ENVIRONMENTAL ENGINEERING, INC
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3337

July 26, 2000

- System continues to operate & remove TPHg + MTBE
- clogged TPHg + BTEX + small chlorinated well (BART) still detects MTBE.

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

Subject: Claim No. 7912
Site Address: 3609 International Blvd., Oakland, California

Dear Mr. Chan:

A copy of SOMA's "Second Quarter 2000 Groundwater Monitoring 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

MS/jb

Enclosure

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

ENVIRONMENTAL PROTECTION
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1.0 INTRODUCTION

This report presents the results of the second quarter 2000 groundwater monitoring activities conducted by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Abolghassem Razi, the property owner. The project site is Tony's Express Auto Service, located at 3609 International Boulevard, Oakland, California (the "Site"), see Figure-1.

The Site is located at the intersection of 36th Avenue and International Boulevard (formerly known as East 14th Street), Oakland, California, see Figure-1. It is currently used as 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 on-site and off-site groundwater monitoring wells. Currently, the groundwater monitoring wells are being monitored on a quarterly basis. The results of the groundwater monitoring programs have indicated elevated levels of petroleum hydrocarbons in the groundwater beneath the Site. The source of petroleum hydrocarbons in the groundwater is believed to be the former underground storage tanks (USTs), which were used to store gasoline at the Site. This report includes the results of historical groundwater monitoring events, as well as the results of the second quarter 2000 groundwater monitoring event.

Based on the property owner's request, the recent groundwater-monitoring event was conducted by SOMA in response to Alameda County Environmental Health Services (ACEHS) requirements.

1.1 BACKGROUND

Currently, the Site is used as a gasoline service station. The environmental

investigation at the subject property started since 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) have 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 are one-10,000 gallon double-walled gasoline tank and two-6,000 gallon double-walled gasoline tanks beneath the Site (Figure 2).

In December 1997, Mr. Razi retained Western Geo-Engineers (WEGE) to conduct additional investigation and perform groundwater monitoring on a quarterly basis. The results of WEGE groundwater monitoring events indicated elevated levels of petroleum hydrocarbons and methyl tertiary butyl ether (MTBE) in the groundwater. The historical groundwater elevation data, total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethlybenzene, xylenes, (BTEX) and MTBE concentrations reported by STE and WEGE are included in Table-2 and Table-5.

In April 1999, Mr. Razi retained SOMA to conduct groundwater monitoring, risk based corrective action (RBCA), 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 area, therefore, the soil and groundwater in on-and off-site areas need to be remediated. The results of CAP study indicated that installation of a French drain along with air sparging technique is a cost effective alternative for site remediation.

In late August 1999, SOMA installed a French drain and initiated a groundwater treatment system to prevent further migration of chemically impacted

groundwater. Currently, this treatment system has been in operation since early December 1999.

On November 2, 1999, HEW Drilling, a subcontractor of SOMA, drilled one boring at BART's property and converted it into a monitoring well (MW-12). Figure 2 shows the location of existing wells and monitoring well MW-12. During the drilling operation, relatively undisturbed soil samples and a grab groundwater sample were collected. The results of the chemical analyses of the samples indicated that petroleum hydrocarbon chemicals have reached ~~to~~ MW-12. The soil sample collected at a depth of 15' (zone of water fluctuation) was found to be contaminated with 480 µg/kg TPHg. The grab groundwater sample was found to be impacted with 26.8 µg/L benzene, 8.3 µg/L toluene, 250 µg/L MTBE and 1,110 µg/L TPHg. During this monitoring event MW-12 was also monitored.

1.2 SITE HYDROGEOLOGY

Based on the results of previous investigations, groundwater is encountered at depths ranging between 10 and 11 feet beneath the Site. Figure-2 shows the location of on-site and off-site groundwater monitoring wells. Prior to the operation of the French drain, groundwater flow was found to be from the north to the south with an average gradient of 0.014 ft/ft. As shown in Figure-3, the groundwater now flows from all directions toward the French drain. As it shows, the capture zone of the drain has extended down gradient to well MW-10.

Based on the results of a pumping test conducted by SOMA, hydraulic conductivity of the saturated sediments ranges between 1.5 and 18.3 feet per day. Assuming the effective porosity of saturated sediments to be 0.35, the groundwater flow velocity ranges between 22 feet and 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 May 31, 2000, the SOMA field crew measured depth to groundwater in the monitoring wells from the top of casings to the nearest 0.01 foot 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 and three risers of the French drain were monitored during this event. Table-1 presents the groundwater elevations and Appendix A presents a summary of field notes for each groundwater monitoring well and the French drain risers.

Before sample collection, each well was purged at least three casing volumes while field readings of pH and temperature were recorded. Each groundwater monitoring well was purged using a 2-inch diameter submersible pump, model ES-60 DC. Groundwater samples were collected using disposable bailers. Each groundwater sample was transferred into two 40-ml VOA vials and sealed properly to prevent developing any air bubbles within the headspace area. The vials were placed in an ice chest and delivered to Curtis & Tompkins, Ltd, of Berkeley, California for analysis. For field measurements a sufficient sample was transferred into a 500-ml polyethylene container.

The groundwater samples that were kept in polyethylene bottles were immediately used for on-site measurements of ferrous iron ($Fe+^{2}$), nitrate-N (NO_3^--N), sulfate (SO_4^{-2}), pH, and electrical conductivity (EC).

The D.O. and temperature were measured with a dissolved oxygen meter, YSI

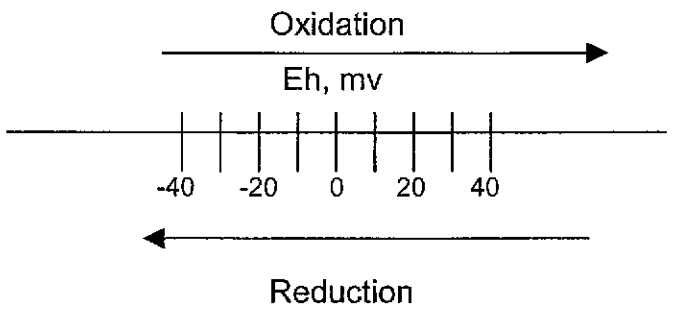
Model 50B (YSI Incorporated, Yellow Springs, Ohio 45387 USA), see Appendix A for the result of field measurements. The instrument was calibrated at the Site according to a procedure provided by the manufacturer and prescribed by Taras *et.al.* (1975). Detail of the calibration and measurement procedures can be found in the instrument's handbook. The measurements were corrected for barometric pressure, temperature and salinity using correction factors provided by the user's manual, see Appendix A.

In order to avoid the intrusion of oxygen in ambient air to groundwater samples, the D.O. and temperature measurements were conducted in situ (down-hole inside each monitoring well).

Turbidity was measured with HANNA Instruments (HI) Model 93703 portable turbidity meter. The HI 93703 portable microprocessor-based turbidity meter provides lab-grade accuracy even in the field. The unit of measure adopted by the ISO Standard is the FTU (Formazine Turbidity Unit) which is identical to NTU (Nephelometric Turbidity Unit). The instrument was calibrated at two points, 0 FTU and 10 FTU. Two calibration solutions of primary standard AMCO-AEPA-1 at 0 FTU and 10 FTU are 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 will not reveal the presence of a specific pollutant in groundwater. It will however, provide general information on the extent of the suspended solids in groundwater.

Oxidation-Reduction Potential of groundwater samples was measured using HANNA's ORP electrode. Oxidation is a process in which a molecule or ion loses one or several electrons. Reduction is a process by which electrons are gained. A measure of the potential for these processes to occur is called Oxidation

Reduction Potential or Eh. The unit of Eh is volt or m-volt and is commonly referred as the redox potential. The most important redox reaction in petroleum contaminated groundwater is the oxidation of petroleum hydrocarbons in the presence of bacteria and free molecular oxygen. Because the solubility of O_2 in water is low (9 mg/L at 25 °C and 11 mg/L at 5 °C), and because O_2 replenishment in subsurface environments is limited, oxidation of only a small amount of petroleum hydrocarbons can result in consumption of all the dissolved oxygen. When all the dissolved O_2 in groundwater is consumed, oxidation of petroleum hydrocarbons can still occur, but the oxidizing agents (i.e., constituents that undergo reduction) are NO^-_3, MnO_2, $Fe(OH)_3$, SO_4^{2-} and others (Freeze and Cherry, 1979). As these oxidizing agents are consumed, the groundwater environment becomes more and more reduced. If the process proceeds far enough, the environment may become very strong reduced in that the petroleum hydrocarbons may undergo anaerobic degradation and production of methane and carbon dioxide. The concept of oxidation and reduction in terms of changes in oxidation states is illustrated below.



Fe^{+2}, NO^-_3-N and SO_4^{-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 orange color is proportional to the iron concentration.

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

NO_3^--N was measured colorimetrically using Method 8039 or 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 to getistic acid to form an amber-colored product. The intensity of the color is proportional to nitrate-N concentration in the sample.

Electrical conductivity, pH were measured with Hydac Model 910 pH meter. The instrument was calibrated for conductance with a standard solution of known concentration (12,000 us/cm) and for pH with 4, 7 and 10 pH units buffer solutions. All measurements were performed according to the instruction manual provided by the manufacturer.

2.1 LABORATORY ANALYSIS

Curtis & Tompkins, Ltd. analyzed the groundwater samples. The measured constituents included TPH –g, BTEX and MTBE.

TPH-g was measured using EPA Method 5030/GCFID. EPA Method 8020 was

used to measure BTEX. MTBE levels in the groundwater were measured using EPA Method 8020 and confirmed using EPA Method 8260. The results are presented in Table-4. As discussed, the groundwater parameters in connection with bio-degradation activities such as dissolved oxygen, redox potential, turbidity, nitrate, sulfate and ferrous iron were analyzed in the field by SOMA's field staff.

3.0 RESULTS

Table-1 presents the measured groundwater elevations at different groundwater monitoring wells and the center riser 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 watertable in different monitoring wells and the center riser of the French drain ranged between 9.45 and 15.6 feet. Watertable elevations ranged between 81.50 and 88.01 feet. A groundwater elevation contour map is displayed in Figure-3. Figure 3 shows the impact of the French drain operation on the water level elevations of the surrounding monitoring wells. On the Site, during the recent monitoring event the groundwater flow was found to be from the north towards the south. This is consistent with the findings of the previous monitoring events that were conducted prior to the installation of the French drain. However, on the off-site properties south of the Site, the groundwater flow has been reversed by the effects of the French drain and is now flowing from the south towards the north. As Figure 3 shows, the capture zone of the French drain has been extended as far as well MW-10, which is located about 170 feet downgradient of the center riser of the French drain.

The historical static water level elevations measured at different monitoring wells and the center riser of the French drain are presented in Table 2. During the

recent monitoring event, in comparison with the previous monitoring event, the water level elevations decreased in the range of 0.2 feet to 1.18 feet. The drop in the elevations is mainly due to a lack of precipitation and the operation of the French drain.

Floating products were not found in any of the wells during the current groundwater monitoring event. During the previous groundwater monitoring event also no floating product was observed.

The results of field measurements of some physical and chemical parameters of the groundwater samples are presented in the field notes and summarized in Table-3. Temperature ranged between 18.5 ^{0}C and 19.8 ^{0}C. The variation in temperature may reflect the changes in air temperature during sampling, see field notes in Appendix A. Temperature measurements allowed us to make corrections to pH and EC measurements using a Manual Temperature Compensation procedure described in the Hydac Model 910 pH meter manual. D.O. measurements were also corrected automatically for the recorded temperatures, see Appendix A.

Dissolved oxygen concentration in the groundwater samples ranged between 0.29 mg/L at MW-12 and 0.8 mg/L in MW-2. The low oxygen content may suggest an anaerobic biodegradation process in this groundwater system. Figure-4 shows the contour map of D.O. concentrations in groundwater. The dissolved oxygen measurement was conducted down-hole (in-situ) after purging the wells.

Turbidity of the groundwater samples ranged between 7.7 FTU and 188 FTU. The maximum turbidity was recorded in the monitoring well MW-3. The recorded high turbidity in MW-3 may be associated with the presence of elevated concentrations of the petroleum hydrocarbons in this well.

Redox potential in the groundwater samples ranged between +17 mv in well MW-10 and –117 mv in Well MW-3. Monitoring well MW-10 with minor hydrocarbon contamination showed an oxidation condition and the remainder of the wells showed strong reduced conditions. Low oxygen level in well MW-10 in combination with the positive redox potential is an indication of aerobic oxidation of the petroleum hydrocarbons in this well. However, all other contaminated wells are showing strong reduced conditions. In these oxygen depleted environment anaerobic processes utilizing alternate electron acceptors for oxidation of petroleum hydrocarbons, may be responsible for strong reduced conditions. Possible alternate electron acceptors include nitrate, iron (III) and sulfate (Lovley *et. al.*, 1994). Under strong reduced conditions and lack of other terminal electron acceptors the occurrence of methanogenesis and production of methane gas is highly possible.

During this monitoring event, nitrate was detected in wells MW-1, MW-2, MW-4 and MW-11. However, in the previous monitoring event, nitrate was only detected in well MW-2. As discussed earlier, the concentrations of dissolved oxygen in all wells are significantly low, and because replenishment of oxygen in 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, MnO_2, $Fe(OH)_3$, SO_4^{2-} and others (Lovley *et. al.*, 1994). Disappearance of nitrate in most of the wells may suggest that, under the observed anaerobic condition, nitrate may have been used as a source of terminal electron acceptor by microorganisms (Lovley *et. al.*, 1994). Figure-5 shows the contour map of nitrate concentration in groundwater.

Sulfate concentrations ranged between non-detectable in wells MW-1, MW-6 MW-8, MW-10, MW-12 and 50 mg/L in well MW-5. Sulfate depleted subsurface

contaminated environment 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 measured on May 31, 2000.

Ferrous iron concentration in groundwater samples ranged between 0.57 mg/L and 7.8 mg/L. High concentrations of ferrous iron in groundwater is a good indication of biological activities. Figure-7 shows the groundwater ferrous iron concentration measured on May 31, 2000. The presence of higher ferrous iron and absence/lack of electron receptors such as nitrogen, sulfate and dissolved oxygen is indicative of anaerobic biodegradation beneath the Site. Due to the presence of low levels of dissolved oxygen, as well as the nutrients such as nitrates and sulfate, generation of methane gas from petroleum hydrocarbons seems likely.

The pH measurements ranged between 7.04 and 7.29 pH units. Electrical conductivity ranged between 433 µs/cm and 870 µs/cm. The unit of electrical conductivity is Siemens (s) or micro-Siemens (µs) in the SI system. In the past, these units have been known as millimhos and micromhos.

The results of chemical analyses are shown in Table 4. The concentrations of TPH-g ranged between 477 µg/L in the monitoring well MW-11 and 68,000 µg/L in the monitoring well MW-3. Benzene concentrations ranged between 4.9 µg/L in MW-7 and 15,000 µg/L in MW-3. TPH-g and benzene concentration contours in groundwater have been shown in Figures 8 and 9, respectively. MTBE concentrations were below the detection limit of 5 µg/L in wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6 and MW-11 and peaked at 580 µg/L in MW-10. MTBE concentrations contour map in groundwater has been shown in Figure-10.

The historical data of groundwater contamination is presented in Table 5.

Generally, chemical concentrations did not show a consistent pattern during the recent groundwater monitoring event in most of the wells. TPHg concentrations decreased in six out of eleven wells and increased in the remainder five wells. While, benzene increased in six wells and decreased in five other wells. It is interesting that MTBE concentrations significantly decreased in six monitoring wells but only slightly increased in two wells while, remained at non-detectable levels in the two remainder wells. The results of this monitoring event confirmed the findings of the previous monitoring event that petroleum hydrocarbons have impacted well MW-12 with the concentrations higher than was previously believed. However, during the recent monitoring event the concentrations of all petroleum hydrocarbons in MW-12 except ethyl-benzene have decreased in MW-12 as compared with the previous event.

4.0 TREATMENT SYSTEM OPERATION

The operation of the treatment system was started on December 9, 1999. Since then, more than 700,000 gallons (recording date is June 29, 2000) of groundwater has been treated and discharged to the East Bay Municipal Utility District (EBMUD) under the existing discharge permit.

As required by the discharge permit and the ACEHS, sampling has been performed on a routine basis. The effluent sampling and maintenance of the system have been performed on a weekly basis from the start of the system to now. The result of the first effluent testing was used to acquire a discharge permit from EBMUD.

Table 6 presents the total volume and chemical composition of the effluent treated at the Site. Table 6 shows that all effluent samples during discharge have maintained compliance with the permit, having values below the level of detection limit. Approximately, 26,000 gallons of chemically impacted

groundwater per week is being treated by the treatment system. 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 effluent samples. The first GAC unit was re-furbished as soon as the traces of chemicals broke through the unit. The second GAC unit is serving as a polishing unit and is always kept highly active. This procedure ensures that the effluent discharging to the EBMUD has non-detectable levels of contaminants.

As Figure 11 shows a total of 60 pounds TPHg and 5 pounds MTBE have been removed during the operation of the treatment system.

5.0 CONCLUSIONS

The results of the May 31, 2000 groundwater monitoring event are summarized as follows:

1. The groundwater flow direction was found to be from the north towards the south, which is consistent with the findings of the previous monitoring events. However, on the off-site properties south of the Site, the groundwater flow has been reversed by the effects of the French drain and is now flowing from the south towards the north.
2. In comparison with the previous monitoring event, the water level elevations decreased in the range of 0.2 feet to 1.18 feet. This is mainly due to a lack of precipitation and the operation of the French drain.
3. Benzene concentrations ranged between 4.9 µg/L in MW-7 and 15,000 µg/L in MW-3.
4. MTBE concentrations were below the detection limit of 5 µg/L in wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6 and MW-11 and peaked at 580 µg/L in MW-10.

5. The concentrations of TPH-g ranged between 477 µg/L in the monitoring well MW-11 and 68,000 µg/L in the monitoring well MW-3.
6. The results of this monitoring event confirmed the findings of the previous monitoring event that petroleum hydrocarbons have impacted well MW-12 with concentrations higher than was previously believed. However, during the recent monitoring event concentrations of all petroleum hydrocarbons except ethyl-benzene have decreased in MW-12 compared with the previous event.
7. Due to the presence of low levels of dissolved oxygen as well as the nutrients such as nitrates and sulfate, generation of methane gas from petroleum hydrocarbon seems likely.
8. So far, more than 700,000 gallons (recording date is June 29, 2000) of groundwater has been treated and discharged to the East Bay Municipal Utility District (EBMUD) under the existing discharge permit.
9. All effluent samples during discharge have maintained compliance with the permit, having values below the level of detection limit.
10. A total of 60 pounds TPHg and 5 pounds MTBE have been removed during the operation of the treatment system.

As the results of the laboratory analysis indicate, the concentration of benzene in MW-3 has drastically increased. To rule out the laboratory error, additional groundwater samples were collected from MW-3 and submitted to Curtis & Tompkins Ltd. for analysis. The results of the laboratory analysis confirmed the presence of elevated levels of benzene and TPHg in MW-3. However, like the previous time no MTBE was detected in this well. Due to the lack of MTBE in this well, it does not seem that the higher chemical concentration is due to new chemical release at the Site. The next couple of groundwater monitoring results will confirm the presence of high chemical concentrations at MW-3, if any.

6.0 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 & Tompkins, Ltd., as well as the data summaries produced by the 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 conditions. All conclusions and recommendations are based on the results of 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.

7.0 REFERENCES

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TABLES

Table 1

Groundwater Elevation Data, May 31, 2000

Monitoring Well	Depth to Water (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft.)	Product Thickness (ft.)
MW-1	11.49	97.99	86.50	ND
MW-2	10.88	98.58	87.70	ND
MW-3	11.68	97.78	86.10	ND
MW-4	11.46	97.85	86.39	ND
MW-5	11.03	99.04	88.01	ND
MW-6	11.70	98.77	87.07	ND
MW-7	10.52	97.83	87.31	ND
MW-8	11.15	97.25	86.10	ND
MW-10	9.45	94.54	85.09	ND
MW-11	13.80	95.94	82.14	ND
MW-12	10.48	94.84	84.36	ND
F.D. Center	15.60	97.10	81.50	ND

TABLE 2

Historical Groundwater Elevation Data
Tony's Express
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
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		
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									
Dec.94	88.67	89.98	87.99									
Oct.94	82.60	83.22	81.99									

TABLE 3

Analytical Results of Groundwater Biodegradation Parameters

WELL	DATE	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous Iron (mg/L)	Dissolved Oxygen (mg/L)	Redox Potential (mv)	Turbidity (FTU)
MW-1	**5/31/00**	**2.8**	**0.0**	**0.57**	**0.30**	**-37.0**	**30**
	2/7/00	0.0	1.0	3.3	0.77	-74.0	
	11/9/99	0.0	26.0	5.1	0.2		
	8/23/99	0.0	8.0	2.67	1.4		
	6/10/99	0	1	3.17	0.14		
	12/30/97	<0.1	<1	3.04	0.5		
MW-2	**5/31/00**	**2.5**	**54.0**	**0.18**	**0.8**	**-55.0**	**30.9**
	2/7/00	6.2	55.0	0.15	1.12	-20.0	
	11/9/99	0.9	55.0	1.0	0.8		
	8/23/99	1.0	60.0	0.62	0.7		
	6/10/99	0.7	40	0.55	0.44		
	6/30/98	<0.1	14	0.5	3.2		
	12/30/97	<0.1	<1	3.35	<0.1		
MW-3	**5/31/00**	**0.00**	**4.00**	**7.80**	**0.45**	**-117.0**	**188.0**
	2/7/00	0.00	140.00	3.60	0.70	-82.00	
	11/9/99	0.00	0.00	3.50	0.61		
	8/23/99	0.00	0.00	3.90	0.80		
	6/10/99	0.00	0.00	3.10	0.42		
	6/30/98	0.10	77.00	0.37	2.00		
MW-4	**5/31/00**	**0.50**	**40.00**	**0.25**	**0.50**	**-40.0**	**26.8**
	2/7/00	0.00	1.00	1.56	1.30	-31.0	
	11/9/99	0.50	23.00	0.99	0.12		
	8/23/99	0.50	28.00	0.67	0.15		
	6/10/99	0.40	10.00	0.81	0.15		
	6/30/98	0.90	7.00	0.93	1.30		
	12/30/97	4.50	42.00	0.39	<0.1		
MW-5	**5/31/00**	**0.00**	**50.00**	**0.35**	**0.48**	**-25.0**	**27.2**
	2/7/00	0.00	47.00	0.64	0.90	18.0	
	11/9/99	2.00	32.00	0.72	0.27		
	8/23/99	2.40	45.00	1.19	0.75		
	6/10/99	2.50	33.00	0.34	0.25		
	6/30/98	1.60	6.00	0.50	0.60		
	12/30/97	0.30	18.00	0.94	<0.1		
MW-6	**5/31/00**	**0.00**	**0.00**	**3.27**	**0.72**	**-62.0**	**111.0**
	2/7/00	0.00	0.00	3.02	1.25	-51.0	
	11/9/99	0.00	0.00	7.00	0.22		
	8/23/99	0.00	9.00	3.30	0.55		
	6/10/99	0.00	23.00	2.52	0.61		

TABLE 3

Analytical Results of Groundwater Biodegradation Parameters

WELL	DATE	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous Iron (mg/L)	Dissolved Oxygen (mg/L)	Redox Potential (mv)	Turbidity (FTU)
	6/30/98	0.70	4.00	0.40	2.50		
	12/30/97	<0.1	5.00	0.30	<0.1		
MW-7	**5/31/00**	**0.00**	**28.00**	**0.72**	**0.30**	**-52.0**	**34.9**
	2/7/00	0.00	41.00	0.53	0.91	-19.0	
	11/9/99	0.00	25.00	0.99	0.14		
	8/23/99	0.00	20.00	1.40	0.65		
	6/10/99	0.00	22.00	0.19	0.15		
	6/30/98	0.50	4.00	0.78	1.00		
	12/30/97	0.20	32.00	0.23	1.20		
MW-8	**5/31/00**	**0.00**	**0.00**	**3.30**	**0.45**	**-95.0**	**13.0**
	2/7/00	0.00	0.00	3.46	0.65	-90.0	
	11/9/99	0.00	0.00	8.90	0.38		
	8/23/99	0.00	13.00	8.20	0.20		
	6/10/99	0.00	0.00	4.70	0.10		
	6/30/98	<0.1	3.00	2.82	1.30		
	12/30/97	0.10	<1	3.35	2.50		
MW-10	**5/31/00**	**0.00**	**0.00**	**0.29**	**0.40**	**17.0**	**22.4**
	2/7/00	0.00	0.00	0.00	0.82	55.0	
	11/9/99	0.00	12.00	0.37	0.44		
	8/23/99	0.00	9.00	0.52	0.50		
	6/10/99	0.00	0.00	0.25	0.20		
	6/30/98	<0.1	<1	0.38	0.90		
	12/30/97	0.30	<1	2.21	<0.1		
MW-11	**5/31/00**	**5.20**	**10.00**	**0.69**	**0.50**	**-15.0**	**12**
	2/7/00	0.00	24.00	0.75	1.10	-14.0	
	11/9/99	0.00	21.00	0.06	0.22		
	8/23/99	0.00	52.00	0.92	0.60		
	6/10/99	0.00	0.00	0.28	0.19		
	6/30/98	1.20	6.00	0.15	2.20		
	12/30/97	3.50	35.00	0.32	<0.1		
MW-12	**5/31/00**	**0.00**	**0.00**	**2.11**	**0.29**	**-54.0**	**7.7**
	2/7/00	0.00	0.00	1.53	0.62	-42.0	
	11/9/99	3.10	9.00	2.21	0.34		
French Drain	**5/31/00**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
	2/7/00	0.00	32.00	0.81	0.88	-40.0	

Table 4

Groundwater Analytical Data, May 31, 2000

Monitoring Well	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	MTBE* (ug/L)	TPH-G** (ug/L)
MW-1	610	350	310	1,400	<5	15,610
MW-2	130	330	130	570	<5	2,930
MW-3	15,000	8,900	1,500	7,400	<5	68,000
MW-3$	14,000	7,900	1,800	8,800	<5	87,000
MW-4	42	19	16	67	<5	552
MW-5	7.4	24	12	32.4	<5	627.4
MW-6	1,700	1,200	17	3,600	<5	21,700
MW-7	4.9	22	4.2	21.9	29	494.9
MW-8	940	130	1,600	3,960	75	25,940
MW-10	1,500	25	390	107.1	580	4,400
MW-11	27	13	9.5	29.2	<5	477
MW-12	230	10	34	12	200	3,930
MW-12#	220	8.7	30	10.7	230	4,020
French Drain	2,400	1,000	210	1,440	230	12,400

NA Not Analyzed
ND Not Detected
* MTBE analyzed with EPA Method 8260
** Note that this is the summation of TPHg(C7-C12) and benzene(C6) that have been reported by C$T Laboratory
\# Field duplicate sample of MW-12
$ A confirmation sample was taken on July 20, 2000

TABLE 5
Historical Groundwater Analytical Data

WELL	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	XYLENES (µg/L)	MTBE (µg/L)	TPH-g (µg/L)
MW-1	**5/31/00**	**610**	**350**	**310**	**1,400**	**<5**	**15,610**
	2/7/00	2,280	1,380	8	6,130	47	40,000
	11/9/99	693	15	<5	3,471	50	10,000
	8/23/99	678	463	893	2,938	38	19,750
	6/10/99	1,110	1,460	1,330	5,265	77	25,000
	3/16/99	480	860	850	3,000	190	17,000
	12/16/98	2,500	2,400	2,300	9,500	160	65,000
	12/30/97	2,300	2,100	1,400	5,100	NA	27,000
	4/10/97	NA	NA	NA	NA	NA	NA
	12/9/96	NA	NA	NA	NA	NA	NA
	4/3/96	98	120	63	170	NA	31,000
	1/3/96	71	73	50	120	NA	30,000
	10/2/95	140	130	140	390	NA	59,000
	6/5/95	950	650	570	150	NA	21,000
	3/6/95	190	160	150	490	NA	32,000
	12/2/94	3,800	6,600	2,300	11,000	NA	80,000
	10/5/94	24,000	21,000	2,600	15,000	NA	320,000
MW-2	**5/31/00**	**130**	**330**	**130**	**570**	**<5**	**2,930**
	2/7/00	372	639	46	134	8	6,400
	11/9/99	<5	<5	<5	<5	<5	<50
	8/23/99	6	9	4	11	ND	60
	6/10/99	290	428	211	744	ND	3,500
	3/16/99	730	830	610	1,900	55	7,600
	12/16/98	1,400	1,600	880	9,500	<5	26,000
	9/29/98	290	180	160	360	<0.5	29,000
	6/30/98	2,000	2,000	1,300	4,300	NA	25,000
	12/30/97	4,900	4,900	1,600	7,000	NA	35,000
	4/10/97	150	110	37	0	ND	53,000
	12/9/96	11	7	2	14	ND	6,200
	4/3/96	0	92	44	13	NA	27,000
	1/3/96	160	130	93	240	NA	46,000
	10/2/95	160	130	93	240	NA	46,000
	6/5/95	220	330	350	660	NA	8,000
	3/6/95	3	3	3	1	NA	490
	12/2/94	1,700	2,200	1,200	3,600	NA	42,000
MW-3	**5/31/00**	**15,000**	**8,900**	**1,500**	**7,400**	**<5**	**68,000**
	2/7/00	6,090	3,360	<5	5,780	276	44,000
	11/9/99	3,218	1,319	<5	6,697	126	26,000
	8/23/99	7,484	8,052	1,744	9,749	141	64,000
	6/10/99	8,245	6,425	1,015	7,173	274	46,000
	3/16/99	4,100	6,400	1,000	6,100	470	45,000
	12/16/98	5,700	3,900	1,200	6,300	410	51,000
	1/3/96	510	410	210	650	NA	150,000

TABLE 5 (continued)
Historical Groundwater Analytical Data

WELL	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	XYLENES (µg/L)	MTBE (µg/L)	TPH-g (µg/L)
MW-3	10/2/95	510	410	210	65	NA	150,000
	6/5/95	20,000	42,000	5,800	36,000	NA	350,000
	3/6/95	20,000	42,000	5,800	36,000	NA	350,000
	12/2/94	19,000	22,000	4,400	28,000	NA	250,000
	10/5/94	190,000	740,000	310,000	130,000	NA	3,000,000
MW-4	**5/31/00**	**42**	**19**	**16**	**67**	**<5**	**552**
	2/7/00	1,200	61	<5	781	<5	7,800
	11/9/99	<5	<5	<5	<5	<5	<50
	8/23/99	497	41	54	145	6	660
	6/10/99	298	44	19	64	13	1,000
	3/16/99	200	35	19	56	11	600
	12/16/98	590	33	28	94	24	1,400
	9/29/98	910	77	68	200	18	6,200
	6/30/98	780	160	54	200	NA	1,700
	12/30/97	410	270	100	1,500	NA	2,300
	4/10/97	ND	ND	ND	ND	ND	ND
	12/9/96	14	6	4	12	ND	4,000
	4/3/96	12	8	5	14	NA	1,900
	1/3/96	230	110	10	29	NA	9,300
	10/2/95	23	11	10	29	NA	9,300
MW-5	**5/31/00**	**7.4**	**24**	**12**	**32.4**	**<5**	**627.4**
	2/7/00	<5	<5	<5	7	<5	70
	11/9/99	<5	<5	<5	<5	<5	<50
	8/23/99	ND	4	ND	4	ND	120
	6/10/99	4	3	6	4	ND	270
	3/16/99	3	1	16	2	10	650
	12/16/98	1	1	ND	2	ND	1,400
	9/29/98	2	1	3	3	<.5	270
	6/30/98	<5	<5	15	<10	NA	400
	12/30/97	82	66	59	160	NA	790
	4/10/97	NA	NA	NA	NA	NA	NA
	12/9/96	NA	NA	NA	NA	NA	NA
	4/3/96	1	1	5	4	NA	780
	1/3/96	1	1	4	5	NA	1,500
	10/2/95	1	1	4	5	NA	1,500
MW-6	**5/31/00**	**1,700**	**1,200**	**17**	**3,600**	**<5**	**21,700**
	2/7/00	1,360	521	<5	4,150	6	17,000
	11/9/99	1,084	130	<5	10,940	<5	40,000
	8/23/99	3,806	3,649	1,554	7,996	10	42,000
	6/10/99	2,060	1,650	735	3,170	ND	18,500
	3/16/99	3,900	4,300	1,600	7,000	180	37,000
	1/3/96	350	310	200	610	NA	120,000
	10/2/95	350	310	200	610	NA	120,000

TABLE 5 (continued)
Historical Groundwater Analytical Data

WELL	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	XYLENES (µg/L)	MTBE (µg/L)	TPH-g (µg/L)
MW-7	**5/31/00**	**4.9**	**22**	**4.2**	**21.9**	**29**	**494.9**
	2/7/00	<5	<5	<5	<5	23	80
	11/9/99	<5	9	<5	<5	12	290
	8/23/99	5	10	ND	ND	ND	570
	6/10/99	3	7	4	3	26	320
	3/16/99	3	1	1	1	62	300
	12/16/98	5	10	5	20	160	990
	9/29/98	1	1	1	2	68	1,800
	6/30/98	4	<5	9	<10	NA	620
	12/30/97	130	98	75	200	NA	1,400
	4/10/97	NA	NA	NA	NA	NA	NA
	12/9/96	NA	NA	NA	NA	NA	NA
	4/3/96	2	3	5	7	NA	1,900
	1/3/96	9	12	17	45	NA	3,300
	10/2/95	10	12	17	NA	3,300	NA
MW-8	**5/31/00**	**940**	**130**	**1,600**	**3,960**	**75**	**25,940**
	2/7/00	1,080	617	<5	4,160	240	44,200
	11/9/99	92	<5	<5	3,414	769	10,500
	8/23/99	5,379	2,438	3,001	6,960	639	58,000
	6/10/99	3,610	1,635	2,175	5,913	988	39,500
	3/16/99	1,800	470	2,000	2,000	820	22,000
	12/16/98	6,300	1,700	2,200	4,400	1,300	61,000
	6/30/98	4,600	2,800	3,500	7,300	NA	54,000
	12/30/97	6,000	1,600	2,100	4,700	NA	28,000
	4/10/97	86	55	50	100	ND	24,000
	12/9/96	88	43	44	80	ND	27,000
	4/3/96	250	170	140	330	NA	58,000
	1/3/96	310	250	180	480	NA	94,000
	10/2/95	310	250	180	480	NA	94,000
MW-10	**5/31/00**	**1,500**	**25**	**390**	**107.1**	**580**	**4,400**
	2/7/00	<5	<5	<5	<5	448	<50
	11/9/99	1,134	20	<5	70	652	2,950
#	11/9/99	65	19	<5	29	1,278	2,580
	8/23/99	2,135	97	600	248	1,800	3,250
	6/10/99	1,168	34	264	154	1,195	4,200
	3/16/99	15	28	420	250	2,800	4,100
	12/16/98	3,800	51	790	420	1,800	8,700
	9/29/98	5,400	66	970	620	2,600	9,900
	12/30/97	5,300	76	1,100	780	NA	10,000
	4/10/97	21	9	3	3	ND	1,000

TABLE 5 (continued)
Historical Groundwater Analytical Data

WELL	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	XYLENES (µg/L)	MTBE (µg/L)	TPH-g (µg/L)
MW-11	**5/31/00**	**27**	**13**	**9.5**	**29.0**	**<5**	**477**
	2/7/00	20	15	<5	35	<5	700
	11/9/99	<5	<5	<5	<5	<5	<50
	8/23/99	4	4	ND	6	ND	170
	6/10/99	1,240	35	290	159	1,291	4,600
	3/16/99	30	6	53	84	8	710
	12/16/98	27	4	25	33	>0.5	650
	9/29/98	7	1	4	9	22	170
	6/30/98	45	24	71	100	NA	1,100
	12/30/97	66	97	59	190	NA	710
	4/10/97	ND	ND	ND	ND	ND	ND
MW-12	**5/31/00**	**230**	**10**	**34**	**12**	**200**	**3,930**
	2/7/00	351	37	<5	24	513	4,000
	11/9/99	<5	<5	<5	<5	229	80
F. D.*	**5/31/00**	**2,400**	**1,000**	**210**	**1,440**	**230**	**12,400**
	2/7/00	419	72	<5	522	797	5,200

ND Not Detected

\# Duplicate sample of MW-10

* French drain

Table 6: Total Volume of Treated Groundwater and Composition of Influent and Effluent Groundwater

Tony's Auto Express, Oakland, California

	Date Totalizer Read	Totalizer Reading (Gallons)	Lab Results For GAC-1 and Effluent* (concentrations in ug/L)					
			MTBE	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylene
June	06/29/00	700,000						
	06/21/00	682,220	ND	ND	ND	ND	ND	ND
	06/16/00	669,720	ND	ND	ND	ND	ND	ND
	06/10/00	651,200	ND	ND	ND	ND	ND	ND
May	05/31/00	629,000	ND	ND	ND	ND	ND	ND
	05/23/00	603,700	ND	ND	ND	ND	ND	ND
	05/18/00	570,000	ND	ND	ND	ND	ND	ND
	05/10/00	530,400	ND	ND	ND	ND	ND	ND
April								
	04/30/00	488,300	ND	ND	ND	ND	ND	ND
	04/18/00	485,300	ND	ND	ND	ND	ND	0.51
	04/10/00	440,200	ND	ND	ND	ND	ND	ND
	04/04/00	390,100	ND	ND	ND	ND	ND	ND
March								
	03/24/00	388,000	ND	ND	ND	ND	ND	ND
	03/17/00	357,100	ND	ND	ND	ND	ND	ND
	03/10/00	329,000	ND	ND	ND	ND	ND	ND
	03/03/00	300,000						
February								
	02/25/00	274,000	ND	ND	ND	ND	ND	ND
	02/18/00	233,000	ND	ND	ND	ND	ND	ND
	02/11/00	190,000	ND	ND	ND	ND	ND	ND
	02/04/00	160,800	ND	ND	ND	ND	ND	ND
January								
	01/28/00	130,600	ND	ND	ND	ND	ND	ND
	01/21/00	103,435	ND	ND	ND	ND	ND	ND
	01/14/00	83,500	185	ND	ND	ND	ND	ND

Table 6: Total Volume of Treated Groundwater and Composition of Influent and Effluent Groundwater

Tony's Auto Express, Oakland, California

	Date Totalizer Read	Totalizer Reading (Gallons)	Lab Results For GAC-1 and Effluent* (concentrations in ug/L)					
			MTBE	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylene
December	12/23/99	51,680	1486	NA	ND	ND	ND	ND
	12/23/99		ND	NA	ND	ND	ND	ND
	12/16/99	30,450	963	NA	ND	ND	ND	ND
	12/16/99		ND	NA	ND	ND	ND	ND
	12/09/99	9,000	230	ND	ND	ND	ND	ND
Pumping began on December 6, 1999								

* Effluent is equivalent to GAC-2

FIGURES

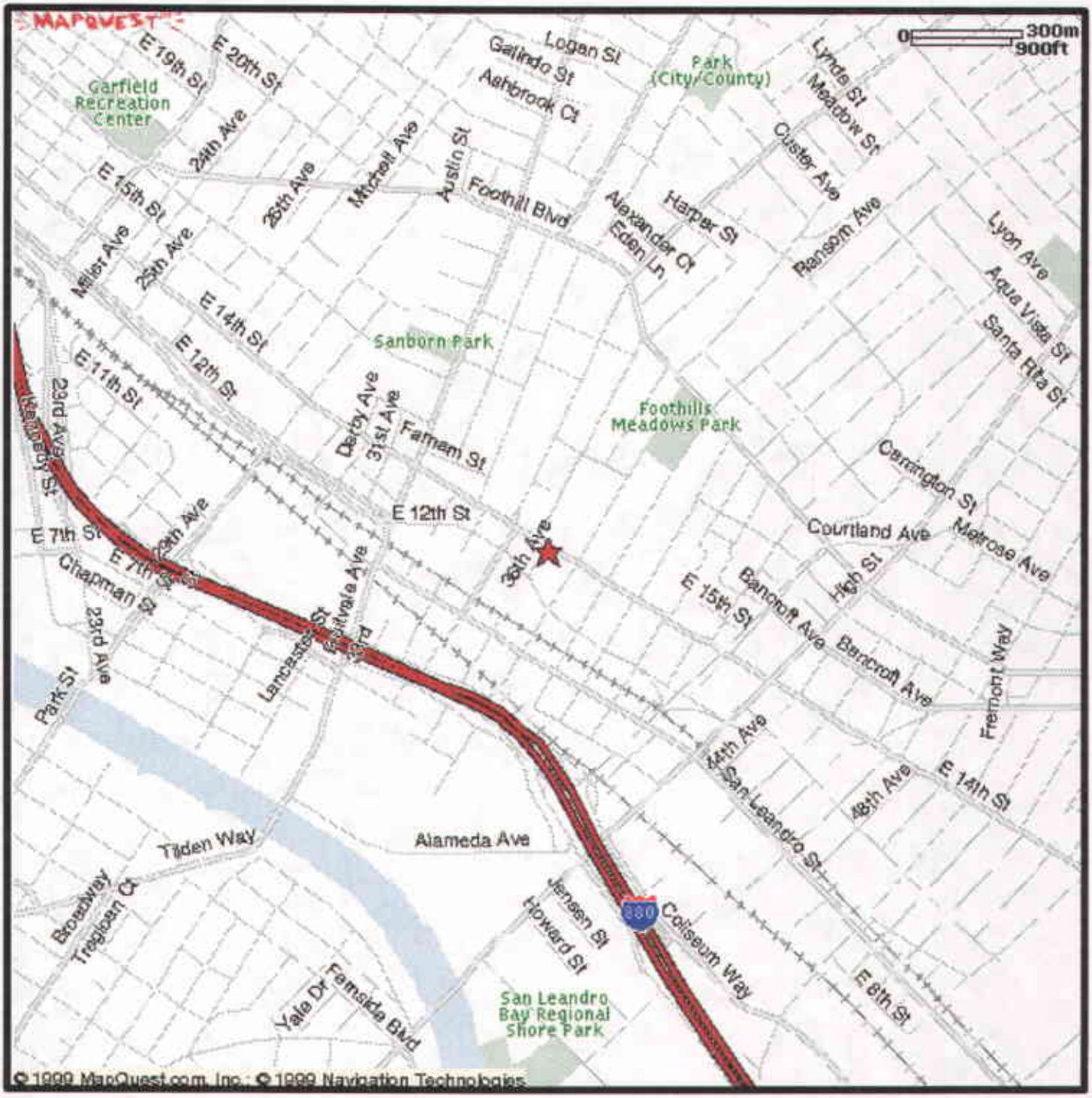

Figure 1: Site Location Map

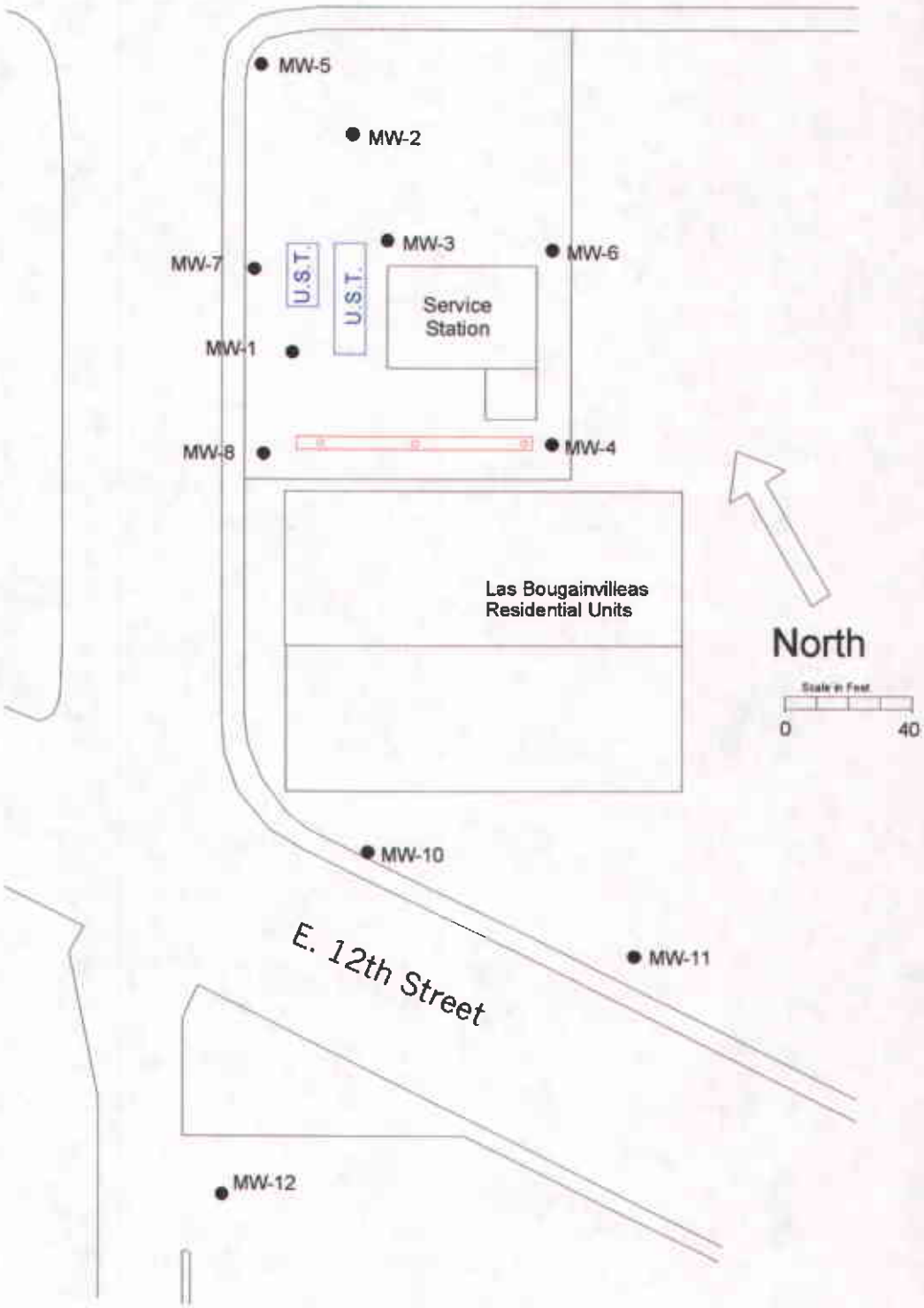

Figure 2: Location of Groundwater Monitoring Wells

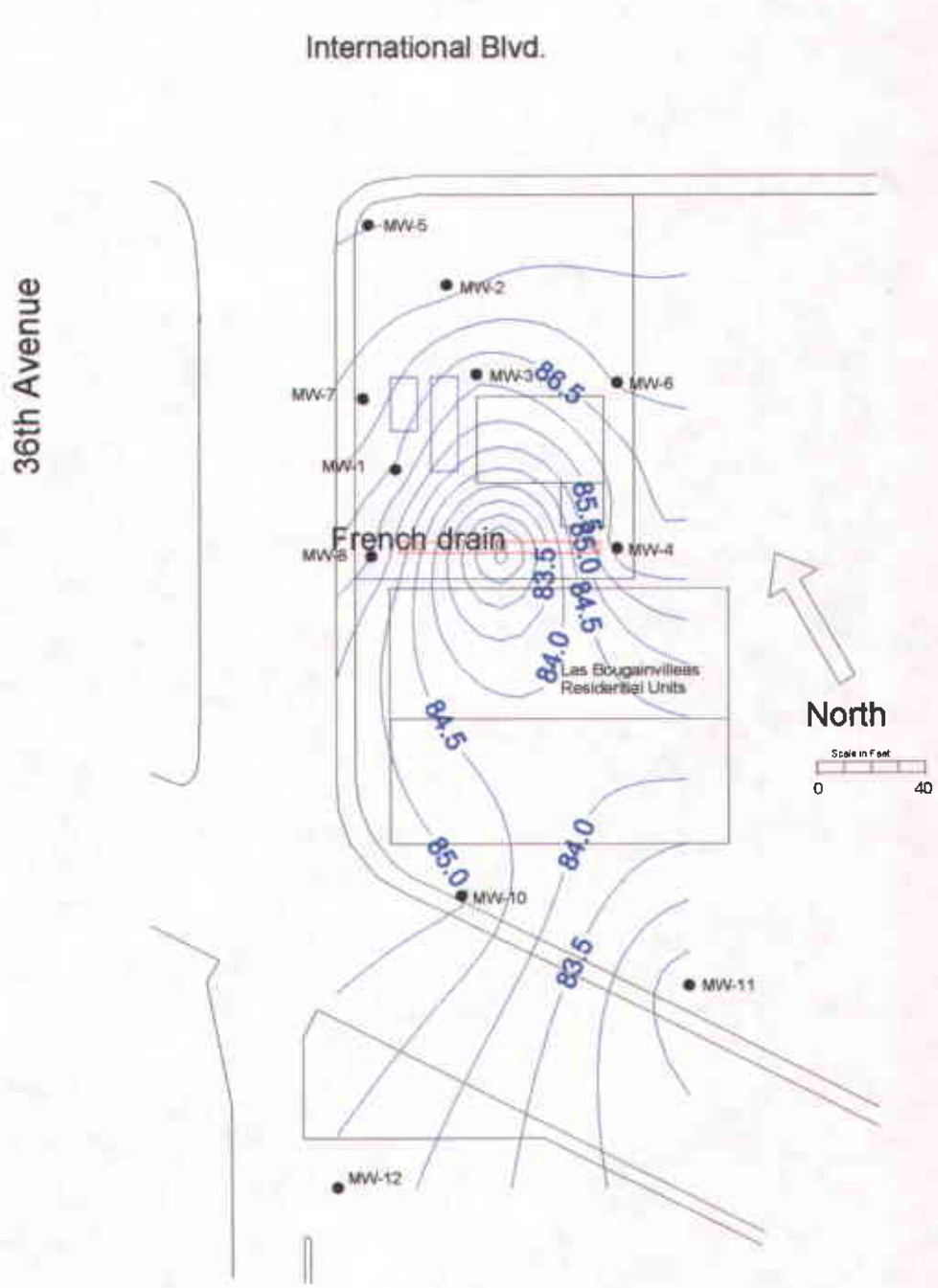

Figure 3: Groundwater Elevation Contour Map, May 31, 2000

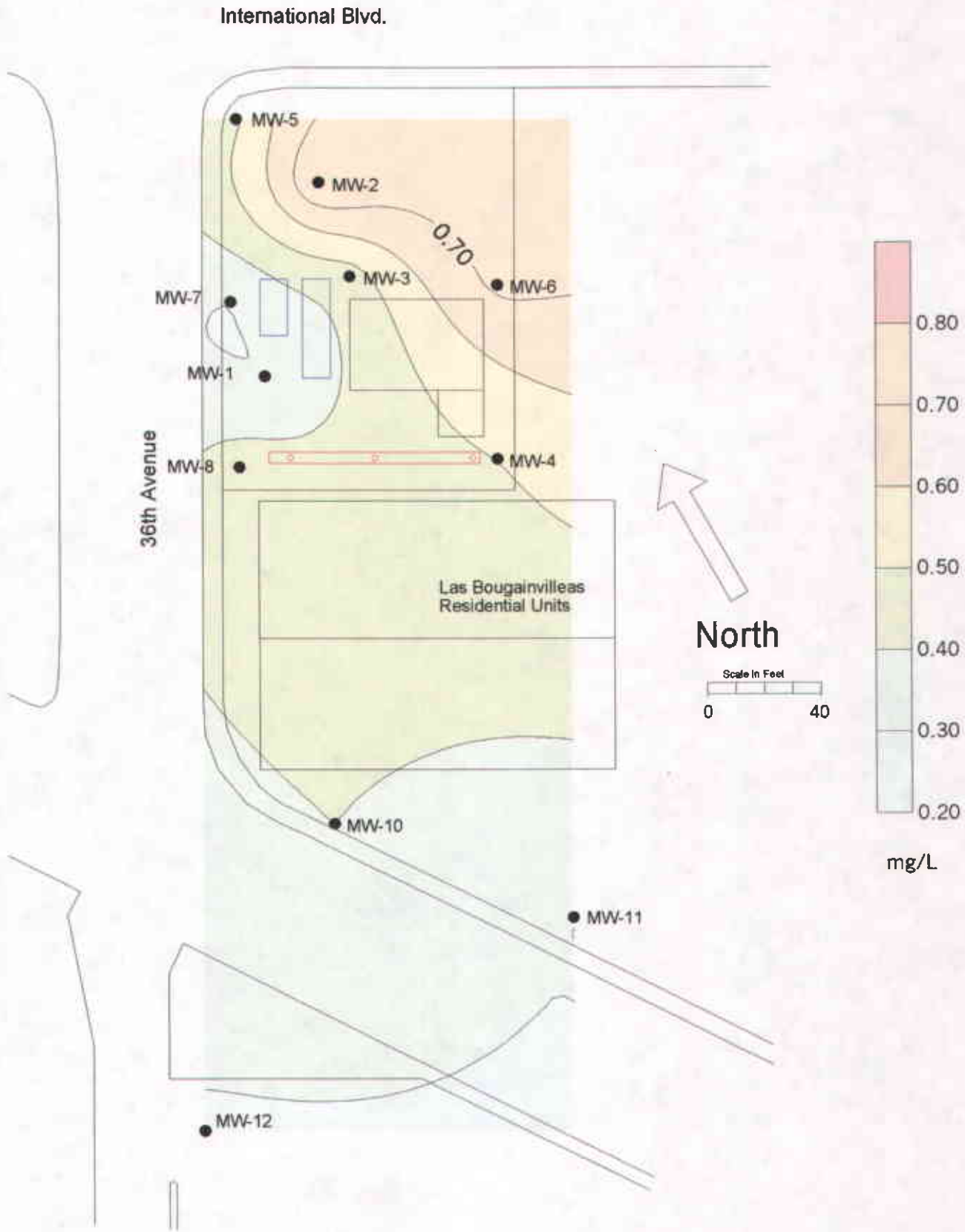

Figure 4: Dissolved Oxygen Concentration in Groundwater, May 31, 2000

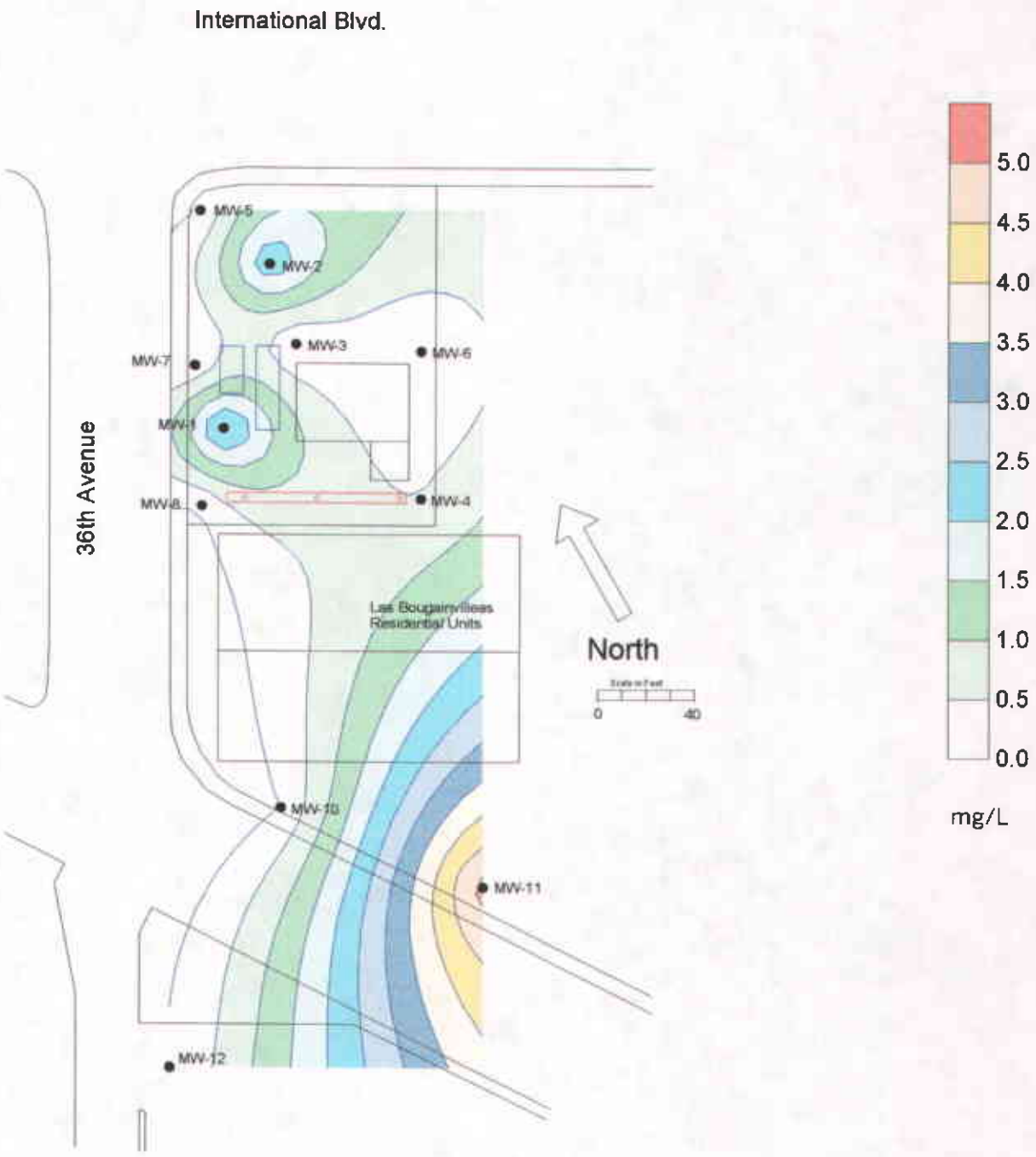

Figure 5: Nitrate Concentration Contour Map in Groundwater, May 31, 2000

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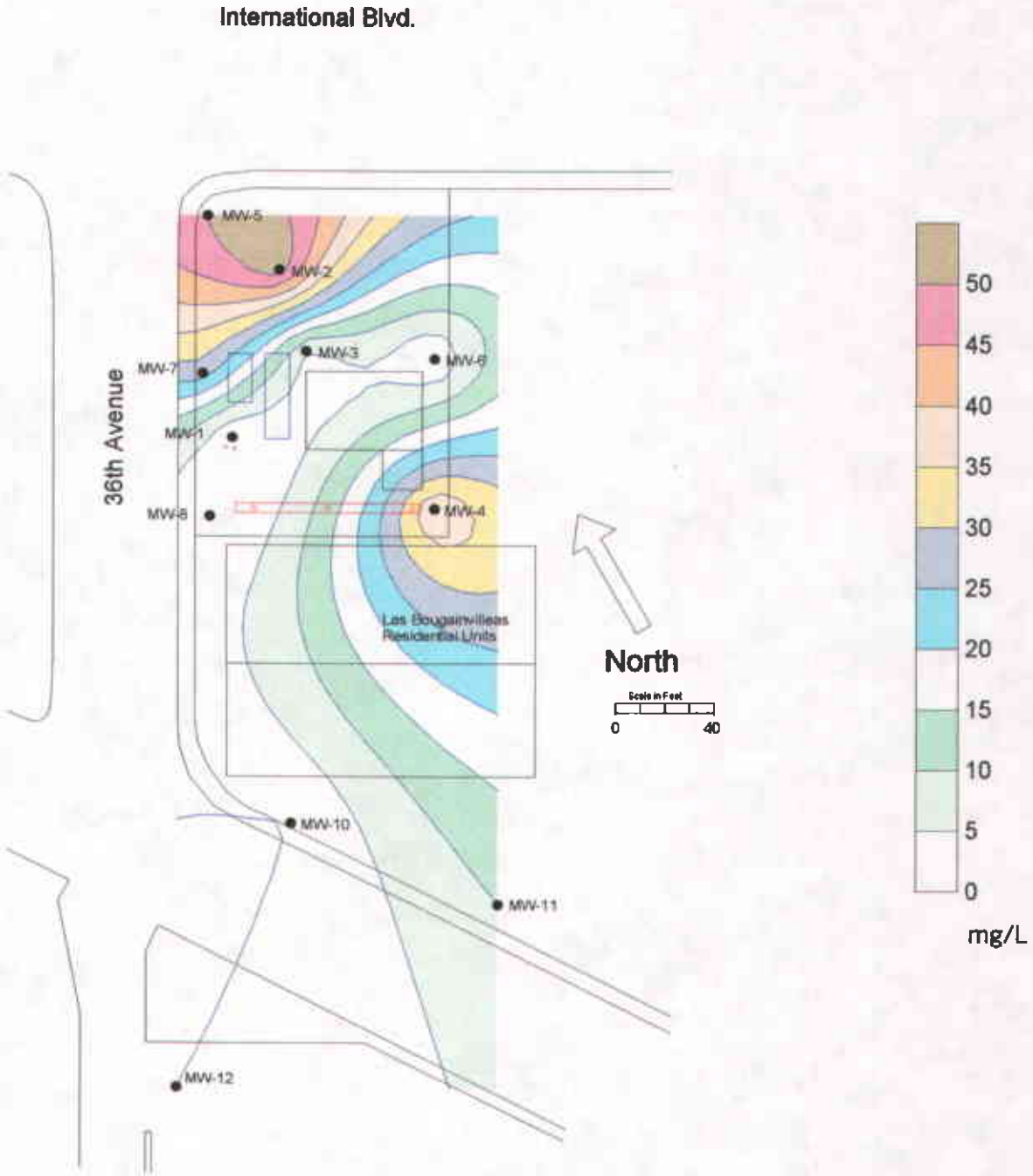

Figure 6: Sulfate Concentration Contour Map in Groundwater, May 31, 2000

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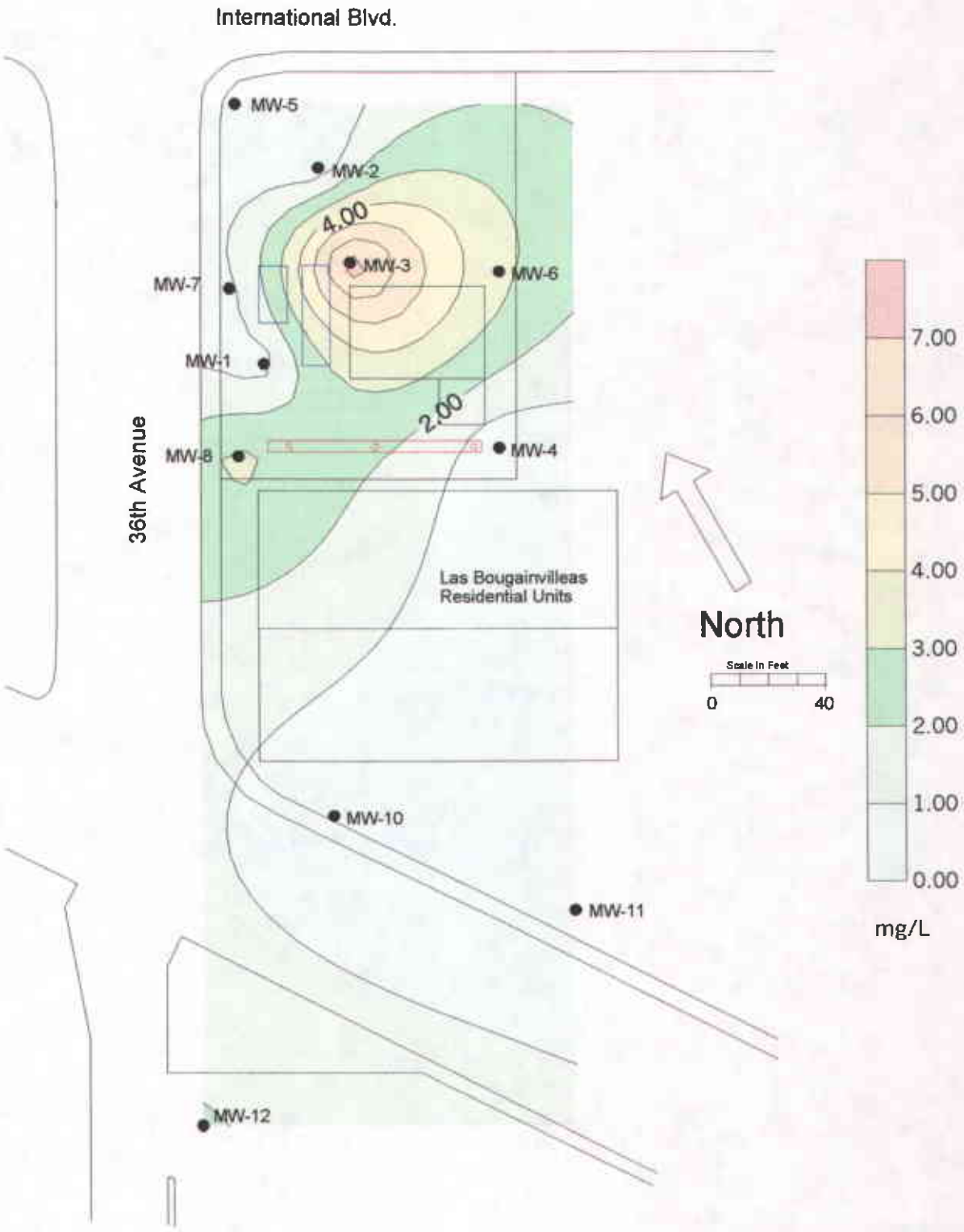


Figure 7: Ferrous Iron Concentration Contour Map in Groundwater, May 31, 2000

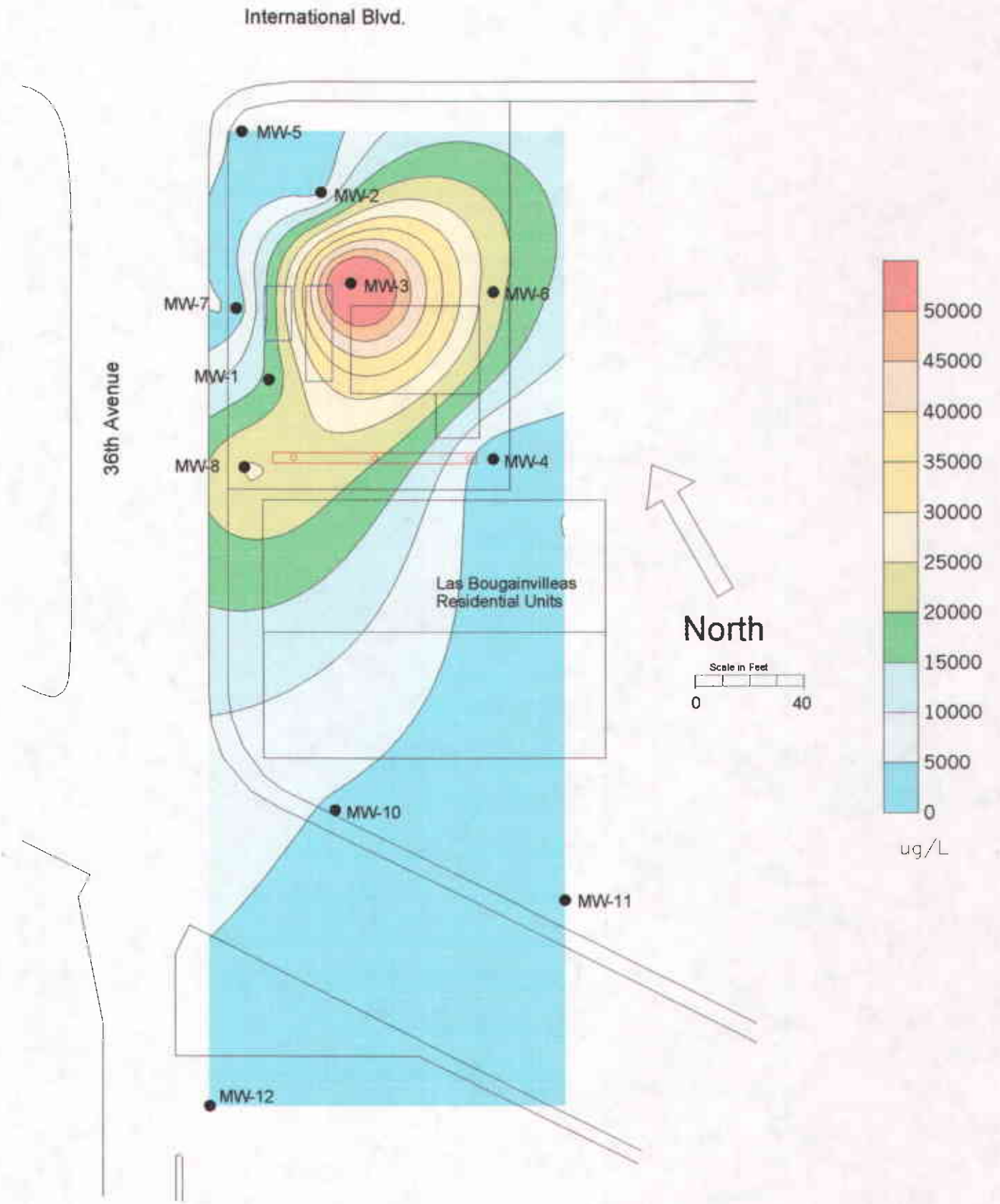


Figure 8: TPH-g Concentration Contour Map in Groundwater, May 31, 2000

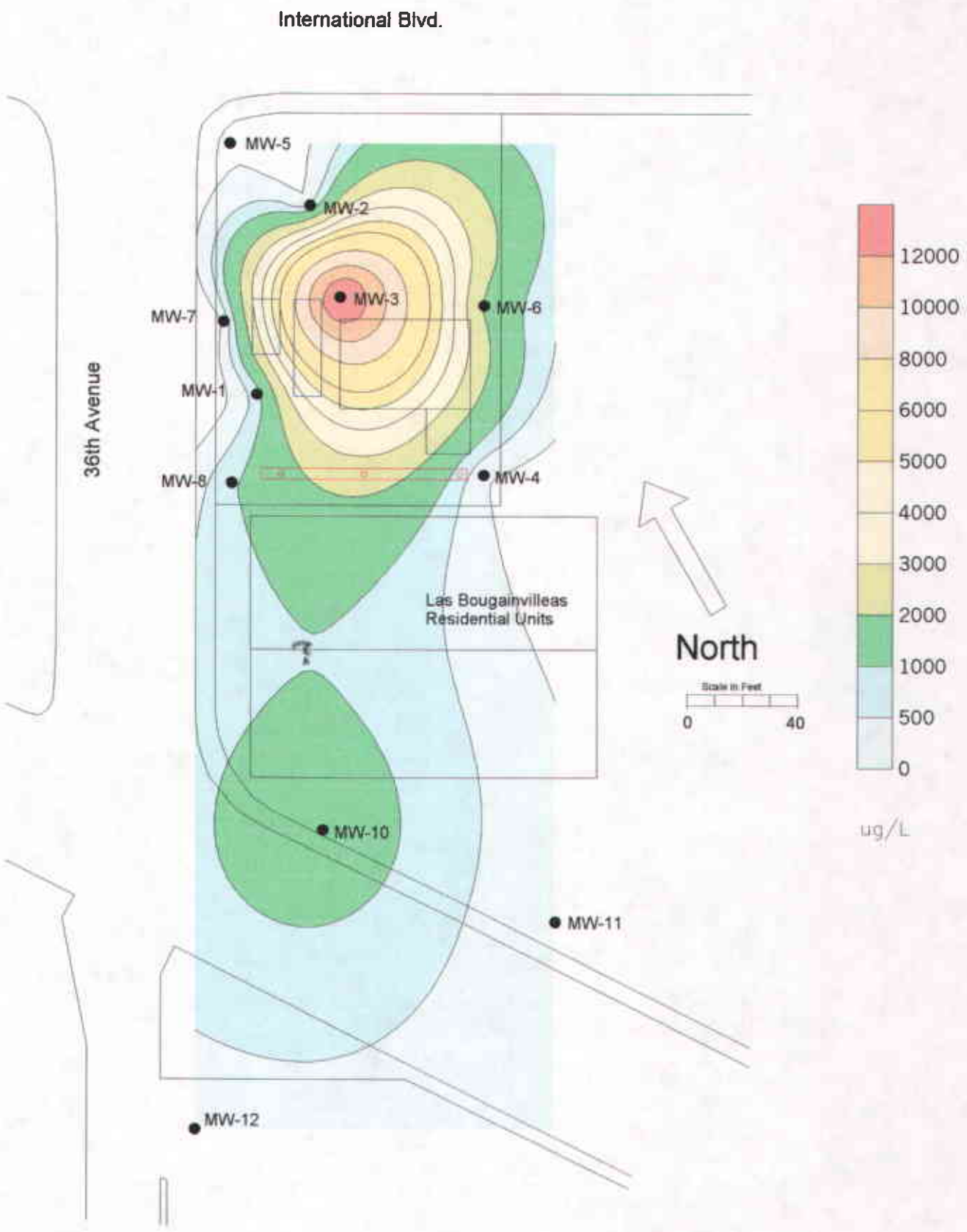


Figure 9: Benzene Concentration Contour Map in Groundwater, May 31, 2000

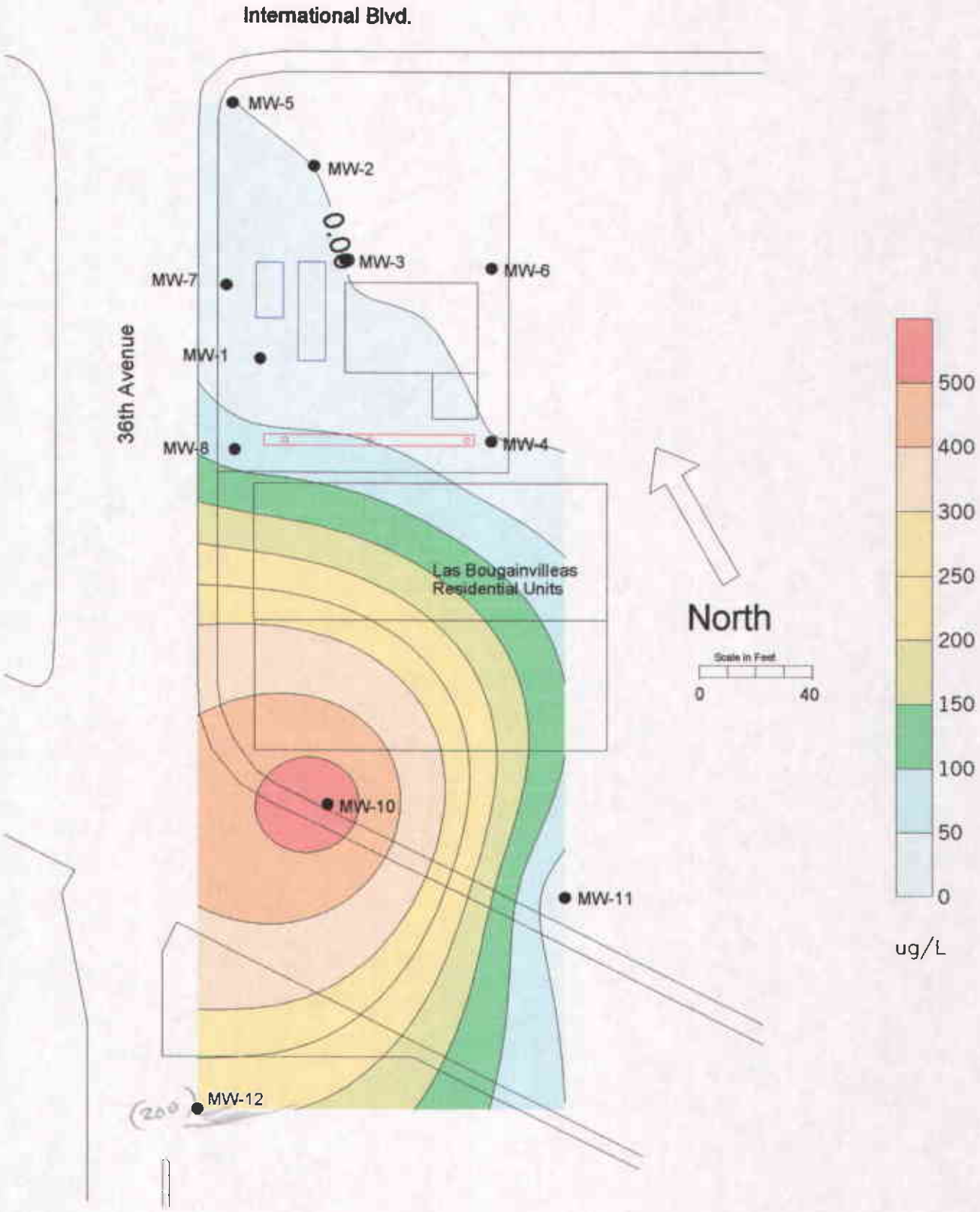
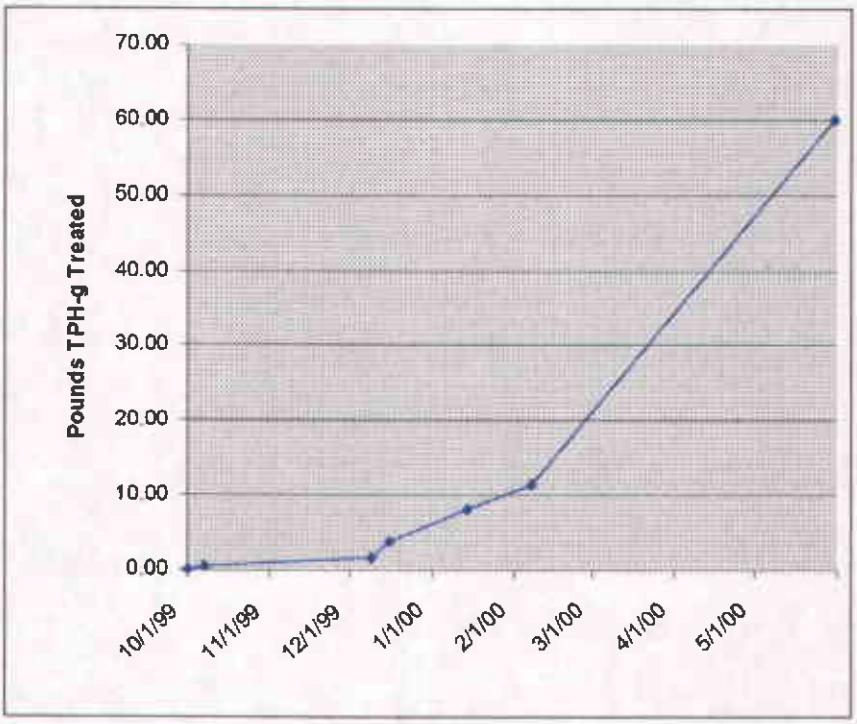


Figure 10: MTBE Concentration Contour Map in Groundwater, May 31, 2000



how were these masses calc.?

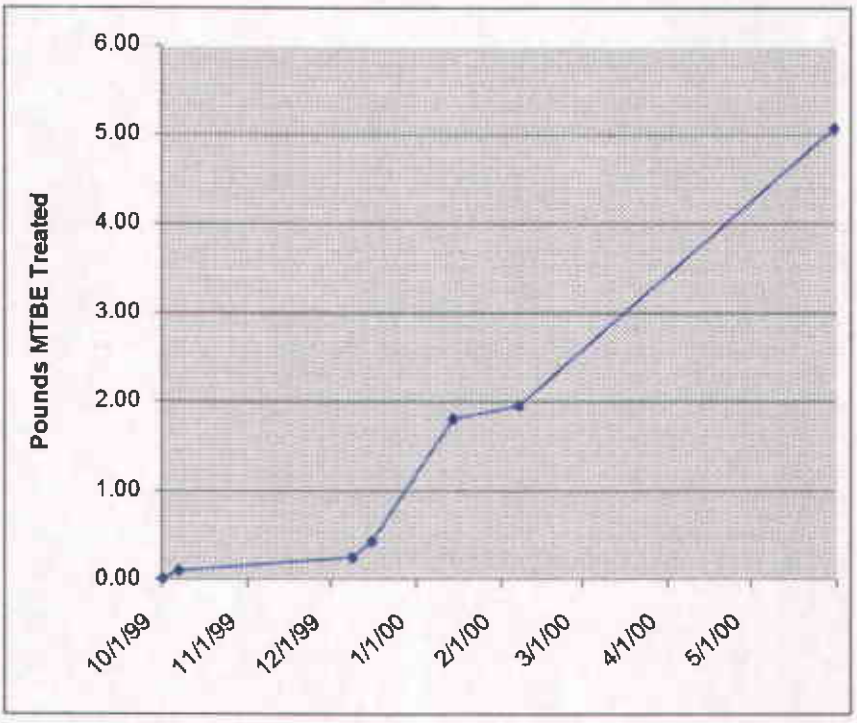


Figure 11: Total Mass of Contaminants Removed in Pounds

APPENDIX A

FIELD NOTES, LABORATORY REPORTS, CHAIN OF CUSTODY FORMS, D.O. CORRECTION TABLES

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-1		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	29.70	feet		Oakland, CA
Elevation of the Casing:	97.99	feet	Date:	May 31, 2000
Depth to Water Table:	11.49	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	86.50	feet		Patrick Sullivan
Height of Water:	18.21	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ■ No ☐ Describe Slight

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
	-37	0.3	0.57	2.8	0	7.16	19.6	602	30

Air temperature 22.0 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-2		Project NO:	2331
Casing Diameter:	4	inch	Address:	3609 International Blvd.
Depth of Well:	30.00	feet		Oakland, CA
Elevation of the Casing:	98.58	feet	Date:	May 31, 2000
Depth to Water Table:	10.88	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	87.70	feet		Patrick Sullivan
Height of Water:	19.12	feet		
Purged Volume:	12	gallons		

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ■ No ☐ Describe Slight

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
9:15am	-55	0.80	0.18	2.5	54	7.07	19.7	600	30.92

Air temperature 17.9 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-3		Project NO:	2331
Casing Diameter:	4	inch	Address:	3609 International Blvd.
Depth of Well:	29.75	feet		Oakland, CA
Elevation of the Casing:	97.78	feet	Date:	May 31, 2000
Depth to Water Table:	11.68	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	86.10	feet		Patrick Sullivan
Height of Water:	18.07	feet		
Purged Volume:	12	gallons		

Purging Method:	Bailer ☐	Pump ■
Sampling Method:	Bailer ■	Bailer ☐

Sheen:	Yes ■	No ☐	Describe	Slight
Odor:	Yes ■	No ☐	Describe	Strong

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
9:45am	-117	0.45	>3.3	0	4	7.04	19.3	870	188
			7.8						

D.F.=10

Air temperature 17.5 °C Reading = 0.78

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-4		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	24.34	feet		Oakland, CA
Elevation of the Casing:	97.85	feet	Date:	May 31, 2000
Depth to Water Table:	11.46	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	86.39	feet		Patrick Sullivan
Height of Water:	12.88	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer □ Pump ■

Sampling Method: Bailer ■ Bailer □

Sheen: Yes □ No ■ Describe

Odor: Yes ■ No □ Describe Slight

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
12:15pm	-40	0.50	0.25	0.5	40	7.15	19.2	549	26.77

Air temperature 19.0 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-5		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	26.08	feet		Oakland, CA
Elevation of the Casing:	99.04	feet	Date:	May 31, 2000
Depth to Water Table:	11.03	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	88.01	feet		Patrick Sullivan
Height of Water:	15.05	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ☐ No ■ Describe

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
	-25	0.48	0.35	0	50	7.09	19.6	712	27.17

Air temperature 18.3 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-6		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	24.45	feet		Oakland, CA
Elevation of the Casing:	98.77	feet	Date:	May 31, 2000
Depth to Water Table:	11.7	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	87.07	feet		Patrick Sullivan
Height of Water:	12.75	feet		
Purged Volume:	8	gallons		

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ■ No ☐ Describe Strong

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
10:30am	-62	0.72	3.27	0	0	7.07	19.2	653	111

Air temperature 19.0 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-7		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	24.60	feet		Oakland, CA
Elevation of the Casing:	97.83	feet	Date:	May 31, 2000
Depth to Water Table:	10.52	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	87.31	feet		Patrick Sullivan
Height of Water:	14.08	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ☐ No ■ Describe

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
	-52	0.30	0.72	0	28	7.29	19.8	433	34.87

Air temperature 21.0 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-8		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	26.34	feet		Oakland, CA
Elevation of the Casing:	97.25	feet	Date:	May 31, 2000
Depth to Water Table:	11.15	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	86.10	feet		Patrick Sullivan
Height of Water:	15.19	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer □ Pump ■

Sampling Method: Bailer ■ Bailer □

Sheen: Yes □ No ■ Describe

Odor: Yes ■ No □ Describe Slight

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
	-95	0.45	>3.3	0	0	7.05	18.8	675	13

Air temperature 19.7 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-10		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	24.35	feet		Oakland, CA
Elevation of the Casing:	94.54	feet	Date:	May 31, 2000
Depth to Water Table:	9.45	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	85.09	feet		Patrick Sullivan
Height of Water:	14.90	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ☐ No ■ Describe

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
2pm	17.0	0.40	0.29	0.0	0.0	7.05	19.3	543	22.4

Air temperature 19.6 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-11		Project NO:	2331
Casing Diameter:	2	inch	Address:	3609 International Blvd.
Depth of Well:	24.30	feet		Oakland, CA
Elevation of the Casing:	95.94	feet	Date:	May 31, 2000
Depth to Water Table:	13.8	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	82.14	feet		Patrick Sullivan
Height of Water:	10.50	feet		
Purged Volume:	6	gallons		

Purging Method: Bailer □ Pump ■

Sampling Method: Bailer ■ Bailer □

Sheen: Yes □ No ■ Describe

Odor: Yes □ No ■ Describe

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
1:45pm	-15.0	0.50	0.69	5.2	10	7.11	18.5	496	12

Air temperature 19.6 °C

ENVIRONMENTAL ENGINEERING, INC

Well NO:	MW-12		Project NO:	2331
Casing Diameter:	4	inch	Address:	3609 International Blvd.
Depth of Well:	30.00	feet		Oakland, CA
Elevation of the Casing:	94.84	feet	Date:	May 31, 2000
Depth to Water Table:	10.48	feet	Sampler:	Naser Pakrou
Elevation of Water Table:	84.36	feet		Patrick Sullivan
Height of Water:	19.52	feet		
Purged Volume:	12	gallons		

MW-13 Duplicate sample of MW-12

Purging Method: Bailer ☐ Pump ■

Sampling Method: Bailer ■ Bailer ☐

Sheen: Yes ☐ No ■ Describe

Odor: Yes ☐ No ■ Describe

Field Measurements

Time	Redox	D.O.	Fe^{+2}	NO_3^--N	SO_4^{+2}	pH	Temp	E.C.	Turbidity
	mv	mg/L	mg/L	mg/L	mg/L		°C	us/cm	FTU
1:15pm	-54.0	0.29	2.11	0.0	0.0	7.2	19	807	7.65

Air temperature 23.6 °C

CHAIN OF CUSTODY FORM

Page 1 of 1

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

C&T LOGIN # 146620

Sampler: Naser Pakrou

Project No: Proj 2331 | Report To: Naser Pakrou

Project Name: Tony's Express | Company: SOMA Env. Eng.

Project P.O.: | Telephone: 925 244 6600

Turnaround Time: 24 hrs. | Fax: 925 244 6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	None	Field Notes	Analyses: TPH-g, BTEX 8020	MTBE 8260
	MW-3	7/20/11:30			✓	2					✓		✓	✓

For Laboratory Use

Notes: Received Chilled HB

Signature

RELINQUISHED BY:	RECEIVED BY:
7/20/00 12:20 DATE/TIME	7/20/00 12:21 DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

Curtis & Tompkins, Ltd

Curtis & Tompkins Laboratories Analytical Report

Lab #:	146620	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331		
Field ID:	MW-3	Sampled:	07/20/00
Matrix:	Water	Received:	07/20/00
Units:	ug/L	Analyzed:	07/21/00
Batch#:	57164		

Type: SAMPLE Lab ID: 146620-001

Analyte	Result	RL	Dil Fac	Analysis
Gasoline C7-C12	73,000 q	1,000	20.00	EPA 8015M
Benzene	14,000 q	50	100.0	EPA 8021B
Toluene	7,900 q	50	100.0	EPA 8021B
Ethylbenzene	1,800 q	50	100.0	EPA 8021B
m,p-Xylenes	6,300 q	50	100.0	EPA 8021B
o-Xylene	2,500 q	50	100.0	EPA 8021B

Surrogate	%REC	Limits	Dil Fac	Analysis
Trifluorotoluene (FID)	116 q	59-135	20.00	EPA 8015M
Bromofluorobenzene (FID)	122 q	60-140	20.00	EPA 8015M
Trifluorotoluene (PID)	89 q	56-142	100.0	EPA 8021B
Bromofluorobenzene (PID)	98 q	55-149	100.0	EPA 8021B

Type: BLANK Diln Fac: 1.000
Lab ID: QC120744

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	101 q	59-135	EPA 8015M
Bromofluorobenzene (FID)	120 q	60-140	EPA 8015M
Trifluorotoluene (PID)	85 q	56-142	EPA 8021B
Bromofluorobenzene (PID)	94 q	55-149	EPA 8021B

b = See narrative
q = Draft result - ending CCV not yet analyzed
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd

Purgeable Aromatics by 8021/8020

Lab #:	146620	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	57159
Lab ID:	146620-001	Sampled:	07/20/00
Matrix:	Water	Received:	07/20/00
Units:	ug/L	Analyzed:	07/21/00
Dil'n Fac:	10.00		

Analyte	Result	RL
MTBE	ND	5.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	98	80-115

ND = Not Detected
RL = Reporting Limit
Page 1 of 1

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

ANALYTICAL REPORT

Prepared for:

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

Date: 23-JUN-00
Lab Job Number: 145891
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: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: 145891 **Receipt Date:** 5/31/00
Client: SOMA Environmental Engineering Inc.
Location: Oakland
Project#: 2331

CASE NARRATIVE

This hardcopy data package contains sample and QC results thirteen water samples that were received on May 31, 2000. Any samples with reportable MTBE concentrations by EPA Method 8020 were confirmed by EPA Method 8260, as requested by the client.

TVH/BTXE: High surrogate recoveries were observed in many samples. This is due to heavy hydrocarbons coeluting with the surrogate peaks. Due to carryover from a previous sample, the second continuing calibration verification standard (CCV) failed high for m,p- and o-xylene. Because the following instrument blank was Non-Detect for all compounds, the carryover did not affect the samples. All subsequent CCVs were within acceptance criteria. No other analytical problems were encountered.

CHAIN OF CUSTODY FORM

Page 1 of 1

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

C&T LOGIN # 145891

Sampler: Naser Pakrou / Patrick Sullivan

Project No: 2331

Report To: Naser Pakrou

Project Name: Oakland

Company: SOMA

Project P.O.: —

Telephone: (925) 244-6600

Turnaround Time: Standard

Fax: (925) 244-6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO	Preservative: HNO_3	Preservative: ICE	Field Notes	Analyses: EPA 8020 MTBE, BTEX, TPH	Analyses: confirm MTBE peaks w/ EPA 8260
1	MW 1	5/31 12:10p		X		2	X			X		X	X
2	MW 2	5/31 9:15A		X		2	X			X		X	X
3	MW 3	5/31 9:45a		X		2	X			X		X	X
4	MW 4	5/31 12:20p		X		2	X			X		X	X
5	MW 5	5/31 10a		X		2	X			X		X	X
6	MW 6	5/31 10:10a		X		2	X			X		X	X
7	MW 7	5/31 11 AM		X		2	X			X		X	X
8	MW 8	5/31 11:45a		X		2	X			X		X	X
10	MW 10	5/31 2p		X		2	X			X		X	X
11	MW 11	5/31 1:45p		X		2	X			X		X	X
12	MW 12	5/31 1:15p		X		2	X			X		X	X
13	MW 13	5/31 1:30p		X		2	X			X	duplicate of MW12	X	X
	TANK	5/31 1p		X		2	X			X		X	X

For Laboratory Use Only

Notes:

Samuel Chilled Jrb

RELINQUISHED BY:	RECEIVED BY:
Patrick G. Sullivan 5/31 4:10p DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

05-31-00 4:47

Signature

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-1	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-001	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	15,000	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	59-135
Bromofluorobenzene (FID)	153 *	60-140

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-002	Analyzed:	06/02/00

Analyte	Result	RL
Gasoline C7-C12	2,800	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	59-135
Bromofluorobenzene (FID)	131	60-140

Field ID:	MW-3	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-003	Analyzed:	06/03/00

Analyte	Result	RL
Gasoline C7-C12	53,000	500

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	145 *	60-140

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-004	Analyzed:	06/03/00

Analyte	Result	RL
Gasoline C7-C12	510	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	111	59-135
Bromofluorobenzene (FID)	122	60-140

* = Value outside of QC limits; see narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-005	Analyzed:	06/03/00

Analyte	Result	RL
Gasoline C7-C12	620	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	59-135
Bromofluorobenzene (FID)	129	60-140

Field ID:	MW-6	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-006	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	20,000	1,000

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	59-135
Bromofluorobenzene (FID)	117	60-140

Field ID:	MW-7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-007	Analyzed:	06/03/00

Analyte	Result	RL
Gasoline C7-C12	490	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	110	59-135
Bromofluorobenzene (FID)	115	60-140

Field ID:	MW-8	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-008	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	25,000	500

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	59-135
Bromofluorobenzene (FID)	148 *	60-140

* = Value outside of QC limits; see narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-10	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-009	Analyzed:	06/03/00

Analyte	Result	RL
Gasoline C7-C12	2,900	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	59-135
Bromofluorobenzene (FID)	116	60-140

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-010	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	450	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	59-135
Bromofluorobenzene (FID)	128	60-140

Field ID:	MW-12	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-011	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	3,700	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	201 *	60-140

Field ID:	MW-13	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-012	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	3,800	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	59-135
Bromofluorobenzene (FID)	205 *	60-140

* = Value outside of QC limits; see narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	TANK	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-013	Analyzed:	06/08/00

Analyte	Result	RL
Gasoline C7-C12	10,000	1,000

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	59-135
Bromofluorobenzene (FID)	128	60-140

Type:	BLANK	Batch#:	56289
Lab ID:	QC117399	Analyzed:	06/02/00
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	59-135
Bromofluorobenzene (FID)	115	60-140

Type:	BLANK	Batch#:	56394
Lab ID:	QC117775	Analyzed:	06/08/00
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	101	60-140

* = Value outside of QC limits; see narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-1	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-001	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	270 C	10
Benzene	610	2.5
Toluene	350	2.5
Ethylbenzene	310	2.5
m,p-Xylenes	1,100	2.5
o-Xylene	300	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	128	56-142
Bromofluorobenzene (PID)	139	55-149

Field ID:	MW-2	Diln Fac:	2.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-002	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	13	4.0
Benzene	130	1.0
Toluene	330	1.0
Ethylbenzene	130	1.0
m,p-Xylenes	390	1.0
o-Xylene	180	1.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	119	56-142
Bromofluorobenzene (PID)	129	55-149

Field ID:	MW-3	Diln Fac:	100.0
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-003	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	770	200
Benzene	15,000	50
Toluene	8,900	50
Ethylbenzene	1,500	50
m,p-Xylenes	5,300	50
o-Xylene	2,100	50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	117	56-142
Bromofluorobenzene (PID)	123	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
b = See narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-004	Analyzed:	06/03/00

Analyte	Result	RL
MTBE	5.6	2.0
Benzene	42	0.50
Toluene	19	0.50
Ethylbenzene	16	0.50
m,p-Xylenes	51 b	0.50
o-Xylene	16 b	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	99	56-142
Bromofluorobenzene (PID)	102	55-149

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-005	Analyzed:	06/03/00

Analyte	Result	RL
MTBE	2.4 C	2.0
Benzene	7.4	0.50
Toluene	24	0.50
Ethylbenzene	12	0.50
m,p-Xylenes	23 b	0.50
o-Xylene	9.4 b	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	104	55-149

Field ID:	MW-6	Diln Fac:	20.00
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-006	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	300	40
Benzene	1,700	10
Toluene	1,200	10
Ethylbenzene	17	10
m,p-Xylenes	2,100	10
o-Xylene	1,500	10

Surrogate	%REC	Limits
Trifluorotoluene (PID)	120	56-142
Bromofluorobenzene (PID)	121	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
b = See narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56289
Lab ID:	145891-007	Analyzed:	06/03/00

Analyte	Result	RL
MTBE	50	2.0
Benzene	4.9	0.50
Toluene	22	0.50
Ethylbenzene	4.2	0.50
m,p-Xylenes	15 b	0.50
o-Xylene	6.9 b	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	99	56-142
Bromofluorobenzene (PID)	100	55-149

Field ID:	MW-8	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-008	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	480	20
Benzene	940	5.0
Toluene	130	5.0
Ethylbenzene	1,600	5.0
m,p-Xylenes	3,400	5.0
o-Xylene	560	5.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	127	56-142
Bromofluorobenzene (PID)	139	55-149

Field ID:	MW-10	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-009	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	820	20
Benzene	1,500	5.0
Toluene	25	5.0
Ethylbenzene	390	5.0
m,p-Xylenes	100	5.0
o-Xylene	7.1	5.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	125	56-142
Bromofluorobenzene (PID)	132	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
b = See narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	56394
Lab ID:	145891-010	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	25	2.0
Benzene	27	0.50
Toluene	13	0.50
Ethylbenzene	9.5	0.50
m,p-Xylenes	22	0.50
o-Xylene	7.2	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	122	56-142
Bromofluorobenzene (PID)	130	55-149

Field ID:	MW-12	Diln Fac:	2.000
Type:	SAMPLE	Batch#:	56427
Lab ID:	145891-011	Analyzed:	06/10/00

Analyte	Result	RL
MTBE	400	4.0
Benzene	230	1.0
Toluene	10 C	1.0
Ethylbenzene	34	1.0
m,p-Xylenes	9.5	1.0
o-Xylene	2.5	1.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	125	56-142
Bromofluorobenzene (PID)	136	55-149

Field ID:	MW-13	Diln Fac:	2.000
Type:	SAMPLE	Batch#:	56427
Lab ID:	145891-012	Analyzed:	06/10/00

Analyte	Result	RL
MTBE	350	4.0
Benzene	220	1.0
Toluene	8.7	1.0
Ethylbenzene	30	1.0
m,p-Xylenes	8.5	1.0
o-Xylene	2.2 C	1.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	125	56-142
Bromofluorobenzene (PID)	133	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
b = See narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

ield ID:	TANK	Diln Fac:	20.00
ype:	SAMPLE	Batch#:	56394
ab ID:	145891-013	Analyzed:	06/08/00

Analyte	Result	RL
MTBE	410	40
Benzene	2,400	10
Toluene	1,000	10
Ethylbenzene	210	10
m,p-Xylenes	970	10
o-Xylene	470	10

Surrogate	%REC	Limits
Trifluorotoluene (PID)	127	56-142
Bromofluorobenzene (PID)	134	55-149

ype:	BLANK	Batch#:	56289
ab ID:	QC117399	Analyzed:	06/02/00
iln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	56-142
Bromofluorobenzene (PID)	105	55-149

ype:	BLANK	Batch#:	56394
ab ID:	QC117775	Analyzed:	06/08/00
iln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	56-142
Bromofluorobenzene (PID)	108	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
b = See narrative
ND = Not Detected
L = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/31/00
Units:	ug/L	Received:	05/31/00

Type:	BLANK	Batch#:	56427
Lab ID:	QC117907	Analyzed:	06/09/00
Dil'n Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	110	55-149

C = Presence confirmed, but confirmation concentration differed by more than a factor of two
b = See narrative
ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC117774	Batch#:	56394
Matrix:	Water	Analyzed:	06/08/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	21.72	109	51-125
Benzene	20.00	20.75	104	67-117
Toluene	20.00	20.38	102	69-117
Ethylbenzene	20.00	20.00	100	68-124
m,p-Xylenes	40.00	42.41	106	70-125
o-Xylene	20.00	19.80	99	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	107	56-142
Bromofluorobenzene (PID)	113	55-149

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC117773	Batch#:	56394
Matrix:	Water	Analyzed:	06/08/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,874	94	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	115	59-135
Bromofluorobenzene (FID)	125	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC117401	Batch#:	56289
Matrix:	Water	Analyzed:	06/02/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.08	100	51-125
Benzene	20.00	19.92	100	67-117
Toluene	20.00	20.62	103	69-117
Ethylbenzene	20.00	21.12	106	68-124
m,p-Xylenes	40.00	44.05 b	110	70-125
o-Xylene	20.00	21.44 b	107	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	105	55-149

b = See narrative

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	56427
Units:	ug/L	Analyzed:	06/09/00
Diln Fac:	1.000		

ype: BS Lab ID: QC117910

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	22.50	112	51-125
Benzene	20.00	21.27	106	67-117
Toluene	20.00	21.07	105	69-117
Ethylbenzene	20.00	20.72	104	68-124
m,p-Xylenes	40.00	43.92	110	70-125
o-Xylene	20.00	20.60	103	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	116	56-142
Bromofluorobenzene (PID)	119	55-149

ype: BSD Lab ID: QC117911

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	22.18	111	51-125	1	20
Benzene	20.00	21.13	106	67-117	1	20
Toluene	20.00	20.71	104	69-117	2	20
Ethylbenzene	20.00	20.48	102	68-124	1	20
m,p-Xylenes	40.00	43.21	108	70-125	2	20
o-Xylene	20.00	20.21	101	65-129	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	113	56-142
Bromofluorobenzene (PID)	118	55-149

PD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC117400	Batch#:	56289
Matrix:	Water	Analyzed:	06/02/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,140	107	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	59-135
Bromofluorobenzene (FID)	132	60-140

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	56581
Lab ID:	145891-001	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/20/00
Diln Fac:	2.174		

Analyte	Result	RL
MTBE	ND	1.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	99	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-2	Batch#:	56511
Lab ID:	145891-002	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	99	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	56581
Lab ID:	145891-003	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/20/00
Diln Fac:	7.143		

Analyte	Result	RL
MTBE	ND	3.6

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	100	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-4	Batch#:	56511
Lab ID:	145891-004	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	102	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-5	Batch#:	56511
Lab ID:	145891-005	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	101	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-6	Batch#:	56581
Lab ID:	145891-006	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/20/00
Diln Fac:	2.000		

Analyte	Result	RL
MTBE	ND	1.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	101	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-7	Batch#:	56511
Lab ID:	145891-007	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	29	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	103	80-115

RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-8	Batch#:	56602
Lab ID:	145891-008	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/20/00
Diln Fac:	3.333		

Analyte	Result	RL
MTBE	75	1.7

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	98	80-115

RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-10	Batch#:	56507
Lab ID:	145891-009	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	6.250		

Analyte	Result	RL
MTBE	580	3.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	103	80-115

RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	56516
Lab ID:	145891-010	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	104	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	109	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-12	Batch#:	56516
Lab ID:	145891-011	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	2.500		

Analyte	Result	RL
MTBE	200	1.3

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	117 *	80-115

* = Value outside of QC limits; see narrative
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-13	Batch#:	56516
Lab ID:	145891-012	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	2.500		

Analyte	Result	RL
MTBE	230	1.3

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	115	80-115

RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	TANK	Batch#:	56516
Lab ID:	145891-013	Sampled:	05/31/00
Matrix:	Water	Received:	05/31/00
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	6.250		

Analyte	Result	RL
MTBE	230	3.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	113	80-115

RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC118218	Batch#:	56507
Matrix:	Water	Analyzed:	06/15/00
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	105	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC118236	Batch#:	56511
Matrix:	Water	Analyzed:	06/15/00
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	105	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC118506	Batch#:	56581
Matrix:	Water	Analyzed:	06/20/00
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	102	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC118588	Batch#:	56602
Matrix:	Water	Analyzed:	06/20/00
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	102	80-115

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	56507
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Type: BS Lab ID: QC118215

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	43.69	87	50-150

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	99	80-115

Type: BSD Lab ID: QC118216

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	42.68	85	50-150	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	98	80-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	56511
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Type: BS Lab ID: QC118234

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	47.16	94	50-150

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	98	80-115

Type: BSD Lab ID: QC118235

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	45.68	91	50-150	3	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	96	80-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	56516
Units:	ug/L	Analyzed:	06/15/00
Diln Fac:	1.000		

Type: BS Lab ID: QC118259

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	46.83	94	50-150

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	104	80-115

Type: BSD Lab ID: QC118260

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	48.42	97	50-150	3	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	104	80-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Batch#:	56581

Type: BS
Lab ID: QC118504
Analyzed: 06/19/00

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	48.49	97	50-150

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	100	80-115

Type: BSD
Lab ID: QC118505
Analyzed: 06/20/00

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	48.24	96	50-150	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	99	80-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	145891	Location:	Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	56602
Units:	ug/L	Analyzed:	06/20/00
Diln Fac:	1.000		

Type: BS Lab ID: QC118586

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	47.78	96	50-150

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

Type: BSD Lab ID: QC118587

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	45.63	91	50-150	5	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	99	80-115

RPD= Relative Percent Difference

OXYGEN SOLUBILITY AND CALIBRATION VALUE TABLES

TABLE A — Solubility of Oxygen in mg/L in Water Exposed to Air at 760 mm Hg Pressure

Temp °C	Chlorinity: 0 Salinity: 0	5.0 9.0	10.0 18.1	15.0 27.1	20.0 36.1	25.0 45.2
0.0	14.62	13.73	12.89	12.10	11.36	10.66
1.0	14.22	13.36	12.55	11.78	11.07	10.39
2.0	13.83	13.00	12.22	11.48	10.79	10.14
3.0	13.46	12.66	11.91	11.20	10.53	9.90
4.0	13.11	12.34	11.61	10.92	10.27	9.66
5.0	12.77	12.02	11.32	10.66	10.03	9.44
6.0	12.45	11.73	11.05	10.40	9.80	9.23
7.0	12.14	11.44	10.78	10.16	9.58	9.02
8.0	11.84	11.17	10.53	9.93	9.36	8.83
9.0	11.56	10.91	10.29	9.71	9.16	8.64
10.0	11.29	10.66	10.06	9.49	8.96	8.45
11.0	11.03	10.42	9.84	9.29	8.77	8.28
12.0	10.78	10.18	9.62	9.09	8.59	8.11
13.0	10.54	9.96	9.42	8.90	8.41	7.95
14.0	10.31	9.75	9.22	8.72	8.24	7.79
15.0	10.08	9.54	9.03	8.54	8.08	7.64
16.0	9.87	9.34	8.84	8.37	7.92	7.50
17.0	9.67	9.15	8.67	8.21	7.77	7.36
18.0	9.47	8.97	8.50	8.05	7.62	7.22
19.0	9.28	8.79	8.33	7.90	7.48	7.09
20.0	9.09	8.62	8.17	7.75	7.35	6.96
21.0	8.92	8.46	8.02	7.61	7.21	6.84
22.0	8.74	8.30	7.87	7.47	7.09	6.72
23.0	8.58	8.14	7.73	7.34	6.96	6.61
24.0	8.42	7.99	7.59	7.21	6.84	6.50
25.0	8.26	7.85	7.46	7.08	6.73	6.39
26.0	8.11	7.71	7.33	6.96	6.62	6.29
27.0	7.97	7.58	7.20	6.85	6.51	6.18
28.0	7.83	7.44	7.08	6.73	6.40	6.09
29.0	7.69	7.32	6.96	6.62	6.30	5.99
30.0	7.56	7.19	6.85	6.51	6.20	5.90
31.0	7.43	7.07	6.73	6.41	6.10	5.81
32.0	7.31	6.96	6.62	6.31	6.01	5.72
33.0	7.18	6.84	6.52	6.21	5.91	5.63
34.0	7.07	6.73	6.42	6.11	5.82	5.55
35.0	6.95	6.62	6.31	6.02	5.73	5.46
36.0	6.84	6.52	6.22	5.93	5.65	5.38
37.0	6.73	6.42	6.12	5.84	5.56	5.31
38.0	6.62	6.32	6.03	5.75	5.48	5.23
39.0	6.52	6.22	5.93	5.66	5.40	5.15
40.0	6.41	6.12	5.84	5.58	5.32	5.08
41.0	6.31	6.03	5.75	5.49	5.24	5.01
42.0	6.21	5.93	5.67	5.41	5.17	4.93
43.0	6.12	5.84	5.58	5.33	5.09	4.86
44.0	6.02	5.75	5.50	5.25	5.02	4.79
45.0	5.93	5.67	5.41	5.17	4.94	4.72

TABLE B — Calibration Values for Various Atmospheric Pressures and Altitudes

PRESSURE		ALTITUDE			CORRECTION
in. Hg	mm Hg	kPa	Feet	m	FACTOR (%)
30.23	768	102.3	-276	-84	101
29.92	760	101.3	0	0	100
29.61	752	100.3	278	85	99
29.33	745	99.3	558	170	98
29.02	737	98.3	841	256	97
28.74	730	97.3	1126	343	96
28.43	722	96.3	1413	431	95
28.11	714	95.2	1703	519	94
27.83	707	94.2	1995	608	93
27.52	699	93.2	2290	698	92
27.24	692	92.2	2587	789	91
26.93	684	91.2	2887	880	90
26.61	676	90.2	3190	972	89
26.34	669	89.2	3496	1066	88
26.02	661	88.2	3804	1160	87
25.75	654	87.1	4115	1254	86
25.43	646	86.1	4430	1350	85
25.12	638	85.1	4747	1447	84
24.84	631	84.1	5067	1544	83
24.53	623	83.1	5391	1643	82
24.25	616	82.1	5717	1743	81
23.94	608	81.1	6047	1843	80
23.62	600	80.0	6381	1945	79
23.35	593	79.0	6717	2047	78
23.03	585	78.0	7058	2151	77
22.76	578	77.0	7401	2256	76
22.44	570	76.0	7749	2362	75
22.13	562	75.0	8100	2469	74
21.85	555	74.0	8455	2577	73
21.54	547	73.0	8815	2687	72
21.26	540	71.9	9178	2797	71
20.94	532	70.9	9545	2909	70
20.63	524	69.9	9917	3023	69
20.35	517	68.9	10293	3137	68
20.04	509	67.9	10673	3253	67
19.76	502	66.9	11058	3371	66