

July 18, 2001

Mr. Barney M. Chan  
Alameda County  
Department of Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
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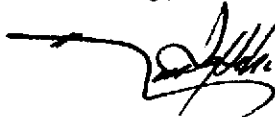
Subject: **SHD#3337**  
Site Address: 3609 International Blvd., Oakland, California

Dear Mr. Chan:

A copy of SOMA's "Second Quarter 2001 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

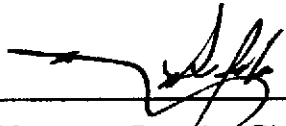


Enclosure

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

**Certification**

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Abolghassem Razi, the property owner at 3609 International Boulevard, Oakland, California, to comply with Alameda County Department of Environmental Health Service's requirements for the Second Quarter 2001 groundwater monitoring event.

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

This report summarizes the results of the second quarter 2001 groundwater monitoring event conducted on May 22, 2001 at the Site, including the results of the laboratory analysis of the groundwater samples, which were analyzed for:

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

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

This report also examines the status of the pump and treat system (PATS) installed by SOMA in December 1999.

## 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 are one 10,000-gallon double-walled gasoline tank and two 6,000-gallon double-walled gasoline tanks beneath the Site (at the locations 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 methyl tertiary butyl ether (MtBE) in the groundwater. The historical groundwater elevation data, total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, xylenes, (BTEX) and MtBE concentrations reported by STE and WEGE are included in Tables 2 and 5 of this report.

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, and that, therefore, the soil and groundwater in on-and off-site areas needed to be decontaminated. The results of the CAP study indicated that installation of a French drain with air sparging would be a cost effective alternative for site remediation.

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

In July 2000, SOMA installed a vapor extraction system based on the recommendation of the Corrective Action Plan (CAP) document dated July 1, 1999 prepared by SOMA, followed by approval from the Alameda County Department of Environmental Health.

The Site is located at the intersection of 36<sup>th</sup> Avenue and International Boulevard (formerly known as East 14<sup>th</sup> 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 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 2001 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 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 May 22, 2001, 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 and three risers of the French drain were monitored during this event. Table 1 presents the groundwater elevations, and 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 and temperature were recorded. 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 two 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 same day to Curtis & Tompkins, Ltd. laboratories of Berkeley, California for analysis. For field measurements, samples were transferred into 500-mL



polyethylene containers.

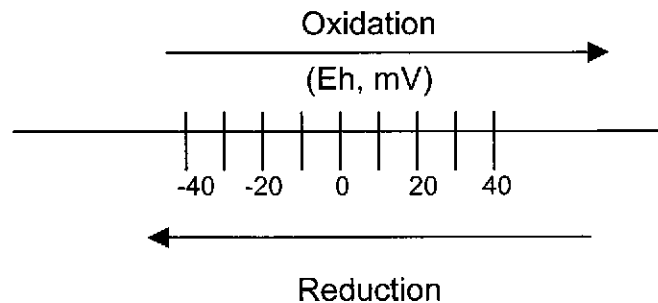
The groundwater samples that were kept in polyethylene bottles were immediately used for on-site measurements of nitrate-N ( $\text{NO}_3^-$ -N), sulfate ( $\text{SO}_4^{2-}$ ), ferrous iron ( $\text{Fe}^{+2}$ ), pH, turbidity, ferrous iron ( $\text{Fe}^{+2}$ ), and electrical conductivity (EC).

In order to avoid the intrusion of oxygen from ambient air to groundwater samples, the D.O. and temperature measurements were conducted in situ (i.e., down-hole inside each monitoring well). The D.O. and temperature were measured with a dissolved oxygen meter, YSI Model 50B (YSI Incorporated, Yellow Springs, Ohio 45387 USA); see the field notes in Appendix A for the details of the field measurements. The instrument was calibrated at the Site according to a procedure provided by the manufacturer and prescribed by Taras *et.al.* (1975). Detail of the calibration and measurement procedures can be found in the instrument's handbook.

Turbidity was measured with a 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 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 groundwater. It does, however, provide general information on the

extent of the suspended solids in groundwater.

A HANNA 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  $O_2$  in water is low (9 mg/L at 25 °C and 11 mg/L at 5 °C), and because the rate of  $O_2$  replenishment in subsurface environments is limited, oxidation of only a small amount of petroleum hydrocarbons can result in the consumption of all the 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., the 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 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 oxidation states is illustrated below:



$\text{Fe}^{+2}$ ,  $\text{NO}_3\text{-N}$  and  $\text{SO}_4^{-2}$  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.

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

$\text{SO}_4^{-2}$  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.

$\text{NO}_3\text{-N}$  was measured colorimetrically using Method 8039: the Cadmium Reduction Method. Cadmium metal in the Nitra Ver 5 Nitrate Reagent reduces nitrates present in the sample to nitrite; the nitrite ion reacts in an acidic medium with sulfanilic acid to form an intermediate diazonium salt, which couples with getistic acid to form an amber-colored product. The intensity of the color is proportional to nitrate-N concentration in the sample.

Electrical conductivity and pH were measured with Hydac Model 910 pH meter. The instrument was calibrated for conductance with a standard solution of known concentration ( $12,000 \mu\text{S/cm}$ ) 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. laboratory of Berkeley 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 8260B. The results of the laboratory analysis are presented in Table 4 and discussed below. As discussed above, the groundwater constituents related to bio-degradation activities (such as dissolved oxygen, redox potential, turbidity, nitrate, ferrous iron, and sulfate) were analyzed in the field by SOMA, and are presented in Table 3.

## **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 watertable in the monitoring wells and the risers of the French drain ranged from 9.80 to 15.85 feet. The corresponding watertable elevations ranged from 81.25 to 87.92 feet. Figure 3 displays the groundwater elevation contour map. The contour map clearly shows the impact of the French drain on the water level elevations of the surrounding monitoring wells: the capture zone of the drain extends down gradient well past East 12<sup>th</sup> Street. Therefore, during the recent monitoring event, the groundwater flow direction was found to be from all directions towards the drain.

Table 2 displays the historical static water level elevations measured at the monitoring wells and the risers of the French drain. During the recent monitoring event, in comparison with the previous monitoring event, the water level

elevations decreased in every well, by 1.48 to 6.46 feet. The largest decrease in water table elevation, 6.46 feet, was exhibited by the French drain, which was off during the previous monitoring event. The decrease in water level in the other wells can be attributed to the operation of the groundwater extraction system, and the onset of the dry season.

Historically, no floating products have been detected in any of the on-or-off site monitoring wells.

The field measurements of some physical and chemical parameters of the groundwater samples are presented in detail in the field notes in Appendix A, and are summarized in Table 3, along with their historical values. Water temperatures ranged from 18.1 °C to 22.4 °C. The variation in temperature may reflect the changes in air temperature during sampling, see the field notes in Appendix A.

The dissolved oxygen concentrations in the groundwater samples ranged from 0.08 mg/L in well MW-3 to 2.13 mg/L in well MW-11. The low oxygen content may suggest the presence of anaerobic biodegradation processes in this groundwater system. Figure 4 shows the concentration contour map of D.O. concentrations in the groundwater. The D.O. has been largely consumed in the vicinity of the most polluted wells (in and around the fueling islands).

The turbidity of the groundwater samples ranged from 6.28 FTU to 593 FTU. The maximum turbidity was recorded in monitoring well MW-5.

The Redox potential in the groundwater samples ranged from -32.0 mV in well MW-3 to +274 mV in Well MW-2. Monitoring wells MW-1, MW-2, MW-4, MW-5, MW-7, MW-10, and MW-11 showed oxidized conditions, while the remainder of the wells showed strongly reduced conditions. The low oxygen levels in wells MW-1, MW-2, MW-4, MW-5, MW-7, 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 detected in wells MW-3, MW-4, MW-5, MW-10, and MW-12. As discussed earlier, the concentrations of dissolved oxygen in all wells were quite low, and because the 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  $\text{NO}_3^-$ ,  $\text{MnO}_2$ ,  $\text{Fe}(\text{OH})_3$ ,  $\text{SO}_4^{2-}$  and others (Lovley *et. al.*, 1994). The disappearance of nitrate in many of the wells may suggest that, under the observed anaerobic conditions, nitrate may have been consumed as a source of terminal electron acceptors by microorganisms (Lovley *et. al.*, 1994). Figure 5 shows the contour map of nitrate concentration in the groundwater; the nitrate thins out to non-detectable levels in the more polluted regions.

Sulfate concentrations ranged from 0 mg/L in well MW-12 to 31 mg/L in well MW-4. 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 May 22, 2001.

Ferrous iron concentration in the groundwater samples ranged from 0.1 mg/L in MW-10 to 6.72 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 May 22, 2001. The presence of high ferrous iron concentrations and low concentrations 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 nutrients such as nitrates and sulfate, generation of methane gas from the biodegradation of petroleum hydrocarbons seems likely.

The pH measurements ranged from 7.09 to 7.44. Electrical conductivity ranged from 691  $\mu\text{S}/\text{cm}$  to 814  $\mu\text{S}/\text{cm}$  (the E.C. meter stopped working during the monitoring event, therefore E.C. was not measured in every well).

Table 4 displays the results of the laboratory analyses of the groundwater samples. TPH-g was detected in every sample, with concentrations ranging from 80  $\mu\text{g}/\text{L}$  in monitoring well MW-4 to 44,000  $\mu\text{g}/\text{L}$  in monitoring well MW-3. Figure 8 displays the contour map of TPH-g in the groundwater.

Benzene concentrations ranged from not detectable (i.e., below the detection limit of 0.5  $\mu\text{g}/\text{L}$ ) in monitoring wells MW-5 and MW-7 to 5,400  $\mu\text{g}/\text{L}$  in MW-3. Figure 9 displays the contour map of Benzene in the groundwater.

MtBE concentrations ranged from below the detection limit of 2.0  $\mu\text{g}/\text{L}$  in two monitoring wells, MW-4 and MW-6, to a maximum of 1,900  $\mu\text{g}/\text{L}$  in well MW-12. Figure 10 displays the contour map of MtBE in the groundwater.

Table 5 presents the historical data of groundwater contamination. Generally speaking, most of the contaminant concentrations in most of the wells are stable. There are, however, a couple of exceptions. Contaminant concentrations in MW-

3, for instance, increased significantly this quarter. However, the concentrations of chemicals in this well during the previous monitoring event (first quarter 2001) were anomalously low, and the current concentrations are very similar to the historical values in this well.

Of more concern is MW-12, which had significantly increased concentrations of contaminants this quarter. MW-12 is located a significant distance off-site and down-gradient, on the BART property. With the exception of toluene, the concentrations of contaminants in MW-12 reached historical highs this quarter, with levels an order of magnitude higher than have ever been recorded. However, we note that the concentration of MtBE, for instance, is far higher in this well (1,900 µg/L) than has ever been detected in any of the on-site wells near the source of contamination. The maximum concentration of MtBE ever detected on-site was 1,300 µg/L in MW-8, and this was back in December of 1998. In recent years, MtBE has been detected in much lower concentrations in all of the on-site wells. It is therefore quite probable that the new contaminant peaks in MW-12 have originated from other off-site sources. SOMA will, however, pay close attention to this well during the next monitoring event, because it is also conceivable that these readings are due to laboratory error.

During this event, compared with the previous event, benzene concentrations increased slightly in seven of the eleven wells, mostly notably in MW-3 and MW-12, but remained within historically observed limits (except for MW-12, as discussed above). MtBE concentrations remained undetectable in 2 of the 11 wells, but increased slightly in seven of the wells, most notably MW-12, as discussed above. TPH-g concentrations increased in seven of the wells this quarter, but remained below historical average values in every well except well MW-12.



#### **4.0 Groundwater Treatment System Operation**

The treatment system began operation on December 9, 1999. Since that time, more than 1,224,600 gallons of groundwater have been treated and discharged to the East Bay Municipal Utility District (EBMUD) under the existing discharge permit (as of June 29, 2001).

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 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 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 of the effluent samples have maintained compliance with the permit, having concentrations below the laboratory detection limits. The laboratories reports are included in Appendix A of this report. An average of approximately 2,046 gallons of chemically impacted groundwater were treated per day during the second quarter of 2001 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 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 EBMUD 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, a total of

approximately 100 pounds of TPH-g and 4.4 pounds of MtBE have been removed during the operation of the treatment system, over its entire life to date.

### **5.0 Vapor Extraction System Operation**

The Vapor Extraction System (VES) consists of 6 vapor extraction wells, a de-moisturizing unit, a blower and three drums of Granulated Active Carbon (GAC) filters. The VES began operation on July 24, 2000. Since then, more than 3,000,000 liters/day of soil gas has been extracted from the vadose zone and treated with the GAC filters before being discharged into the atmosphere. When the system first began to operate, the influent had a concentration of 394 ppmv petroleum hydrocarbons, but this gradually dropped, and after 31 days of operation decreased to 68 ppmv. On January 4, 2001, due to an entire month of extremely low influent concentrations (i.e., less than 10 ppm of hydrocarbons), the SVE system was turned off.

### **6.0 Conclusions and Recommendations**

The findings of the second quarter 2001 groundwater monitoring event can be summarized as follows:

1. The groundwater flow direction was found to be from all directions towards the French drain, and the capture zone extended south into East 12<sup>th</sup> Street.
2. In comparison with the previous monitoring event, the water level elevations decreased by approximately 1.48 to 6.46 feet in all of the wells. This result is attributable to the operation of the groundwater extraction system, and the onset of the dry season.
3. Benzene was detected in all wells except MW-5 and MW-7, with a peak concentration of 5,400 µg/L in MW-3.

4. MIBE concentrations were below the detection limit of 2.0 µg/L in two monitoring wells MW-4 and MW-6 (as was the case last quarter) and peaked at 1,900 µg/L in well MW-12.
5. TPH-g was detected in every monitoring well, with concentrations ranging up to 44,000 µg/L in monitoring well MW-3. In 7 of the 11 wells, TPH-g concentrations increased since the previous monitoring event, however, the current values are all well within the historically observed values (except MW-12).
6. Due to the presence of low levels of dissolved oxygen and nutrients such as nitrates and sulfate, generation of methane gas from the biodegradation of petroleum hydrocarbon in on-site areas seems likely.
7. So far, more than 1,224,600 gallons of groundwater have been treated and discharged to the East Bay Municipal Utility District (EBMUD) under the existing discharge permit.
8. All effluent samples have maintained compliance with the permit, with all contaminant concentrations remaining below the laboratory detection limit.
9. An estimated total of 100 pounds of TPH-g and 4.4 pounds of MtBE have been removed since the installation of the groundwater treatment system.
10. The Vapor Extraction System has removed 187 pounds of petroleum hydrocarbons from the vadose zone beneath the Site since it was installed. The VES has been turned off due to low concentrations of TPH-g in the extracted vapor.

11. Contaminant concentrations in the off-site well MW-12 increased significantly. MiBE levels in MW-12, in particular, are now much higher than have ever been measured in any of the other wells. Therefore, it is suspected that this new contamination is the result of off-site activities. SOMA will closely monitor this well during the next monitoring event.

## 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 & Tompkins, Ltd. laboratories as well as 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 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.

## 8.0 References

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# TABLES

**Table 1**  
**Groundwater Elevation Data, May 22, 2001**  
**3609 International Boulevard, Oakland, California**

<b>Monitoring Well</b>	<b>Depth to Water (ft.)</b>	<b>Top of Casing Elevation (ft.)</b>	<b>Groundwater Elevation (ft.)</b>	<b>Product Thickness (ft.)</b>
MW-1	11.50	97.99	86.49	ND
MW-2	11.00	98.58	87.58	ND
MW-3	11.81	97.78	85.97	ND
MW-4	11.50	97.85	86.35	ND
MW-5	11.12	99.04	87.92	ND
MW-6	11.82	98.77	86.95	ND
MW-7	10.60	97.83	87.23	ND
MW-8	11.15	97.25	86.10	ND
MW-10	9.80	94.54	84.74	ND
MW-11	11.15	95.94	84.79	ND
MW-12	10.52	94.84	84.32	ND
F.D. Center	15.85	97.10	81.25	ND
F.D. East	13.05	97.90	84.85	ND
F.D. West	13.50	96.90	83.40	ND

ND      Not Detected



**Table 3**  
**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 (FTU)
MW-1	5/22/01	0.0	21.0	0.34	1.36	32.5	40.90
	3/13/01	4.4	80.0	0.5	0.53	-4.70	66.0
	11/2/00	0.0	33.0	1.1	0.56	-39.40	18.00
	8/9/00	0.0	0.0	1.7	0.32	-40.0	219.0
	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	5/22/01	0.0	25	0.71	0.80	274	160
	3/13/01	6.8	80.0	0.1	0.89	117.9	24.15
	11/2/00	0.0	7.9	0.7	1.35	111	ND
	8/9/00	5.4	0	0.72	0.76	-74	1000
	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	5/22/01	0.2	16	6.72	0.08	-32	98
	3/13/01	0	0	2.66	0.62	-60	26.91
	11/2/00	0	28	4.1	0.83	-94	4,816
	8/9/00	0	0	6.1	0.4	-72	123
	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	-	-

**Table 3**  
**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 (FTU)
MW-4	5/22/01	0.1	31	0.47	1.27	193.9	50
	3/13/01	3.2	48	0.51	0.72	9.4	190
	11/2/00	4.5	45	0	0.6	-39	ND
	8/9/00	1	14	0.32	0.46	-50	83
	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	5/22/01	14.8	13.0	1.1	1.2	167	593
	3/13/01	1.00	45	0.33	1.01	34.2	35.36
	11/2/00	6.5	31	1.02	0.56	49	ND
	8/9/00	0	26	0	1.97	80	490
	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	5/22/01	0.0	17.0	1.3	0.12	-9.5	413
	3/13/01	1.3	79	2.63	0.75	-42.1	83
	11/2/00	0	16	2.65	0.8	-34	618
	8/9/00	2.5	0	4.1	0.65	-33	1000
	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	-	-
	6/30/98	0.70	4.00	0.40	2.50	-	-
	12/30/97	<0.1	5.00	0.30	<0.1	-	-

**Table 3**  
**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 (FTU)
<b>MW-7</b>	<b>5/22/01</b>	<b>0.0</b>	<b>12.0</b>	<b>0.79</b>	<b>1.71</b>	<b>56</b>	<b>49.8</b>
	3/13/01	0	40	3.3	0.79	-10.4	110
	11/2/00	3.5	30	0.27	0.58	-11.6	ND
	8/9/00	0	17	0.95	0.26	-33	131
	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	-	-	
<b>MW-8</b>	<b>5/22/01</b>	<b>0.0</b>	<b>5.0</b>	<b>3.3</b>	<b>1.16</b>	<b>-8.8</b>	<b>179</b>
	3/13/01	2.1	12	3.3	0.48	-76	110
	11/2/00	-	16	73.3	-	-104.9	350
	8/9/00	0	7	3.3	0.5	-91	94
	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	-	-	
<b>MW-10</b>	<b>5/22/01</b>	<b>1.7</b>	<b>12.9</b>	<b>0.1</b>	<b>1.76</b>	<b>105</b>	<b>19.56</b>
	3/13/01	0	0	0.23	0.65	28	32.11
	11/2/00	1.3	13	0.42	0.53	26.7	ND
	8/9/00	0	0	0.4	0.45	19	116
	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	-	-	

**Table 3**  
**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 (FTU)
MW-11	5/22/01	0.0	20	0.53	2.13	40.5	32.3
	3/13/01	0	78	0.34	0.79	114.7	111
	11/2/00	1.5	21	0.44	0.6	17	ND
	8/9/00	1.5	0	0.8	0.48	10	42
	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	5/22/01	1.9	0.0	2.38	1.76	-18.9	6.28
	3/13/01	0	0	1.44	0.64	-5.6	8.42
	11/2/00	0	6	1.93	0.6	12	19
	8/9/00	0	0	2.84	0.31	-48	56
	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	-	-

**Table 4**  
**Groundwater Analytical Data, May 22, 2001**  
**3609 International Boulevard, Oakland, California**

Monitoring Well	DF	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE* (µg/L)	TPH-g (µg/L)
MW-1	10	310	81	82	388	150	4,900
MW-2	1	37	75	55	179	2.7	870
MW-3	50	5,400	3,100	1,400	6,400	200	44,000
MW-4	1	12	1.9	4.1	9.8	ND	80
MW-5	1	ND	ND	2.1	0.57	4.4	180
MW-6	10	760	450	1,600	4,270	ND	27,000
MW-7	1	ND	9.1	1.3	2.3	28	370
MW-8	5	110	28	140	194	410	3,100
MW-10	5	630	11	200	31	270	2,900
MW-11	1	12	8.3	3.3	9.8	12	280
MW-12	10	1,200	ND	95	165	1,900	31,000
DL		0.5	0.5	0.5	0.5	2.0	50

DF Dilution Factor

DL Minimum laboratory detection limit

ND Not Detected (i.e., below DL)

\* MTBE analyzed with EPA Method 8260



**Table 5**  
**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	5/22/01	310	81	82	388	150	4,900
	3/13/01	1,005	440	108	2,030	16	14,570
	11/2/00	435	52	ND	689	10	7,050
	8/9/00	638	<5	<5	<5	17.1	11,000
	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

**Table 5**  
**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-2	5/22/01	37	75	55	179	2.7	870
	3/13/01	18	34	1.3	225	ND	932
	11/2/00	ND	ND	ND	ND	ND	ND
	8/9/00	<5	<5	<5	<5	<5	<50
	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	5/22/01	5,400	3,100	1,400	6,400	200	44,000
	3/13/01	2,250	140	ND	1,284	110	14,754
	11/2/00	6,789	4,816	676	7,258	83	48,000
	8/9/00	8,900	5,636	883	7,356	176	76,000
	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
	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

**Table 5**  
**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-4	5/22/01	12	1.9	4.1	9.8	ND	80
	3/13/01	ND	ND	3.2	8.7	ND	62
	11/2/00	5.30	ND	ND	8	ND	ND
	8/9/00	5.08	<5	<5	<5	<5	370
	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	5/22/01	ND	ND	2.1	0.57	4.4	180
	3/13/01	6.1	1.9	6.6	5.9	ND	382
	11/2/00	ND	ND	ND	ND	ND	ND
	8/9/00	<5	<5	<5	<5	<5	<50
	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	

**Table 5**  
**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-6	5/22/01	760	450	1,600	4,270	ND	27,000
	3/13/01	713	459	238	2,363	ND	15,637
	11/2/00	1,387	618	ND	5,250	ND	19,000
	8/9/00	1,306	870	<5	5,162	<5	24,000
	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
	MW-7	5/22/01	ND	9.1	1.3	2.3	28
3/13/01		0.97	ND	0.76	ND	78	82
11/2/00		ND	ND	ND	ND	9.1	50
8/9/00		<5	<5	<5	<5	11.7	80
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	

**Table 5**  
**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-8	5/22/01	110	28	140	194	410	3,100
	3/13/01	81	16	71	270	221	2,360
	11/2/00	278	350	209	980	21	3,000
	8/9/00	632	5.38	<5	2,686	37.3	22,000
	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	5/22/01	630	11	200	31	270	2,900
	3/13/01	969	18	41	72	630	4,935
	11/2/00	ND	ND	ND	ND	145	ND
	8/9/00	1,055	26	54	53.8	1,283	6,800
	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
	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**  
**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-11	5/22/01	12	8.3	3.3	9.8	12	280
	3/13/01	8.6	2.1	10	14	ND	273
	11/2/00	ND	ND	ND	ND	ND	60
	8/9/00	10.5	5.94	<5	7.75	<5	590
	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	5/22/01	1,200	ND	95	165	1,900	31,000
	3/13/01	13	5.6	5.5	11	214	1,517
	11/2/00	9.3	19.0	ND	7.40	215	1,010
	8/9/00	15.4	12.4	<5	<5	185	1,730
	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



**Table 6**  
**Total Volume of Water Treated and Effluent Chemistry**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter Reading (gallons)	Lab Results For Influent and Effluent*					Ethyl benzene	Total Xylenes
			(concentrations in µg/L)						
			MtBE	TPH-g	Benzene	Toluene			
		221,520	NA	NA	NA	NA	NA	NA	
<u>February</u>	2/10/01	975,490	System shut down for maintenance and cleaning.						
<u>January</u>	1/29/01	957,880	ND	ND	ND	ND	ND	ND	
	1/29/01	957,880	ND	ND	ND	ND	ND	ND	
<u>December</u>	12/5/00	883,000	ND	ND	ND	ND	ND	ND	
	12/5/00	883,000	ND	ND	ND	ND	ND	ND	
<u>November</u>	11/24/00		ND	ND	ND	ND	ND	ND	
	11/24/00		ND	ND	ND	ND	ND	ND	
	11/1/00	842,000	ND	ND	ND	ND	ND	ND	
	11/1/00	842,000	ND	ND	ND	ND	ND	ND	
<u>October</u>	10/1/00	809,000	ND	ND	ND	ND	ND	ND	
	10/1/00	809,000	ND	ND	ND	ND	ND	ND	
<u>August</u>	8/24/00	778,000	ND	ND	ND	ND	ND	ND	
<u>July</u>	7/26/00	726,000	ND	ND	ND	ND	ND	ND	
	7/19/00	718,000	ND	ND	ND	ND	ND	ND	
	7/13/00	712,000	ND	ND	ND	ND	ND	ND	
	7/7/00	706,000	ND	ND	ND	ND	ND	ND	
<u>June</u>	06/29/00	700,000	ND	ND	ND	ND	ND	ND	
	06/21/00	682,220	ND	ND	ND	ND	ND	ND	
	06/16/00	669,720	ND	ND	ND	ND	ND	ND	
	06/10/00	651,200	ND	ND	ND	ND	ND	ND	
<u>May</u>	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	
<u>April</u>	04/30/00	488,300	ND	ND	ND	ND	ND	ND	



**Table 6**  
**Total Volume of Water Treated and Effluent Chemistry**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter Reading (gallons)	Lab Results For Influent and Effluent*					Ethyl benzene	Total Xylenes
			(concentrations in µg/L)						
			MtBE	TPH-g	Benzene	Toluene			
	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	
<b>March</b>	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							
<b>February</b>	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	
<b>January</b>	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	
<b>December</b>	12/23/99	51,680	1486	NA	ND	ND	ND	ND	
	12/23/99	51,680	ND	NA	ND	ND	ND	ND	
	12/16/99	30,450	963	NA	ND	ND	ND	ND	
	12/16/99	30,450	ND	NA	ND	ND	ND	ND	
	12/09/99	9,000	230	ND	ND	ND	ND	ND	
Pumping began on December 6, 1999									

\* Effluent is equivalent to GAC-2

# FIGURES

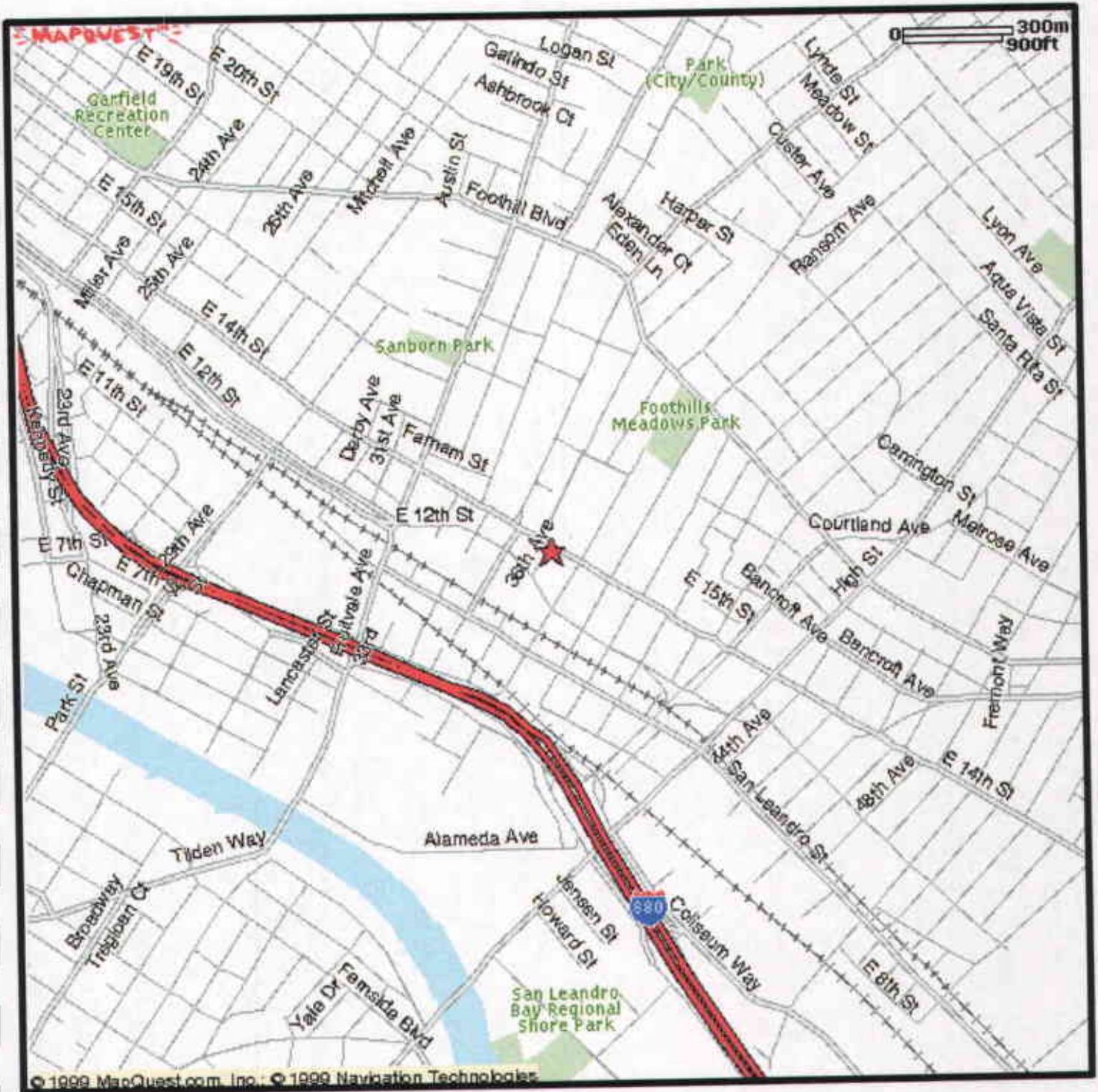


Figure 1: Site Location Map

International Blvd. ( old E. 14th Street)

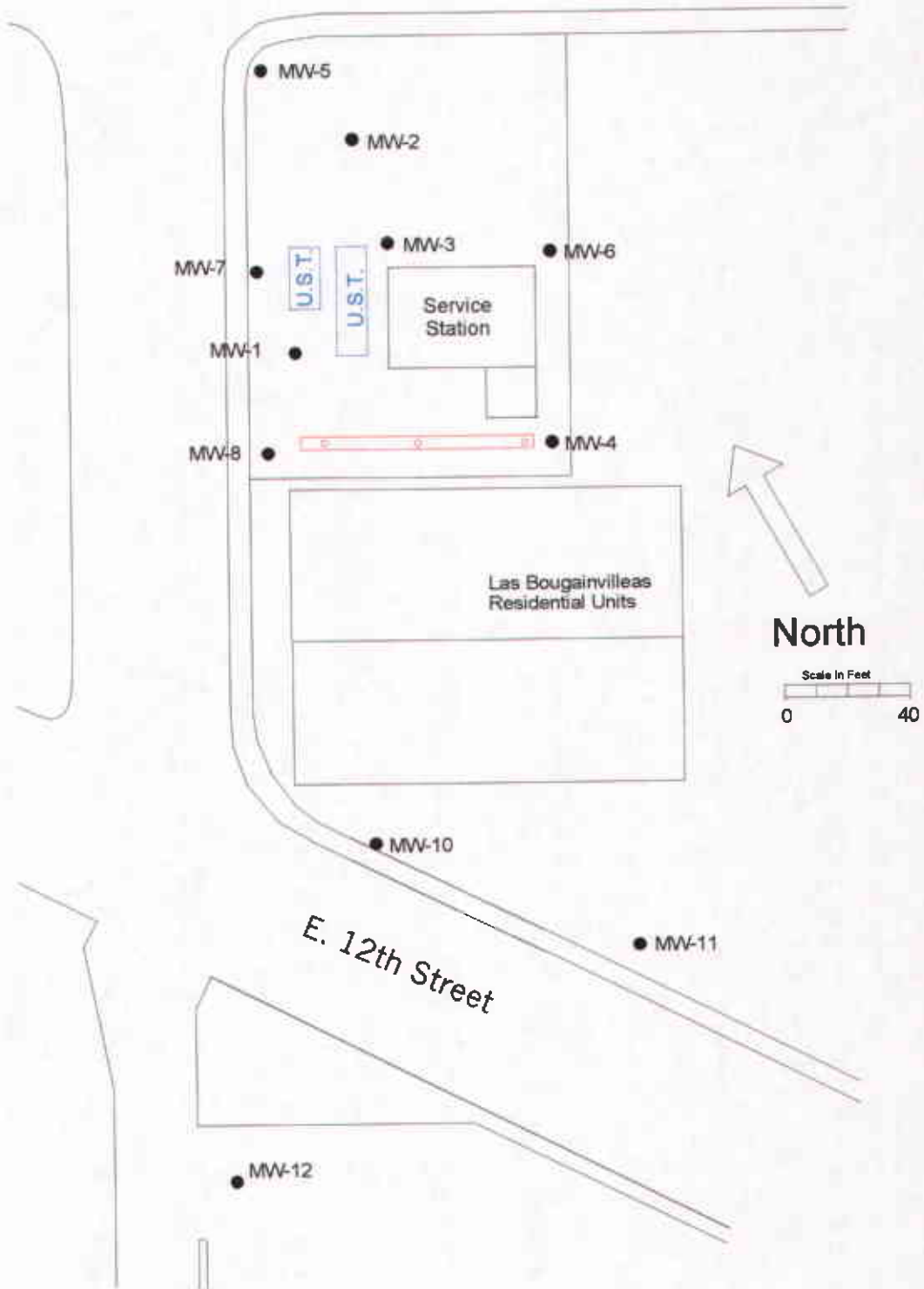


Figure 2: Location of Groundwater Monitoring Wells

International Blvd. ( old E. 14th Street)

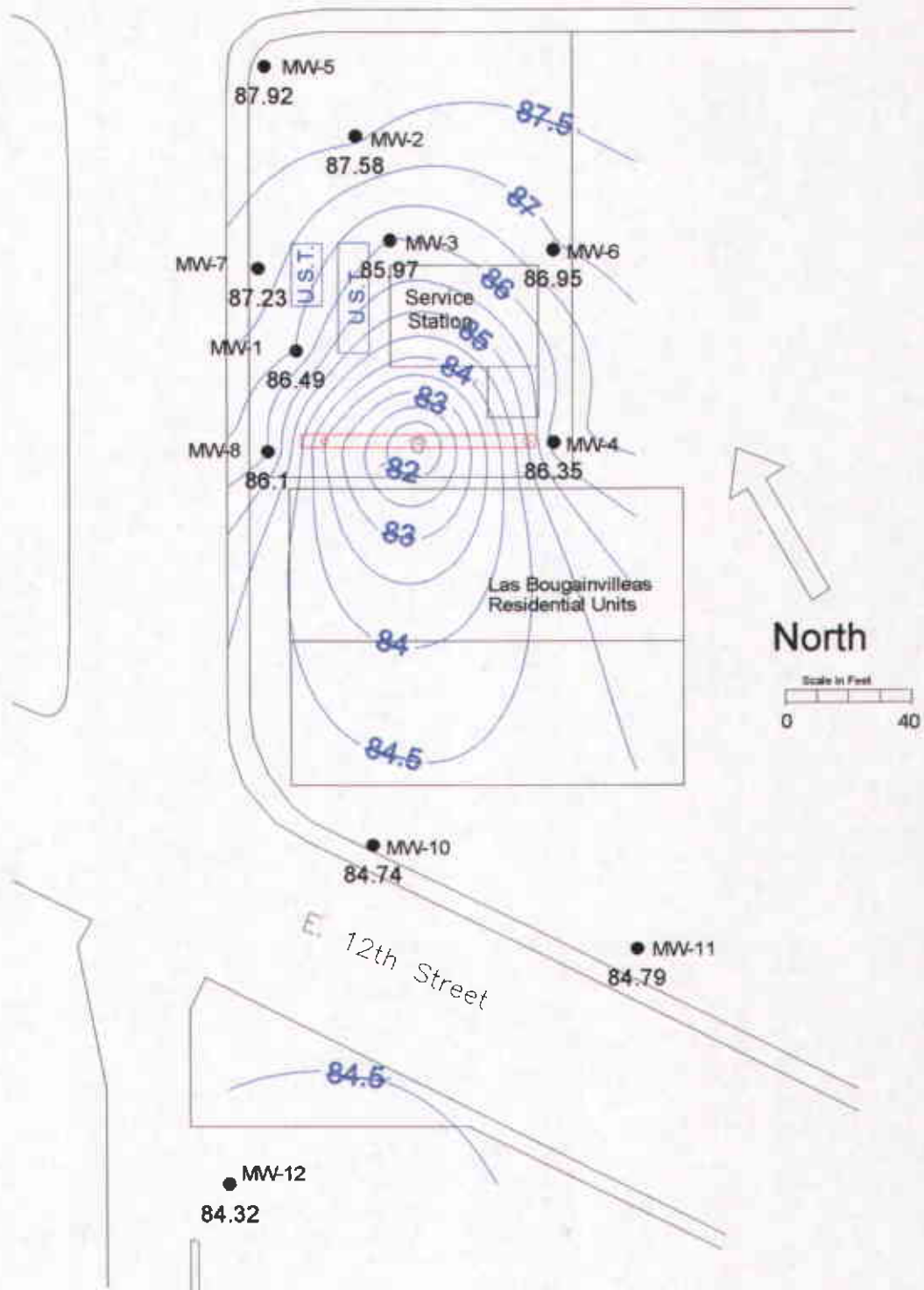


Figure 3: Groundwater Elevation Contour Map, May 22, 2001

International Blvd. ( old E. 14th Street)

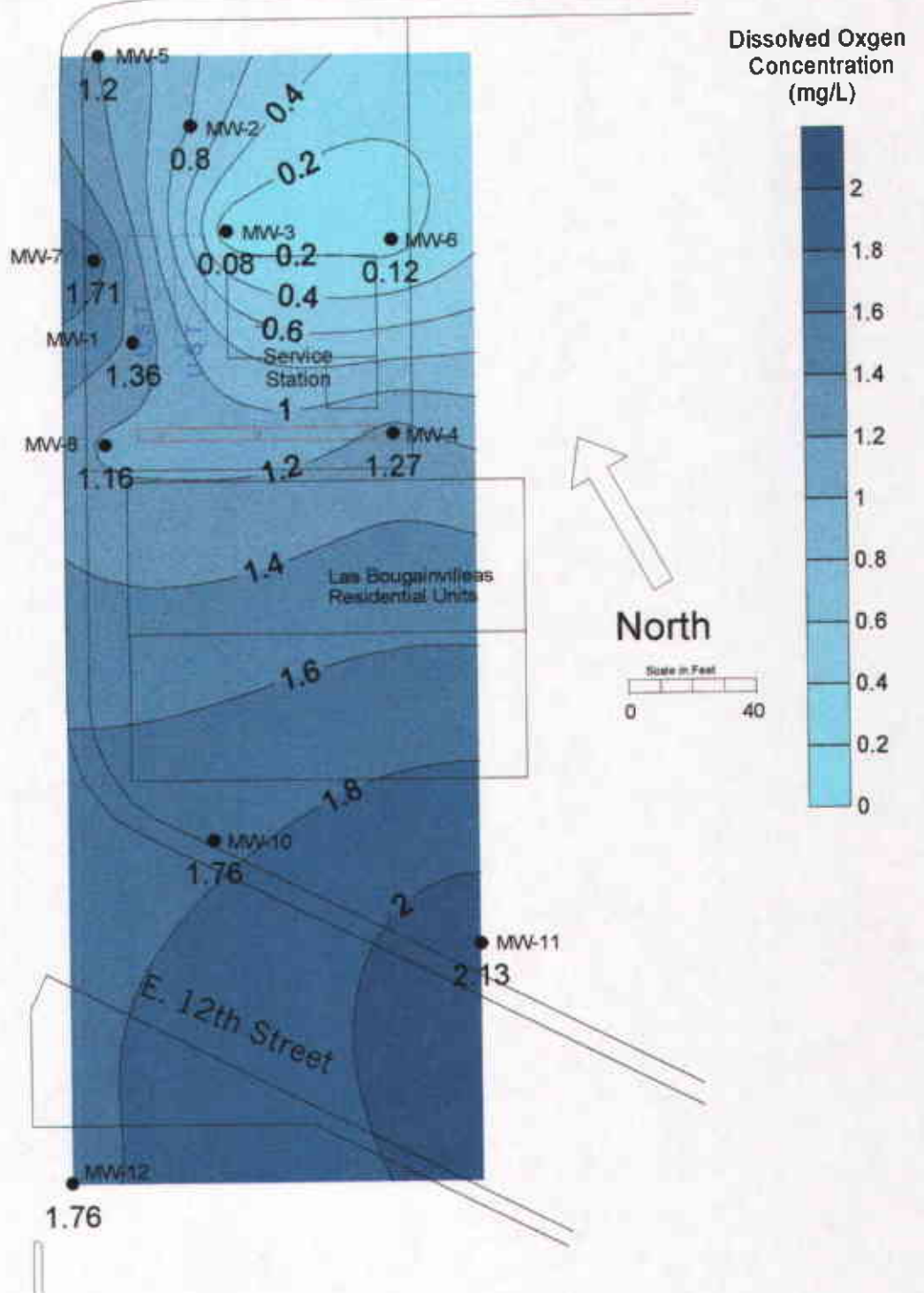


Figure 4: Dissolved Oxygen Concentration in Groundwater, May 22, 2001

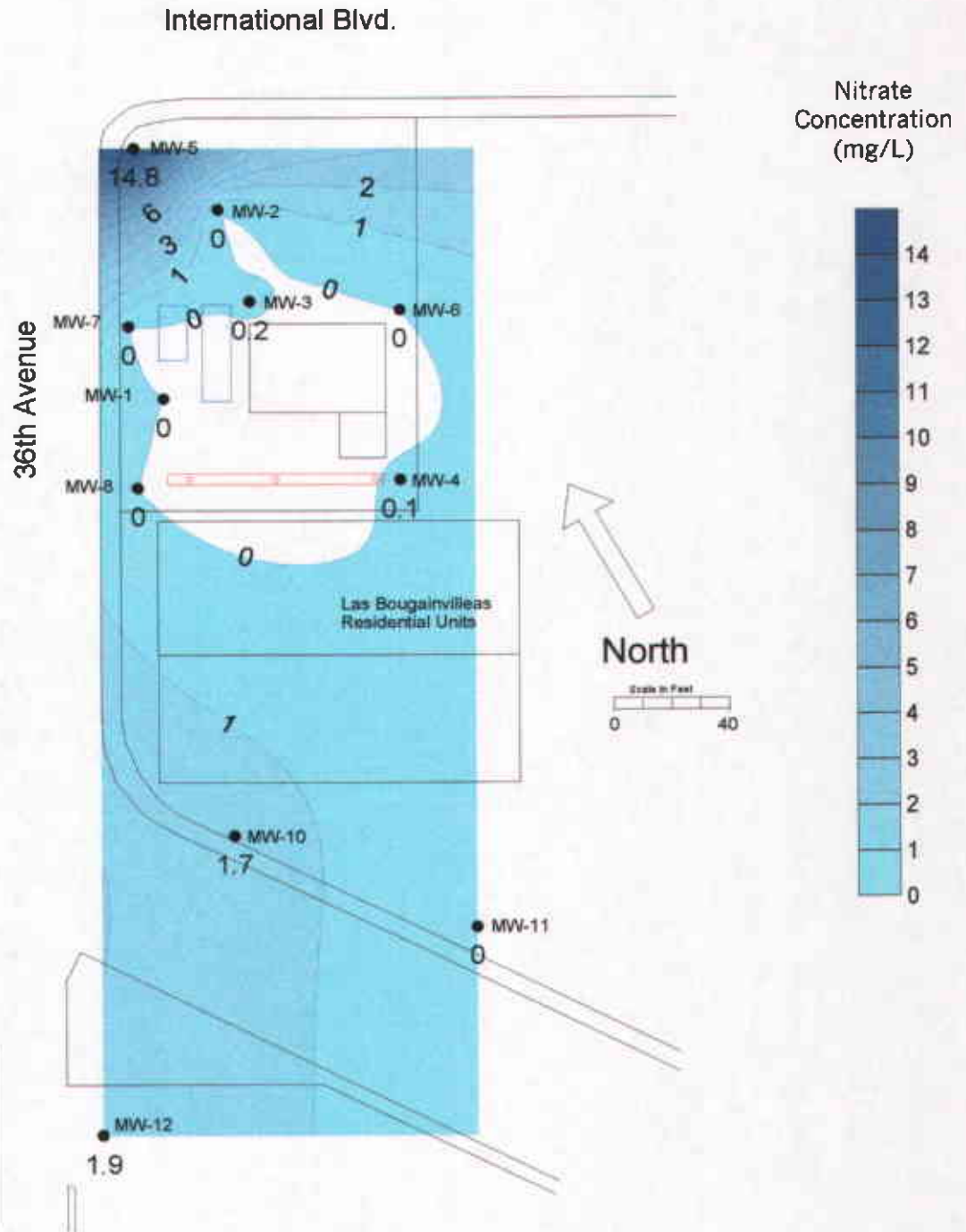


Figure 5: Nitrate Concentration Contour Map in Groundwater, May 22, 2001

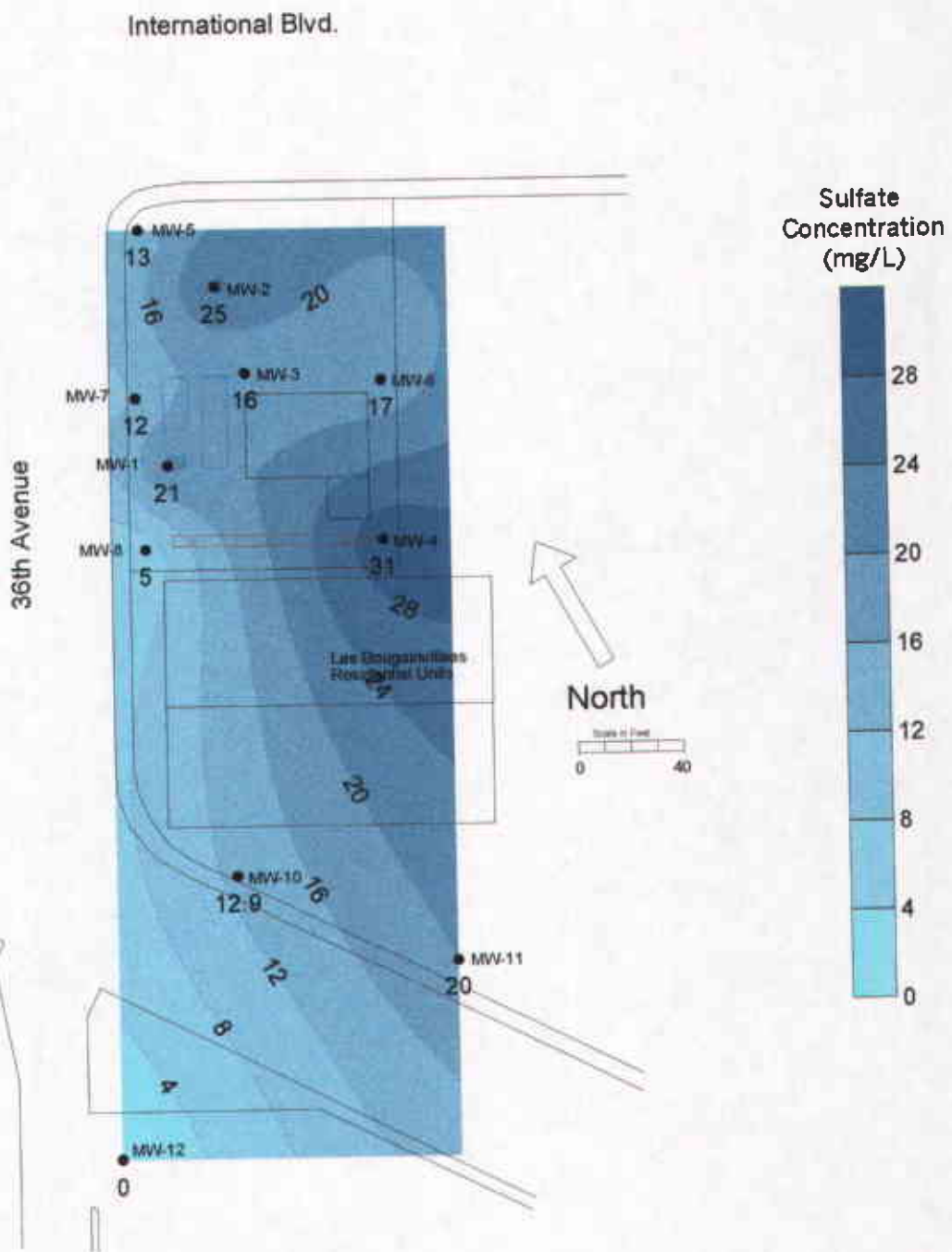


Figure 6: Sulfate Concentration Contour Map in Groundwater, May 22, 2001



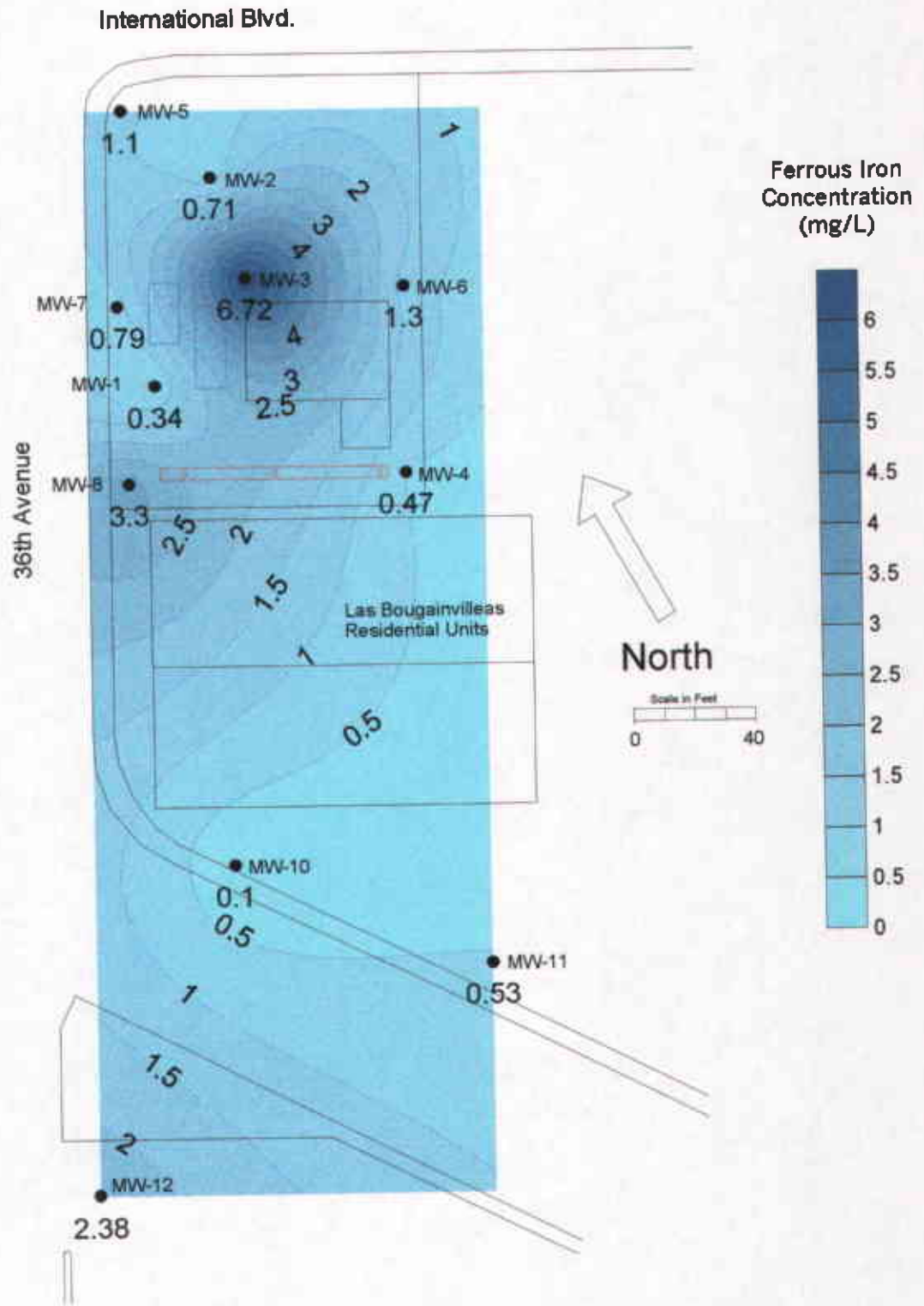


Figure 7: Ferrous Iron Concentration Contour Map in Groundwater, May 22, 2001

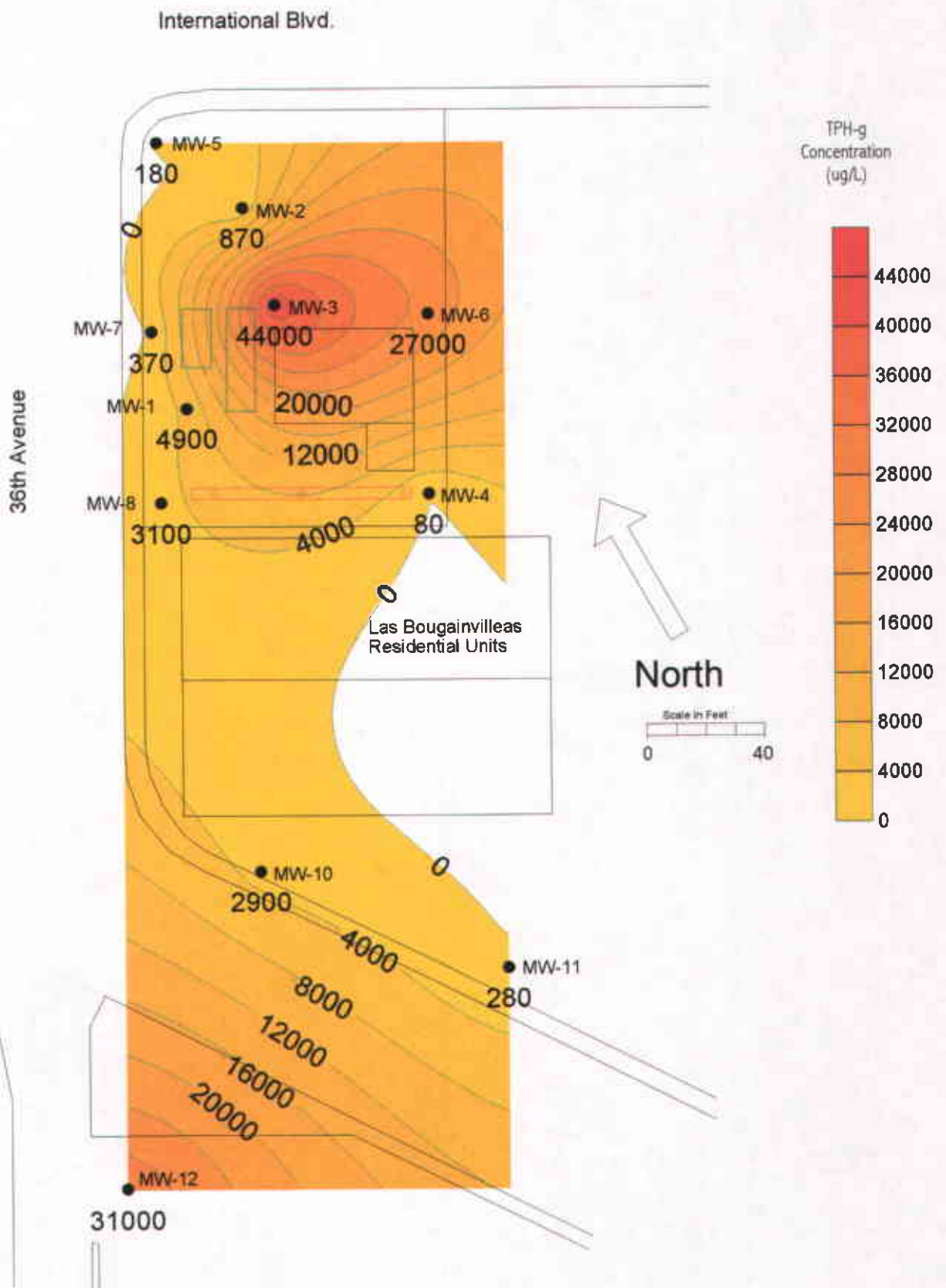


Figure 8: TPH-g Concentration Contour Map in Groundwater, May 22, 2001

International Blvd.

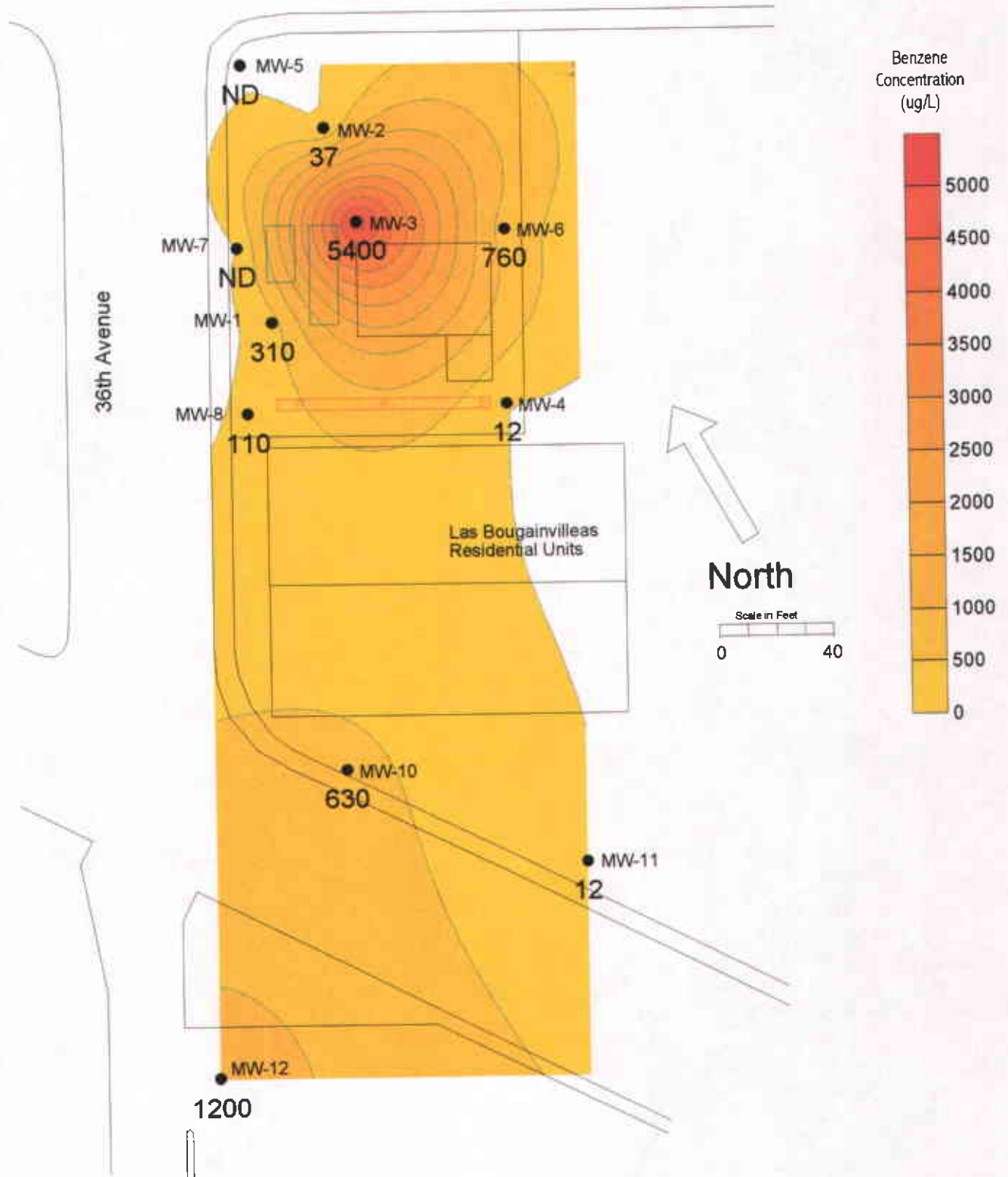


Figure 9: Benzene Concentration Contour Map in Groundwater, May 22, 2001

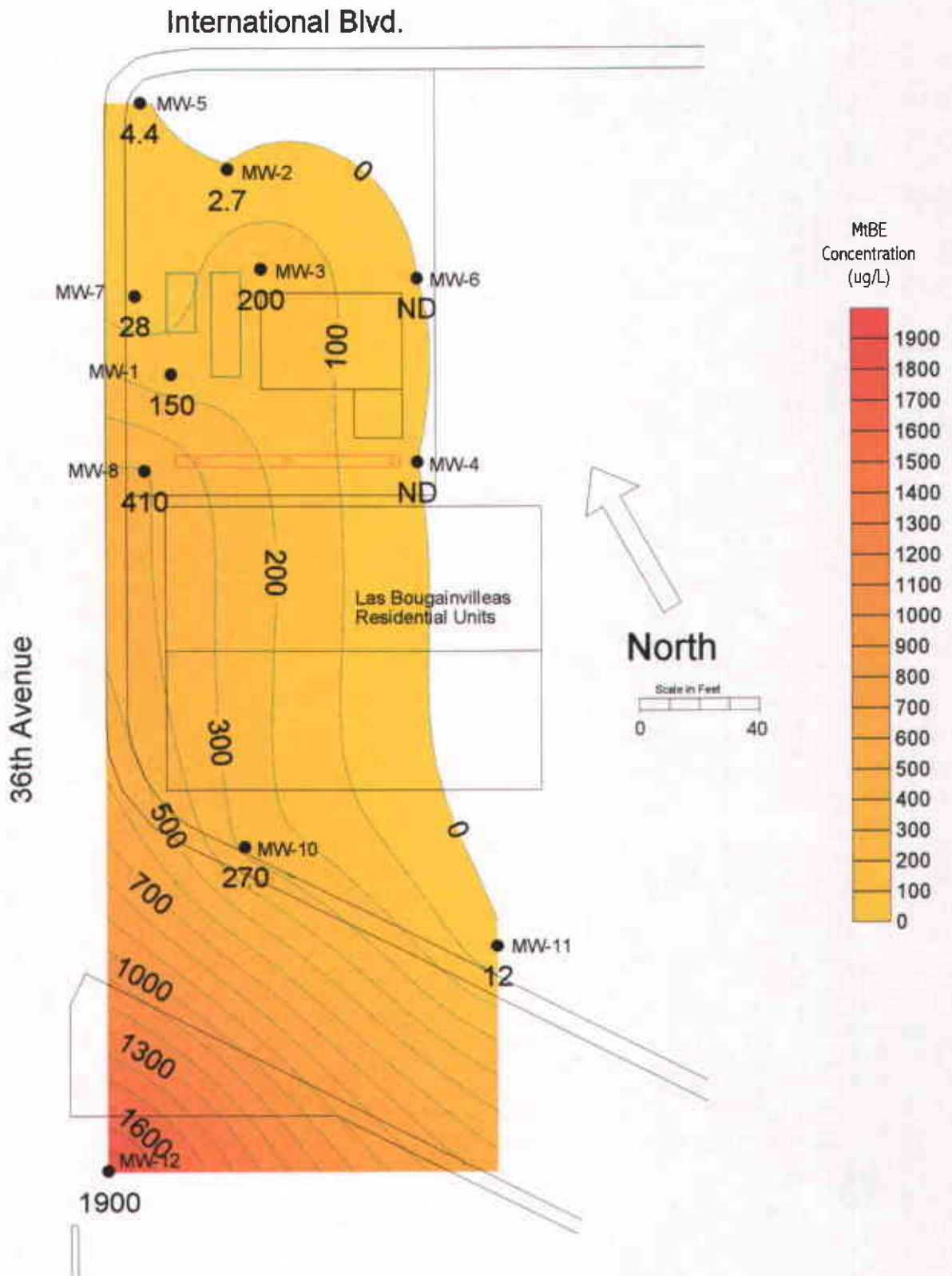
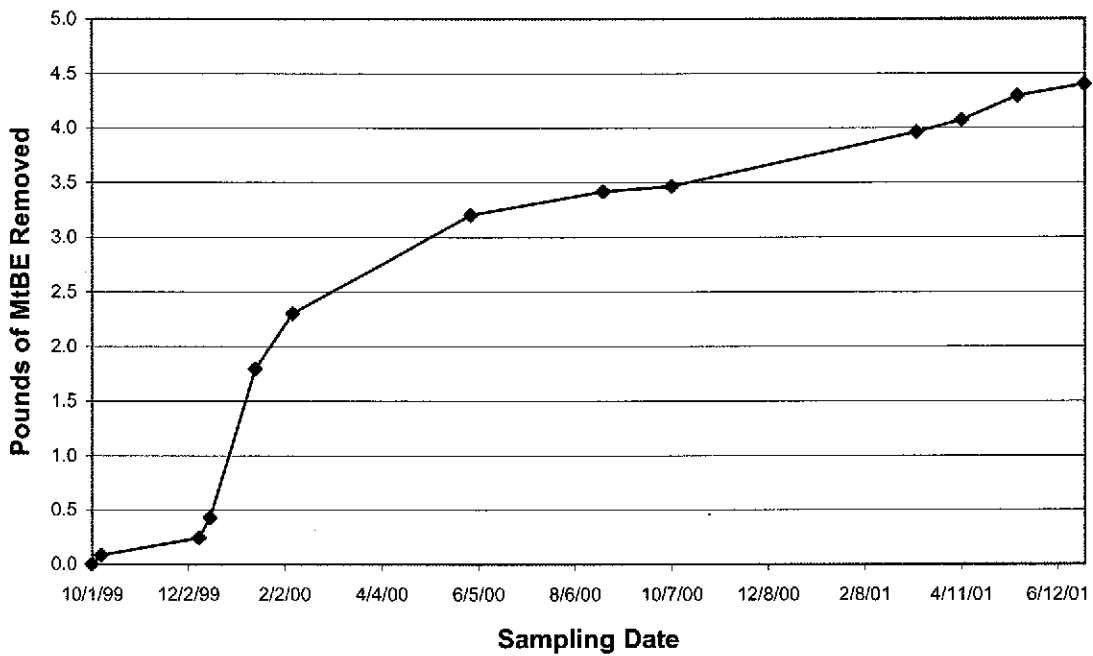
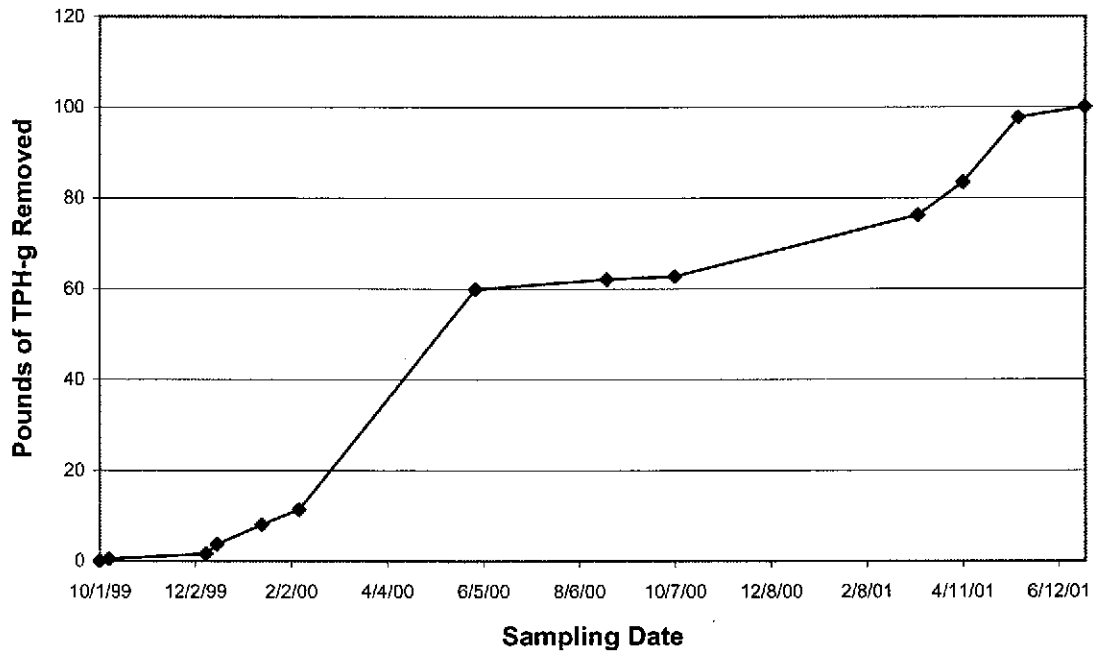


Figure 10: MtBE Concentration Contour Map in Groundwater, May 22, 2001

**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, 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 22, 2001  
 Depth to Water Table: 11.5 feet Sampler: Naser Pakrou  
 Elevation of Water Table: 86.49 feet  
 Height of Water: 18.20 feet  
 Purged Volume: 3 gallons *\*dry after 3 gallons purged*

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: \_\_\_\_\_

Sheen: Yes  No  Describe: \_\_\_\_\_

Odor: Yes  No  Describe: slight petroleum odor

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
2:00	21.5	7.24		0.0	21.0	0.34	1.36	32.5	40.90



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 22, 2001  
 Depth to Water Table: 11.00 feet Sampler: Naser Pakrou  
 Elevation of Water Table: 87.58 feet  
 Height of Water: 19.00 feet  
 Purged Volume: 26 gallons

Purging Method: Bailer  Pump   
 Sampling Method: Bailer  Bailer   
 Color: Yes  No  Describe: cloudy  
 Sheen: Yes  No  Describe: \_\_\_\_\_  
 Odor: Yes  No  Describe: \_\_\_\_\_

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
8:45	18.1	7.15	814	0.0	25	0.71	0.80	274	160





ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-3  
 Casing Diameter: 4 inch  
 Depth of Well: 29.75 feet  
 Elevation of the Casing: 97.78 feet  
 Depth to Water Table: 11.81 feet  
 Elevation of Water Table: 85.97 feet  
 Height of Water: 17.94 feet  
 Purged Volume: 26 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No

Describe: Black

Sheen: Yes  No

Describe: Rainbow Sheen

Odor: Yes  No

Describe: Strong Petroleum odor

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
9:15	18.1	7.37		0.2	16	73.3 6.72	<del>0.00</del> 0.08	-32	98

25 → 100

1.68

6.72



ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-4  
 Casing Diameter: 2 inch  
 Depth of Well: 24.34 feet  
 Elevation of the Casing: 97.85 feet  
 Depth to Water Table: 11.50 feet  
 Elevation of Water Table: 86.35 feet  
 Height of Water: 12.84 feet  
 Purged Volume: 7 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: \_\_\_\_\_

Sheen: Yes  No  Describe: \_\_\_\_\_

Odor: Yes  No  Describe: \_\_\_\_\_

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
<del>4:20</del> 4:20	<del>52</del> 22.4	<del>7.08</del> 7.09		0.1	31	<del>0.42</del> 0.47	1.27	193.9	5.0



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 22, 2001  
 Depth to Water Table: 11.12 feet Sampler: Naser Pakrou  
 Elevation of Water Table: 87.92 feet  
 Height of Water: 14.94 feet  
 Purged Volume: 6 gallons

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: cloudy

Sheen: Yes  No  Describe: \_\_\_\_\_

Odor: Yes  No  Describe: \_\_\_\_\_

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
1:10	20.2	7.09	<del>6.0</del>	14.8	13.0	1.1	1.2	167	593



ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-6  
 Casing Diameter: 2 inch  
 Depth of Well: 24.45 feet  
 Elevation of the Casing: 98.77 feet  
 Depth to Water Table: 11.82 feet  
 Elevation of Water Table: 86.95 feet  
 Height of Water: 12.63 feet  
 Purged Volume: 6 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: Black

Sheen: Yes  No  Describe: Rainbow

Odor: Yes  No  Describe: Strong Petroleum odor

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
9:50	18.3	7.44	802	0-0	17.0	1.3	0.12	-9.5	413



ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-7  
 Casing Diameter: 2 inch  
 Depth of Well: 24.60 feet  
 Elevation of the Casing: 97.83 feet  
 Depth to Water Table: 10.60 feet  
 Elevation of Water Table: 87.23 feet  
 Height of Water: 14.00 feet  
 Purged Volume: 7 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: \_\_\_\_\_

Sheen: Yes  No  Describe: \_\_\_\_\_

Odor: Yes  No  Describe: Slight Petroleum odor

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
2:30	22.0	<del>7.28</del>		0.0	12.0	<del>0.79</del>	1.71	56	49.8

7.28

0.79



ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-8  
 Casing Diameter: 2 inch  
 Depth of Well: 26.34 feet  
 Elevation of the Casing: 97.25 feet  
 Depth to Water Table: 11.15 feet  
 Elevation of Water Table: 86.10 feet  
 Height of Water: 5.19 feet  
 Purged Volume: 2 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: black

Sheen: Yes  No  Describe: slight

Odor: Yes  No  Describe: slight petroleum odor

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3-</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
<del>1:30</del> 1:40	21.0	7.12	691	0.0	5.0	3.3	1.16	-8.8	179

2



ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-90  
Casing Diameter: 2 inch  
Depth of Well: 24.35 feet  
Elevation of the Casing: 94.54 feet  
Depth to Water Table: 9.80 feet  
Elevation of Water Table: 84.74 feet  
Height of Water: 14.55 feet  
Purged Volume: 6 gallons

Project No.: 2331  
Address: 3609 International Blvd.  
Oakland, CA  
Date: May 22, 2001  
Sampler: Naser Pakrou

Purging Method: Bailer  Pump   
Sampling Method: Bailer  Bailer   
Color: Yes  No  Describe: \_\_\_\_\_  
Sheen: Yes  No  Describe: \_\_\_\_\_  
Odor: Yes  No  Describe: \_\_\_\_\_

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
3:50	22.0	7.13		1.7	12.9	0.1	1.76	105	19.56



ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-11  
 Casing Diameter: 2 inch  
 Depth of Well: 24.30 feet  
 Elevation of the Casing: 95.94 feet  
 Depth to Water Table: 11.15 feet  
 Elevation of Water Table: 84.79 feet  
 Height of Water: 13.15 feet  
 Purged Volume: 7 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: \_\_\_\_\_

Sheen: Yes  No  Describe: \_\_\_\_\_

Odor: Yes  No  Describe: \_\_\_\_\_

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3-</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
3:20	21.4	7.16		0.0	20	0.53	2.13	40.5	323





ENVIRONMENTAL ENGINEERING, INC

Well No.: MW-12  
 Casing Diameter: 4 inch  
 Depth of Well: 30.00 feet  
 Elevation of the Casing: 94.84 feet  
 Depth to Water Table: 10.52 feet  
 Elevation of Water Table: 84.32 feet  
 Height of Water: 19.48 feet  
 Purged Volume: 6 gallons

Project No.: 2331  
 Address: 3609 International Blvd.  
 Oakland, CA  
 Date: May 22, 2001  
 Sampler: Naser Pakrou

Purging Method: Bailer  Pump

Sampling Method: Bailer  Bailer

Color: Yes  No  Describe: \_\_\_\_\_

Sheen: Yes  No  Describe: \_\_\_\_\_

Odor: Yes  No  Describe: \_\_\_\_\_

Field Measurements:

Time	Temp (°C)	pH	EC (µS/cm)	NO <sup>3</sup> -N (mg/L)	SO <sub>4</sub> <sup>+2</sup> (mg/L)	Fe <sup>+2</sup> (mg/L)	D.O. (mg/L)	Redox (mV)	Turbidity (FTU)
3:00	20.9	7.22		1.9	0.0	2.38	1.76	18.9	6.28

Influent 8:50





## Gasoline by GC/FID CA LUFT

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW-1	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-001	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	4.900	500
Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	116	60-140

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-002	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	870	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	59-135
Bromofluorobenzene (FID)	118	60-140

Field ID:	MW-3	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63866
Lab ID:	152163-003	Analyzed:	05/26/01

Analyte	Result	RL
Gasoline C7-C12	44.000	500
Surrogate	%REC	Limits
Trifluorotoluene (FID)	122	59-135
Bromofluorobenzene (FID)	106	60-140

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-004	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	80	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	121	59-135
Bromofluorobenzene (FID)	115	60-140

\*= Value outside of QC limits; see narrative

ND= Not Detected

RL= Reporting Limit

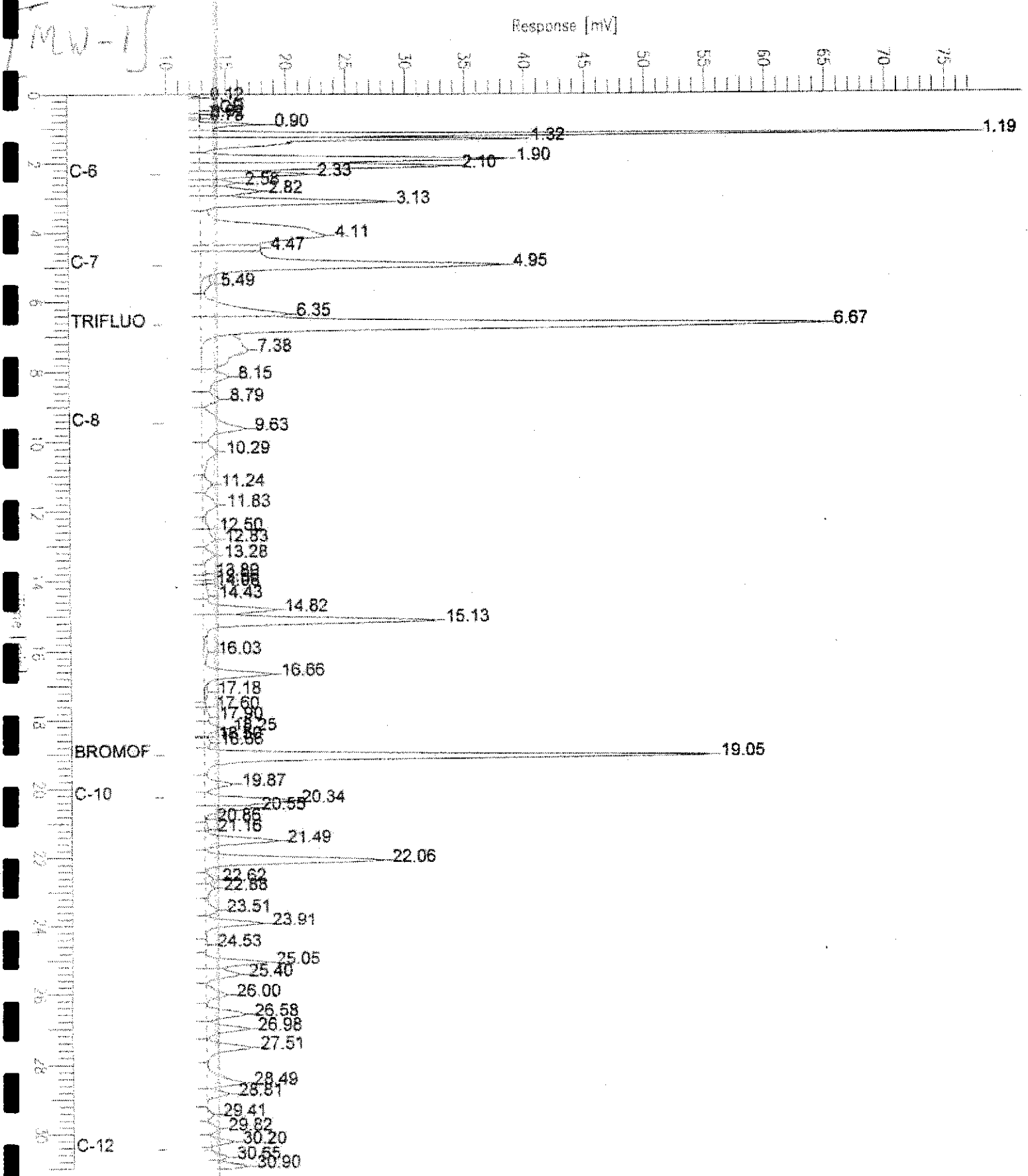
Page 1 of 4

# Chromatogram

Sample Name : 152163-001, 43824, +MTBE  
FileName : G:\GC05\DATA\143G038.raw  
Method : TVHHTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

End Time : 31.00 min  
Plot Offset: 10 mV

Sample #: A1  
Date : 5/24/01 01:26 PM  
Time of Injection: 5/24/01 12:55 PM  
Low Point : 9.55 mV  
High Point : 77.45 mV  
Plot Scale: 67.9 mV



# Chromatogram

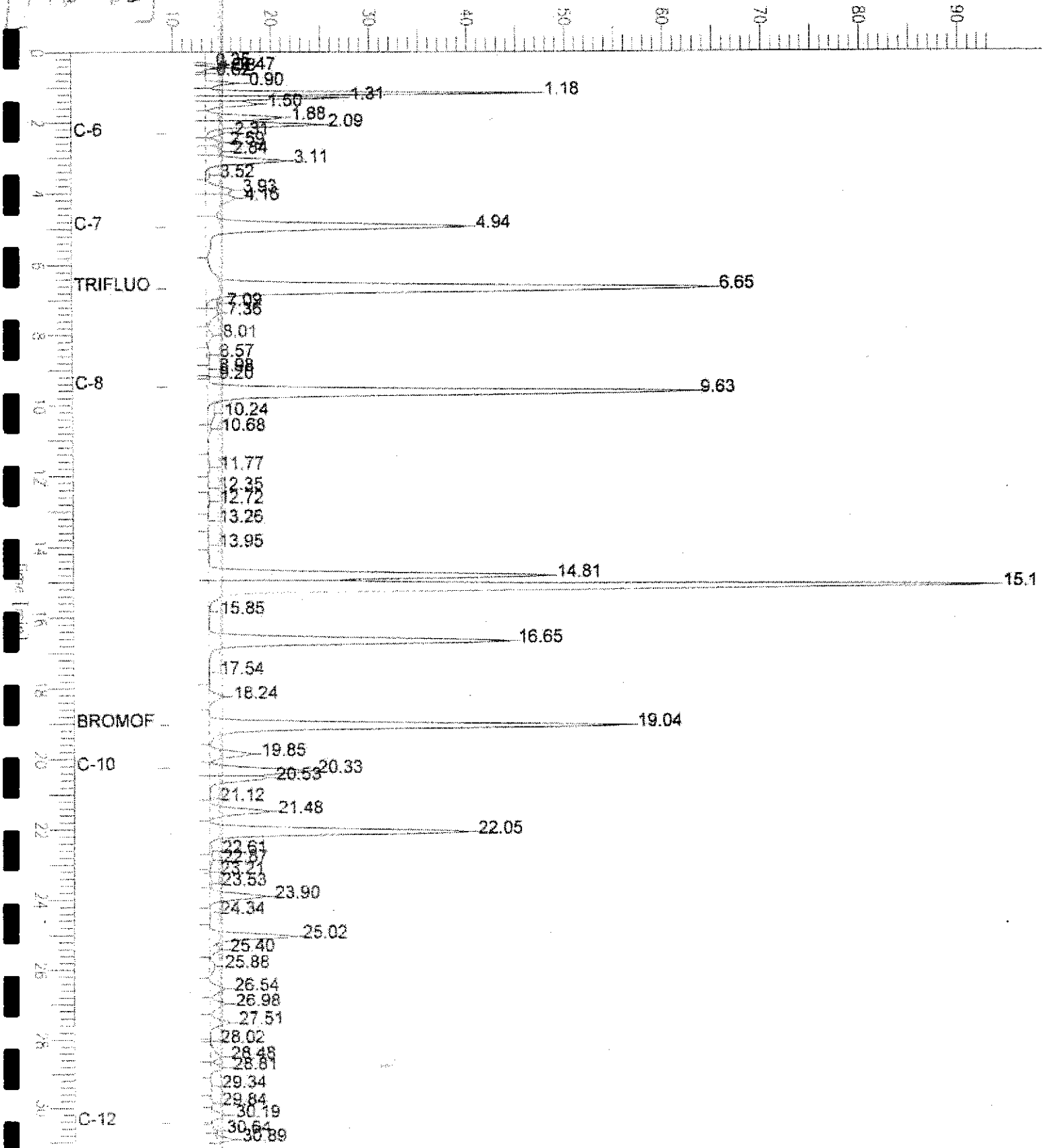
Sample Name : MSS,152163-002,63824,+MTBE  
FileName : G:\GC05\DATA\1430025.raw  
Method : TVHSTXE  
Start Time : 0.00 min  
Scale Factor: 1.0

End Time : 31.00 min  
Plot Offset: 9 mV

Sample #: A1  
Date : 5/24/01 09:00 AM  
Time of Injection: 5/24/01 03:28 AM  
Low Point : 9.32 mV  
Plot Scale: 84.2 mV  
High Point : 93.56 mV

MW-2

Response [mV]



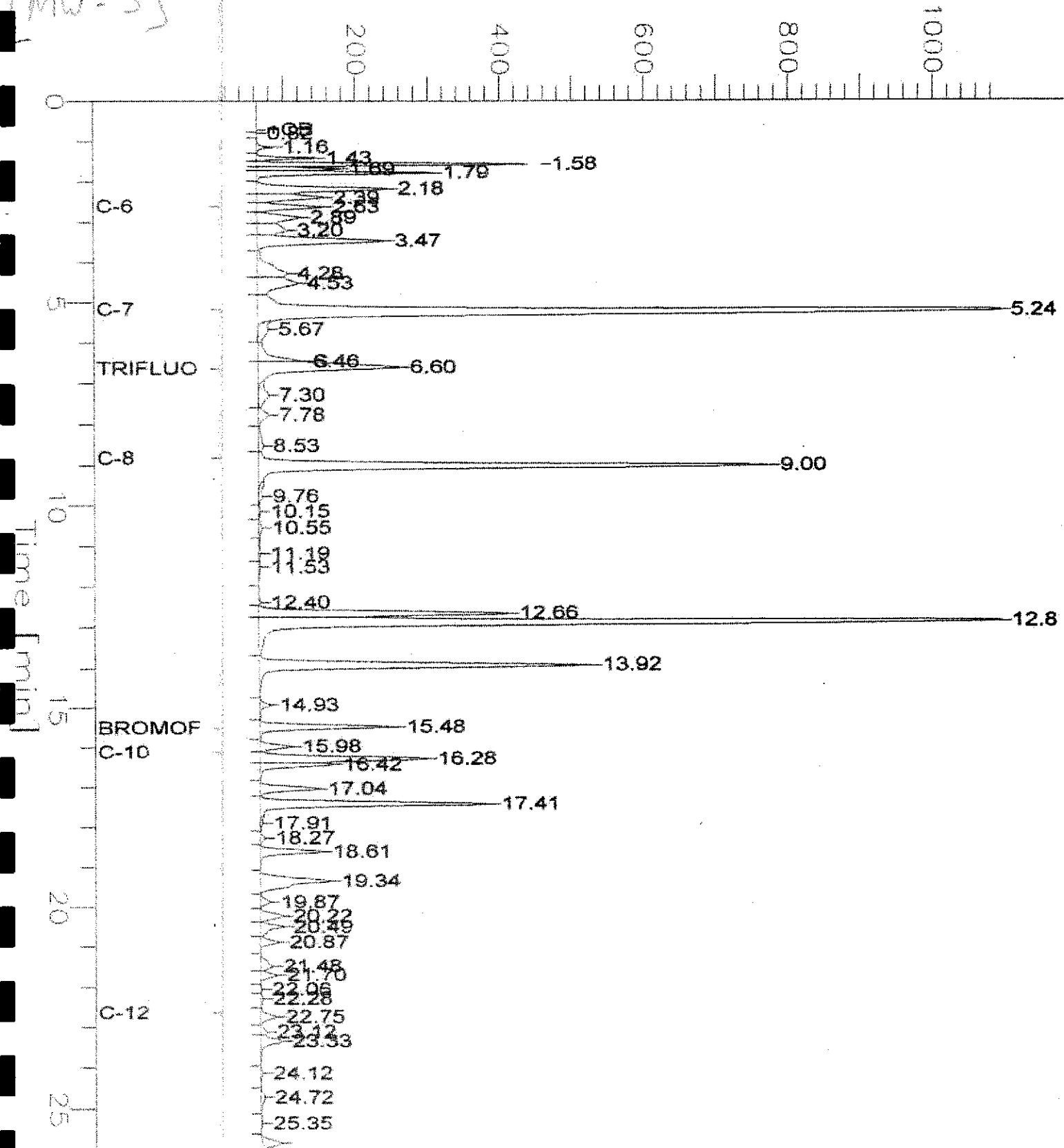
# GC04 TVH 'J' Data File FID

Sample Name : 152163-003,63066,+mke  
 FileName : G:\GC04\DATA\145J030.raw  
 Method : TVHSTXE  
 Start Time : 0.00 min  
 Scale Factor : 1.0

Sample #: b1  
 Date : 5/29/01 12:06 PM  
 Time of Injection: 5/26/01 04:32 AM  
 Low Point : 12.30 mV  
 High Point : 1094.35 mV  
 End Time : 26.00 min  
 Plot Offset: 12 mV  
 Plot Scale: 1082.0 mV

## Response [mV]

[Mw-3]



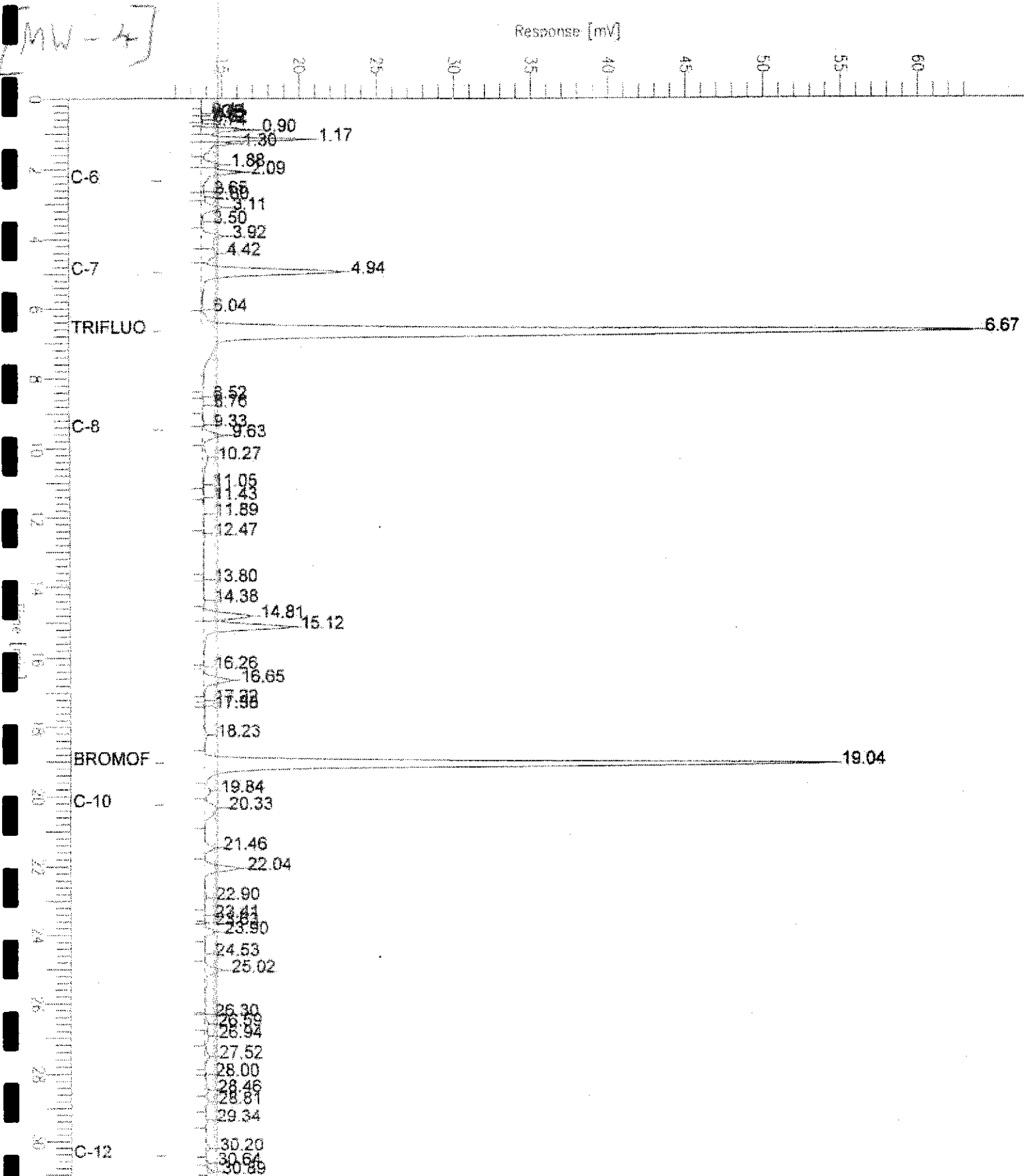
# Chromatogram

Sample Name : 152153-004\_03824,+MTBE  
FileName : G:\GC05\DATA\143G028.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor: 1.0

End Time : 31.00 min  
Plot Offset: 11 mV

Sample #: A1  
Date : 5/24/01 09:01 AM  
Time of Injection: 5/24/01 05:38 AM  
Low Point : 11.12 mV  
Plot Scale: 52.6 mV  
High Point : 63.74 mV

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**Gasoline by GC/FID CA LUFT**

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	3331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-005	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	180	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	59-135
Bromofluorobenzene (FID)	115	60-140

Field ID:	MW-6	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-006	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	27,000	250
Surrogate	%REC	Limits
Trifluorotoluene (FID)	156 *	59-135
Bromofluorobenzene (FID)	122	60-140

Field ID:	MW-7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-007	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	370	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	59-135
Bromofluorobenzene (FID)	121	60-140

Field ID:	MW-8	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-008	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	3,100	250
Surrogate	%REC	Limits
Trifluorotoluene (FID)	132	59-135
Bromofluorobenzene (FID)	118	60-140

\*= Value outside of QC limits; see narrative  
 ND= Not Detected  
 L= Reporting Limit  
 Page 2 of 4



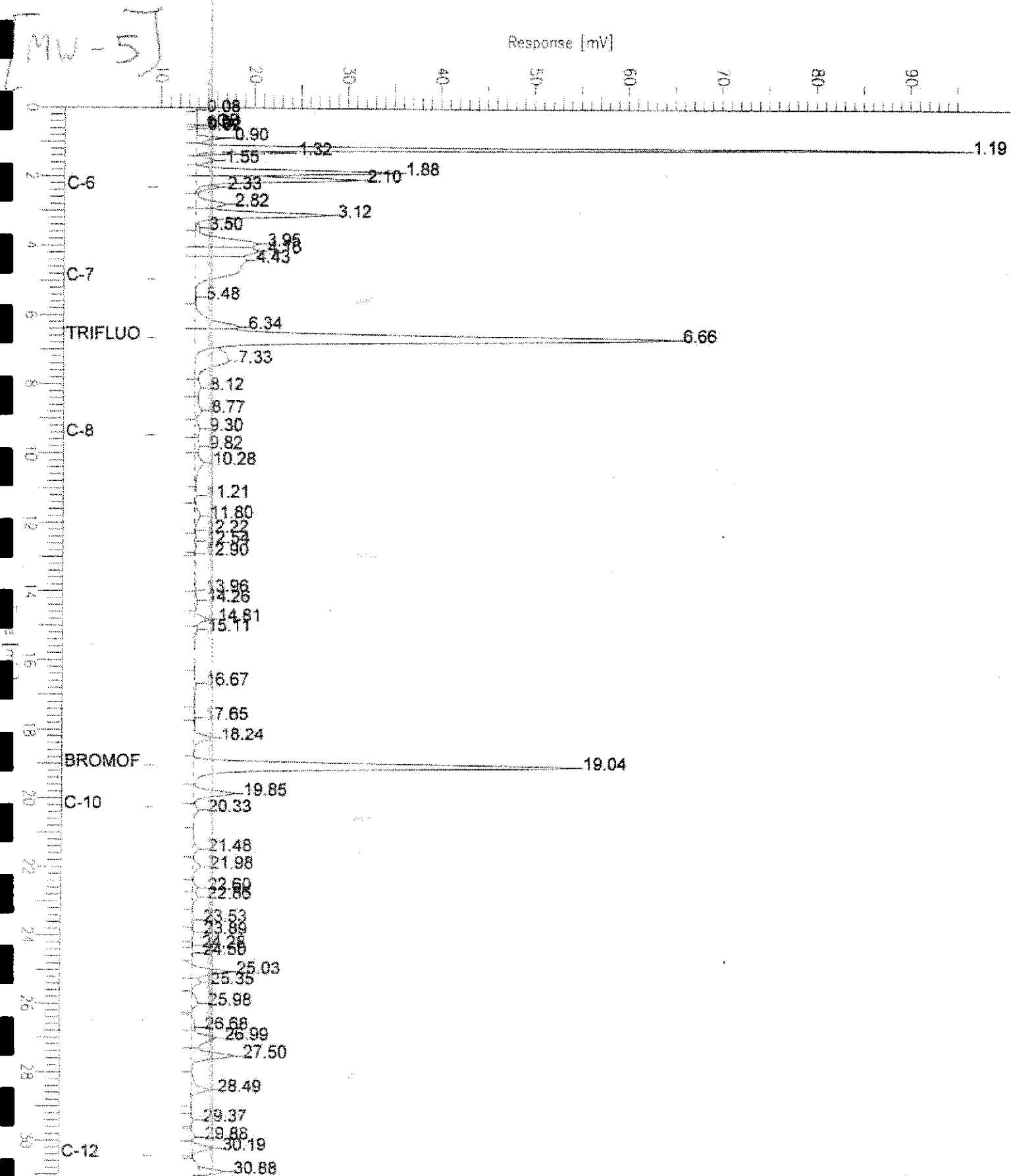
# Chromatogram

Sample Name : 152163-005, #1824, +MTBE  
FileName : G:\GC05\DATA\143G029.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

End Time : 31.00 min  
Plot Offset : 10 mV

Sample #: A1  
Date : 5/24/01 09:01 AM  
Time of Injection: 5/24/01 06:22 AM  
Low Point : 9.62 mV  
High Point : 95.65 mV  
Plot Scale: 86.0 mV

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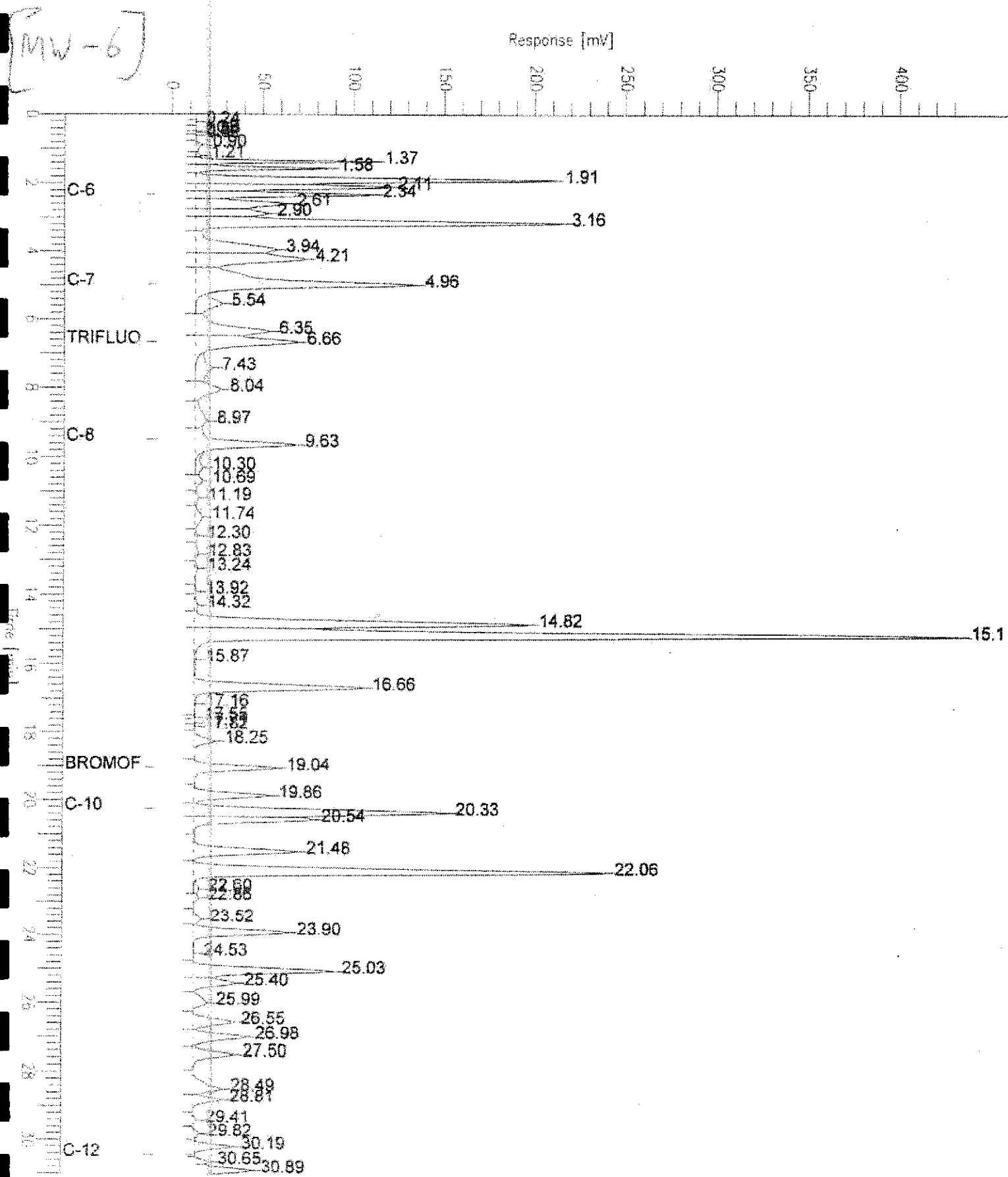
# Chromatogram

Sample Name : 152163-006, #3824, +MTBE  
FileName : G:\GC05\DATA\143G036.raw  
Method : TVHETXE  
Start Time : 0.00 min  
Scale Factor: 1.0

End Time : 31.00 min  
Plot Offset: -8 mV

Sample #: A1  
Date : 5/24/01 11:59 AM  
Time of Injection: 5/24/01 11:28 AM  
Low Point : -7.85 mV  
High Point : 435.23 mV  
Plot Scale: 443.1 mV

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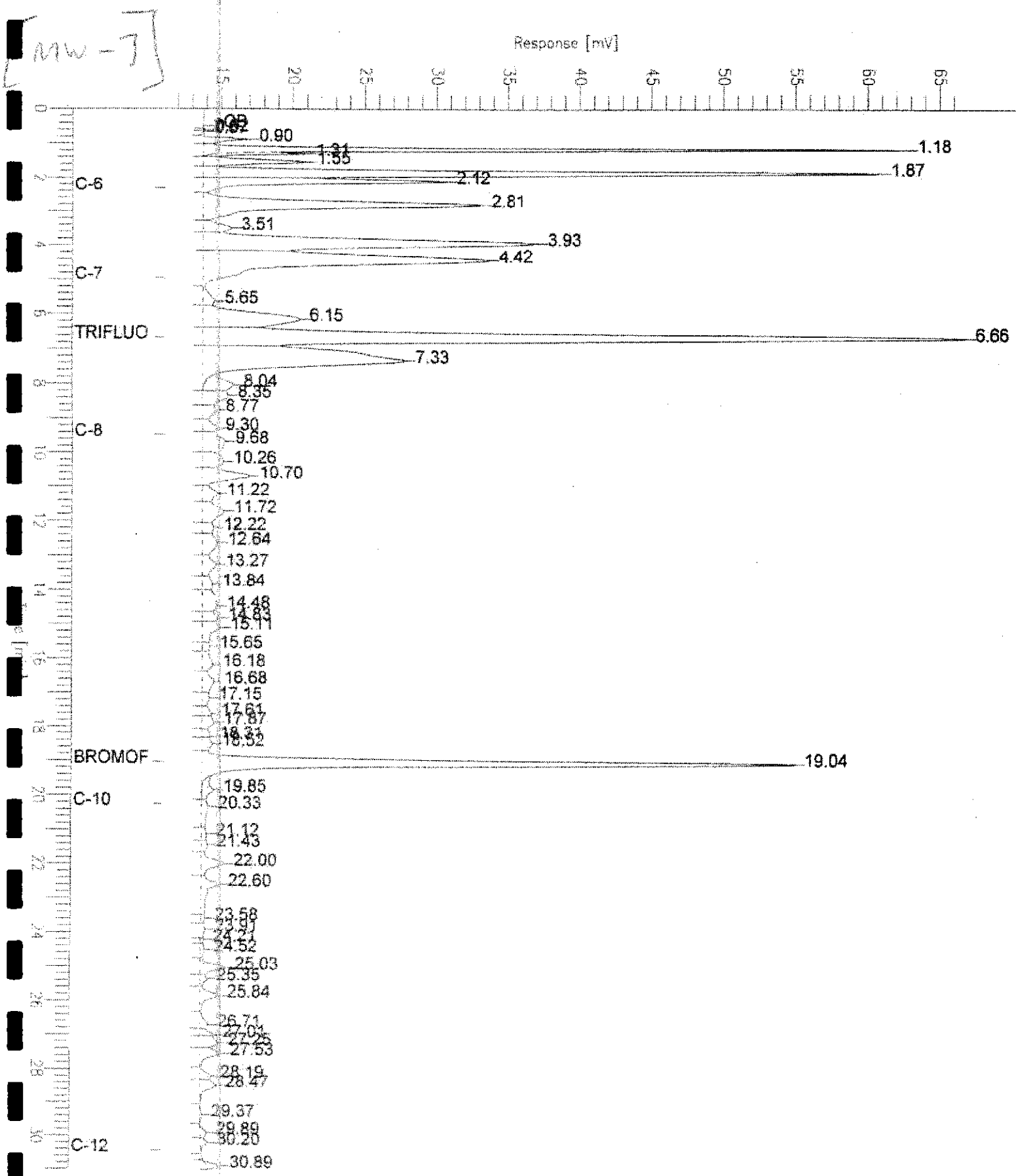


# Chromatogram

Sample Name : 152153-007, 51924, +MTBE  
FileName : G:\GCOS\DATA\143G030.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

Sample #: A1  
Date : 5/24/01 09:01 AM  
Time of Injection: 5/24/01 07:05 AM  
Low Point : 11.09 mV  
High Point : 66.88 mV  
End Time : 31.00 min  
Plot Offset: 11 mV  
Plot Scale: 55.8 mV

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# Chromatogram

Sample Name : 152163-008, #3824, +MTBE  
FileName : G:\GC05\DATA\1430037.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

End Time : 31.00 min  
Plot Offset : 6 mV

Sample #: A1  
Date : 5/24/01 12:42 PM  
Time of Injection: 5/24/01 12:11 PM  
Low Point : 5.76 mV  
High Point : 162.87 mV  
Plot Scale: 157.1 mV

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[MW-8]

Response [mV]



**Gasoline by GC/FID CA LUFT**

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW-10	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-009	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	2,900	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	140 *	59-135
Bromofluorobenzene (FID)	119	60-140

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-010	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	280	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	59-135
Bromofluorobenzene (FID)	116	60-140

Field ID:	MW-12	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-011	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	31,000	500
Surrogate	%REC	Limits
Trifluorotoluene (FID)	208 *	59-135
Bromofluorobenzene (FID)	132	60-140

Field ID:	INFLUENT	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63911
Lab ID:	152163-012	Analyzed:	05/28/01

Analyte	Result	RL
Gasoline C7-C12	8,700	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	149 *	59-135
Bromofluorobenzene (FID)	121	60-140

\*= Value outside of QC limits; see narrative

ND= Not Detected

RL= Reporting Limit

# Chromatogram

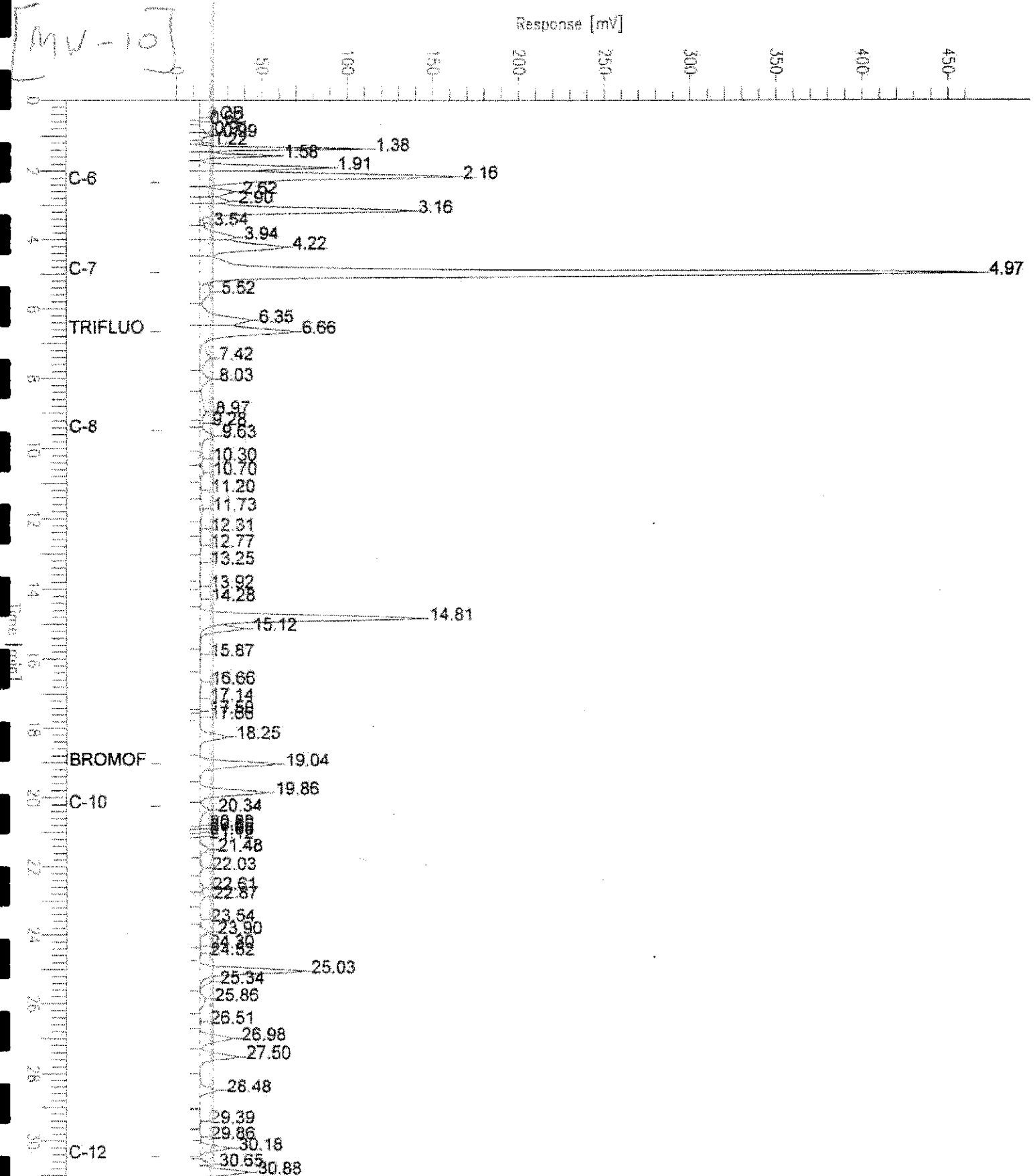
Sample Name : 152163-009\_#3824,+MTBE  
FileName : G:\GC05\DATA\143G031.raw  
Method : TVHBTXR  
Start Time : 0.00 min  
Scale Factor : 1.0

End Time : 31.00 min  
Plot Offset : -9 mV

Sample #: A1  
Date : 5/24/01 09:01 AM  
Time of Injection: 5/24/01 07:48 AM  
Low Point : -9.12 mV  
Plot Scale: 478.1 mV  
High Point : 468.97 mV

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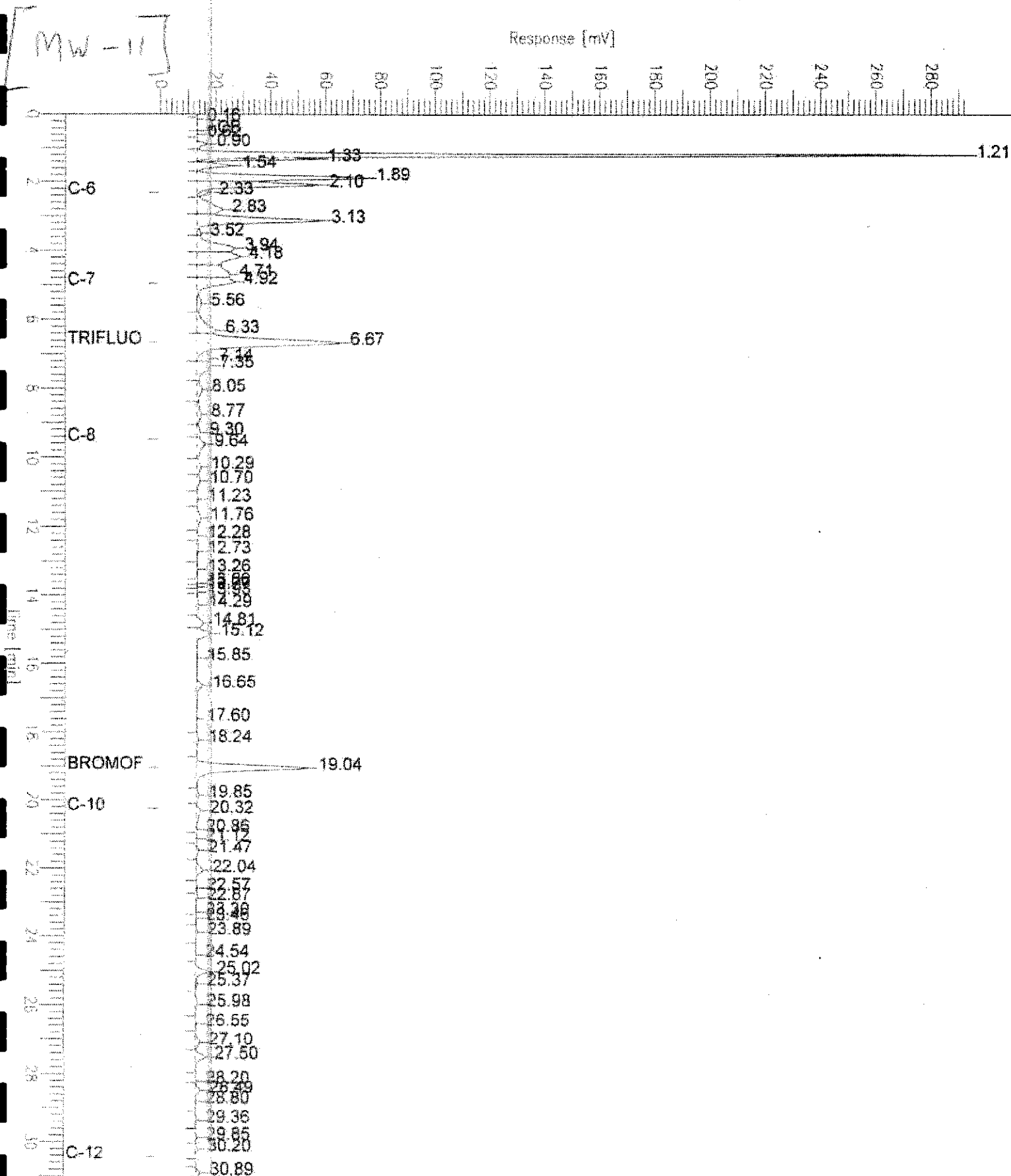
Response [mV]



# Chromatogram

Sample Name : 152163-010, 53824, +MTBE  
FileName : G:\GC05\DATA\143G054.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

Sample #: A1  
Date : 5/24/01 10:32 AM  
Time of Injection: 5/24/01 10:01 AM  
Low Point : -0.66 mV  
High Point : 293.15 mV  
Plot Scale: 293.8 mV



# Chromatogram

Sample Name : 152163-011, 83824, +MTBE  
FileName : G:\GC05\DATA\143G039.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

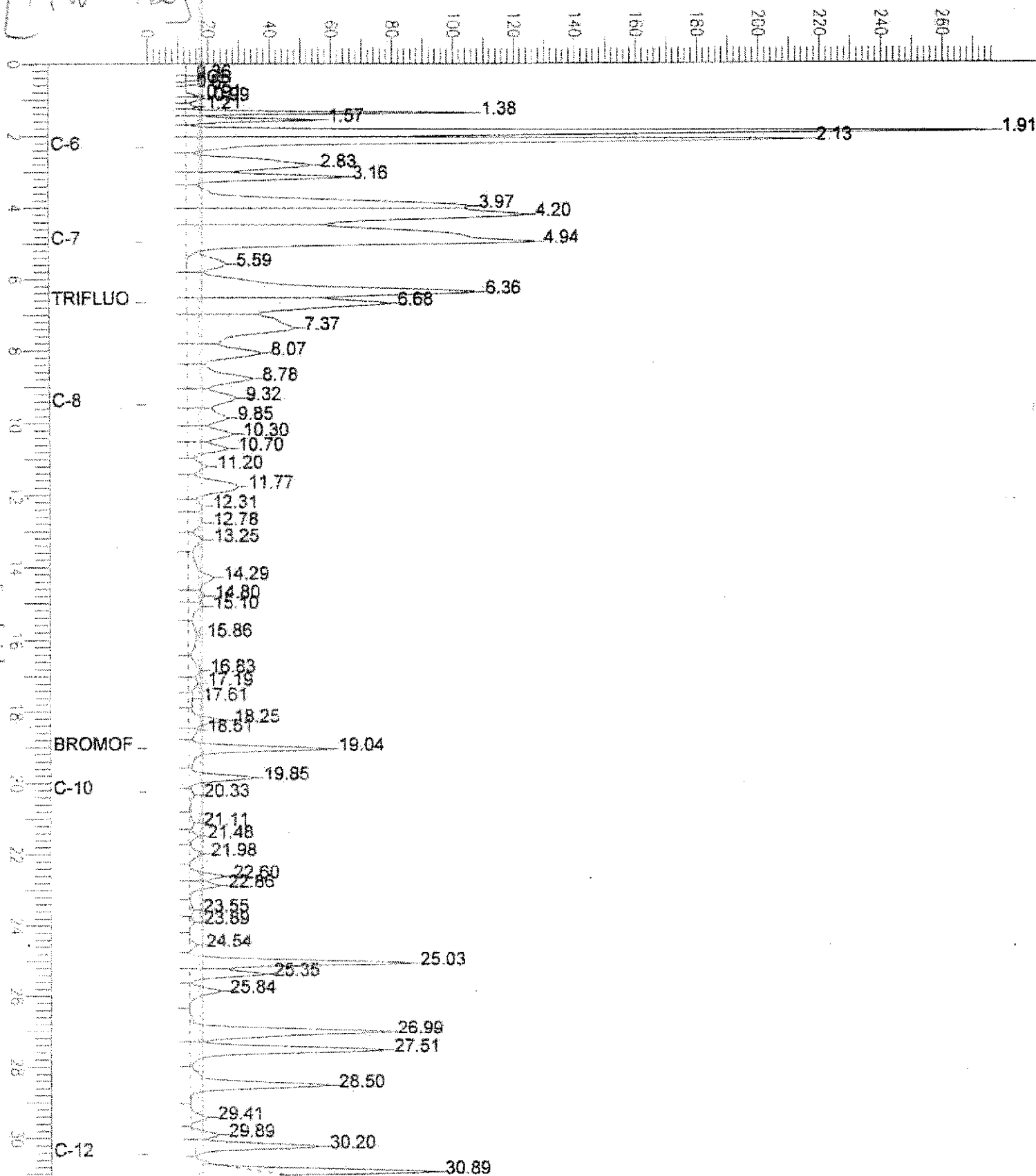
End Time : 31.00 min  
Plot Offset: -1 mV

Sample #: A1  
Date : 5/24/01 02:10 PM  
Time of Injection: 5/24/01 01:38 PM  
Low Point : -0.51 mV  
Plot Scale: 276.6 mV  
High Point : 276.07 mV

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[MW-12]

Response [mV]



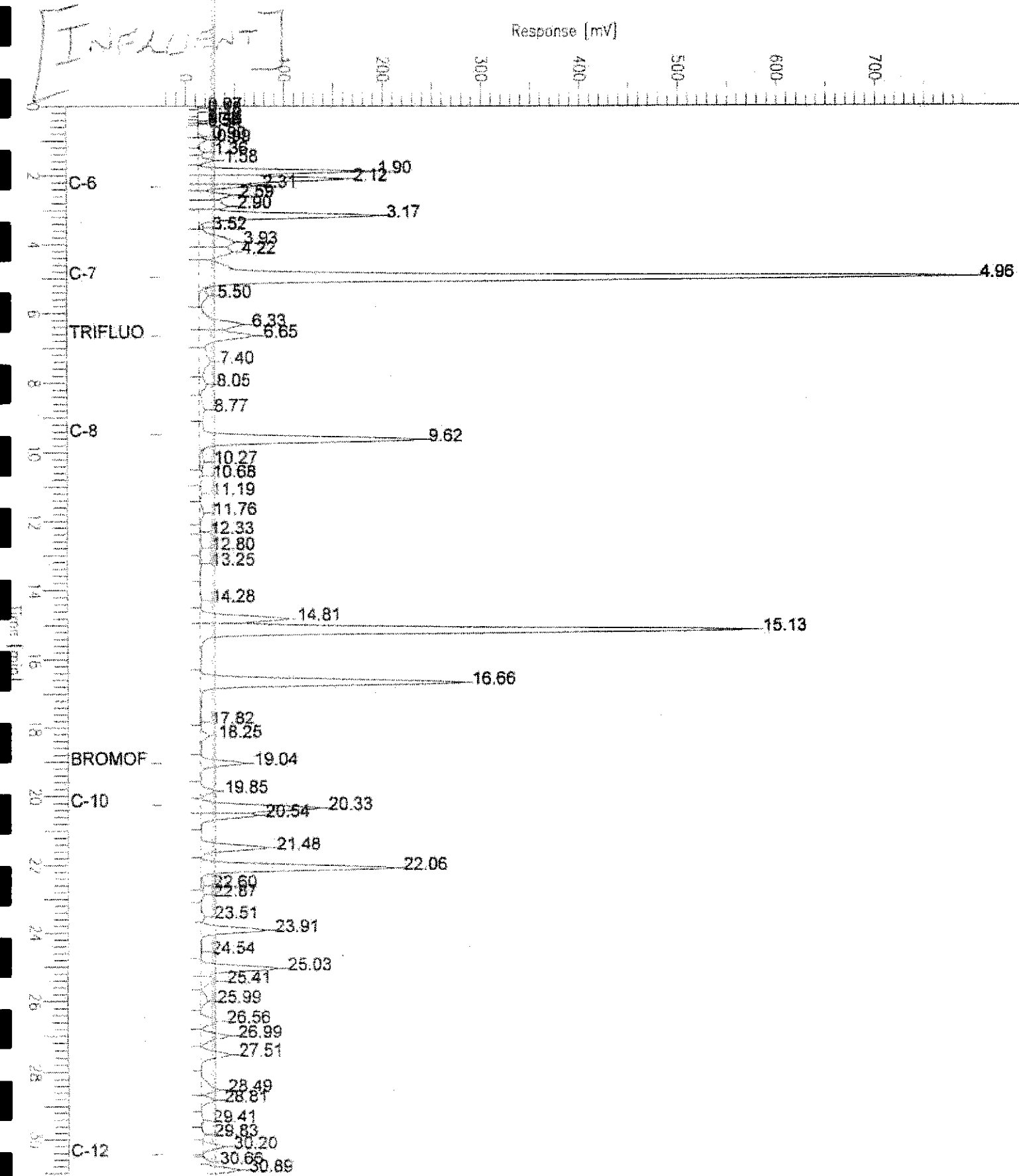


# Chromatogram

Sample Name : 152163-012\_62911  
FileName : G:\GC05\DATA\1478026.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor : 1.0

End Time : 31.00 min  
Plot Offset : -26 mV

Sample #: A1  
Date : 5/28/01 10:46 AM  
Time of Injection: 5/28/01 10:14 AM  
Low Point : -26.32 mV  
Plot Scale: 824.0 mV  
High Point : 797.71 mV



# Chromatogram

Sample Name : CCV/LCS,QCI#6120,63808,01WS1024,5/5000

Sample #:

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FileName : G:\GC05\DATA\143G022.raw

Date : 5/25/01 10:55 AM

Method : TVHBTXE

Time of Injection: 5/24/01 01:17 AM

Start Time : 0.00 min

End Time : 31.00 min

Low Point : 7.87 mV

High Point : 120.62 mV

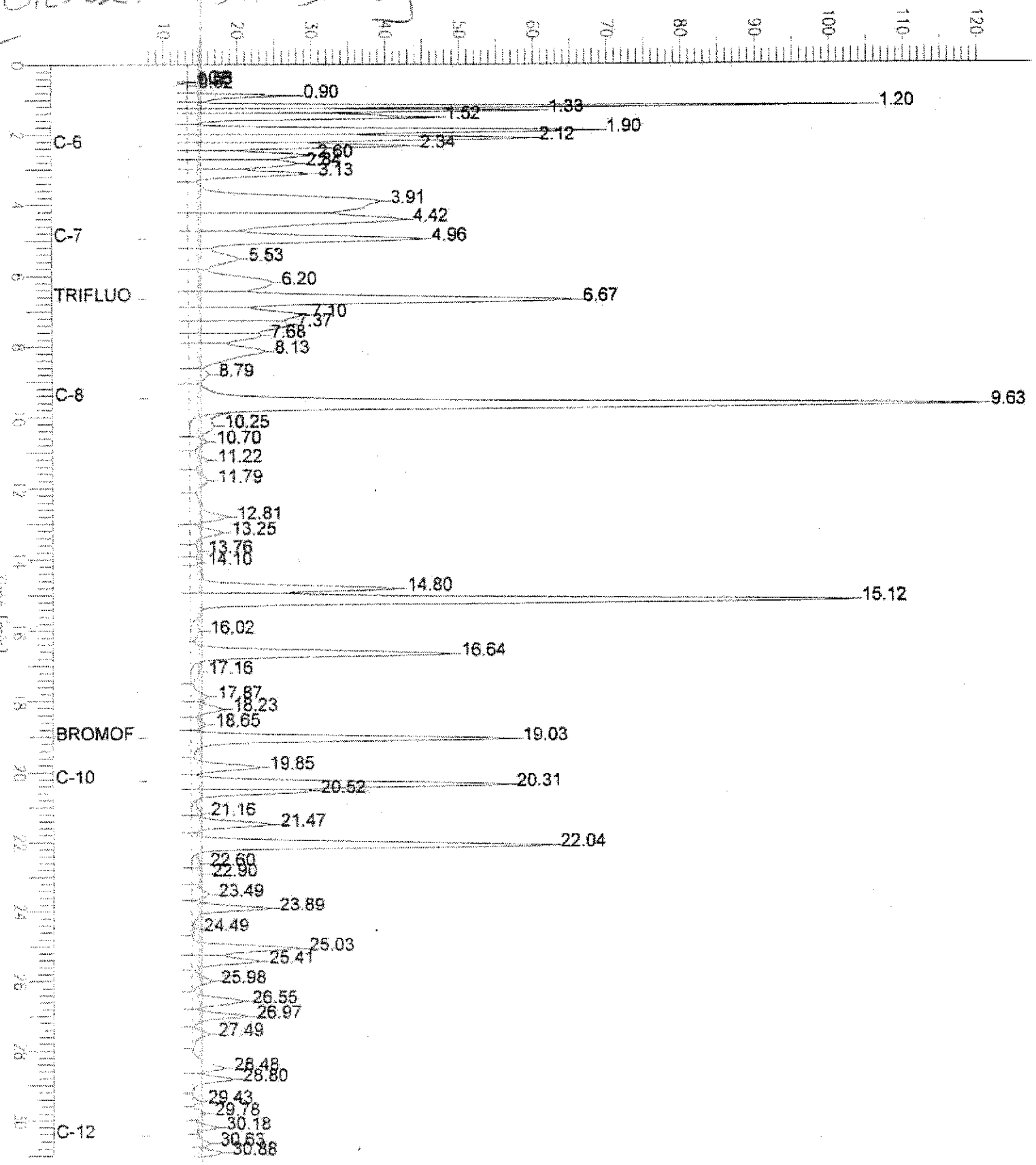
Scale Factor: 1.0

Plot Offset: 8 mV

Plot Scale: 112.7 mV

GASOLINE STANDARD

Response [mV]





## Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW-1	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-001	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	150	20
Benzene	310	5.0
Toluene	81	5.0
Ethylbenzene	82	5.0
m, p-Xylenes	300	5.0
o-Xylene	88	5.0

Surrogate	RRRC	Limits
Trifluorotoluene (PID)	124	56-142
Bromofluorobenzene (PID)	120	55-149

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-002	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	2.7 C	2.0
Benzene	37	0.50
Toluene	75	0.50
Ethylbenzene	55	0.50
m, p-Xylenes	130	0.50
o-Xylene	49	0.50

Surrogate	RRRC	Limits
Trifluorotoluene (PID)	119	56-142
Bromofluorobenzene (PID)	120	55-149

Field ID:	MW-3	Diln Fac:	50.00
Type:	SAMPLE	Batch#:	63911
Lab ID:	152163-003	Analyzed:	05/28/01

Analyte	Result	RL
MTBE	200 C	100
Benzene	5,400	25
Toluene	3,100	25
Ethylbenzene	1,400	25
m, p-Xylenes	4,500	25
o-Xylene	1,900	25

Surrogate	RRRC	Limits
Trifluorotoluene (PID)	117	56-142
Bromofluorobenzene (PID)	117	55-149

\*= Value outside of QC limits; see narrative

C= Presence confirmed, but confirmation concentration differed by more than a factor of two

b= See narrative

ND= Not Detected

RL= Reporting Limit

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**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-004	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	ND	2.0
Benzene	12	0.50
Toluene	1.9	0.50
Ethylbenzene	4.1	0.50
m,p-Xylenes	7.5	0.50
o-Xylene	2.3	0.50

Surrogate	SRRC	Limits
Trifluorotoluene (PID)	114	56-142
Bromofluorobenzene (PID)	117	55-149

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-005	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	4.4	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	2.1	0.50
m,p-Xylenes	0.57	0.50
o-Xylene	ND	0.50

Surrogate	SRRC	Limits
Trifluorotoluene (PID)	117	56-142
Bromofluorobenzene (PID)	117	55-149

Field ID:	MW-6	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63929
Lab ID:	152163-006	Analyzed:	05/29/01

Analyte	Result	RL
MTBE	ND	20
Benzene	760	5.0
Toluene	450	5.0
Ethylbenzene	1,600	5.0
m,p-Xylenes	3,500	5.0
o-Xylene	770	5.0

Surrogate	SRRC	Limits
Trifluorotoluene (PID)	132	56-142
Bromofluorobenzene (PID)	121	55-149

\*= Value outside of QC limits; see narrative

c= Presence confirmed, but confirmation concentration differed by more than a factor of two

b= See narrative

ND= Not Detected

L= Reporting Limit

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## Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW#7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-007	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	28	2.0
Benzene	ND	0.50
Toluene	9.1 C	0.50
Ethylbenzene	1.3	0.50
m,p-Xylenes	1.4	0.50
o-Xylene	0.90	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	118	56-142
Bromofluorobenzene (PID)	119	55-149

Field ID:	MW#8	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-008	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	410	10
Benzene	110	2.5
Toluene	28	2.5
Ethylbenzene	140	2.5
m,p-Xylenes	180	2.5
o-Xylene	14	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	125	56-142
Bromofluorobenzene (PID)	122	55-149

Field ID:	MW#10	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	63866
Lab ID:	152163-009	Analyzed:	05/26/01

Analyte	Result	RL
MTBE	270 b	10
Benzene	630	2.5
Toluene	11	2.5
Ethylbenzene	200	2.5
m,p-Xylenes	31	2.5
o-Xylene	ND	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	111	56-142
Bromofluorobenzene (PID)	106	55-149

\*= Value outside of QC limits; see narrative

C= Presence confirmed, but confirmation concentration differed by more than a factor of two

b= See narrative

ND= Not Detected

RL= Reporting Limit

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**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	05/22/01
Units:	ug/L	Received:	05/22/01

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-010	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	12	2.0
Benzene	12	0.50
Toluene	8.3	0.50
Ethylbenzene	3.3	0.50
m,p-Xylenes	6.9	0.50
o-Xylene	2.9	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	121	56-142
Bromofluorobenzene (PID)	117	55-149

Field ID:	MW-12	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63824
Lab ID:	152163-011	Analyzed:	05/24/01

Analyte	Result	RL
MTBE	1,900	20
Benzene	1,200	5.0
Toluene	ND	5.0
Ethylbenzene	95	5.0
m,p-Xylenes	100	5.0
o-Xylene	65	5.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	169 *	56-142
Bromofluorobenzene (PID)	131	55-149

Field ID:	INFLUENT	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	63929
Lab ID:	152163-012	Analyzed:	05/29/01

Analyte	Result	RL
MTBE	300	20
Benzene	1,200	5.0
Toluene	340	5.0
Ethylbenzene	140	5.0
m,p-Xylenes	920	5.0
o-Xylene	440	5.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	115	56-142
Bromofluorobenzene (PID)	115	55-149

\*= Value outside of QC limits; see narrative

C= Presence confirmed, but confirmation concentration differed by more than a factor of two

b= See narrative

ND= Not Detected

L= Reporting Limit

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Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	63960
Lab ID:	152163-001	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/30/01
Diln Fac:	1000		

Analyte	Result	RL
MTBE	61	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	83	80-115



Purgeable Aromatics by GC/MS

Lab #:	152153	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-2	Batch#:	63960
Lab ID:	152153-002	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/30/01
Diln Fac:	1000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	91	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	86	80-115



## Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	63960
Lab ID:	152163-003	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	1.429		

Analyte	Result	RL
MTBE	ND	0.7

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	74 *	80-115

\*= Value outside of QC limits; see narrative

ND= Not Detected

L= Reporting Limit



Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-5	Batch#:	63960
Lab ID:	152163-005	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/30/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	72 *	80-115

\* = Value outside of QC limits; see narrative  
ND= Not Detected  
RL= Reporting Limit  
Page 1 of 1



## Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MT-7	Batch#:	63960
Lab ID:	152163-007	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	17	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	73 *	80-115

\*= Value outside of QC limits; see narrative

L= Reporting Limit



Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MF-8	Batch#:	63960
Lab ID:	152163-008	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	2,500		

Analyte	Result	RL
MTBE	420	1.3

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	90	78-123
Toluene-d8	80	80-110
Bromofluorobenzene	57 *	80-115

\*= Value outside of QC limits; see narrative

L= Reporting Limit



Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-10	Batch#:	63960
Lab ID:	152163-009	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	2,000		

Analyte	Result	RL
MTBE	230	1.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	78-123
Toluene-d8	87	80-110
Bromofluorobenzene	81	80-115



## Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	63960
Lab ID:	152163-010	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	78-123
Toluene-d8	93	80-110
Bromofluorobenzene	66 *	80-115

\*= Value outside of QC limits; see narrative

ND= Not Detected

L= Reporting Limit

**Purgeable Aromatics by GC/MS**

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	MW-12	Batch#:	63981
Lab ID:	152163-011	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	140	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	103	80-115



Purgeable Aromatics by GC/MS

Lab #:	152163	Location:	Tony's, Oakland
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2331	Analysis:	EPA 8260B
Field ID:	INFLUENT	Batch#:	63960
Lab ID:	152163-012	Sampled:	05/22/01
Matrix:	Water	Received:	05/22/01
Units:	ug/L	Analyzed:	05/31/01
Diln Fac:	1.429		

Analyte	Result	RL
MTBE	250	0.7

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	62 *	80-115

\*= Value outside of QC limits; see narrative

L= Reporting Limit





**SOMA**  
2680 Bishop Drive, Suite 203  
San Ramon, CA 94583

**Client project ID:**  
Proj.# 2333  
3609 International Blvd  
Tony's Auto Express

Ref: R5924400  
Method: 5030 GCFID/  
8020  
Sampled: 4/11/01  
Received: 4/11/01  
Matrix: Water  
Analyzed: 4/12/01  
Reported: 4/19/01  
Units: ug/L  
Analyst: DS

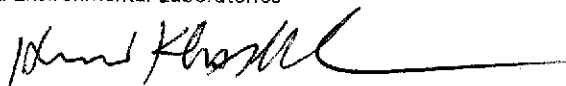
Attention: Naser Pakrou

**Laboratory Results for TPH + BTEX Analysis**

Analyte	EPA Method	Detection Limit ug/L	Results		
			Sample ID		
			Influent	Gac-1	PSP #1
<b>BTEX</b>					
Benzene	8020	0.5	1,627	ND	ND
Toluene	8020	0.5	532	ND	ND
Ethylbenzene	8020	0.5	103	ND	ND
Total Xylene	8020	1.0	2,083	ND	ND
<b>TPH-g</b>	5030/GCFID	50	17,170	ND	ND

ND: Not Detected (<MDL)

Delta Environmental Laboratories



Hossein Khosh Khoo, Ph.D.

## Quality Control Report

**SOMA**

2680 Bishop Drive, Suite 203  
San Ramon, CA 94583

**Client Project ID:**  
proj 2333  
3609 International Blvd  
Tony's Auto Express

Ref.: Q 5924400  
Method: 5030 GC/FID/  
8020  
Sampled: 4/11/01  
Received: 4/11/01  
Matrix: Water  
Analyzed: 4/12/01  
Analyst: DS  
Reported: 4/19/01  
Units: ug/L

**Attention:** Naser Pakrou

### Quality Control Report for TPH & BTEX

Analyte	Detection Limit ug/L	Sample Result ug/L	Spike Added ug/L	% MS Recovery	% MSD Recovery	Relative % Difference RPD	Method
Benzene	0.5	ND	20	99	100	1.0	8020
Toulene	0.5	ND	20	92	95	3.2	8020
Ethylbenzene	0.5	ND	20	98	100	2	8020
T-Xylene	1.0	ND	40	98	100	2.0	8020
TPH-Gas,GC/FID	50	ND	400	112	111	0.9	5030

Delta Environmental Laboratories

  
**H. Khosh Khoo, PhD.**  
Laboratory Director/President

**Client:**  
SOMA  
2680 Bishop Drive, Suite 203  
San Ramon, CA 94583

**Client Project ID:**  
Proj. # 2333  
3609 International Blvd  
Tony's Auto Express

Ref: R5924100  
Method: 8260  
Sampled: 4/11/01  
Received: 4/11/01  
Matrix: Water  
Analyzed: 4/13-17/2001  
Reported: 4/19/01  
Analyst: DS  
Unit: ug/L

**Attention:** Naser Pakrou

**Purgeable Hydrocarbons**

EPA 8260  
VOC

Analyte	Detection Limit ug/L	Results		
		Sample ID		
		Influent*	GAC-1	PSP #1
Benzene	0.5	1,716	ND	ND
Bromobenzene	0.5	ND	ND	ND
Bromochloromethane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
n-Butylbenzene	0.5	10	ND	ND
sec-Butylbenzene	0.5	5.1	ND	ND
tert-Butylbenzene	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	0.54
Chloromethane	0.5	ND	ND	ND
2-Chlorotoluene	0.5	ND	ND	ND
4-Chlorotoluene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.5	ND	ND	ND
1,2-Dibromoethane	0.5	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND
dichlorodifluoromethane	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND

**Client:**  
SOMA  
2680 Bishop Drive, Suite 203  
San Ramon, CA 94583

**Client Project ID:**  
Proj. # 2333  
3609 International Blvd  
Tony's Auto Express

Ref: R5924100  
Method: 8260  
Sampled: 4/11/01  
Received: 4/11/01  
Matrix: Water  
Analyzed: 4/13-17/2001  
Reported: 4/19/01  
Analyst: DS  
Unit: ug/L

**Attention:** Naser Pakrou

**Purgeable Hydrocarbons**

EPA 8260

VOC

Analyte	Detection Limit ug/L	Results		
		Sample ID		
		Influent*	GAC-1	PSP #1
2,2-Dichloropropane	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND
Ethylbenzene	0.5	108	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND
Isopropylbenzene	0.5	11	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Naphthalene	0.5	157	ND	ND
n-Propylbenzene	0.5	10	ND	ND
Styrene	0.5	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Toluene	0.5	474	ND	ND
1,2,3-Trichlorobenzene	0.5	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND
1,2,4-Trimethylbenzene	0.5	616	ND	ND
1,3,5-Trimethylbenzene	0.5	124	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Xylenes, Total	1.0	1673	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND

ND: Not Detected

\* Sample was diluted 10 times; therefore, detection limits must be multiplied by the same factor.

DELTA Environmental Laboratories

H.Khosh Khoo, PhD.,

  
Laboratory Director/President

## Quality Control Report

**Client:**  
SOMA  
2680 Bishop Drive, Suite 203  
San Ramon, CA 94583

**Client Project ID:**  
Proj. # 2333  
3609 International Blvd  
Tony's Auto Express

**Ref.** Q5924100

**Matrix:** Water  
**Unit:** ug/L

**Attention:** Naser Pakrou

**QC Batch:** 5923

**Reported** 4/19/01

### Surrogate Standard Recovery Summary Method : EPA8260

Date Analyzed	Lab Id.	Percent Recovery		
		Pentafluoro-benzene	Toluene d8	p-Bromofluoro-Benzene
4/13/01	Blank	88	103	108
4/13/01	Blank	94	101	105
QC limit:		70-121	81-117	74-121

Date Analyzed: 4/13/01  
Sample Spiked: Blank

### Matrix Spike Recovery

Analyte	Spike Added ug/L	Matrix Spike % Recovery	Matrix Spike Dup % Recovery	Relative % Difference RPD
1,1-Dichloroethene	20	94	98	4.2
Trichloroethene	20	105	101	200.0
Benzene	20	104	101	200.0
Toluene	20	106	102	200.0
Chlorobenzene	20	100	98	2.0

H.Khosh Khoo, PhD.,  
Laboratory Director/President





A N A L Y T I C A L   R E P O R T

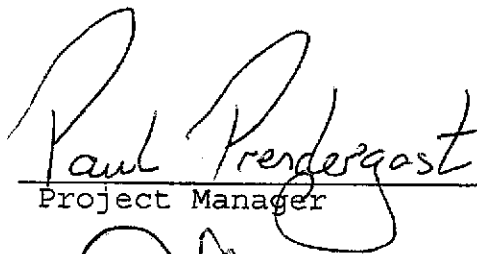
Prepared for:

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2680 Bishop Dr.  
Suite 203  
San Ramon, CA 94583

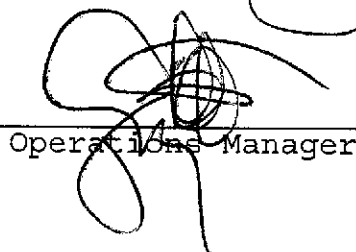
Date: 15-JUN-01  
Lab Job Number: 152088  
Project ID: 2333  
Location: Tony's Auto Express

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

C&T  
 LOGIN # 152088

**Analyses**

Project No: 2333

Sampler: Naser Pakrou

Project Name: Tony's Auto Express

Report To: Naser Pakrou

Project P.O.:

Company: SOMA Env. Eng.

Turnaround Time: Standard

Telephone: 925 244 6600

Fax: 925 244 6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix			# of Containers	Preservative				Field Notes
			Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE	
	<u>BAC-1</u>	<u>5/17 1:30</u>			<input checked="" type="checkbox"/>	<u>3</u>	<input checked="" type="checkbox"/>				
	<u>PSP #1</u>	<u>"</u>			<input checked="" type="checkbox"/>	<u>"</u>	<input checked="" type="checkbox"/>				
F o r t o r y											
L a b o r a t o r y											

✓ Tony's BTEX MTBE 8260B

Received  On Ice  
 Cold  Ambient  Intact

Notes:

RELINQUISHED BY:	RECEIVED BY:
<u>Naser Pakrou</u> <u>5/17 5:00</u> DATE/TIME	<u>Juan Aleg</u> <u>5/18/01 9:00am</u> DATE/TIME

Signature



**Gasoline by GC/FID CA LUFT**

Lab #:	152088	Location:	Tony's Auto Express
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	63827
Units:	ug/L	Sampled:	05/17/01
Diln Fac:	1.000	Received:	05/18/01

Field ID:	GAC-1	Lab ID:	152088-001
Type:	SAMPLE	Analyzed:	05/23/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	59-135
Bromofluorobenzene (FID)	104	60-140

Field ID:	PSP#1	Lab ID:	152088-002
Type:	SAMPLE	Analyzed:	05/24/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	59-135
Bromofluorobenzene (FID)	103	60-140

Type:	BLANK	Analyzed:	05/23/01
Lab ID:	QC146132		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	97	60-140

**Gasoline by GC/FID CA LUFT**

Lab #:	152088	Location:	Tony's Auto Express
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC146133	Batch#:	63827
Matrix:	Water	Analyzed:	05/23/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,070	104	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	59-135
Bromofluorobenzene (FID)	101	60-140

## Gasoline by GC/FID CA LUFT

Lab #:	152088	Location:	Tony's Auto Express
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	63827
MSS Lab ID:	152107-001	Sampled:	05/18/01
Matrix:	Water	Received:	05/18/01
Units:	ug/L	Analyzed:	05/24/01
Diln Fac:	1.000		

Type: MS Lab ID: QC146134

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<21.00	2,000	1,991	100	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	115	59-135
Bromofluorobenzene (FID)	106	60-140

Type: MSD Lab ID: QC146135

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,036	102	65-131	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	59-135
Bromofluorobenzene (FID)	109	60-140



**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #: 152088	Location: Tony's Auto Express
Client: SOMA Environmental Engineering Inc.	Prep: EPA 5030
Project#: 2333	Analysis: EPA 8021B
Matrix: Water	Batch#: 63785
Units: ug/L	Sampled: 05/17/01
Oiln Fac: 1.000	Received: 05/18/01

Field ID: GAC-1	Lab ID: 152088-001
Type: SAMPLE	Analyzed: 05/23/01

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)	106	56-142
Bromofluorobenzene (PID)	108	55-149

Field ID: PSP#1	Lab ID: 152088-002
Type: SAMPLE	Analyzed: 05/23/01

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)	107	55-149

Type: BLANK	Analyzed: 05/22/01
Lab ID: QC145986	

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)	101	55-149



**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	152088	Location:	Tony's Auto Express
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC145990	Batch#:	63785
Matrix:	Water	Analyzed:	05/22/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	21.98	110	51-125
Benzene	20.00	21.64	108	67-117
Toluene	20.00	23.15	116	69-117
Ethylbenzene	20.00	22.93	115	68-124
m,p-Xylenes	40.00	48.28	121	70-125
o-Xylene	20.00	23.72	119	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	108	56-142
Bromofluorobenzene (PID)	106	55-149



A N A L Y T I C A L   R E P O R T

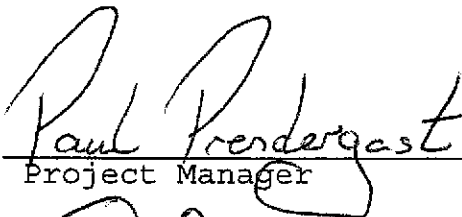
Prepared for:

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

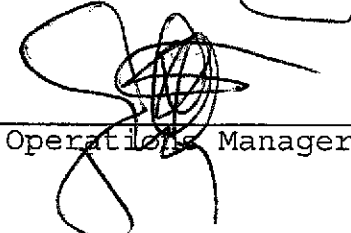
Date: 10-JUL-01  
Lab Job Number: 152813  
Project ID: 2333  
Location: Tonys

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Project Manager

Reviewed by:

  
Operations Manager

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 (510)486-0532 Fax

**Analyses**

C&T  
 LOGIN # \_\_\_\_\_

**Project No:** 2333  
**Project Name:** TONY'S  
**Project P.O.:** 025120  
**Turnaround Time:** Standard

**Sampler:** fc  
**Report To:** Frank Cioffi  
**Company:** SOMTA  
**Telephone:** (425) 244-6600  
**Fax:** (425) 244-6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix			# of Containers	Preservative				Field Notes
			Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE	
	<u>GFF/PHL</u>	<u>10/10</u>		<input checked="" type="checkbox"/>		<u>1</u>	<input checked="" type="checkbox"/>				<u>FC 10/10 10/10 10/10</u>
	<u>GAC-1</u>	<u>10/10</u>		<input checked="" type="checkbox"/>		<u>1</u>	<input checked="" type="checkbox"/>				
	<u>INF</u>	<u>10/10</u>		<input checked="" type="checkbox"/>		<u>1</u>	<input checked="" type="checkbox"/>				
For Factory Use											

Notes:	<b>RELINQUISHED BY:</b>		<b>RECEIVED BY:</b>	
	<u>Frank Cioffi</u>	<u>6/29/01</u>	<u>10/10</u>	<u>Karl Koenig</u>
			DATE/TIME	DATE/TIME

Signature

## Gasoline by GC/FID CA LUFT

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	06/29/01
Units:	ug/L	Received:	06/29/01

Field ID:	EFF/PSPI	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	64657
Lab ID:	152813-001	Analyzed:	07/01/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	59-135
Bromofluorobenzene (FID)	106	60-140

Field ID:	GAC-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	64657
Lab ID:	152813-002	Analyzed:	07/01/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	102	59-135
Bromofluorobenzene (FID)	105	60-140

Field ID:	INF	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	64765
Lab ID:	152813-003	Analyzed:	07/06/01

Analyte	Result	RL
Gasoline C7-C12	6,600	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	59-135
Bromofluorobenzene (FID)	105	60-140



# GC07 TVH 'A' Data File RTX 502

Sample Name : 152813-003,64765,TVH ONLY

Sample #: A1 HS

Page 1 of 1

FileName : G:\GC07\DATA\186A010.raw

Date : 7/6/01 12:43 PM

Method : TVHBTXE

Time of Injection: 7/6/01 12:17 PM

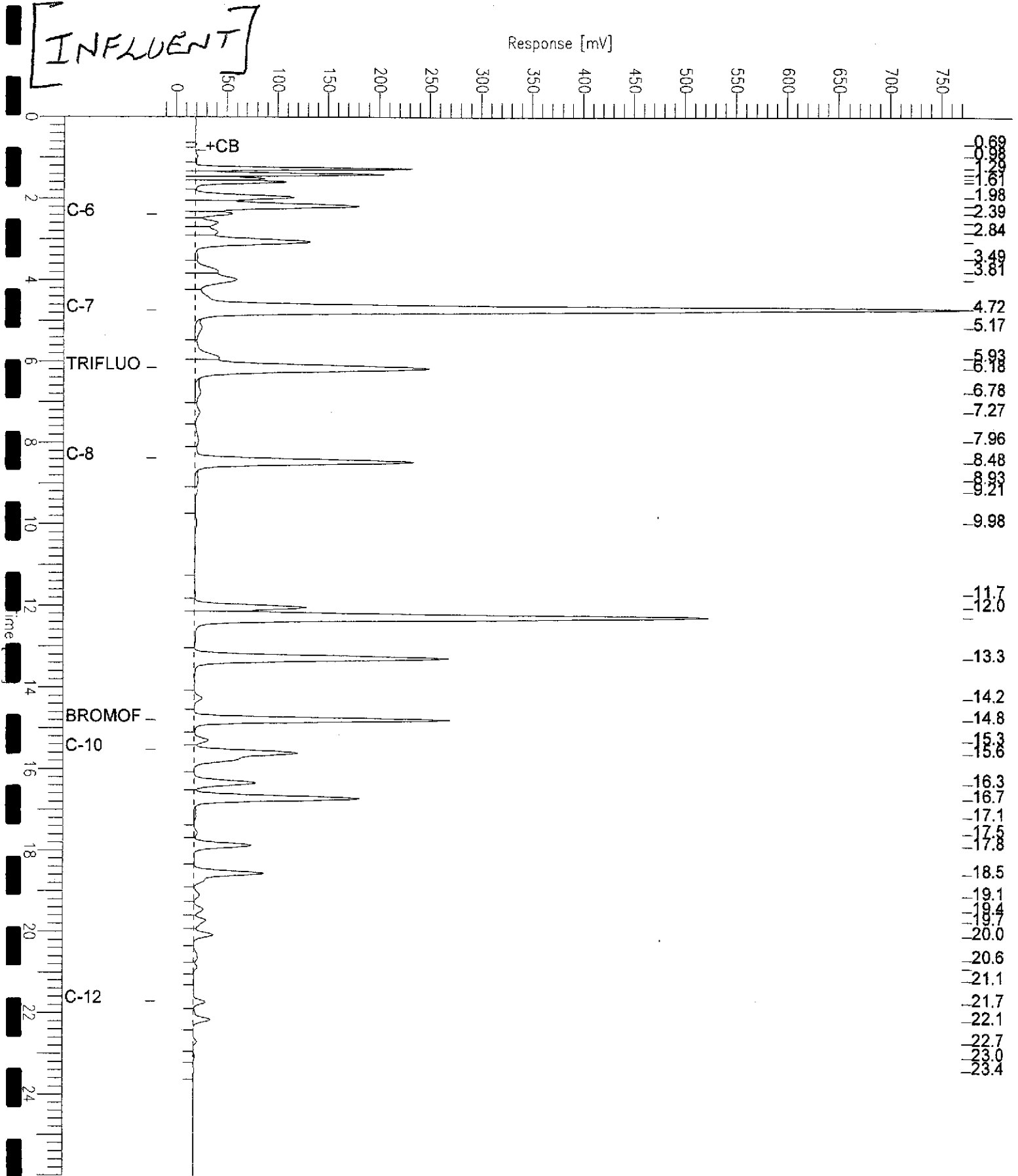
Start Time : 0.00 min End Time : 26.00 min

Low Point : -18.78 mV High Point : 772.11 mV

Scale Factor: 1.0

Plot Offset: -19 mV

Plot Scale: 790.9 mV

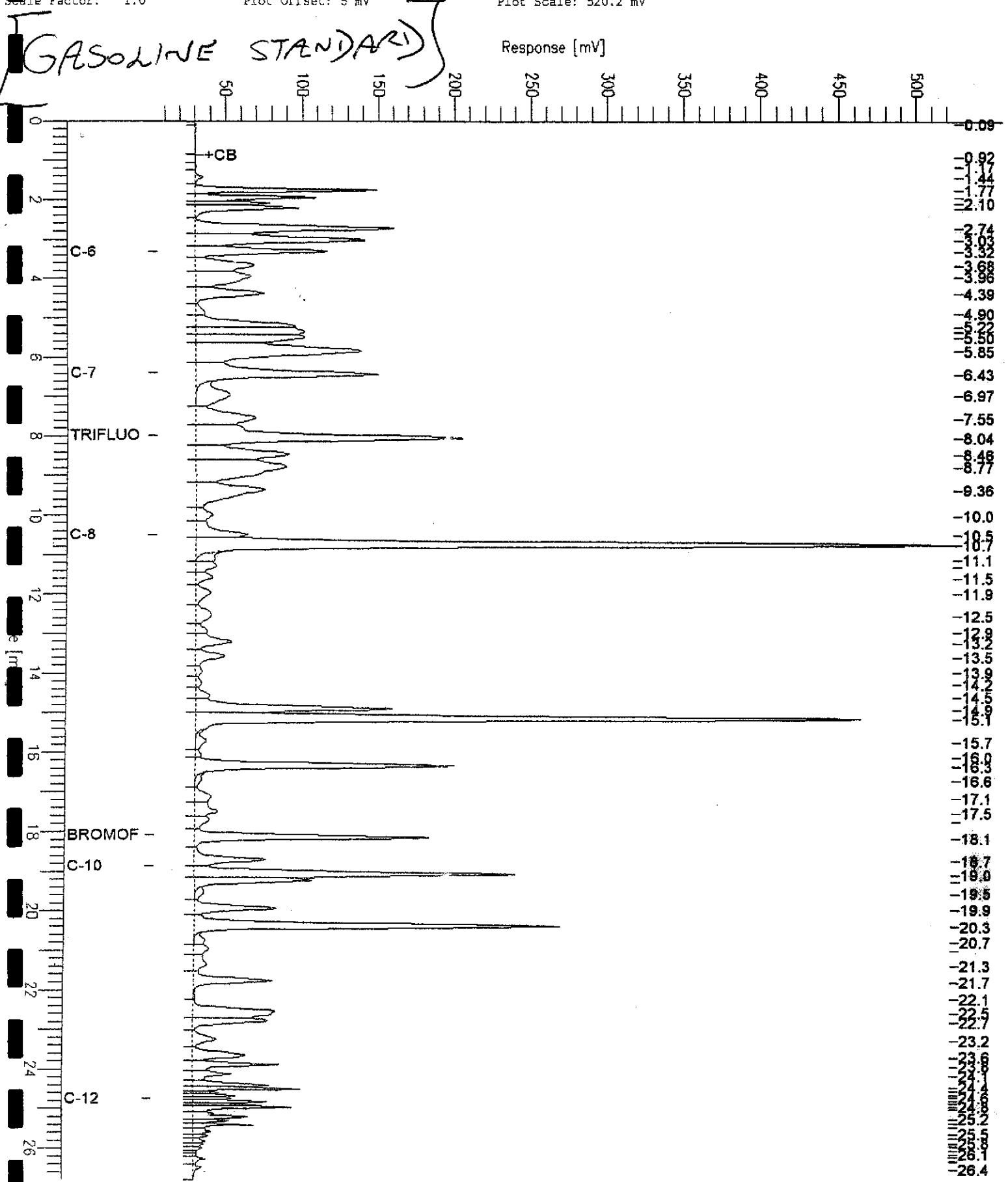


# GC19 TVH 'X' Data File (FID)

Sample Name : CCV/LCS, QC149221, 64657, 01WS1268, 5/5000  
 FileName : G:\GC19\DATA\181X003.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor : 1.0

Sample # :  
 Date : 6/30/01 08:05 PM  
 Time of Injection: 6/30/01 07:38 PM  
 Low Point : 4.86 mV  
 Plot Scale: 520.2 mV

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**Gasoline by GC/FID CA LUFT**

Lab #: 152813	Location: Tonys
Client: SOMA Environmental Engineering Inc.	Prep: EPA 5030
Project#: 2333	Analysis: EPA 8015M
Matrix: Water	Sampled: 06/29/01
Units: ug/L	Received: 06/29/01

Type: BLANK	Batch#: 64657
Lab ID: QC149220	Analyzed: 06/30/01
Diln Fac: 1.000	

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	99	59-135
Bromofluorobenzene (FID)	99	60-140

Type: BLANK	Batch#: 64765
Lab ID: QC149641	Analyzed: 07/06/01
Diln Fac: 1.000	

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	102	60-140

**Gasoline by GC/FID CA LUPT**

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC149221	Batch#:	64657
Matrix:	Water	Analyzed:	06/30/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,791	90	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	124	59-135
Bromofluorobenzene (FID)	104	60-140



Gasoline by GC/FID CA LUFT

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	64765
Units:	ug/L	Analyzed:	07/06/01
Diln Fac:	1.000		

Type: BS Lab ID: QC149642

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,290	115	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	110	59-135
Bromofluorobenzene (FID)	113	60-140

Type: BSD Lab ID: QC149643

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,212	111	73-121	3	20

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

## Gasoline by GC/FID CA LUFT

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	64657
MSS Lab ID:	152792-002	Sampled:	06/28/01
Matrix:	Water	Received:	06/28/01
Units:	ug/L	Analyzed:	07/01/01
Diln Fac:	1.000		

Type: MS Lab ID: QC149222

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,835	92	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	131	59-135
Bromofluorobenzene (FID)	112	60-140

Type: MSD Lab ID: QC149223

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,821	91	65-131	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	111	60-140

## Purgeable Organics by GC/MS

Lab #: 152813	Location: Tonys
Client: SOMA Environmental Engineering Inc.	Prep: EPA 5030
Project#: 2333	Analysis: EPA 8260B
Field ID: EFF/PSPI	Batch#: 64700
Lab ID: 152813-001	Sampled: 06/29/01
Matrix: Water	Received: 06/29/01
Units: ug/L	Analyzed: 07/03/01
Diln Fac: 1.000	

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

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Field ID:	EFF/PSPI	Batch#:	64700
Lab ID:	152813-001	Sampled:	06/29/01
Matrix:	Water	Received:	06/29/01
Units:	ug/L	Analyzed:	07/03/01
Diln Fac:	1.000		

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

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	109	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	99	80-115



## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Field ID:	GAC-1	Batch#:	64700
Lab ID:	152813-002	Sampled:	06/29/01
Matrix:	Water	Received:	06/29/01
Units:	ug/L	Analyzed:	07/03/01
Diln Fac:	1.000		

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

ND= Not Detected

L= Reporting Limit

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Field ID:	GAC-1	Batch#:	64700
Lab ID:	152813-002	Sampled:	06/29/01
Matrix:	Water	Received:	06/29/01
Units:	ug/L	Analyzed:	07/03/01
Diln Fac:	1.000		

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

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	111	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	99	80-115

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Field ID:	INF	Batch#:	64730
Lab ID:	152813-003	Sampled:	06/29/01
Matrix:	Water	Received:	06/29/01
Units:	ug/L	Analyzed:	07/04/01
Diln Fac:	7.143		

Analyte	Result	RI
Freon 12	ND	71
Chloromethane	ND	71
Vinyl Chloride	ND	71
Bromomethane	ND	71
Chloroethane	ND	71
Trichlorofluoromethane	ND	36
Acetone	ND	140
Freon 113	ND	36
1,1-Dichloroethene	ND	36
Methylene Chloride	ND	140
Carbon Disulfide	ND	36
MIBK	300	36
trans-1,2-Dichloroethene	ND	36
Vinyl Acetate	ND	360
1,1-Dichloroethane	ND	36
2-Butanone	ND	71
cis-1,2-Dichloroethene	ND	36
2,2-Dichloropropane	ND	36
Chloroform	ND	36
Bromochloromethane	ND	71
1,1,1-Trichloroethane	ND	36
1,1-Dichloropropene	ND	36
Carbon Tetrachloride	ND	36
1,2-Dichloroethane	ND	36
Benzene	1,100	36
Trichloroethene	ND	36
1,2-Dichloropropane	ND	36
Bromodichloromethane	ND	36
Dibromomethane	ND	36
4-Methyl-2-Pentanone	ND	71
cis-1,3-Dichloropropene	ND	36
Toluene	350	36
trans-1,3-Dichloropropene	ND	36
1,1,2-Trichloroethane	ND	36
2-Hexanone	ND	71
1,3-Dichloropropane	ND	36
Tetrachloroethene	ND	36

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Field ID:	INF	Batch#:	64730
Lab ID:	152813-003	Sampled:	06/29/01
Matrix:	Water	Received:	06/29/01
Units:	ug/L	Analyzed:	07/04/01
Diln Fac:	7.143		

Analyte	Result	RI
Dibromochloromethane	ND	36
1,2-Dibromoethane	ND	36
Chlorobenzene	ND	36
1,1,1,2-Tetrachloroethane	ND	36
Ethylbenzene	210	36
m,p-Xylenes	1,000	36
o-Xylene	470	36
Styrene	ND	36
Bromoform	ND	36
Isopropylbenzene	ND	36
1,1,2,2-Tetrachloroethane	ND	36
1,2,3-Trichloropropane	ND	36
Propylbenzene	ND	36
Bromobenzene	ND	36
1,3,5-Trimethylbenzene	88	36
2-Chlorotoluene	ND	36
4-Chlorotoluene	ND	36
tert-Butylbenzene	ND	36
1,2,4-Trimethylbenzene	390	36
sec-Butylbenzene	ND	36
para-Isopropyl Toluene	ND	36
1,3-Dichlorobenzene	ND	36
1,4-Dichlorobenzene	ND	36
n-Butylbenzene	ND	36
1,2-Dichlorobenzene	ND	36
1,2-Dibromo-3-Chloropropane	ND	36
1,2,4-Trichlorobenzene	ND	36
Hexachlorobutadiene	ND	36
Naphthalene	140	36
1,2,3-Trichlorobenzene	ND	36

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	112	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	96	80-115

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC149392	Batch#:	64700
Matrix:	Water	Analyzed:	07/03/01
Units:	ug/L		

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

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC149392	Batch#:	64700
Matrix:	Water	Analyzed:	07/03/01
Units:	ug/L		

Analyte	Result	RL
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
hexachlorobutadiene	ND	5.0
naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	108	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	99	80-115

## Purgeable Organics by GC/MS

Lab #: 152813	Location: Tonys
Client: SOMA Environmental Engineering Inc.	Prep: EPA 5030
Project#: 2333	Analysis: EPA 8260B
Type: BLANK	Diln Fac: 1.000
Lab ID: QC149480	Batch#: 64700
Matrix: Water	Analyzed: 07/03/01
Units: ug/L	

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

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

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC149480	Batch#:	64700
Matrix:	Water	Analyzed:	07/03/01
Units:	ug/L		

Analyte	Result	RL
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	106	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	99	80-115



## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC149500	Batch#:	64730
Matrix:	Water	Analyzed:	07/04/01
Units:	ug/L		

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

ND - Not Detected  
 RL - Reporting Limit

## Purgeable Organics by GC/MS

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC149500	Batch#:	64730
Matrix:	Water	Analyzed:	07/04/01
Units:	ug/L		

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

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	108	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	99	80-115

**Purgeable Organics by GC/MS**

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	64700
Units:	ug/L	Analyzed:	07/03/01
Diln Fac:	1.000		

Type: BS Lab ID: QC149390

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	43.91	88	74-132
Benzene	50.00	42.34	85	80-116
Trichloroethene	50.00	45.24	90	80-119
Toluene	50.00	45.47	91	80-120
Chlorobenzene	50.00	44.42	89	80-117

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	95	80-115

Type: BSD Lab ID: QC149391

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	44.66	89	74-132	2	20
Benzene	50.00	43.31	87	80-116	2	20
Trichloroethene	50.00	46.71	93	80-119	3	20
Toluene	50.00	45.77	92	80-120	1	20
Chlorobenzene	50.00	46.36	93	80-117	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	110	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	94	80-115

**Purgeable Organics by GC/MS**

Lab #:	152813	Location:	Tonys
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	64730
Units:	ug/L	Analyzed:	07/04/01
Filen Fac:	1.000		

Type: BS Lab ID: QC149498

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	42.67	85	74-132
Benzene	50.00	40.61	81	80-116
Trichloroethene	50.00	44.08	88	80-119
Toluene	50.00	43.83	88	80-120
Chlorobenzene	50.00	44.86	90	80-117

Surrogate	%REC	Limits
Bromofluoromethane	100	80-122
1,2-Dichloroethane-d4	107	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	93	80-115

Type: BSD Lab ID: QC149499

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	41.49	83	74-132	3	20
Benzene	50.00	41.05	82	80-116	1	20
Trichloroethene	50.00	44.66	89	80-119	1	20
Toluene	50.00	42.36	85	80-120	3	20
Chlorobenzene	50.00	46.12	92	80-117	3	20

Surrogate	%REC	Limits
Bromofluoromethane	96	80-122
1,2-Dichloroethane-d4	106	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	96	80-115

# 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