BLANK Diln Fac: 1.000 Lab ID: QC171976 Batch#: 70575 Matrix: Water Analyzed: 03/05/02 Units: ug/L

Analyte	Result	RL	
MTBE	ND	0.5	
	······································	0.5	

Surrogate	4REC	Limits	*********
.,2-Dichloroethane-d4	105	77-130	
Toluene-d8	99	80-120	
Bromofluorobenzene	106	80-120	



latrix:	Water		Analyzed:	03/05/02
Lab ID:	QC171977		Batch#:	70575
Type:	BLANK		Diln Fac:	1.000
	2331	····	Analysis:	EPA 8260B
	SOMA Environmental Er	ngineering Inc.	Prep:	EPA 5030B
	157168		Location:	Oakland

Analyte		Result	RL	
TITE	N	D	0.5	
Surrogate	%REC	Limits		
.,2-Dichloroethane-d4	105	77-130		
.,2-Dichloroethane-d4 Toluene-d8	98	80-120		

80-120

116

N= Not Detected
F= Reporting Limit
Page 1 of 1 Not Detected

Promofluorobenzene



Purgeable Aromatics by GC/MS Lab #: 157168 Location: Oakland :lient: SOMA Environmental Engineering Inc. Prep: EPA 5030B <u>roject#: 2331</u> Analysis: EPA 8260B Matrix: Water Batch#: 70575 Units: ug/L Analyzed: 03/05/02 iln Fac: 1.000

pe:

BS

Lab ID:

QC171974

Analyte	Spiked	Depul-	4REC	Limits	0000
TBE	50.00	61.31	123	54-131	

Surrogate	%REC	Limits	
,2-Dichloroethane-d4	104	77-130	
Toluene-d8	100	80-120	
Bromofluorobenzene	102	80-120	

pe:

BSD

Lab ID:

QC171975

TBE		50.00	59	.70	119	54-131	3	20
Surrogate	*RBC	Limits						
,2-Dichloroethane-d4	101	77-130		and the second s			**********	440000000000000000000000000000000000000
oluene-d8 romofluorobenzene	101	80-120						

Appendix B

Laboratory Reports and Chain of Custody Forms for Treatment System



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: 08-FEB-02 Lab Job Number: 156627 Project ID: 2333 Location: 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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CA ELAP # 1459

Page 1 of 20



Laboratory Number:

156627

Client:

Soma Environmental Engineering, Inc.

Project Name:

Oakland - Tony's

Project #:

2333

Receipt Date:

01/23/02

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for three water samples received from the above referenced project on January 23rd, 2002. The samples were received cold and intact.

Gasoline by GC/FID CA LUFT (EPA 8015B(M)):

The recoveries for the trifluorotoluene surrogates were over the acceptable QC limits for the sample spike (C&T ID 156618-001) for batch number 69624 and the sample spike duplicate (C&T ID 156653-001) for batch number 69722. These samples were not submitted by the client but were in the same batch. The associated laboratory control samples were acceptable so the quality of the sample data should not be affected. No other analytical problems were encountered.

MBTEX (EPA 8021B):

The 'b-flag' notation for several analytes on the laboratory control sample for batch number 69624 indicates that the continuing calibration verification for these analytes was over the acceptable QC limits. None of the target analytes was detected in any of the samples for this batch so the quality of the sample data should not be affected. No other analytical problems were encountered.

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

No analytical problems were encountered.

CHAIN OF CUSTODY FORM

Page ___of _

101560

DATE/TIME

DATE/TIME

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

Project	No:	2333	

Project Name: Dakland- Tony's

Project P.O.:

Analyses C&T LOGIN # 156627

Sampler:	TONY ,	PERINI
Report To:	Naser	Pakrou

Company: SOMA ENVIRONMENTAL

Telephone: 925-244-6600

Turnaround	Time: 5+	MOARD				Fax: 92			24	4-	6	601		78								.	
			ì	lat	rix		F	re.	sen	/ati	ve			8	j								
Laboratory Number	Sample ID.	Sampling Date Time	Soli	Water	Waste	# of Containers	HCL	H2SO	ÖNH	ICE			Field Notes	##T									
	PSP#1	1/22/02 1720		1		3	V	Г		7		Grah	sample	7								\dashv	_
	GAC-1	1/22/02 1730		1		3	V			V		Grab	Sample Sample Sample	1								\Box	
>	Influent	1/22/02 174	,	1	\perp	3	1			/		Grab	Sample	/							\Box		
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					-		مر	7		JC Bo	s De	ECOLE	1/23/02 /0:50 DATE/TIME		•	La	<u> </u>	<i></i>	P	1	ВАТ	E/TII	-3/6 ме

Signature

pech cold in cooler

DATE/TIME

DATE/TIME



Gasoline by GC/FID CA LUFT

ab #: 156627 Client:

SOMA Environmental Engineering Inc.

roject#: 2333

atrix: Water Units: ug/L

Location: Prep:

Tony's **EPA** 5030B

Analysis: Sampled:

8015B(M) 01/22/02

Received:

01/23/02

Field ID:

PSP-1

SAMPLE 156627-001 Diln Fac:

1.000

Batch#:

69624

Analyzed:

01/23/02

Analyte Result RL soline C7-C12 ND 50

Surrogate %REC Limits rifluorotoluene (FID) 106 59-135 romofluorobenzene (FID) 106 60-140

Field ID:

GAC-1

SAMPLE

156627-002

Diln Fac:

Batch#: Analyzed: 1.000 69624

01/23/02

Analyte Result RL

Surrogate	%REC	Limits	
ifluorotoluene (FID)	109	59-135	
momofluorobenzene (FID)	107	60-140	

Field ID:

INFLUENT

SAMPLE

ID:

156627-003

Diln Fac:

10.00

Batch#:

69722

Analyzed:

01/29/02

Analyte Result R1 soline C7-C12 13,000 500

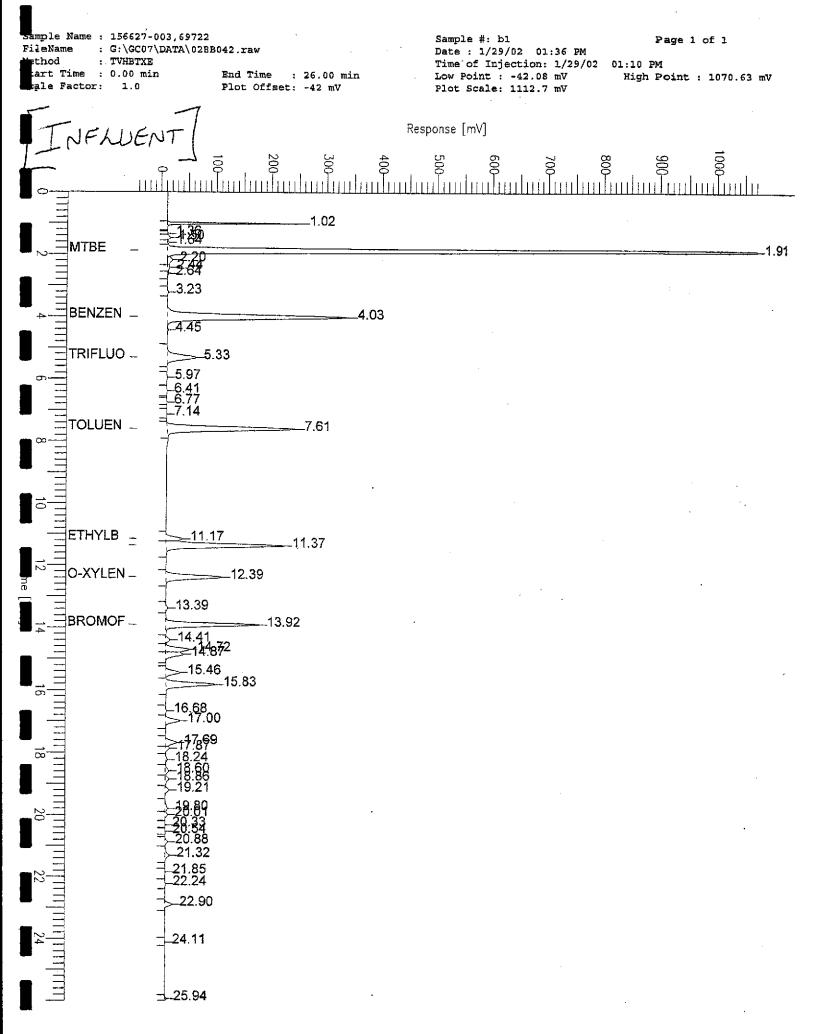
Surrogate	%REC	Limits	
Trifluorotoluene (FID)	121	59-135	
Fomofluorobenzene (FID)	105	60-140	·

ND= Not Detected

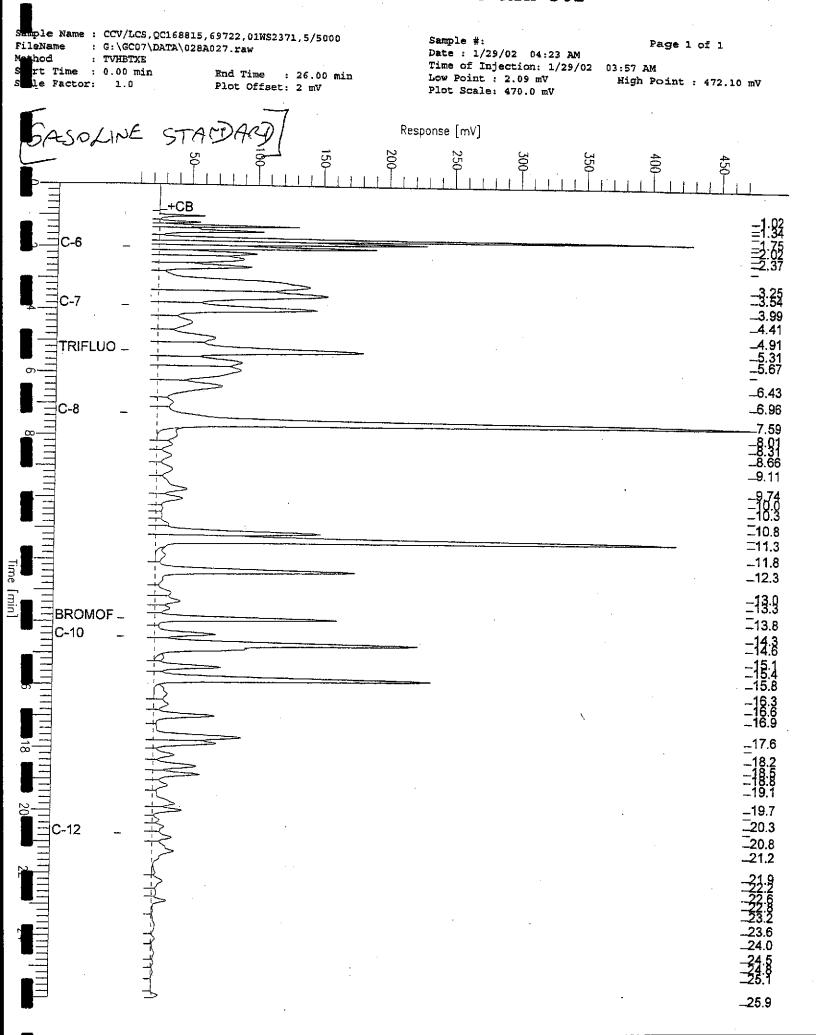
Reporting Limit

e 1 of 2

GC07 BTXE 'B' DATA FILE



GC07 TVH 'A' Data File RTX 502





Gasoline by GC/FID CA LUFT Lab #: 156627 Location: Tony's Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B roject#: 2333 Analysis: 8015B(M) atrix: Water Sampled: 01/22/02 Units: ug/L Received: 01/23/02

Type: I b ID: BLANK QC168464

In Fac:

1.000

Batch#:

69624

Analyzed:

01/23/02

Analyte	Result	RL	
asoline C7-C12	ND	50	200000000

Deposition (127) 103 39-135	Surrogate	%REC	Limits	
Bromofluorobenzene (FID) 98 60-140	1	103	59-135	200
JO 00-140	Bromofluorobenzene (FID)	98	60-140	1

Type:

BLANK

D ID:

n Fac:

QC168814 1.000 Batch#:

69722

Analyzed:

01/29/02

Analyte	Result	RL	
asoline C7-C12	ND	50	

Surrogate	%RE(C Limits	
rifluorotoluene (FID)	100	59-135	
romofluorobenzene (FID)	98	60-140	

ND= Not Detected RE Reporting Limit Pege 2 of 2



Gasoline by GC/FID CA LUFT Lab #: 156627 Location: Tony's Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B roject#: 2333 Analysis: 8015B(M) ype: LCS Diln Fac: 1.000 Lab ID: QC168465 Batch#: 69624 atrix: Water Analyzed: 01/23/02 nits: ug/L

Analyte		Result	·	Limits
asoline C7-C12	2,000	1 (0)	5.F.	Dimits
	2,000	1,691	85	73-121

Surrogate	*RE	C Limits
rifluorotoluene (FID)	125	59-135
romofluorobenzene (FID)	98	60-140



Gasoline by GC/FID CA LUFT Lab #: 156627 Tony's Location: Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B roject#: 2333 Analysis: 8015B(M) Type: LCS Diln Fac: 1.000 Lab ID: QC168815 Batch#: 69722 atrix: Water Analyzed: 01/29/02 nits: ug/L

Analyte Analyte	Spiked			Limits
asoline C7-C12	2,000	1,811	91	73-121

rifluorotoluene (FID) 127 59-135	Surrogate	%RI	C Limits				12001000000000000000000000000000000000
Bromofluorobenzene (FID) 100 60-140	rifluorotoluene (FID)	127	59-135		_	·	
	bromofluorobenzene (FID)	100	60-140	_			



		Gescline by	GC/FID CA LUFT	
Lab #: Client: Project#:	156627 SOMA Environmental 2333	Engineering Inc.	Location: Prep: Analysis:	Tony's EPA 5030B 8015B(M)
Field ID: MSS Lab II Matrix: Mnits: Diln Fac:	Water		Batch#: Sampled: Received: Analyzed:	69624 01/22/02 01/22/02 01/24/02

Type:

MS

Lab ID:

QC168467

Analyte	MSS Result	Spiked	Result	%RI	2C Limits
Gasoline C7-C12	<20.00	2,000	1,917	96	65-131

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	136 *	59-135	,
Bromofluorobenzene (FID)	112	60-140	
•			

pe:

MSD

romofluorobenzene (FID)

Lab ID:

QC168468

Analyte	Spiked	Result	t er	BC Limits	RPD Lim
Casoline C7-C12	2,000	1,887	94	65-131	2 20
	•				
Surrogate	%REC Limit	S			
Trifluorotoluene (FID)	132 59-13	5			

60-140

107

^{*=} Value outside of QC limits; see narrative RD = Relative Percent Difference Pge 1 of 1



Lab #:	156627			
			Location:	Tony's
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:			Analysis:	8015B (M)
rield ID:	ZZZZZZZZZ		Batch#:	69722
MSS Lab ID	: 156653-001		Sampled:	01/23/02
latrix:	Water		Received:	01/24/02
nits:	ug/L	•	Analyzed:	01/29/02
Diln Fac:	1.000		. Liu Ly Dou .	01/25/02

MS

Lab ID:

QC168817

122CA 14MA (77_C17	,	SE 00	2 222			
Gasoline C7-C12		5.88	2,000	1,931	92	65-131
Surrogate	%REC	Limits				
	11. 11. 11. 11. 11. 11. 11. 11. 11. 11.					
Trifluorotoluene (FID)	135	59-135		-		

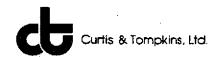
MSD

Lab ID:

QC168818

asoline C7-C12		2,000	1,962	94	65-131	2	20
-							
Surrogate	9. DW/	Limits					800 MAG
			200 000 000 000 000 000 000 000 000 000				
rifluorotoluene (FID)	136 *	59-135				***********	******

^{*=} Value outside of QC limits; see narrative RD= Relative Percent Difference Page 1 of 1



Benzene, Toluene, Ethylbenzene, Xylenes 156627 Tony's EPA 5030B EPA 8021B ab #: Location: SOMA Environmental Engineering Inc. ient: Prep: Project#: 2333 EPA Analysis: 01/22/02 01/23/02 Matrix: Water Sampled: ug/L hits: Received:

Field ID:

PSP-1 SAMPLE Diln Fac:

1.000 69624

Batch#: 156627-001 Analyzed: 01/23/02 Result

BE ND 2.0 nzene ND 0.50 bluene ND 0.50 Ethylbenzene ND 0.50 p-Xylenes Xylene ND 0.50 ND

er kan di kan di Per Surrogate Trifluorotoluene (PID) 127 56-142 romofluorobenzene (PID) 55-149 132

eld ID: e:

GAC-1 SAMPLE 156627-002 Diln Fac: Batch#:

1.000 69624

ID: 01/23/02 Analyzed: Analyte Result BE ND 2.0 nzene ND 0.50 **To**luene 0.50 ND Ethylbenzene ND0.50 p-Xylenes Xylene ND 0.50

0.50 NDSurrogate %REC Limits Trifluorotoluene (PID) 56-142 55-149 128 omofluorobenzene (PID) 134

ld ID:

INFLUENT SAMPLE 156627-003 Diln Fac: Batch#:

50.00 69752

Analyzed: 01/29/02 Analyte Result ΒE 40,000 100 nzene Toluene nzene 1,900 25 25 Ethylbenzene 170 25 p-Xylenes Xvlene 1,000 25

620

Surrogate 1314D(e) 1625m64D2 Trifluorotoluene (PID) 104 56-142 55-149 omofluorobenzene (PID) 103

ND= Not Detected Reporting Limit ge 1 of 2



T.	Benze	ene, Toluen	e, E	thylbenzen	e. Xylenes	
<pre>lab #: lient: Project#:</pre>	156627 SOMA Environmental 2333	Engineering	Inc.	Location: Prep: Analysis:	Tony's EPA 5030B EPA 8021B	
Matrix:	Water ug/L			Sampled: Received:	01/22/02 01/23/02	

rpe: b ID: ln Fac: BLANK QC168464 1.000 Batch#: Analyzed: 69624 01/23/02

 Analyte
 Result
 RL

 TBE
 ND
 2.0

 enzene
 ND
 0.50

 Toluene
 ND
 0.50

 Ethylbenzene
 ND
 0.50

 ,p-Xylenes
 ND
 0.50

 -Xylene
 ND
 0.50

Surrogate %RBC Dimits
Trifluorotoluene (PID) 119 56-142
romofluorobenzene (PID) 120 55-149

pe: b ID: BLANK QC168937 1.000 Batch#: Analyzed: 69752 01/29/02

Analyte	Result	RĽ	
TBE	ND	2.0	,
enzene	ND	0.50	
Toluene	ND	0.50	
Ethylbenzene	ND	0.50	
, p-Xylenes	ND	0.50	
-Xylene	ND	0.50	

	Surroga	te	%REC	Limits	
12	rifluorotoluene	(PID)	98	56-142	
Ц	romofluorobenzen	e (PID)	95	55-149	

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



	Benzene, Toluene, F	Sthylbenzene	Xylenes
Lab #: Client: Project#:	156627 SOMA Environmental Engineering Inc. 2333	Location: Prep: Analysis:	Tony's EPA 5030B EPA 8021B
ype: Lab ID: Matrix: nits:	LCS QC168466 Water ug/L	Diln Fac: Batch#: Analyzed:	1.000 69624 01/23/02

Analyte	Spiked	Result	%REC	Limits
TBE	20.00	22.09	110	51-125
enzene	20.00	19.59	98	67-117
Toluene	20.00	20.71	104	69-117
thylbenzene	20.00	20.96 b	105	68-124
,p-Xylenes o-Xylene	40.00	42.94 b	107	70-125
o-Xylene	20.00	22.36 b	112	65-129

Surrogate	\$REC	Limits
Trifluorotoluene (PID)	124	56-142
Bromofluorobenzene (PID)	124	55-149



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #: 156 Client: SOM

156627

SOMA Environmental Engineering Inc.

Project#: 2333

Matrix:

Units: Piln Fac:

Water ug/L 1.000 Location:

n: Tony's

Prep: Analysis: EPA 5030B EPA 8021B

Batch#:

69752

Analyzed:

01/29/02

pe:

BS

Lab ID:

QC168939

Analyte	Spiked	Result	%RE(Idmits
ITBE	20.00	19.20	96	51-125
■ enzene	20,00	17.67	88	67-117
Toluene	20.00	16.48	82	69-117
thylbenzene	20.00	16.81	84	68-124
n,p-Xylenes o-Xylene	40.00	34.19	85	70-125
o-Xylene	20.00	17.62	88	65-129

Surrogate	€RE	EC Limits	
Trifluorotoluene (PID)	98	56-142	1
Bromofluorobenzene (PID)	96	55-149	

pe:

BSD

Lab ID:

Analyte	Spiked	Result	%REC	Limits	RPL	Laim
MTBE	20.00	19.41	97	51-125	1	20
enzene	20.00	17.40	87	67-117	2	20
T oluene	20.00	15.76	79	69-117	4	20
Ethylbenzene	20.00	17.44	87	68-124	4	20
,p-Xylenes	40.00	34.85	87	70-125	2	20
-Xylene	20.00	17.66	88	65-129	0	20

Bromofluorobenzene (PID)	98	55-149
rifluorotoluene (PID)	100	56-142
Surrogate	%REC	Dimits



69819

01/22/02

01/23/02

02/01/02

Purgeable Aromatics by GC/MS

Lab #: 156627 Location: Tony's SOMA Environmental Engineering Inc. Client: Prep: EPA 5030B Project#: 2333 Analysis: EPA 8260B

Field ID: INFLUENT Batch#: Lab ID: 156627-003 Sampled: Matrix: Water Received: Units: Analyzed:

ug/L Diln Fac: 333.3

Result MTBE 23,000 170

Surrogate	%RBC	Limits	
1,2-Dichloroethane-d4	115	78-123	
Toluene-d8	98	80-110	
Bromofluorobenzene	100	80-115	



Purgeable Aromatics by GC/MS Lab #: 156627 Location: Tony's Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B roject#: 2333 Analysis: EPA 8260B уре: 1.000 BLANK Diln Fac: Lab ID: QC169176 Batch#: 69819 atrix: Water Analyzed: 01/31/02 nits: ug/L

10 to 10 to	Result	and the contract of the laboratory and the	RL	
rbe	ND	_	0.5	

Surrogate	%REC	Limits
, 2-Dichloroethane-d4	107	78-123
Coluene-d8	94	80-110
Bromofluorobenzene	.99	80-115



Purgeable Aromatics by GC/MS Lab #: 156627 Location: Tony's Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: <u>roject#: 2333</u> Analysis: EPA 8260B ype: BLANK Diln Fac: 1.000 Lab ID: QC169177 Batch#: 69819 atrix: Water Analyzed: 01/31/02 nits: ug/L

Analy	rte Result	RL	
TBE	ND	0.5]

Surrogate	%REC	Lámits
,2-Dichloroethane-d4	106	78-123
Coluene-d8	96	80-110
Bromofluorobenzene	98	80-115



Purgeable Aromatics by GC/MS Lab #: 156627 Location: Tony's Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B roject#: 2333 Analysis: EPA 8260B ype: LCS Diln Fac: 1.000 Lab ID: QC169175 Batch#: 69819 atrix: Water Analyzed: 01/31/02 nits: ug/L

Analyte	Spiked	Result	%REC	Limits
TBE	50.00	53.94	108	60-140

Surrogate	%REC	Limits
,2-Dichloroethane-d4	104	78-123
Doluene-d8	98	80-110
Bromofluorobenzene	96	80-115



ab #: :	15662	27		************	•	
		= :	Describer of	_	Location:	Tony's
roject#: 2	2222	Environmental	Engineering	Inc.	Prep:	EPA 5030B
	2333			· · · · · · · · · · · · · · · · · · ·	Analysis:	EPA 8260B
ield ID:		ZZZZZZZZZ			Batch#:	69819
ISS Lab ID:	:	156747-012			Sampled:	01/29/02
atrix:		Water			Received:	01/29/02
nits:		ug/L			Analyzed:	·
Diln Fac:		1.000			mary zed:	01/31/02

Type:

MS

Lab ID:

QC169191

MTBE	<	0.1200	50.00	Result 55.34	777	Limits
				33.34	111	60-140
Surrogate	%REC	Limits				
	109	78-123				
1,2-Dichloroethane-d4 Toluene-d8 romofluorobenzene	109 96	78-123 80-110				

Tpe:

MSD

Lab ID:

QC169192

BE SE		50.00		54.33	109	60-140	2	20
Surrogate		**************************************	*					
2-Dichloroethane-d4	*KEC 106							
Poluene-d8	95	78-123 80-110						
Bromofluorobenzene	96	80-110						•
		20 223				•		

Spiked



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: 14-MAR-02 Lab Job Number: 157217

Project ID: 2333

Location: Treatment System

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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CA ELAP # 1459

Page 1 of _____

CHAIN OF CUSTODY FORM

Page __/_of __/_

Curtis & Tompkins, Ltd.

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

C&T	. (2 0 1-
LOGIN#	157217

A	na	lys	es

	(510)486-0 (510)486-0	900 Phone 532 Fax				Sampler:		10	13	/	P	ERINI			8260									
Project No:	2333		,			Report To:	/	Na	m	50	u	- Sepehr		١ .	H									
Project Nar	ne:Oakla	Mb-ton	y's	<u> </u>								8015	8											
Project P.O						Telephone:	9	2	<u></u>	24	14	-6600		12	284		Ì							
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Laboratory Number	Sample ID	Sampling Date Time	Soil	Water	Waste	# of Containers	로	H ₂ SO	HNO3	ICE		Field Notes		Har	Gre									
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						4 .	<u> </u>		····	· · · · ·		DAT	E/TIME							DA	TE/T	IME		Í
						Signature						·	,					. –						



Lab #: 157217

Client: SOMA Environmental Engineering Inc.

Project#: 2333

Matrix: Water

Units:

Analysis:

Treatment System EPA 5030B

Location: Prep:

8015B(M)

Sampled:

02/27/02

Received:

02/27/02

eld ID:

PSP-1

pe: ab ID:

SAMPLE

ug/L

157217-001

Diln Fac:

1.000

Batch#:

70513

Analyzed:

03/02/02

		ANNO PROPERTY CONTROL
Analyte	型数数据 【集	
Analyte	Result	K.1
		RL
## # # # # # # # # # # # # # # # # # #	1770	
FEGSULINE C./-C.L.Z		EV 1
	1417	50

Surrogate	%REC	Limits	
rifluorotoluene (FID)	105	68-145	
Bromofluorobenzene (FID)	110	66-143	

Field ID:

b ID:

GAC-1

SAMPLE

157217-002

Diln Fac:

1.000

Batch#:

70513

Analyzed:

03/02/02

Analyte	Result	ŖĹ.	
asoline C7-C12	ND	50	

Surrogate	%REC	Dimits
rifluorotoluene (FID)	106	68-145
Bromofluorobenzene (FID)	102	66-143

Field ID:

INFLUENT

157217-003

ID:

SAMPLE

Diln Fac:

10.00

Batch#:

70568

Analyzed:

03/05/02

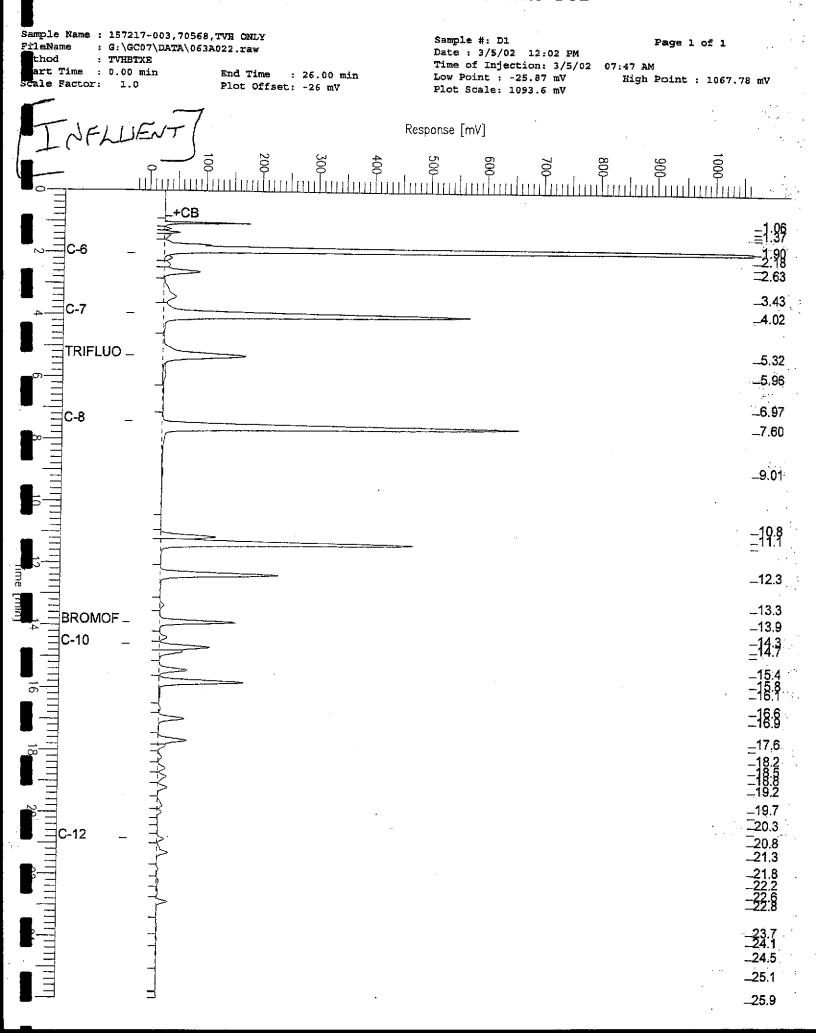
	Result	RL	
asoline C7-C12	16,000	500	

Surrogate	%RE(C Limits
rifluorotoluene (FID)	114	68-145
romofluorobenzene (FID)	93	66-143

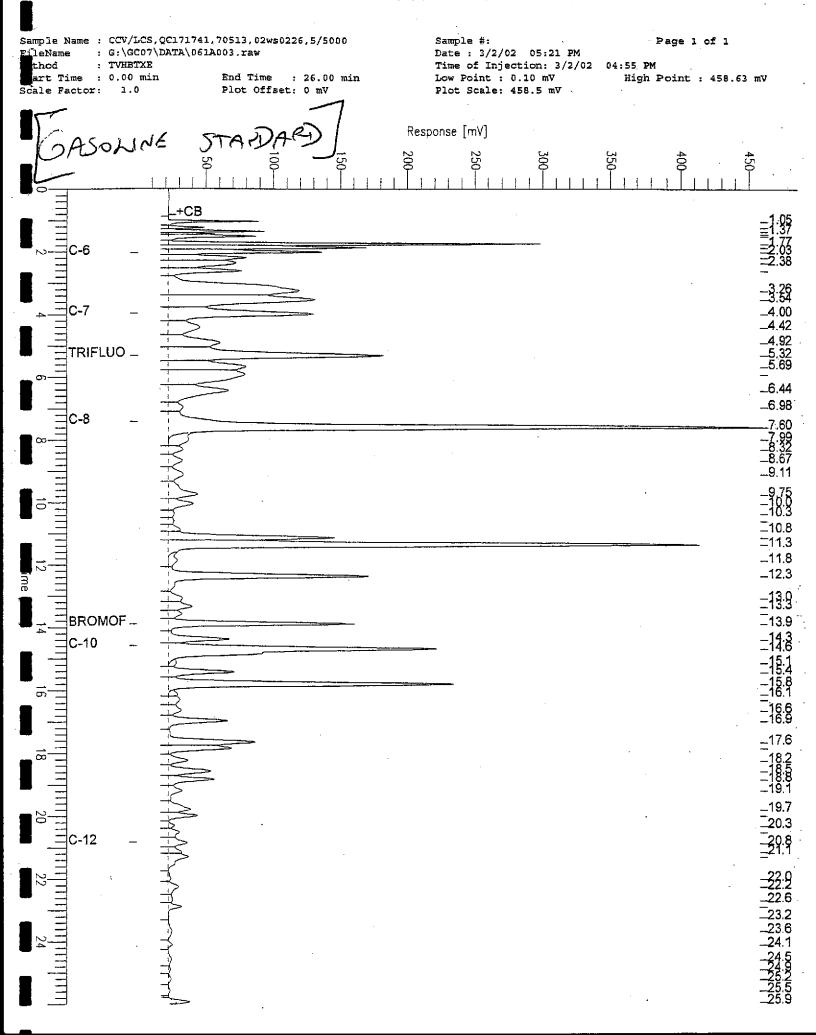
ND= Not Detected Reporting Limit

ge 1 of 2

GC07 TVH 'A' Data File RTX 502



GC07 TVH 'A' Data File RTX 502





Lab #: 157217

Client: SOMA Environmental Engineering Inc.

Project#: 2333

Matrix:

Units:

Water ug/L

Location:

Treatment System

Prep: EPA 5030B

Analysis: B015B(M)

Sampled: 02/27/02 Received:

02/27/02

BLANK

ab ID: Diln Fac:

QC171740 1.000

Batch#:

70513

Analyzed:

03/02/02

Analyte Result RL Sasoline C7-C12

Surrogate %REC Limits rifluorotoluene (FID) 102 68-145 Bromofluorobenzene (FID) 97 66-143

Type:

BLANK

b ID:

QC171939

ln Fac:

1.000

Batch#:

70568

Analyzed:

03/04/02

Analyte Result RL asoline C7-C12 ND

Surrogate %REC Limits rifluorotoluene (FID) 94 68-145 Bromofluorobenzene (FID) 90 66-143

ND= Not Detected Reporting Limit ge 2 of 2



Lab #: 157217

SOMA Environmental Engineering Inc. Client:

Project#:

LCS

Туре: Lab ID: Matrix:

QC171741 Water

mits:

ug/L

Location:

Treatment System

EPA 5030B

Analysis:

Prep:

8015B(M)

Diln Fac:

Batch#:

1.000 70513

Analyzed:

03/02/02

Analyte	Spiked	Result	\$REC	Limits
asoline C7-C12	2,000	1,894	95	79-120

Bromofluorobenzene (FII	O) 97	66-143
rifluorotoluene (FID)	124	68-145
Surrogate	*REC	Limits



157217 Lab #:

Location:

Treatment System

Client:

SOMA Environmental Engineering Inc.

Prep:

EPA 5030B

Analysis:

8015B(M)

Matrix:

Water

Batch#:

70568

Units:

iln Fac:

ug/L 1.000 Analyzed:

03/04/02

BS

Lab ID:

QC171940

Analyt	e Spiked	Result	*REC	Limits
asoline C7-C12	2,000	2,077	104	79-120

Surrogate	*REC	Limits
rifluorotoluene (FID)	125	68-145
romofluorobenzene (FID)	93	66-143

BSD

Lab ID:

Analyte	Spiked	Result	*REC	Limits		16888888 37869766 8881 -
asoline C7-C12	2,000	1,985	99	79-120	5	20

Surrogate	%REC	Limits
rifluorotoluene (FID)	124	68-145
Bromofluorobenzene (FID)	93	66-143



		Gasoline	з Бу	GC/FID CA LUF	Ţ.	
Lab #: Client: Project#:	l7 Environmental	Engineering	Inc.	Location: Prep: Analysis:	Treatment System EPA 5030B 8015B(M)	
Field ID: MSS Lab II Matrix:	PSP-1 157217-001 Water			Batch#: Sampled: Received:	70513 02/27/02 02/27/02	
units: Diln Fac:	ug/L 1.000			Analyzed:	03/02/02	

pe:

MS

Lab ID:

QC171743

Analyte	MSS R	esult	Spiked	Result	%REC	Limits
Gasoline C7-C12	<	17.00	2,000	2,043	102	67-120
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	131	68-145				
romofluorobenzene (FID)	109	66-143				

pe:

MSD

Lab ID:

Analyte		Spiked	Result	%REC	Limits	RPI	Lin
asoline C7-C12		2,000	2,003	100	67-120	2	20
Surrogate	%REC	Limits					
rifluorotoluene (FID)	131	68-145					
romofluorobenzene (FID)	107	66-143					



		Purgeable Aro	matics by G0	C/ME	
Lab #:	157217		Location:	Treatment System	
	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B	
roject#:	2333		Analysis:	EPA 8260B	
Field ID:	PSP-1		Batch#:	70486	
ab ID:	157217-001		Sampled:	02/27/02	
latrix:	Water		Received:	02/27/02	
Units:	ug/L	•	Analyzed:	03/02/02	
Diln Fac:	1.000		4	,,	

		RL
MTBE	ND	0.5
enzene	ND	0.5
oluene	ND	0.5
Chlorobenzene	ND	0.5
thylbenzene	ND ·	0.5
,p-Xylenes -Xylene	ND	0.5
o-Xylene	ND	0.5
,3-Dichlorobenzene	ND	0.5
,4-Dichlorobenzene	ND	0.5
,2-Dichlorobenzene	ND .	0.5

Surrogate	FREC	: Limits	
,2-Dichloroethane-d4	96	77-130	
Toluene-d8	97	80-120	•
Promofluorobenzene	99	80-120	



		Purgeable Aro	matics by	GC/MS
Lab #:	157217		Location:	Treatment System
Client: Project#:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Field ID:	GAC-1		Analysis: Batch#:	EPA 8260B 70486
Lab ID:	157217-002		Sampled:	02/27/02
latrix:	Water		Received:	02/27/02
Units: Diln Fac:	ug/L 1.000		Analyzed:	03/02/02

MTBE	1.1	0.5	
Benzene	ND	0.5	
Coluene	ND	0.5	
Chlorobenzene	ND	0.5	
Ethylbenzene	ND	0.5	
ı,p-Xylenes	ND	0.5	
5-Xylene	ND	0.5	
1,3-Dichlorobenzene	ND	0.5	
,4-Dichlorobenzene	ND	0.5	
,2-Dichlorobenzene	ND	0.5	

Toluene-d8	100	80-120	
Toluene-d8	100	80-120	
Bromofluorobenzene	100	80-120	



		Purgeable Aro	matics by G	C/MS
- : :		-	Ī	
Lab #:	157217		Location:	Treatment System
client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		Analysis:	EPA 8260B
Field ID:	INFLUENT		Batch#:	70535
ab ID:	157217-003		Sampled:	02/27/02
Matrix:	Water		Received:	02/27/02
Units:	ug/L		Analyzed:	03/04/02
Diln Fac:	166.7		-	

Analyte	Result	RL:	
MTBE	18,000	83	
Benzene	1,900	83	
Toluene	2,200	83	
Chlorobenzene	ND	83	
Ethylbenzene	280	83	
h,p-Xylenes	1,300	83	
o-Xylene	620	83	
1,3-Dichlorobenzene	ND	83	
,4-Dichlorobenzene	ND	83	
1,2-Dichlorobenzene	ND	83	

Surrogate	%REC	Limits	
,2-Dichloroethane-d4	97	77-130	
Toluene-d8	102	80-120	
Promofluorobenzene	100	80-120	



	Purgeable Ar	omatics by	gc/ms
Lab #:	157217	Location:	Treatment System
	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
📫 ab ID:	QC171629	Batch#:	70486
latrix:	Water	Analyzed:	03/01/02
Units:	ug/L		· · ·

TBE	ND	0.5	
enzene	ND	0.5	
oluene	ND	0.5	
hlorobenzene	ND	0.5	
Ethylbenzene	ND	0.5	
,p-Xylenes	ND	0.5	
-Xylene	ND	0.5	
,3-Dichlorobenzene	ND	0.5	
,4-Dichlorobenzene	ND	0.5	
,2-Dichlorobenzene	ND	0.5	

Surrogate	%REC	Limits	
2-Dichloroethane-d4	98	77-130	
oluene-d8	100	80-120	· '
Bromofluorobenzene	101	80-120	



		Purgeable Arc	matics by (GC/MS
Lab #:	157217		Location:	Treatment System
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
?roject#:	2333		Analysis:	EPA 8260B
Type:	BLANK		Diln Fac:	1.000
Lab ID:	QC171815		Batch#:	70535
latrix:	Water		Analyzed:	03/04/02
Units:	ug/L		-	

Analyte	Result	RL
TBE	ND	0.5
Benzene	ND	0.5
foluene	ND	0.5
hlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
-Xylene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
,2-Dichlorobenzene	ND	0.5

Surrogate	&REC	C Limits
, 2-Dichloroethane-d4	95	77-130
oluene-d8	99	80-120
Bromofluorobenzene	99	80-120

N= Not Detected R= Reporting Limit Page 1 of 1



	Purgeable Arc	matics by	GC/ME
Lab #:	157217	Location:	Treatment System
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
roject#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	70486
Units:	ug/Ļ	Analyzed:	03/01/02
Diln Fac:	1.000	2	,,

pe:

BS

Lab ID:

QC171626

Analyte	Spiked	Result	%REC	Limits
enzene	50.00	50.69	101	76-120
Toluene	50.00	51.03	102	79-120
Chlorobenzene	50.00	51.00	102	80-120

Surrogate	%RE	C Limits	
1,2-Dichloroethane-d4	97	77-130	
cluene-d8	100	80-120	
romofluorobenzene	96	80-120	

ype:

BSD

Lab ID:

		· · · · · · · · · · · · · · · · · · ·				
hlorobenzene	50.00	50.65	101	80-120	1	20
Toluene	50.00	50.41	101	79-120	1	20
₩enzene	50.00	50.29	101	76-120	1	20
Analyte	Spiked	Result	%REC	Limits	RPD	Lim

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	77-130
oluene-d8	100	80-120
Fromofluorobenzene	97	80-120



Purgeable Aromatics by GC/MS Lab #: 157217 Location: Treatment System Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B roject#: 2333 Analysis: EPA 8260B Matrix: Water Batch#: 70535 Units: ug/L Analyzed: 03/04/02 Diln Fac: 1.000

pe:

BS

Lab ID:

QC171812

Analyte	Spiked	Result	*REC	Limits
Benzene	50.00	52.70	105	76-120
Toluene	50.00	54.45	109	79-120
Chlorobenzene	50.00	50.71	101	80-120

Surrogate	*REC	Limits	
1,2-Dichloroethane-d4	94	77-130	
Toluene-d8	102	80-120	
romofluorobenzene	96	80-120	

ype:

BSD

Lab ID:

Analyte	Spiked	Result	%REC	Limits	RPL	Lim
B enzene	50.00	52.55	105	76-120	0	20
Toluene	50.00	52.98	106	79-120	3	20
hlorobenzene	50.00	50.72	101	80-120	0	20

Surrogate	%REC	Limits	
1,2-Dichloroethane-d4	92	77-130	
oluene-d8	99	80-120	
Bromofluorobenzene	93	80-120	