

First Quarter 2002 Groundwater Monitoring Report Former Glovatorium Facility

3815 Broadway
Oakland, California

March 27, 2002

Project 01-2510

Prepared for
Smiland and Khachigian
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Project: 01-2510

April 1, 2002

APR 03 ZOOZ

Mr. Scott Seery, CHMM Alameda County Department of Environmental Health 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502-6577

Subject: Site Located at 3815 Broadway, Oakland, California

Former Glovatorium Facility

Dear Mr. Seery:

A copy of SOMA's "First Quarter 2002 Groundwater Monitoring Report" for the subject property is enclosed.

Thank you for your time in reviewing our report. Please do not hesitate to call me at (925) 244-6600, if you have any questions or comments.

Sincerely,

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

Enclosure

cc: Mr. Stuart Depper, Clean Tech Machinery w/enclosure

Mr. Albert M. Cohen, Smiland & Khachigian w/enclosure

Ms. Betty Graham, Regional Water Quality Control Board w/enclosure

Dr. Bruce Page, Bruce W. Page Consulting w/enclosure

Certification



This report has been prepared by SOMA Environmental Engineering, Inc. for Smiland & Khachigian, to comply with Alameda County Department of Environmental Health's requirements for the First Quarter 2002 groundwater monitoring event and to provide information necessary to defend claims brought against the owners by Earl Thompson and Grace Johnson.

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

Principal Hydrogeologist



Table of Contents

LIST	OF TABLESIII
LIST	OF FIGURESIII
LIST	OF APPENDICESIV
1.0	INTRODUCTION1
1.1	Site Description2
1.2	Background4
1.3	Site Geology and Hydrogeology7
2.0	FIELD ACTIVITIES 8
2.1	Laboratory Analysis9
3.0	RESULTS9
3.1	Groundwater Flow Condition
3.2	Groundwater Quality12
3.3	Bioattenuation Parameter Analysis Results14
4.0	CONCLUSIONS AND RECOMMENDATIONS19
4.1	Conclusions
4.2	Recommendations23
5.0	REFERENCES25

List of Tables

Table 1: Construction Data for Temporary Sampling Points and Monitoring Wells Table 2: Groundwater Elevation Data January 30-31, 2002 Table 3: Historical Groundwater Elevation at Different Wells Table 4: Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity in Groundwater Samples Table 5: Analytical Results of Groundwater Samples Analyzed for Petroleum Hydrocarbons Table 6: Analytical Results of Groundwater Samples Analyzed for Volatile Organic Compounds Table 7: Historical Analytical Result for Total Petroleum Hydrocarbons, BTEX and MtBE Analyses of Groundwater Samples Table 8: Historical Analytical Results for Volatile Organic Compounds Analyses of Groundwater Samples Table 9: Historical In-Situ and Ex-Situ Analyses Results for Bioattenuation Parameters of Groundwater Samples

List of Figures

Figure 1:	Site Location Map							
Figure 2:	Location of Groundwater Monitoring Wells							
Figure 3:	Groundwater Elevation Contour Map, January 30, 2002							
Figure 4:	TPH-g Concentration Contour Map in Groundwater, First Quarter 2002							
Figure 5:	TPH-ss Concentration Contour Map in Groundwater, First Quarter 2002							
Figure 6:	Cis-1,2-DCE Concentration Contour Map in Groundwater, First Quarter							
	2002							
Figure 7:	Tetrachloroethene Concentration Contour Map in Groundwater, First							

Quarter 2002

Figure 8: Trichloroethene Concentration Contour Map in Groundwater, First Quarter 2002

Figure 9: Dissolved Oxygen Concentration Contour Map in Groundwater, First Quarter 2002

Figure 10: Nitrate Concentration Contour Map in Groundwater, First Quarter 2002
Figure 11: Sulfate Concentration Contour Map in Groundwater, First Quarter 2002

Figure 12: Ferrous Iron Concentration Contour Map in Groundwater, First Quarter 2002

Figure 13: Methane Concentration Contour Map in Groundwater, First Quarter 2002

List of Appendices

Appendix A: Laboratory Reports, Chain of Custody Forms

Appendix B: Field Notes, Field Measured Physical and Chemical Parameter Values and DO Correction Tables.

1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) for the Law Offices of Smiland and Khachigian on behalf of their client, the owners of the former Glovatorium. The site is the former Glovatorium property located at 3815 Broadway Avenue, Oakland, California (the "Site"), as illustrated in Figure 1. The Site is located in an area consisting primarily of commercial and residential uses.

This report summarizes the results of the First Quarter 2002 groundwater monitoring event conducted on January 30 and 31, 2002 by SOMA at the Site, including the results of the laboratory analyses of the groundwater samples, which were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-g), and as Stoddard solvents (TPH-ss) using EPA modified 8015;
- Volatile organic compounds (VOCs) using EPA Method 8260B;
- Benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX) and methyl tertiary butyl ether (MtBE) using EPA Method 8021B.

During the current groundwater monitoring event the newly installed groundwater monitoring wells SOMA-1 through SOMA-4 were sampled for the second time and analyzed for the above constituents. However, monitoring wells B-7 and B-10, which were replaced by the new wells, were not sampled.

In addition to the above laboratory analyses, the natural attenuation study which was initiated by Levine•Fricke Recon (LFR) in the Third Quarter of 2000 continued during this monitoring event. The objective of the natural attenuation study was to evaluate whether or not tetrachloroethylene (PCE) and other VOCs found in groundwater are biodegrading. Therefore, the groundwater samples

collected during this monitoring event were analyzed for common electron acceptors and other geochemical indicators, and the results are described in this report.

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 work is needed to determine the nature and extent of environmental contamination, and thus whether contamination is affecting the neighboring Thompson property. This information is needed to defend against the claim that Mr. Thompson brought against Glovatorium and the Deppers. This work may also provide data that could help determine when releases occurred, which is also significant to defending against the claims brought by a former owner of the property, Ms. Johnson.

1.1 Site Description

The Site is located between Manila Avenue and Broadway, near the intersection of 38th Street in Oakland, California. The ground surface at the Site is covered with concrete and asphalt and slopes gently southwest, with surface elevations ranging from approximately 78 to 84 feet above mean sea level (msl).

A 54-inch inside-diameter storm drain culvert passes under the property, from Manila Avenue on the west to 38th Street on the south (see Figure 2). The depth of the storm drain invert is approximately 8.5 feet under the sidewalk on the eastern side of Manila Avenue and approximately 13.2 feet below ground surface (bgs) at the far end approximately 60 feet south of GW-4.

In addition to a storm drain system, a 10-inch diameter cast iron sanitary sewer

conduit runs in a westerly direction from the on-site building and discharges into the sanitary sewer line, which runs north to south along Manila Avenue. The floor drain inside the building is less than 2 feet bgs. However, the depth of the sanitary sewer line inside the building gradually increases and then slopes more steeply downward near the western wall of the building, where it plunges underneath the 54-inch storm drain (LFR, January 2001). Figure 2 shows the location of the storm drain and sanitary sewer system.

Reportedly, there were six underground storage tanks (USTs) at the Site. Two USTs were located under the sidewalk on 38th Street and four USTs were located inside the building. The volumes of the USTs have been variously reported as ranging from 800 gallons up to 5,000 gallons. They reportedly contained Stoddard solvent, fuel oil and possibly waste oil. In August 1997, the six USTs were abandoned in-place by backfilling with either cement-sand slurry or pea gravel. In addition, there are three USTs owned by Earl Thompson, Sr., under the sidewalk on 38th Street, see Figure 2.

The surrounding properties are primarily commercial, businesses and residential housing. A TOSCO Marketing Company (TOSCO) site is located north and upgradient of the Site, at 40th Street and Broadway and contains a number of groundwater monitoring wells. 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 the presence of VOCs and petroleum hydrocarbons in the groundwater beneath the Site. The source of VOCs and Stoddard solvent is believed to be the former USTs, which were used to store Stoddard solvent and VOCs at the Site. There also has been testimony in the ongoing litigation concerning the Site that there were releases from the piping on the washer system and from washing the floors with Stoddard solvent. This report includes both the results of historical groundwater monitoring events and the results of the First Quarter 2002 groundwater monitoring event.

1.2 Background

The following is a brief description of previous Site investigations conducted by different environmental firms:

In August 1997, Geosolv, LLC (Geosolv) initiated the first soil and groundwater investigation at the Site. Geosolv drilled fourteen soil borings to approximate depths of 10 to 24 feet bgs using the direct push method. Seven of the soil borings (B-2, B-3, B-7 through B-10 and B-13; see Figure 2) were converted into temporary groundwater monitoring wells where grab groundwater samples were collected. In September 1998, Geosolv conducted further soil and groundwater investigations by drilling twelve additional soil borings to approximate depths of 19 to 25 feet bgs. All of the twelve soil borings were converted into temporary groundwater sampling points, and are labeled E-15 through E-26 in Figure 2. After collecting grab groundwater samples from the "E" temporary sampling points, they were abandoned and grouted.

In July 1999, based on the request of the ACEHS, an investigation of potential groundwater preferential flow paths was initiated by LFR. LFR drilled ten soil borings (GW-1 through GW-8, GW-5A, and GW-6A) primarily along the 54-inch diameter storm drain and sanitary sewer systems to depths ranging from 8 to 20 feet bgs using a direct push drilling method. During drilling operations, soil samples were collected from various depth intervals. In August 1999, LFR collected grab groundwater samples from seven of the nine "GW" wells.

In January and April 2000, LFR conducted quarterly groundwater monitoring events at the Site. During the groundwater monitoring events, groundwater elevations were measured in the temporary sampling points installed by LFR and Geolsolv, and in off-site wells MW-8, MW-9 and MW-11 owned by TOSCO. Groundwater samples were collected from the temporary sampling points installed by LFR and from the off-site well MW-11.

In July and August 2000, LFR installed four groundwater monitoring wells, namely LFR-1 through LFR-4, and conducted the Third Quarter 2000 groundwater monitoring event. This was the first sampling event in which bioattenuation parameters were collected. The measured bioattenuation parameters included: dissolved oxygen (DO), nitrate (NO₃⁻¹), sulfate (SO₄⁻²) ferrous iron (Fe⁺²), total iron, methane, oxidation reduction potential (ORP), alkalinity, chloride, carbon dioxide, nitrite, sulfide, ethene, and ethane. The bioattenuation parameters provided a baseline for these parameters and a means to compare their concentrations at locations within the apparent source area against surrounding upgradient, downgradient, and cross-gradient locations. During this monitoring event, groundwater elevations were measured and groundwater samples were collected from the newly installed groundwater monitoring wells LFR-1 through LFR-4, from temporary sampling points installed by LFR and Geosolv, and from off-site monitoring wells MW-8, MW-9, and MW-11 owned by TOSCO. No groundwater samples were collected from MW-8 or MW-9.

In late October and early November 2000, LFR conducted the Fourth Quarter 2000 groundwater monitoring event, including another bioattenuation study. During the fourth quarter monitoring event, LFR sampled nine groundwater monitoring wells and temporary groundwater sampling points and measured groundwater elevations in nineteen groundwater monitoring wells and temporary sampling points (LFR, January 2001).

Well completion details for the LFR wells and the Geosolv sampling points are presented in Table 1.

In late January, LFR conducted the First Quarter 2001 groundwater monitoring event. However, SOMA prepared the First Quarter 2001 monitoring report

(SOMA, May 2001). The results of the First Quarter 2001 groundwater monitoring event suggested the occurrence of strong anaerobic biodegradation activities and dechlorination of PCE beneath the Site.

The Second Quarter 2001 groundwater monitoring event was conducted by SOMA on April 26 and 27, 2001 and reported on July 5, 2001. During this period certain bioattenuation data, which were proved to be less useful, were not collected. The results of the Second Quarter 2001 monitoring event indicated a strong occurrence of the dechlorination process of PCE in the subsurface.

The Third Quarter 2001 groundwater monitoring event was conducted by SOMA on July 26 and 27, 2001. During this monitoring event ten groundwater monitoring wells were sampled and depths to groundwater was measured in 20 groundwater monitoring wells and temporary sampling points. To better evaluate the bioattenuation parameters including DO, SOMA recommended replacing the existing small diameter monitoring wells B-7 and B-10 with larger diameter wells as proposed in the SOMA June 15, 2001 Workplan.

After receiving approval of the workplan on August 27, 2001, on October 4, 11 and 12, 2001 SOMA installed five groundwater monitoring wells, SOMA-1 through SOMA-5, at the Site. During the installation of groundwater monitoring wells, boreholes were continuously logged and soil samples were collected at 5-foot depth intervals. The objective of this investigation was to delineate the vertical extent of soil and groundwater contamination and install larger diameter monitoring wells at the suspected chemical source areas in order to collect more reliable bioattenuation parameters (i. e., DO) in groundwater.

The Fourth Quarter 2001 groundwater monitoring event was conducted by SOMA on October 18 and 19, 2001. During this monitoring event eleven groundwater monitoring wells were sampled and depths to groundwater was measured in 20 groundwater monitoring wells and temporary sampling points.

1.3 Site Geology and Hydrogeology

The Site is located on the alluvial plain between the San Francisco Bay shoreline and the Oakland hills. Surface sediments in the Site's vicinity consist of Holocene alluvial deposits that are representative of an alluvial fan depositional environment. These deposits consist of brown, medium dense sand that fines upward to sandy or silty clay. The pattern of stream channel deposition results in a three-dimensional network of coarse-grained sediments interspersed with finer grained silts and clays. The individual units tend to be discontinuous lenses aligned parallel to the axis of the former stream flow direction (LFR, 2001).

According to LFR, sediments encountered in soil borings at the Site are typical of those encountered in an alluvial fan depositional environment. The sediments are predominantly fine-grained, consisting of clay, silty clay, sandy clay, gravelly clay and clayey silt. Discontinuous layers of coarse-grained sediments (clayey sand, silty sand, and clayey gravel) generally also contain relatively high percentages of silt and clay, which tend to reduce their permeability. Based on LFR (2001), during previous investigations conducted by Geosolv and LFR, a relatively coarse-grained layer of silty sand, clayey sand, and clayey gravel was encountered in soil borings E-23, E-25, E-26, GW-2, GW-3, GW-7, and GW-8 at depths of approximately 4.5 to 14 feet bgs. A discontinuous layer of silty to clayey sand was encountered at depths of 17 to 21 bgs in borings B-11, E-23, E-25, GW-7 and GW-8.

Based on the October 2001 results of the field investigation conducted by SOMA, no major water-bearing zone at a deeper depth was encountered. However, as the lithological logs of the newly installed groundwater monitoring wells indicate, the water-bearing zone is composed of fine-grained, clayey silt sediments which are separated by very low permeability intervening clay layers, which in some locations are unsaturated. For instance, SOMA-5, which has been screened within a significantly thick clay layer beneath the first water-bearing zone from 21

to 26 feet bgs using the dual tubing method, was a dry well until this sampling event. Due to the presence of unsaturated and low permeability of the intervening clay layers between shallow and deep layers, there is a significant vertical downward gradient between the shallow and deep wells.

According to the results of historical groundwater monitoring activities, groundwater occurs at 4 to 14 feet bgs. Based on the current and previous groundwater monitoring reports, groundwater flows from the northeast to the southwest with an approximate groundwater flow gradient of 0.019 ft/ft to 0.035 ft/ft. The results of the slug tests indicated that the hydraulic conductivity of the saturated sediments ranges between 1.2 x 10⁻⁴ and 6.9 x 10⁻⁴ cm/sec, which is equivalent to 0.34 ft/day to 1.95 ft/day. Using the average groundwater flow gradient of 0.027 and aquifer porosity of 0.32, the groundwater flow velocity ranges between 10.5 and 60.1 ft/year.

2.0 FIELD ACTIVITIES

Field activities were conducted on January 30 and 31, 2002, during which ten groundwater monitoring wells were sampled and water levels were measured in 25 groundwater monitoring wells and temporary sampling points. Because of the presence of floating product in SOMA-4 this well was not sampled. Figure 2 shows the location of the groundwater monitoring wells and temporary sampling points. Appendix A includes SOMA's site-specific field activities during the current groundwater monitoring event.

On January 30, 2002, SOMA's field crew measured the depths to groundwater in the monitoring wells and temporary groundwater sampling points from the top of the casings to the nearest 0.01 feet using an electrical sounder. The depth to groundwater and top of the casing elevation data at each groundwater monitoring well were used to calculate the groundwater elevation.

Groundwater sampling was conducted on January 30 and 31, 2002. During the groundwater sampling activities, certain biodegradation groundwater parameters such as DO, ORP, ferrous iron, total iron, nitrate, nitrite, sulfate and manganese were measured by the field crew. After collecting the groundwater samples, they were placed in an ice chest and delivered to Curtis & Tompkins, Ltd. of Berkeley, California for routine analyses and to Microseeps Analytical Laboratories of Pittsburgh, Pennsylvania (Microseeps) for methane analyses only. Additionally, the field crew measured certain groundwater parameters such as pH, temperature, electrical conductivity (EC) and turbidity in-situ during the groundwater monitoring event.

2.1 Laboratory Analysis

Curtis & Tompkins, Ltd. of Berkeley, California analyzed the groundwater samples. The measured constituents included TPH-g, TPH-ss, BTEX, MtBE and VOCs.

TPH-g and TPH-ss were measured using EPA Method 8015M. EPA Method 8021B was used to measure BTEX and MtBE. EPA Method 8260B was used to measure VOCs including verification of presence of MtBE.

Most of the groundwater constituents related to bio-degradation activities were measured by SOMA's field crew except dissolved methane, which was performed by Microseeps Laboratory. The analyses conducted by the field crew included ferrous iron, total iron, nitrate, nitrite, sulfate, dissolved manganese, and DO.

3.0 Results

This section describes the results of the First Quarter 2002 groundwater

monitoring event. It includes groundwater flow conditions, the status of groundwater contamination, and the occurrence of bioattenuation in the subsurface.

3.1 Groundwater Flow Condition

Table 2 presents the measured groundwater elevations at different groundwater monitoring wells and temporary groundwater sampling points. At each location, depth to watertable and elevation of the top of the casings were used to calculate the watertable elevation relative to the assumed datum. Appendix B presents the field notes. Table 3 shows the historical water level elevations at different groundwater monitoring wells.

As Table 2 shows, the watertable elevations ranged from 67.72 feet in LFR-1 and 79.41 feet above msl in MW-9; the watertable elevations were about 3 feet higher than those in the fourth quarter, particularly for the wells located inside the building. The higher water level elevation during this monitoring event can be attributed to the excessive rainfall amounts that we experienced during December and January. In evaluating the groundwater flow direction and gradient, water level data from GW-4, B-7, B-8, B-9, SOMA-3, SOMA-5, SOMA-1 and SOMA-4 were not utilized for the following reasons:

- No accurate information about the construction details of the "B" wells installed by Geosolv is available, therefore water level data from these wells are questionable;
- 2. GW-4 was installed adjacent to the storm drain system in order to evaluate whether or not the storm drain system is leaking. This well was installed in the shallow formation, and may partially penetrate into the underlying water-bearing zone. Therefore, the water level elevation recorded inside GW-4 may not be representative of the underlying waterbearing zone.
- 3. SOMA-1, SOMA-3 and SOMA-5 have been completed in the deeper zone

- and due to the strong vertical gradient, the water level elevation in the deeper zone is significantly lower than the shallow water-bearing zone.
- 4. Due to the presence of a significant amount of free product in SOMA-4, the recorded water level elevation in this well is not representative of the shallow water-bearing zone.
- 5. The water level elevation in SOMA-2 closely matches the water level elevation of the other groundwater monitoring well within the source area, therefore, it was used in drawing water level elevation contour map.

This is the first time that groundwater was encountered in SOMA-5. However, the well could not be sampled due to insufficient groundwater volume. This could be attributed to the excessive rainfall amounts during recent months. SOMA-5 has been completed within the intervening clay layers below the first water-bearing zone.

Figure 3 displays the groundwater elevation contour map. As Figure 3 shows, during the recent monitoring event, the groundwater was found to flow from the northeast to southwest. This is consistent with the findings of the previous monitoring events. It should be noted that our knowledge of groundwater flow direction does not extend beyond LFR-3, the most downgradient groundwater monitoring well.

The field measurements of some physical and chemical parameters of the groundwater samples are presented in detail in the field notes in Appendix B, and are summarized in Table 4, along with their historical values. Water temperatures ranged from 12.00 °C to 19.10 °C. The variation in temperature may reflect the changes in air temperature during sampling. The temperature measurements allowed the field crew to make corrections to the pH, EC, and DO measurements. pH measurements ranged from 6.30 to 6.70 units. The EC measurements ranged from 0.414 to 1.358 µS/cm.

3.2 Groundwater Quality

The groundwater samples were analyzed for petroleum hydrocarbons and VOCs using EPA Methods 8015M, 8021B, and 8260B. Table 5 displays the results of the laboratory analyses for TPH-ss, TPH-g, MtBE, benzene, toluene, ethylbenzene, and total xylenes. As Table 5 shows, TPH-g and TPH-ss were found at high concentrations beneath the Site. The maximum concentrations of TPH-g and TPH-ss were found in SOMA-2 and GW-4. Also, TPH-g was found in nine out of ten groundwater monitoring wells sampled during this monitoring event. TPH-ss was found in 6 out of ten groundwater monitoring wells. Historically, the maximum concentrations of TPH-g and TPH-ss occurred in B-7 and B-10. During the current groundwater monitoring event, the detected concentration of TPH-ss and TPH-g in SOMA-2 and GW-4 were comparable with historical concentrations of these chemicals in B-7 and B-10. Figures 4 and 5 show the concentration contour maps of TPH-g and TPH-ss in groundwater, respectively.

For the first time, during the current groundwater monitoring event, elevated levels of MtBE were detected in SOMA-1 and SOMA-3. For the first time floating product was reported in SOMA-4. SOMA is currently planning to conduct additional investigation to delineate the extent of free product in the vicinity of SOMA-4. MtBE was only detected in newly installed groundwater monitoring wells SOMA-1 and SOMA-3 at concentrations of 110 μ g/L in SOMA-1 and 310 μ g/L in SOMA-3. During the previous monitoring event, MtBE was also detected in SOMA-4 at a concentration of 650 μ g/L. Surprisingly, no MtBE was detected in SOMA-2 (at a detection limit of 71 μ g/L), despite its close proximity to SOMA-3. In the past, the maximum concentration of MtBE was detected in LFR-4 at 11 μ g/L.

Benzene, toluene, ethylbenzene and xylenes were not detected in any of the

groundwater monitoring wells during this event. During the previous event BTEX were sporadically detected at low concentrations in B-7, LFR-2, LFR-4 and MW-11.

Table 7 shows the historical TPH-ss, TPH-g, TPH-d, MtBE and BTEX concentrations measured at different groundwater monitoring wells and groundwater sampling points.

Table 6 shows the concentrations of VOCs in the groundwater during this monitoring event. As Table 6 shows, cis-1,2-dichloroethene (cis-1,2-DCE) and tetrachloroethylene were found most frequently. Cis-1,2-DCE was detected at a maximum concentration of 1,800 µg/L in SOMA-2, which in comparison with the previous event decreased significantly. During the third quarter 2001 monitoring event, cis-1,2-DCE was detected at a maximum concentration of 6,600 in B-10. Cis-1,2-DCE is produced during the reductive dechlorination of PCE. In general, the reductive dechlorination process occurs by sequential dechlorination from PCE to trichloroethene (TCE) to DCE to vinyl chloride (VC). Bouwer (1994) reports that under the influence of biodegradation, cis-1,2-DCE is a more common intermediate compound than trans-1,2-DCE, and that 1,1-DCE is the least prevalent of the three DCE isomers when they are present as daughter products. Trans-1,2-DCE was not found in any of the groundwater monitoring wells during this event. Cis-1,2-DCE was reported in four out of ten groundwater monitoring wells. Figure 6 shows the distribution of cis-1,2-DCE concentration in groundwater.

PCE and TCE were reported at relatively high frequencies in the groundwater samples, especially in the source area. PCE was detected in five out of ten groundwater monitoring wells, while TCE was found in two of ten wells. The maximum reported concentrations of PCE and TCE were 370 and 35 μ g/L, respectively, both in well LFR-1. In the previous monitoring event the maximum

concentrations of PCE, TCE and cis-1,2-DCE were reported in SOMA-2. During this monitoring event PCE and TCE concentrations in SOMA-2 were below detection limit of 71 μ g/L. This could be attributed to the excess rainfall during the months of December 2001 and January 2002. Figures 7 and 8 show the distribution of PCE and TCE concentrations in the groundwater.

Vinyl chloride (VC) was not detected in any of the wells. As mentioned before, the reductive dechlorination process in general occurs by sequential dechlorination from PCE to TCE to DCE to VC. The depletion of PCE and TCE coupled with the presence of cis-1,2-DCE may indicate that the reductive dechlorination process of PCE and TCE is strongly occurring beneath the Site. Table 8 shows the historical concentration of VOCs in the groundwater.

3.3 Bioattenuation Parameter Analysis Results

This is the seventh groundwater quarterly monitoring event in which the natural attenuation parameters of groundwater were studied. The objective of the bioattenuation study is to evaluate whether or not intrinsic bioremediation processes are active at the Site. The results of this study will reveal whether or not PCE and other dissolved organic compounds are biodegrading beneath the Site.

Like the previous monitoring event, most of the bioattenuation parameters were measured in the field. Only dissolved methane was measured in the laboratory. In addition, DO was measured in-situ by the field crew. Based on Borden (1998) and Sepehr (1999), the ex-situ measurement of natural gases such as DO may introduce oxygen into the groundwater sample and result in certain errors. Therefore, DO was measured in the field inside the casing without collecting a groundwater sample.

During the degradation process, the indigenous bacteria that exist in the

subsurface consume electron acceptors such as DO. After the DO is consumed, anaerobic microorganisms typically use alternative electron acceptors in the following order of preference: nitrate, ferric iron, oxyhydroxide, sulfate, and, finally, carbon dioxide. Evaluating the distribution of these electron acceptors can provide evidence of where and to what extent chlorinated and aliphatic hydrocarbon biodegradation is occurring. The by-products of biodegradation processes are nitrite, ferrous iron, alkalinity, sulfide, methane, and carbon dioxide. For evaluation of the bioattenuation processes, groundwater samples were collected during the current groundwater monitoring event and analyzed for selected electron acceptors and the by-products of biodegradation activities, as described below:

Dissolved Oxygen. DO is the most favored electron acceptor used by microbes for the biodegradation of organic compounds. A concentration of DO less than 0.5 mg/L indicates anaerobic conditions. It is our experience that down-hole measurements of DO (i.e., in-situ measurements) yield more realistic results than ex-situ (laboratory) measurements. Significant differences in DO concentrations using in-situ and ex-situ measurements (conducted by Microseep) during the First Quarter 2001 can be attributed to cross contamination by atmospheric air during ex-situ measurement (R. Borden, 1998, M. Sepehr 1999). Therefore, during the current monitoring events, the DO measurements were conducted insitu only by SOMA's field crew. Figure 9 presents the DO concentration contour map in groundwater using in-situ measurements.

For the second time, the new wells (SOMA-1 through SOMA-3) were used for DO measurements during this event. It should be noted that due to the limitation of drilling equipment, SOMA-3 still is a ¾ inch diameter well which was installed in the deeper zone within the suspected chemical source area inside the building. This well still is not suitable for DO measurements. As the results of field measurements indicate the measured DO in SOMA-1 through SOMA-4 and

GW-4 were quite low as expected, which seems to be representative of an anaerobic condition within the chemical source area. Table 9 presents the current and historical DO concentrations in the groundwater.

Nitrate. After DO has been depleted, nitrate may be used as an electron acceptor for anaerobic biodegradation. Nitrate concentrations less than 1.0 mg/L may indicate that reductive dechlorination is occurring. Low concentrations of nitrate near the apparent source area in SOMA-2, and in the downgradient wells LFR-2, GW-4 and SOMA-1 indicate conditions that are conducive to anaerobic biodegradation. Relatively, high concentrations of nitrate were observed in upgradient monitoring well MW-11, and downgradient well LFR-3 indicating a low likelihood of anaerobic biodegradation in these wells. Figure 10 shows the nitrate concentration contour map using the field data.

Manganese. After DO and nitrate have been depleted, manganese may be used as an electron acceptor for anaerobic biodegradation, and therefore, increased dissolved manganese concentrations are indicative of reductive dechlorination. Manganese concentrations ranged from non-detectable (ND) level in GW-2, LFR-2, MW-11, and SOMA-1, to 22 mg/L in SOMA-3, in the apparent source area, indicating conditions that are conducive to anaerobic biodegradation.

Sulfate. After DO, nitrate, and manganese have been depleted, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed sulfate reduction, and results in the production of sulfide. Sulfate concentrations less than 20 mg/L are indicative of reductive dechlorination (EPA 1998). Sulfate concentrations were ND in the apparent source area location SOMA-2 and first downgradient well GW-4 and 79 mg/L at MW-11. Figure 11 shows a sulfate concentration contour map in the groundwater using the field data.

Ferrous Iron. Increased ferrous iron accompanies anaerobic degradation. Ferric iron can be used as an electron acceptor during anaerobic biodegradation.

During this process, ferric iron is reduced to ferrous iron, which may be soluble in water. Ferrous iron concentrations can thus be used as an indicator of anaerobic biodegradation.

The highest ferrous iron concentrations were in the apparent source area (9 mg/L in SOMA-2). The minimum concentrations of ferrous iron were detected in GW-3, MW-11, SOMA-1 LFR-1 and LFR-3 (ND), where conditions are aerobic. Figure 12 shows a ferrous iron concentration contour map using the field data.

Methane. The presence of methane in groundwater is indicative of strongly reduced conditions, and suggests reductive dechlorination by the process of methanogenesis. Methane was detected in concentrations ranging from 0.0062 mg/L in LFR-1 to 13 mg/L in SOMA-2. The higher concentration of methane at GW-4 (3.5 mg/L) and at the source area (SOMA-2 and LFR-2) indicates conditions that are conducive to anaerobic biodegradation. Figure 13 shows a methane concentration contour map during the recent groundwater monitoring event, using the laboratory data.

Oxygen Reduction Potential. The ORP of groundwater is a measure of electron activity, and is an indicator of the relative tendency of a solution to accept or transfer electrons. ORP may range from greater than 800 milliVolts (mV) to less than -400 mV, with lower values expected in areas where anaerobic processes are occurring. ORP measurements obtained in this sampling event ranged from -103 mV in SOMA-2 to +218 mV in MW-11. The highest values were also found in downgradient locations (LFR-1, GW-3 and LFR-3) and upgradient locations (MW-11). The low values were found in the apparent source area (SOMA-2). These results indicate that conditions in and near the apparent source area are conducive to anaerobic biodegradation.

Other Parameters

Alkalinity. Alkalinity is a general water quality parameter. High alkalinity levels are a result of interaction between carbon dioxide (a product of several

biodegradation processes) and aquifer minerals. Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no alkalinity data was collected during the current and previous groundwater monitoring events.

Chloride. Chloride is the final product of the reduction of chlorinated solvents, and is also a general water quality parameter.

Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no chloride data was collected during the current groundwater monitoring event.

Carbon Dioxide. Carbon dioxide is a product of several biodegradation processes. Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no carbon dioxide data was collected during the last two groundwater monitoring events.

Iron. Ferric iron may be used as an electron acceptor during anaerobic biodegradation. During this process, ferric iron is reduced to ferrous iron that may be soluble in water. Ferric iron concentrations may be obtained by subtracting ferrous iron concentrations from total iron concentrations. Total iron concentrations ranged from ND (SOMA-1) to 12.7 mg/L (GW-4). Table 4 presents the results of the total iron analyses, and Table 9 presents the results of the ferrous iron analyses.

Nitrite. Nitrate may reduce to nitrite during the process of anaerobic biodegradation. Nitrite measurements were not performed on any of the monitoring wells because of the limited value in interpretation of biodegradation processes.

Sulfide. When sulfate is used as an electron acceptor for anaerobic

biodegradation, it is reduced to sulfide. Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no sulfide data was collected during the current groundwater monitoring event.

pH, Temperature, and Conductivity. The pH of groundwater has an effect on the activity of microbial populations in groundwater, with optimal pH values ranging from 6 to 8 standard units for microbes capable of degrading PCE and other chlorinated aliphatic hydrocarbons. The groundwater temperature affects the metabolic activity of bacteria, and groundwater conductivity is directly related to the concentration of ions in solution. The pH, temperature, and conductivity values are included in Table 4.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of the work performed on January 30, and 31, 2002 and the results of this work.

Groundwater samples were collected from monitoring wells SOMA-1 through SOMA-3, (SOMA-5 has insufficient water and SOMA-4 contained floating product), LFR-1 through LFR-3, (LFR-4 was inaccessible) temporary sampling points GW-2, GW-3, GW-4, and from well MW-11. The samples were analyzed for TPH-ss, TPH-g, MtBE, BTEX, and VOCs.

A maximum concentration of PCE of 0.37 mg/L was detected in LFR-1, which is lower than its previous concentration at SOMA-2. PCE was also detected in GW-3 at 0.096 mg/L, which is lower than its concentration in this well during the previous monitoring event. The lower PCE concentration can be attributed to the excess rainfall during the first quarter 2002. Since PCE was detected at SOMA-3 at only 0.018 mg/L, it is apparent that the vertical extent of PCE is limited. The presence of intervening and unsaturated clay layers prevents its movement beyond the sampling depth of SOMA-3. SOMA-3 is a deep monitoring well

located adjacent to SOMA-2, where the concentration of PCE was less than 0.071 mg/L. SOMA-3 has been screened from 21 to 26 feet bgs, while SOMA-2 has been screened from 10 to 20 feet bgs. Historically, a maximum concentration of PCE was detected in LFR-1 at 2.8 mg/L during the Third Quarter 2000 groundwater monitoring event.

This was the seventh quarterly groundwater monitoring event in which bioattenuation parameters were analyzed. Selected samples were analyzed for the following: DO, nitrate, manganese, sulfate, ferrous iron, methane, ORP, and total iron. Certain parameters such as chloride, carbon dioxide, hydrogen, alkalinity, and sulfide were not measured due to their inconclusive role in the bioattenuation processes at this Site.

Cis-1,2-DCE is one of the breakdown products of PCE. It was detected at concentrations up 1.8 mg/L in the newly installed monitoring well SOMA-2. Previously it was detected at 7.3 mg/L in the temporary sampling point B-10 and its presence in groundwater indicates that reductive dechlorination is likely occurring.

Vinyl chloride was historically detected in wells GW-4 and LFR-2. However, during this current groundwater monitoring event it was not detected in any of the monitoring wells. The presence of vinyl chloride, a breakdown product of PCE, indicates reductive dechlorination is likely occurring.

Benzene was not detected in any of the groundwater monitoring wells during the current groundwater monitoring event. Elevated-levels of MtBE were detected in new groundwater monitoring wells SOMA-1 and SOMA-3. Since no MtBE was detected in the upgradient monitoring well MW-11, the source of the high MtBE concentration in these wells is unknown.

The maximum concentrations of petroleum hydrocarbons were found in groundwater monitoring wells SOMA-2, GW-4 and LFR-2, as are shown in Table-

5. Table 6 shows the analytical results of groundwater samples analyzed for VOCs.

4.1 Conclusions

Based on the data obtained during the First Quarter 2002 groundwater monitoring event, our conclusions are as follows:

The farthest downgradient well, LFR-3, contained no detectable concentration of VOCs, TPH-ss and BTEX. It reportedly contained 0.067 mg/L of TPH-q.

The data collected to date regarding the distribution of PCE and other VOCs in groundwater indicates that PCE has been degraded into some of its breakdown products. PCE typically degrades into TCE, then cis-1,2-DCE and trans-1,2-DCE (at much lower concentrations than cis-1,2-DCE), then to VC, ethane and ethene and finally carbon dioxide, water, and chloride. This sequence of degradation would be anticipated where biological reductive dehalogenation of PCE is occurring. These breakdown products and relative concentrations are present at the Site. The presence of TCE in the apparent source area well SOMA-3 and in LFR-1 during the current sampling event indicates that PCE degradation is occurring. The presence of relatively high concentrations of cis-1,2-DCE in SOMA-2 and its presence in other wells such as SOMA-1, SOMA-3 and LFR-2 is also indicative of biodegradation. Historical data from temporary sampling point GW-8 indicates the presence of VC between July 1999 and April 2000. VC was also detected in LFR-2 since the October/November 2000 groundwater monitoring event and for the first time in GW-4 during the previous monitoring event. We expect to detect VC in the other groundwater monitoring wells in the future due to the progression of the dechlorination process of PCE in the subsurface.

The results of DO, nitrate, manganese, sulfate, ferrous iron, methane, and ORP measurements indicate that conditions in the apparent source area are

conducive to the reductive dechlorination processes.

DO concentrations of approximately less than 1.0 mg/L in the groundwater are indicative of anaerobic biodegradation conditions. During the recent groundwater monitoring event, anaerobic conditions were detected in SOMA-1, SOMA-2, LFR-2, GW-4 and SOMA-4. In the past several monitoring events, results indicated that conditions in the apparent source area were conducive to the anaerobic biodegradation processes. It appears that in-situ DO measurements in the newly installed monitoring wells SOMA-2 and SOMA-4 within the chemical source are more representative of actual anaerobic conditions in this area. This improvement over the previous monitoring event was due to the replacement of B-7 and B-10 with the newly installed monitoring wells SOMA-2, and SOMA-4.

Relatively low concentrations of nitrate (e.g. less than 1.0 mg/L) are anticipated in locations where the oxygen has been depleted, because nitrate ion can be an effective electron acceptor in anaerobic biodegradation processes. Low concentrations of nitrate occurred near the apparent source area in temporary sampling points SOMA-1, SOMA-2 and GW-4, indicating conditions that are conducive to anaerobic biodegradation.

Increased dissolved manganese concentrations are indicative of reductive dechlorination conditions. Manganese concentrations ranged from ND (MW-11, GW-2, SOMA-1, LFR-2) and 22 mg/L (SOMA-3) in the apparent source area, indicating conditions that are conducive to anaerobic biodegradation.

Relatively low concentrations of sulfate (e.g. less than 20 mg/L) are anticipated in locations where the oxygen has been depleted, because sulfate ion can be used as an effective electron acceptor in the anaerobic biodegradation processes. Sulfate concentrations were 52 mg/L in the GW-3 and ND in GW-4 and SOMA-2, indicating conditions that are conducive to anaerobic biodegradation.

The reducing conditions conducive to dehalogenation of VOCs can also reduce

iron to the soluble ferrous state. Therefore, a relatively high concentration of ferrous iron is anticipated in locations where biodegradation occurs. The highest ferrous iron concentrations were in the apparent source area (SOMA-2) and in the slightly downgradient location LFR-2 and GW-4, indicating conditions that are conducive to anaerobic biodegradation.

A relatively high concentration of methane is anticipated in locations where biodegradation occurs because methane is indicative of strongly reducing conditions and suggests reductive dechlorination by the process of methanogenesis. Methane concentrations ranged from 0.0062 mg/L in LFR-1 to 13 mg/L in SOMA-2 the apparent source area well, indicating conditions that are conducive to anaerobic biodegradation.

The ORP of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solution to accept or transfer electrons. ORP may range from greater than 800 millivolts (mV) to less than -400 mV, with negative values expected in areas where anaerobic processes are occurring. The lowest value (-103 millivolts) was found in and near the apparent source area (SOMA-2). These results indicate that conditions in and near the apparent source area are conducive to anaerobic biodegradation.

4.2 Recommendations

SOMA's recommendations for future work at the Site are as follows:

- Continue implementing the sampling and analysis plan for the routine parameters and natural bioattenuation parameters established through discussion with representatives of the ACEHS and the RWQCB.
- Continue quarterly groundwater monitoring in the newly installed monitoring wells SOMA-1 through SOMA-5 (installed in October 2001), LFR-1 through LFR-4, (installed in July 2000), in the upgradient well MW-11, and in selected previously installed temporary sampling points.

- 3. Continue to evaluate PCE and potential breakdown product concentrations in on- and off-site wells.
- 4. Develop a workplan for delineation of the extent of the free product beneath the former Glovatorium building. Once the extent of free product is identified, the best free product removal alternative can be employed.

The second phase of SOMA's approved Workplan dated June 15, 2001 will be implemented in order to define the Site's regulatory status in the near future. Once the Site's regulatory status in terms of "Low Risk" or "High Risk" chemical release site is known, the most appropriate corrective action can be proposed to the ACEHS.

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TABLES

Table 1
Construction Data for Temporary Sampling Points and Monitoring Wells
Former Glovatorium Site
3815 Broadway, Oakland, California

	Ground Top of Screen									
		Surface	Casing	Total	Screen	interval				
	Date	Elevation	Elevation			Elevation				
	Installed	(feet)	(feet)	- op		1	Notes			
Location		, ,		` '	Depth (feet)	(reet)	Notes			
		Points Install	5 to 21	77.2 to 61.2						
B-2	19-Aug-97		82.09	21		77.6 to 64.6	1 1			
B-3	19-Aug-97	•	82.57	18	5 to 18		'			
B-7	20-Aug-97	1	76.96	17.5	5 to 17.5	72.3 to 59.8	1			
B-8	20-Aug-97	82.06	81.82	24	9 to 24	73.1 to 58.1				
B-9	21-Aug-97	77.57	77.37	19.5	4.5 to 19.5	73.1 to 58.1				
B-10	21-Aug-97		81.5	19	4 to 9	77.7 to 62.7	1			
B-13	22-Aug-97		84.58	20	5 to 20	80.1 to 65.1				
	Temporary Sampling Points Installed by LFR:									
GW-1	16-Jul-99	80.24	79.94	8	3 to 8	77.2 to 72.2				
GW-2	16-Jul-99	79.44	79.14	20	10 to 20	69.4 to 59.4				
GW-3	15-Jul-99	78.48	77.92	20	10 to 20	68.5 to 58.5				
GW-4	16-Jul-99	82.55	82.37	12	7 to 12	75.6 to 70.6]			
GW-5	15-Jul-99	81.31	81.01	13	8 to 13	73.3 to 68.3	<u> </u>			
GW-6	15-Jul-99	81.91	81.65	13.5	7.5 to 13.5	74.4 to 68.4	2			
GW-6A	16-Jul-99	81.93	81.61	15	5 to 15	76.9 to 66.9				
GW-7	15-Jul-99	81.3	NS	20	10 to 20	71.3 to 61.3	2			
GW-8	16-Jul-99	80.28	80.1	20	10 to 20	70.3 to 60.3	2			
Temporary	Sampling F	oints Install	ed by TOSC	Ď:						
MW-8	unknown	NS	87.44	unknown	unknown	unknown	•			
MW-9 unknown		NS	86.56	unknown	unknown	unknown	•			
MW-11 unknown		NS	84.13	unknown	unknown	unknown				
Groundwat	er Monitori	ng Wells Ins	talled by LFF	ŧ:						
LFR-1	28-Jul-00	NS	79.97	19	9 to 19	i				
LFR-2	27-Jul-00	NS	81.89	19	9 to 19					
LFR-3	27-Jul-00	NS	77.96	22	12 to 22					
LFR-4	28-Jul-00		81.65	19	9 to 19					
Groundwat	İ	1								
SOMA-1	4-Oct-01	82.31	81.64	40	25 to 40	42.31 to 57.71				
SOMA-2	11-Oct-01	81.62	81.39	20	10 to 20	61.62 to 71.62				
SOMA-3	11-Oct-01	81.65	81.42	30	21 to 26	60.65 to 71.51				
SOMA-4	12-Oct-01	81.51	81.09	20	10 to 20	61.51 to 71.51	1			
SOMA-5	12-Oct-01	61.68	81.5	26	21 to 26	55.68 to 60.68				

Notes

(1) Top of casing surveyed on south side on January 21, 2000, because the casing was broken.

NS = Not surveyed.

⁽²⁾ GW-7 was abandoned on July 15, 1999, in accordance with LFR's workplan dated May 6, 1999. GW-6 and GW-8 were abandoned on July 26, 2000, in accordance with LFR's workplan dated June 14, 2000.

Table 2
Groundwater Elevation Data, January 30-31, 2002
3815 Broadway, Oakland, California

Monitoring Well	Casing Elevation (feet)	Depth to Water (feet)	Water Elevation (feet)	Free Product (feet)	
B-2	82.09	4.74	77.35	Detected	
B-3	82.57	5.41	77.16	0.5	
B-7	76.96	6.17	70.79		
B-8	81.82	6.79	75.03	0.5	
B-9	77.37	6.94	70.43		
B-10	81.50	7.36	74.14		
B-13	84.58	7.05	77.53	0.7	
GW-1	79.94	dry	-		
GW-2	79.14	9.37	69.77		
GW-3	77.92	9.64	68.28		
GW-4	82.37	7.54	74.83		
GW-5	81.01	12.23	68.78		
GW-6A	81.61	13.55	68.06		
LFR-1	79.97	9.41	70.56		
LFR-2	81.89	9.97	71.92		
LFR-3	77.96	10.24	67.72		
LFR-4	81.65	NM	NM		
MW-8	87.44	8.58	78.86		
MW-9	86.56	7.15	79.41		
MW-11	84.13	8.73	75.40		
SOMA-1	81.64	12.28	69.36		
SOMA-2	81.39	7.41	73.98		
SOMA-3	81.42	9.96	71.46		
SOMA-4	81.09	11.30	69.79	2.5	
SOMA-5	81.50	24.12	57.38		

Notes:

(-): well GW-1 was dry when measured during monitoring event

NM: well LFR-4 was not measured due to a car being parked over the well

Trace amount of free product detected in temporary well B-2

Table 3
Historical Groundwater Elevation Data
Former Glovatorium Site

3815 Broadway, Oakland, Callfornia

Date	B-2	B-3	B-7	B-8	B-9	B-10	B-13	GW-1	GW-2	GW-3	GW-4	GW-5
31-Jan-02	77.35 ^(FP)	77.16 (FP 0.5)	70.79	75.03 (FP 0.5")	70.43	74.14	77.53 (FP 0.7')	-	69.77	68.28	74.83	68.78
18-Oct-01	73.26 ^(0.25' FP)	73.24 ^(1' FP)	67.89	69.51 ^(2.1' FP)	67.98	71.96	DRY	NA	67.91	67.67	74.22	68.41
26-Jul-01	73.86	73.17	68.69	70.41	68.73	72.61	DRY	NA	68.55	67.84	73.85	68.77
26-Арг-01	75.26	74	69.60	73.19	69.8	73.61		NA	69.41	67.93	74.59	68.43
29-Jan-01	74.63	75.06	69.11	74.23	69.33	73.2		71.99	68.62	67.89	74.92	68.61
2-Nov-00]							
31-Oct-00												
30-Oct-00	74.34	74.84 ^(FP)	69.01	73.32	69.42	73.35	DRY		68.45	67.95	74.55	68.64
10-Aug-00												
9-Aug-00	73.9 ^(FP)	74.55 ^(FP)	68.61	72.8 ^(FP)	68.82	72.65	75.23	DRY	69.11	66.54	DRY	68.71
27-Арг-00	75.41 ^(FP)	75.86 ^(FP)	69.85 ^(FP)	74.14 ^(FP)	69.96	73.7	75.87	DRY	70.59	68.16	73.97	68.7
25-Jan-00												
24-Jan-00	75.93 ^(FP)	75.83	69.66 ^(FP)	72.84	70.25 ^(FP)	74.15 ^(FP)						
21-Jan-00							76.32	<u> </u>	68.32		74.33	
20-Jan-00			1							67.93		68.61
19-Jan-00	73.97 ^(FP)	73.22 ⁽²⁾	68.6 ^(FP)	71.81 ^(FP)	68.91 ^(FP)	73.02 ^(FP)	74.18	DRY	68.24	67.86	74.71	68.61
27-Aug-99								DRY	68.46	67.66	NM	68.71
18-Feb-98	78.16 ⁽¹⁾	78.04 ⁽¹⁾	71.57 ⁽¹⁾	76.64 ⁽¹⁾	71.44 ⁽¹⁾	75.13 ⁽¹⁾	78.51 ⁽¹⁾				:	
26-Oct-97	72.66 ⁽¹⁾	73.64 ⁽¹⁾	68.09 ⁽¹⁾	71.11 ⁽¹⁾	68.39 ⁽¹⁾	72.26 ⁽¹⁾	73.02 ⁽¹⁾					

Notes:

1= Survey elevation and water-level measurement taken at concrete surface. Elevations and water levels without a "1" in Notes Column were measured from top of casing.

2= Top of the casing was re-surveyed because it was broken.

NM = not measured

FP= Floating product or sheen was observed.

Table 3
Historical Groundwater Elevation Data
Former Glovatorium Site
3815 Broadway, Oakland, Callfornia

Date	GW-6A	GW-8	MW-8	MW-9	MW-11	LFR-1	LFR-2	LFR-3	LFR-4	SOMA-1	SOMA-2	SOMA-3	SOMA-4	SOMA-5
31-Jan-02	68.06		78.86	79.41	75.48	70.56	71.92	67.72	NM	69.36	73.98	71.46	69.79 ^(FP 2.5')	57.38
18-Oct-01	67.81		76.81	76.46	72.97	70.04	70.53	66.09	67.74	67.89	71.86	68.32	69.77	NM
26-Jul-01	68		77.4	77.03	73.73	70.16	70.92	66.56	68.33					
26-Apr-01	68.43				74.81	70.23	71.9	67.62	68.87					
29-Jan-01	67.9		78.14	77.95	73.79	70.44	72.04	66.96	67.92	1]		
2-Nov-00			78.38	78.31								1		
31-Oct-00	1				1				68.14	ļ				1
30-Oct-00	68.16			[73.62	70.22	71.62	66.99	l :					
10-Aug-00	<u> </u>		77.26	77.14										
9-Aug-00	67.88				74.12	70.16	69.99	66.76	68.39					
27-Apr-00	68	71.34	79.15	77.25	75.35		ł							
25-Jan-00					73.48									
24-Jan-00											1			1
21-Jan-00							1							
20-Jan-00		70.42	İ		İ]]		
19-Jan-00	67.63	70.44						ĺ						
27-Aug-99	67.71	70.6]	1					
18-Feb-98												•		
26-Oct-97					٠					<u> </u>		<u> </u>		

Notes:

NM = not measured

FP= Floating product or sheen was observed.

Table 4

Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity in Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California (Concentrations are in milligram per titer [mg/L] unless otherwise noted)

Weil ID	Date Sampled	Alkalinity	Chloride	Carbon Dioxide	Total Iron	Nitrite	Sulfide	Ethane	Ethene	pH Standard Unit	Temp. Celcius	Electrical Cond. (uS/cm)
	mpling Points In	stalled by Ge	eosolv, LLC									
8-7 8-7 field	11-Aug-00 11-Aug-00	760	39	202		-1	0.049	<0.0005	<0.0005	6.86	17.55	1279
B-7 B-7 field	31-Oct-00 31-Oct-00	760	42	200	14 17,22	<0.1 -1	<2.0 -1			6.16	40.05	
8-7 B-7 field	31-Jan-00 31-Jan-00	720	43	170	12	<0.1	<2.0				16.05	1454
B-7 Neid B-7 B-7	26-Apr-01 26-Jul-01				>3.3	0.243				6.79 6.59	13.9 16.3	1424 1340
B-10 B-10 fleid	10-Aug-01	520	74	145	15.3 6	0.024 <0.05	<0.04	<0.0005	0.00057	6.39 6.86	15.97 16.8	1400 1130
B-10	10-Aug-00 31-Oct-00	500	76	120	6.6	0,023 <0,1	0.06 <2.0					
B-10 B-10	31-Oct-00 31-Jan-01	480	81	72	8.35 6.1	0.001 <0.1	0.004 <2.0			6.21	16.62	1051
8-10 8-10	31-Jan-01 11-Jun-01				1.44 1.31	0.073				6.81 6.65	14.66 16.7	1117 1090
B-10	26-Jul-01 mpling Points In				6.5	0			···-	6.38	16.09	1160
GW-2	1-Nov-2000	stalled by LF	<u> </u>				• •					
GW-2	30-Jan-2001			63						6.31	18.97	1218
GW-2 field	31-Jan-2001							i		6.82	13.75	B46
GW-2 GW-2	Apr-26-01				0.02	2001				6.8	19.5	874
GW-2 GW-2	Jul-26-01 Oct-19-01	NM	NM	NM	0.03 NM	0.024 NM	1.15.4	l l		6.74	20.3	803
GW-2	Jan-31-02	NM i	NM NM	NM NM	1.05	0.013	NM NM	NM NM	NM NM	6.84	21.3	786
GW-3 GW-3 field	11-Aug-2000 11-Aug-2000	340	25	54.3	1.03	0.046	-1	<0.0005	<0.0005	6.70 7.05	17.7 21.43	7 97 860
GW-3 field GW-3	1-Nov-2000 1-Feb-2001			54		0.040	-1			6.52	18.83	967
GW-3 field	29-Jan-2001			34						6.89	17.29	602
GW-3 GW-3	Jun-11-01 Jul-26-01				0 0,14	0.7 0.004				5.68 6.53	16.2	673
GW-3	Oct-19-01	NM	NM	NM	0.14	NM	NM	NM I	NM	6.53 6.84	22.25 22.56	547 5 9 0
GW-3	Jan-31-02	NM	NM	NM	0.14	0.014	NM	NM	NM	6.70	18.4	593
GW-4	30-Jan-2001		l		_			1 1		6.6	13.48	479
GW-4 GW-4	Jul-26-01 ' Oct-19-01				2	0.035 NM		1		6.45	19.44	827
GW-4	Jan-31-02	NM NM	NM NM	NM NM	11 12.7	0,010	NM NM	NM NM	NM NM	6.79 6.50	18.36 12	732 414

Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity

in Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

(Concentrations are in milligram per liter [mg/L] unless otherwise noted)

				Carbon	Total					рН	Temp.	Electrical
Well ID	Date	Alkalinity	Chloride	Dioxide	Iron	Nitrite	Suifide	Ethane	Ethene	Standard	Celcius	Cond.
	Sampled									Unit		(uS/cm)
Monitoring We	ells Owned by TO	osco										
MW-11	10-Aug-00	360	110	216	0.13	<0.05	<0.04	<0.0005	< 0.0005	6.47	21.00	1.089
MW-11 field	10-Aug-00					0.036	0.002	i				
MW-11	1-Nov-00	300	120	190	<0.05	<0.1	<2.0	f				
MW-11 field	1-Nov-00				0.01	0.003	-1			5.83	20.13	1.264
MW-11	31-Jan-01	330	130	150	<0.05	<0.1	<2.0				į	
MW-11 field	31-Jan-01									6.35	13.67	1.098
MW-11	Apr-26-01				0.01					5.67	18.00	1210
MW-11	Jul-26-01				0	0.021				6.02	19.85	1120
MW-11	Oct-19-01	NM	NM	. NM	0	NM	NM	NM ;	NM	6.41	21.25	130
MW-11	Jan-31-02	NM	NM	NM	0.05	0.036	NM	NM	NM	6.60	18.50	1090
	ells installed by I											
LFR-1	11-Aug-00	250	110					< 0.0005	<0.0005	6.97	19.73	936
LFR-1 field	09-Aug-00			51.1		0.02	-1					,
LFR-1	30-Oct-00	240	100	25	<0.05	<0.1	<2	-		,	1	
LFR-1 field/sp	30-Oct-00		1		0.01/0.01	0.031/0.036	0.001/0.001			6.38	17.94	697
LFR-1-spl	30-Oct-00	220	100	40	<0.05	<0.1	<2					
LFR-1	29-Jan-01	150	76	28	<0.05	<0.1	<2	, ,			1	
LFR-1 field	29-Jan-01		i		0	0.037				6.82	15.00	870
LFR-1 Dup	29-Jan-01	150	75	26	<0.05	<0.1	<2				1	
LFR-1	Apr-26-01				0.004					5.76	16.80	980
LFR-1	Jul-26-01				0.05	0.008				6.48	19.38	772
LFR-1	Jul-26-01	NM	NM	NM	0.42	NM	NM	NM	NM	6.73	20.83	661
LFR-1	Jan-31-02	NM	NM	NM	0.03	0.011	NM	NM	NM	6.50	16.50	879
LFR-2	11-Aug-00	590	33	174		1		<0.0005	0.0017	6.8	19.87	1.088
LFR-2 field	11-Aug-00				2.95	-1	0.005					
LFR-2	02-Nov-00	550	40	180	6.2	<0.1	<2					
LFR-2 field	02-Nov-00				7.45	0.007	0.003			6.19	19.67	1.306
LFR-2	30-Jan-01	480	21	130	4.6	<0.1	<2				1	
LFR-2 field	30-Jan-01				1.04	0.007				6.6	12.73	945
LFR-2	Apr-27-01				2.97					5.64	16.40	921
LFR-2	Jul-26-01		1		4.6	0.011				6.31	18.66	970
LFR-2	Oct-18-01	MM	NM	NM	8.2	NM	NM	NM	NM	6.78	19.56	109
LFR-2	Jan-31-02	NM	NM	NM I	1.97	0.046	NM	NM	NM	6.50	16.60	644

Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity in Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

(Concentrations are in milligram per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Alkalinity	Chloride	Carbon Dioxide	Total Iron	Nitrite	Sulfide	Ethane	Ethene	pH Standard Unit	Temp. Celclus	Electrical Cond. (uS/cm)
LFR-3	10-Aug-00	310	85	182	<0.1	0.15	0.04	<0.0005	< 0.0005	6.57	19.92	951
LFR-3 split	10-Aug-00	300	85	152				<0.0005	<0.0005			
LFR-3 field	10-Aug-00	1				0.058	-1					
LFR-3	01-Nov-00	350	66	160	<0.05	<0.1	<2				1	
LFR-3 field	01-Nov-00				0.01	0.011	0.002			6.16	17.71	1164
LFR-3	30-Jan-01	250	31	71	<0.05	<0.1	<2					
LFR-3 field	30-Jan-01				0.03					6.64	17.29	541
LFR-3	Jun-11-01				0.01					5.43	18.00	613
LFR-3	Jul-26-01				0.7	0.027				6.25	20.50	602
LFR-3	Oct-18-01	NM	NM	NM .	0.12	NM	NM	NM	NM	6.5	21,39	645
LFR-3	Jan-31-02	NM	NM	NM	0.06	0.024	NM	NM	NM	6.30	19.10	566
LFR-4	11-Aug-00	630	71	161				<0.0005	<0,0005	6.9	20.11	1240
LFR-4 field	11-Aug-00				0.22	0.018	0.002	i I			i	
LFR-4	31-Oct-00	490	28	130	1	<0.1	<2	i			i	
LFR-4 field	31-Oct-00,		i		0.67	0.022	0.	i		6.21	18.11	830
B-10 FB	10-Aug-00							<0.0005	<0.0005			
LFR-4	01-Feb-01	460	25	120	1.3	<0.1	<2				!	
LFR-4 field	01-Feb-01				1,43	0.017				8,55	15.28	916
LFR-4	Apr-27-01				1.44					5.79	18,30	1060
LFR-4	Jul-26-01				0.95	0		.		6.26	19.23	866
	ells installed by	SOMA										
SOMA-1	Oct-19-01	MM	NM	MM	0.75	NM	NM	NM	NM	6.77	18.15	146
SOMA-1	Jen-31-02	NM	NM ·	NM	D.0	0.00	NM	NM	NM	6.70	17.80	11 60 . _{Fi}
SOMA-2	Oct-19-01	NM	NM	NM	44	NM	NM	NM	NM	6.87	16.93	122
SOMA-2	Jan-31-62	NM	NM	MM	10.6	0.344	NM	NM	NM	6.30	15.20	1140
SOMA-3	Oct-19-01	NM	NM	NM	0.4	NM	NM	NM	NM	6.91	17.09	158
SOMA-3	Jen-31-62	NM	NM	NM	0.78	0.376	NIM	NM	NM	6.60	14.90	1320
SOMA-4	Oct-19-01	NM	NM i	NM	0.26	NM	NM	NM	NM	6.53	16.88	145

Samples with "field" in the well tD indicate that the results are from field measurements obtained using a Hach spectrometer or a Hydrolab Quanta flow-through instrument.

since April 2001, field measurements have been performed using a Hach Calorimeter

(1) Sample concentration was too diffute to be reproducibly measured using the Hach spectrometer.

*)Methane measured by Microseep Laboratory, Pittsburgh, PA

NM= not measured

Table 5
Analytical Results of Groundwater Samples Analyzed for Petroleum Hydrocarbons
January 30-31, 2002

Former Glovatorium Site 3815 Broadway, Oakland, California

Well	Stoddard Solvent C7-C12 (ug/L)	Gasoline C7-C12 (ug/L)	MTBE ^{1,5} (ug/L)	Benzene ⁴ (ug/L)	Toluene ⁶ (ug/L)	Ethyl- benzene ⁵ (ug/L)	Total Xylenes ⁶ (ug/L)
GW-2	<50	<50	<5.0	<5.0	<5.0	<5.0	<5.0
GW-3	<50	70 ^{2,3}	<5.0	<5.0	<5.0	<5.0	<5.0
GW-4	920	1700 ^{2,4}	<5.0	<5.0	<5.0	<5.0	<5.0
MW-11	<50	71 ²	<5.0	<5.0	<5.0	<5.0	<5.0
LFR-1	150 ^{2,3}	270 ^{2,3}	<13	<13	<13	<13	<13
LFR-2	760	1400 ^{2,4}	<5.0	<5.0	<5.0	<5.0	<5.0
	<50	67 ²	<5.0	<5.0	<5.0	<5.0	<5.0
LFR-3	58	100 ^{2,4}	110	<5.0	<5.0	<5.0	<5.0
SOMA-1		2400 ^{2,4}	<71	<71	<71	<71	<71
SOMA-2	1,300	410 ^{2,4}	310	<13	<13	<13	<13
SOMA-3 SOMA-4	230 FP	FP	FP	FP	FP	FP	FP

- < : not detected above the laboratory reporting limits
- MTBE, BTEX data are reported using EPA Method 8260B
- Sample exhibits fuel pattern which does not resemble standard
- Sample exhibits unknown single peak or peaks
- 4 Heavier hydrocarbons contributed to the quantitation
- Analysis was carried out past the the hold date, the client was informed and analysis proceeded no analytical problems were encountered

FP: Free product was observed in the well, and no analysis was performed on sample

Table 6
Anayltical Results of Groundwater Samples Analyzed for Volatile Organic Compounds
Former Glovatorium Site
3815 Broadway, Oakland, California

Sample ID	Date	Tetra Chioro ethene ¹ (ug/L)	Trichloro ethene ¹ (ug/L)	cis-1,2 Dichloro ethene ¹ (ug/L)	trans-1,2 Dichloro ethene ¹ (ug/L)	Vinyl Chloride ¹ (ug/L)	1,2 Dichloro propane ¹ (ug/L)	1,1- Dichloro ethene ¹ (ug/L)
GW-2	31-Jan-02	9.2	<5.0	<5.0	<5.0	<10	<5.0	<5.0
GW-3	31-Jan-02	96	<5.0	<5.0	<5.0	<10	<5.0	<5.0
GW-4	31-Jan-02	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0
LFR-1	31-Jan-02	370	35	<13	<13	<25	<13	<13
LFR-2	31-Jan-02	<5.0	<5.0	6.9	<5.0	<10	<5.0	<5.0
LFR-3	30-Jan-02	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0
MW-11	30-Jan-02	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0
SOMA-1	31-Jan-02	5.6	<5.0	7.0	<5.0	<10	5.7	<5.0
SOMA-2	31-Jan-02	<71	<71	1,800	<71	<140	<71	<71
SOMA-3	31-Jan-02	18	23	380	<13	<25	<13	<13
SOMA-4	31-Jan-02	FP	FP.	FP	FP	FP	FP	FP

FP: Free Product observed in well SOMA-4

< : not detected above laboratory reporting limits

Analysis was carried out past the the hold date, the client was informed and analysis proceeded no analytical problems were encountered

Table 7 Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE on Groundwater Samples

Former Glovatorium Site 3815 Broadway, Oakland, California

All results are expressed in milligrams per liter (mg/L)

		TPH,	TPH,				Ethyl	
Location	Date	Purgable	Purgable	MtBE	Benzene	Toluene	benzene	Xylenes
	Sampled	Stoddard	Gasoline					
Temporary Sa	mpling Points Ins		v, LLC:					
B-2	24-Jan-00	20 ^J	31 ^{YJ}	<0.05	<0.013	<0.013	0.11 ^c	0.22 ^C
B-3	24-Jan-00	4.9 ^J	8.8 ^{YJ}	<0.01	0.0048	<0.0025	<0.0025	0.0714
B-7	24-Jan-00	19	30 3	<0.05	<0.013	0.062	<0.013	0.207
B-7	11-Aug-00	3.7 ^J	6.8 YHJ	0.02	0.0077	0.047 ^J	0.007 ^J	0.065 ^{දා}
B-7	31-Oct-00	62 ^J	98 ^{YHJ}	0.01 ^J	0.0091 ³	0.061 ^J	<0.0005	0.237 J
B-7	Jan-31-01	5.3	7.9	0.01	0.0089	0.059	0.0097	0.087
B- 7	Apr-26-01	4.5	8.9 ^H	0.0069	0.011	0.071	0.077 ^C	0.208
B-7	Jul-27-01	2.5	5.2 HY	0.0057	0.007	0.051	0.0082	0.074
B-8	24-Jan-00	11 ^J	19 ^{YJ}	<0.01	<0.0025	<0.0025	<0.0025	0.17 ^C
B-9	24-Jan-00	1 YJ	1.8 YHJ	<0.002	<0.0005	<0.0005	0.01 ^C	0.0089 ^C
B-10	24-Jan-00	2.4 ^Y	4.2	0.014 °	0.0072	0.027	0.025 ^C	0.032
B-10	10-Aug-00	2.8 ^Y	6.1 ^Y	0.16	0.0073	0.012	<0.005	0.0241
B-10	31-Oct-00	2.2 ^{YZ}	3.5 ^z	<0.002	0.0038	0.011	<0.0005	0.0182
B-10	Jan-31-01	2.4 ^z	3.6 HYZ	<0.002	0.0031	0.01	0.00076 °	0.0197
B-10	Apr-26-01	2.4 ^Z	4.7 ^Z	0.0025	0.0041	0.013	ND	0.029
B-10	Jul-27-01	1.7	3.6 ^H	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
B-13	24-Jan-00	1.7 ^J	3 ^{YJ}	<0.01	<0.0025	<0.0025	<0.0025	0.02
Temporary Sa	impling Points Ins							
GW-2	19-Jul-99	<0.05	<0.05	0:0025	<0.0005	0.00071	<0.0005	0.00074
GW-2	20-Jan-00	0.15	0.25 ^Y	0.0044	<0.0005	<0.0005	0.00097 ^C	0.0013
GW-2	28-Apr-00	< 0.05	0.095 ^{YZ}	<0.0021	<0.0005	<0.0005	<0.0005	<0.0005
GW-2	2-Nov-00	<0.05	<0.05	<0.002	<0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005
GW-2	1-Feb-01	<0.05	ND	<0.002	<0.0005		<0.0005	<0.0005
GW-2	Apr-27-01	<0.05	0.086 YZ	0.0022 <0.0005	<0.0005 <0.0005	0.024 <0.0005	<0.0005	<0.0005
GW-2	Jul-27-01 Oct-19-01	<0.05 <0.05	<0.05 <0.05	<0.005	<0.005	<0.005	<0.005	<0.005
GW-2 GW2	Jan-31-01	<0.050	<0.050	<0.005 b	<0.005 b	<0.005 b	<0.005 b	<0.005 b
GW-3	19-Jul-99	0.07 ^Z	0.1 ^z	<0.002	<0.0005	<0.0005	<0.0005	0.00064
GW-3	20-Jan-00	0.15	0.26 ^Y	<0.002	<0.0005	<0.0005	<0.0005	0.0013 ^C
GW-3	27-Apr-00	0.2 ^{YZ}	0.38 YZ	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
Split	27-Apr-00	0.3 ^z	0.57 YZ	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	11-Aug-00	<0.05	0.077 YZ	<0.002	<0.0005	<0.0005	<0.0005	0.00051
GW-3	2-Nov-00	<0.05	0.05 ^{YZ}	0.0026	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	1-Feb-01	<.05	<0.05	<.002	<.0005	<.0005	<.0005	<.0005
GW-3	27-Apr-01	<.05	0.062 YZ	0.0056	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	Jul-27-01	<.05	<0.05	0.0008	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	Oct-19-01	0.054	0.11	<0.01	<0.01	<0.01	<0.01	<0.02
GW-3	Jan-31-02	<0.050	0.07 YZ	<0.005 b	<0.005 b	<0.005 *	<0.005 b	<0.005 b
GW-4	21-Jul-99	6.8 ^J	10 YHJ	0.0022	<0.0005	<0.0005	<0.0005	0.0029
GW-4	20-Jan-00	0.97 ^J	1.6 ^{YJ}	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Split	20-Jan-00	0.85 ^J	1.5 ^{YJ}	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
GW-4	27-Apr-00	0.31	0.6 ^Y	<0.002	<0.0005	<0.0005	<0.0005	0.0027
GW-4	Jan-30-01	0.39	0.58 ^{HY}	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
GW-4	Jul-27-01	0.42	0.86 ^{HY}	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
GW-4	Oct-19-01	0.83	1.6	<0.005	<0.005	<0.005	<0.005	<0.01
GW-4	Jan-31-02	0.920	1.7 HY	<0.005 b	<0.005 b	<0.005 ^b	<0.005 b	<0.005 b

Table 7 Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE on Groundwater Samples

Former Glovatorium Site 3815 Broadway, Oakland, California

All results are expressed in milligrams per liter (mg/L)

		TPH,	TPH,				Ethyl	
Location	Date	Purgable	Purgable	MtBE	Benzene	Toluene	benzene	Xylenes
	Sampled	Stoddard	Gasoline	_				
Temporary Sa	mpling Points Ins	stalled by Geoso	lv, LLC:					
GW-5	27-Aug-99	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001
GW-5	20-Jan-00	< 0.05	0.057 ^Y	0.0007	<0.0005	<0.0005	<0.0005	<0.0005
GW-5	27-Арг-00	0.05 ^Y	0.096 ^Y	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
GW-6A	27-Aug-99	<0.05	0.054 ^Y	0.0089	< 0.0005	<0.0005	<0.0005	<0.0005
Split	27-Aug-99	< 0.05	0.057 ^Y	0.0087	<0.0005	<0.0005	<0.0005	<0.0005
GW-6A	25-Jan-00	< 0.05	< 0.05	0.0022	<0.0005	<0.0005	<0.0005	<0.0005
GW-6A	27-Apr-00	<0.05	0.087 ^Y	<0.002	<0.0005	< 0.0005	<0.0005	<0.0005
GW-7	15-Jul-99	NA	NA NA	< 0.0025	0.05 ^J	<0.0005	0.000727	0.00313
Split	15-Jul-99	NA.	NA	NA	NA	NA	NA	NA
GW-7	15-Jul-99	NA	NA	NA	0.0567 1	< 0.002	< 0.002	< 0.002
Split	15-Jul-99	NA.	NA.	NA	0.0755	< 0.002	< 0.002	< 0.002
GW-8	19-Jul-99	<0.05	<0.05	0.0078	< 0.0005	0.00064	< 0.0005	0.00151
GW-8	20-Jan-00	0.19	0.33 ^Y	<0.002	< 0.0005	< 0.0005	<0.0005	<0.0005
Split	20-Jan-00	0.2	0.37 ^Y	<0.002	0.00058	< 0.0005	< 0.0005	<0.0005
GW-8	28-Apr-00	0.064 YZ	0.12 ^{YZ}	0.013	< 0.0005	< 0.0005	<0.0005	<0.0005
Monitoring We	lls Owned by TOSC	:O-	V.12					
MW-11	25-Jan-00	<0.05	<0.05	0.009	<0.0005	<0.0005	<0.0005	<0.0005
MW-11	28-Apr-00	<0.05	<0.05	<0.0087	<0.0005	< 0.0005	< 0.0005	<0.0005
MW-11	10-Aug-00	<0.05	<0.05	0.011	< 0.0005	< 0.0005	<0.0005	<0.0005
MW-11	1-Nov-00	<0.05	<0.05	0.0068	< 0.0005	< 0.0005	<0.0005	< 0.0005
MW-11	31-Jan-01	<.05	<.05	<0.0005	<0.0005	< 0.0005	< 0.0005	< 0.0005
	Jul-27-01	<0.05	0.1 HY	0.001	<0.0005	< 0.0005	< 0.0005	0.0007
MW-11		<0.05	<0.05	<0.005	<0.005	< 0.005	< 0.005	<0.01
MW-11	Oct-19-01 Jan-31-02	<0.050	0.071 Y	<0.005 b	<0.005 b	<0.005 b	<0.005 b	<0.005 b
MW-11	lls installed by LFR		0.071	-0.000				
	9-Aug-00	0.53	1.2	0.0095	<0.0005	<0.0005	<0.0005	<0.0005
LFR-1		0.24 ^{YZ}	0.37 YZ	<0.002	<0.0005	<0.0005	<0.0005	< 0.0005
LFR-1	30-Oct-00 30-Oct-00	0.24 ^{YZ}	0.37 YZ	0.0043	<0.0005	< 0.0005	<0.0005	< 0.0005
Split		0.24 0.21 ^{YZ}	0.31 ^{YZ}	0.0033	<0.0005	<0.0005	< 0.0005	<0.0005
LFR-1	29-Jan-01	0.092	0.18 YZ	0.0044	<0.0005	0.002	< 0.0005	<0.0005
LFR-1	Apr-26-01	0.086	0.18 ^{YZ}	<0.0013	<0.0013	<0.0013	< 0.0013	< 0.0013
LFR-1	Jul-27-01	0.086	0.38	<0.031	<0.031	<0.031	<0.031	< 0.062
LFR-1	Oct-18-01	0.15 ^{YZ}	0.27 YZ	<0.031 b	<0.013 ^b	<0.013 b	<0.013 b	<0.013 ^b
LFR-1	Jan-31-02				0.0018	<0.005	<0.0005	0.0013
LFR-2	11-Aug-00	0.59	1.1 ^{YH}	0.0022		0.0011	0.0042	0.0013
LFR-2	2-Nov-00	0.38	0.7 YH	0.003	0.0035		<0.0042	<0.0005
LFR-2	30-Jan-01	0.36	0.54 HY	0.0034	0.00057	<0.0005	<0.0005	<0.0005
LFR-2	Apr-27-01	0.33	0.66 HY	<0.002	<0.0005	0.0013	<0.0005	0.013
LFR-2-2	Apr-27-01	0.36	0.72 HY	<0.002	0.00059	0.0019		0.0006
LFR-2	Jul-,27-01	0.33	0.76 HY	<0.0005	0.0013	<0.0005	<0.0005	
LFR-2	Oct-18-01	0.73	1.5	<0.0071	<0.0071	<0.0071	<0.0071	<0.0142
LFR-2	Jan-31-02	0.760	1.4 HY	<0.005 b	<0.005 b	<0.005 b	<0.005 b	<0.005

Table 7 Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE on Groundwater Samples

Former Glovatorium Site 3815 Broadway, Oakland, California

All results are expressed in milligrams per liter (mg/L)

		TPH,	TPH,				Ethyl	
Location	Date	Purgable	Purgable	MtBE	Benzene	Toluene	benzene	Xylenes
ł	Sampled	Stoddard	Gasoline					_
Temporary Sa	mpling Points Ins	stalled by Geosol	v, LLC:					
LFR-3	10-Aug-00	<0.05	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
Split	10-Aug-00	< 0.05	< 0.05	< 0.002	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	1-Nov-00	< 0.05	< 0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	30-Jan-01	<.05	<.05	0.0036	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	Apr-27-01	< 0.05	< 0.05	0.0024	<0.0005	0.0054	<0.0005	<0.0005
LFR-3	Jul-27-01	< 0.05	< 0.05	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	Oct-18-01	< 0.05	< 0.05	< 0.005	< 0.005	<0.005	< 0.005	<0.01
LFR-3	Jan-31-02	<0.050	0.067 ^Y	<0.005 b	<0.005 ^b	<0.005 b	<0.005 b	<0.005 ^b
LFR-4	11-Aug-00	0.22 ^Y	0.41 ^Y	0.0051	0.011	<0.0005	<0.0005	0.00162 ^C
LFR-4	31-Oct-00	0.17 ^Y	0.27	0.0065	0.00084	<0.0005	<0.0005	<0.0005
LFR-4	1-Feb-01	0.16 ^Y	0.22	0.0097	0.0033	<0.0005	<0.0005	<0.0005
LFR-4	Apr-27-01	0.22 ^Y	0.44	0.0058	0.027	0.0036	<0.0005	<0.0005
LFR-4	Jul-27-01	0.091 ^Y	0.19	0.011	0.0009	<0.0005	<0.0005	<0.0005
LFR-4	Jan-31-02	NA	NA	NA	NA	NA .	NA_	NA
Monitoring Wei	is installed by SON	ЛA:						
SOMA-1	Oct-19-01	0.22	0.44	0.034	<0.005	<0.005	< 0.005	<0.01
SOMA-1	Jan-31-02	0.058	0.1 HY	0.11 b	<0.005 b	<0.005 b	<0.005 b	<0.005 b
SOMA-2	Oct-19-01	1.4	2.8	< 0.25	<0.25	< 0.25	<0.25	<0.5
SOMA-2	Jan-31-02	1.300	2.4 HY	<0.071 b	<0.071 b	<0.071 b	<0.071 b	<0.071 b
SOMA-3	Oct-19-01	0.42	0.83	0.65	<0.025	< 0.025	<0.025	< 0.05
SOMA-3	Jan-31-02	0.230	0.41 HY	0.31 b	<0.013 ^b	<0.013 ^b	<0.013 ^b	<0.013 b
SOMA-4	Oct-19-01	2.5	5	0.63	<0.13	<0.13	<0.13	<0.26
SOMA-4	Jan-31-02	FP	FP	FP	FP	FP	FP	FP

Notes:

- Analysis was carried out npast the hold date, no analytical problems were encountered
- ^c Presence of this compound confirmed by second column, however, the confirmation concentration different from reported results by more than a factor of two.
- ^J Result is estimated.
- Y Sample exhibits fuel pattern which does not resemble standard.
- ^H Heavier hydrocarbons than the standard are present in the sample.
- ² Sample exhibits unknown single peak or peaks.
- NA = Not analyzed
- NA = Not analyzed, LFR-4 was not analzed due to the well being inaccessible
- TPH, purge = Total petroleum hydrocarbons (purgeable)

Groundwater samples collected from the temporary sampling points are considered grab samples, therefore, the results should be considered estimates of groundwater quality.

Table 8 Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/L)

Location	Date	PCE	TCE	cis-1,2-	trans-1,2-	Vinyl	1,2-DCP	Notes
Location	Sampled	100	101	DCE	DCE	Chloride	.,	
Tomporoni Sc	ampling Points	installed by Gr	acchy II (1	502	J		
	24-Jan-00	<0.0013	<0.0013	0.27	0.0014	< 0.0013	< 0.0013	1
B-2 B-3	24-Jan-00 24-Jan-00	< 0.002	< 0.0013	0.61	< 0.002	< 0.002	< 0.002	1
B-7	24-Jan-00	< 0.0036	< 0.002	0.92	0.0043	< 0.0036	< 0.0036	
B-7	11-Aug-00	< 0.0030	< 0.0031	0.86	0.0048	< 0.0031	< 0.0031	
B-7	31-Oct-00	< 0.0042	< 0.0042	0.91	0.0042	< 0.0042	< 0.0042	
B-7	31-Jan-01	< 0.0042	< 0.0042	0.92	0.0048	< 0.0042	< 0.0042	ŀ
B-7	Apr-27-01	<0.0031	<0.0031	1.1	0.0069	<0.0031	<0,0031	
B-7	Jul-27-01	0.0098	0.017	0.86	0.005	<0.0031	<0.0031	
B-8	24-Jan-00	< 0.0005	< 0.0005	0.035	< 0.0005	< 0.0005	< 0.0005	
B-9	24-Jan-00	< 0.0005	0.0006	0.0032	< 0.0005	< 0.0005	< 0.0005	
B-10	24-Jan-00	1.2	2.4	14	0.09	< 0.063	< 0.063	1
B-10	10-Aug-00	2.9	1.6	6,5	0.05	< 0.025	< 0.025	
B-10	31-Oct-00	2.4	1.9	7.1	0.061	< 0.025	< 0.025	1
B-10	31-Jan-01	2.1	1.6	6.6	0.044	< 0.025	< 0.025	Į.
B-10	Jul-27-01	1.7	1.4	7.3	0.043	<0.025	< 0.025	
B-10	Jul-27-01	0.87	0.81	6.6	0.041	<0.025	<0.025	ŀ
B-13	24-Jan-00	0.02	0.029	0.13	0.0049	< 0.0005	< 0.0005	Į
	ampling Points							
GW-2	19-Jul-99	0.014	0.0014	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
GW-2	20-Jan-00	0.13	0.019	0.0055	< 0.0005	< 0.0005	< 0.0005	
GW-2	28-Apr-00	0.12	0.016	0.0033	< 0.0005	< 0.0005	< 0.0005	
GW-2	2-Nov-00	0.0078	0.0008	0.0032	< 0.0005	< 0.0005	< 0.0005	
GW-2	1-Feb-01	0.0077	0.0006	0.0028	< 0.0005	< 0.0005	< 0.0005	
GW-2	Арг-27-01	0.0096	0.0018	0.0024	<0.0005	<0.0005	<0.0005	
GW-2	Jul-27-01	0.033	0.0043	0.0024	<0.0005	<0.0005	<0.0005	
GW-2	Oct-19-01	0.019	<0.005	<0.005	<0.005	<0.01	<0.005	
GW-2	Jan-31-02	0.0092 b	<0.005 b	<0.005 b	<0.005 b	<0.010 b	<0.005 ^b	
GW-3	19-Jul-99	0.22	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	
GW-3	20-Jan-00	0.055	0.001	0.02	< 0.0005	< 0.0005	< 0.0005	
GW-3	27-Apr-00	0.35	0.0023	0.0056	< 0.0005	< 0.0005	< 0.0005	
Split	27-Apr-00	0.27	0.0015	0.0023	< 0.0013	< 0.0013	< 0.0013	
GW-3	11-Aug-00	0.068	0.0028	0.012	< 0.0005	< 0.0005	< 0.0005	
GW-3	2-Nov-00	0.059	0.0008	0.0024	< 0.0005	< 0.0005	< 0.0005	
GW-3	1-Feb-01	0.046	0.0006	0.0011	< 0.0005	< 0.0005	< 0.0005	
GW-3	Apr-27-01	0.079	0.0007	0.0015	<0.0005	<0.0005	<0.0005	
GW-3	Jul-27-01	0.09	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	
GW-3	Oct-19-01	0.18	<0.01	<0.01	<0.01	<0.02	<0.01	}
GW-3	Jan-31-02	0.096 ^b	<0.005 b	<0.005 b	<0.005 b	<0.010 b	<0.005 b	
GW-4	19-Jul-99	< 0.0005	< 0.0005	0.0035	< 0.0005	< 0.0005	0.0017	
GW-4	20-Jan-00	0.0008	< 0.0005	0.0036	< 0.0005	< 0.0005	0.0015	
Split	20-Jan-00	0.0006	< 0.0005	0.0044	< 0.0005	< 0.0005	0.0021	
GW-4	27-Apr-00	0.0017	< 0.0005	0.001	< 0.0005	< 0.0005	0.0006	1
GW-4	30-Jan-01	< 0.0005	< 0.0005	0.0024	< 0.0005	< 0.0005	0.0014	
GW-4	Jul-27-01	< 0.0005	< 0.0005	0.003	< 0.0005	0.0006	0.0019	
GW-4	Oct-19-01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	1
GW-4	Jan-31-02	<0.005 °	<0.005 °	<0.005 "	<0.005°	<0.010 °	<0.005°	L

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/L)

Location	Date	PCE	TCE	cis-1,2-	trans-1,2-	Vinyl	1,2-DCP	Notes
Location	Sampled	. 32	,	DCE	DCE	Chloride	1	·
Temporary Sa	ampling Points	Installed by G	eosoly II (
GW-5	27-Aug-99	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
GW-5	20-Jan-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
GW-5	27-Apr-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
GW-6A	27-Aug-99	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
Split	27-Aug-99	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
GW-6A	25-Jan-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
GW-6A	27-Apr-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
GW-7	15-Jul-99	< 0.0005	< 0.0005	0.00358	< 0.0005	< 0.0005	0.000632	
GW-7	15-Jul-99	< 0.002	< 0.002	0.00398	< 0.002	< 0.002	< 0.002	
Split	15-Jul-99	< 0.002	< 0.002	0.00383	< 0.002	< 0.002	< 0.002	
GW-8	19-Jul-99	0.024	0.015	0.0038	0.0017	0.0012	< 0.0005	
GW-8	20-Jan-00	0.15	0.19	0.053	0,012	0.0045	< 0.0007	
Split	20-Jan-00	0.15	0.18	0.052	0.011	0.0046	< 0.0005	
GW-8	28-Apr-00	0.12	0.11	0.029	0.0053	0.0023	< 0.0005	
	ells owned by			5.525		, ,	•	
MW-11	25-Jan-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	28-Apr-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	10-Aug-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	1-Nov-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	31-Jan-01	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	Apr-27-01	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	Jul-27-01	0.0017	0.001	0.0062	< 0.0005	< 0.0005	< 0.0005	I
MW-11	Oct-19-01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	I
MW-11	Jan-31-02	<0.005 b	<0.005 b	<0,005 b	<0.005 b	<0.010 b	<0.005 b	I
	ells installed b		[1	'	•	
LFR-1	9-Aug-00	2.8	0.064	0.041	< 0.0083	< 0.0083	< 0.0083	I
LFR-1	30-Oct-00	0.82	0.034	0.01	< 0.0031	< 0.0031	< 0.0031	I
Split	30-Oct-00	0.87	0.035	0.014	< 0.0031	< 0.0031	< 0.0031	1
LFR-1	29-Jan-01	0.77	0.026	0.0073	<0.0025	<0.0025	<0.0025	
LFR-1	Apr-26-01	0.44	0,013	0.005	<0.0013	<0.0013	< 0.0013	İ
LFR-1	Jul-27-01	0.38	0.031	0.0098	<0.0013	<0.0013	< 0.0013	
LFR-1	Oct-18-01	0.78	0.093	<0.031	<0.031	<0.063	<0.031	Í
LFR-1	Jan-31-02	0.37 b	0.035 b	<0.013 b	<0.013 b	<0.025 b	<0.013 b	
LFR-2	11-Aug-00	< 0.0005	< 0.0005	0.035	< 0.0005	0.0045	< 0.0005	
LFR-2	2-Nov-00	< 0.0005	< 0.0005	0.13	0.001	0.015	0,0006	
LFR-2	29-Jan-01	< 0.0005	<0.0005	0.0056	<0.0005	0.0016	<0.0005	
LFR-2	Apr-27-01	0.0007	<0.0005	0.0056	<0.0005	0.0013	<0.0005	
LFR-2	Jul-27-01	0.0014	0.0007	0.019	<0.0005	<0.0005	<0.0005	
LFR-2	Oct-18-01	<0.0071	<0.0071	0.16	<0.0071	<0.014	<0.0071	
LFR-2-2	Apr-27-01	0.0007	<0.0005	0.0065	<0.0005	0.0019	<0.0005	
LFR-2	Jan-31-02	<0.005 b	<0.005 b	0.0069	<0.005 b	<0.010 b	<0.005 ^b	
LFR-3	10-Aug-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	1
Split	10-Aug-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	1
LFR-3	1-Nov-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
LFR-3	30-Jan-01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-3	Apr-27-01	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	1
LFR-3	Jul-27-01	0.0022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	1
LFR-3	Oct-18-01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	1
LFR-3	Jan-31-02	<0.005 "	<0.005 °	<0.005°	<0.005 °	<0.010°	<0.005 °	l

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on

Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/L)

Location	Date Sampled	PCE	TCE	cis-1,2- DCE	trans-1,2- DCE	Vinyl Chloride	1,2-DCP	Notes
LFR-4	11-Aug-00	< 0.0005	< 0.0005	0.0012	< 0.0005	< 0.0005	< 0.0005	
LFR-4	31-Oct-00	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
LFR-4	30-Jan-01	<0.0005	<0.0005	0.0006	<0.0005	< 0.0005	< 0.0005	ŀ
LFR-4	Apr-27-01	<0.0005	<0.0005	0.0016	<0.0005	<0.0005	<0.0005	i
LFR-4	Jul-27-01	0.0005	<0.0005	0.0021	<0.0005	<0.0005	<0.0005	
Monitoring w	ells installed by	SOMA		•				
SOMA-1	Oct-19-01	<0.005	<0.005	0.014	<0.005	<0.01	<0.005	
SOMA-1	Jan-31-02	0.0056 b	<0.005 b	0.007 b	<0.005 b	<0.010 b	0.0057 b	<u> </u>
SOMA-2 SOMA-2	Oct-19-01 Jan-31-02	1.4 <0.071 ^b	0.35 <0.071 ^b	5 1.8 ⁶	<0.25 <0.071 b	<0.5 <0.140 b	<0.25 <0.071 b	
SOMA-3 SOMA-3	Oct-19-01	0.042 0.018 ^b	0.057 0.023 ^b	0.44 0.38 ^b	<0.025 <0.013 b	<0.05 <0.025 b	<0.025 <0.013 b	
SOMA-4 SOMA-4	Jan-31-02 Oct-19-01 Jan-31-02	<0.13 FP	<0.13 FP	2.6 FP	<0.13 <0.13	<0.25 FP	<0.13 FP	

^b analysis was carried out past hold date, no analytical problems were encountered FP: Not Analyzed due to Free Product

Table 9 Historical In-Situ and Ex-Situ Analyses Results for Bioattenuation Parameters on Groundwater Samples

at the Former Glovatorium Site 3815 Broadway, Oakland, California (concentrations in milligrams per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Dissolved Oxygen	Manganese (dissolved)	Nitrate	Sulfate	Ferrous iron (Fe + 2)	Methane*	ORP (milliVolts)	Hydrogen (nano- Moles)
	44.4	Oxygen	(dissolves)				11	193	
B-7	11-Aug-00 11-Aug-00	0.63		-1	3				
B-7-field	31-Oct-00	0.62	2.6	< 0.10	< 1.0	11	2.4		
B-7	31-Oct-00	0.25	2.0	0.4	-1	15.85		-62.5	
B-7-field	31-Oct-00 1-Feb-01	0.78	2.2	0.78	<1.0	15	13		
B-7	31-Jan-01	0.48						28	
B-7-field	Apr-26-01	0.6	1.7	2.5	5	>3.3	7.6	-28	
B-7 Field	Apr-26-01 Jul-26-01	1.98	7.3	0	8	11.6	7	-40	•
B-7 Field	31-Jan-01	0.45		_	ļ	1 .	ŀ	58	
B-8 field		0.43		< 0.05	< 0.05	5.7	10	213	
B-10	10-Aug-00	0.44	Į.	-1	-2		!		1
B-10-field	10-Aug-00 31-Oct-00	2.4	1.4	< 0.10	< 1.0	5.9	6.7		0.81
B-10	31-Oct-00 31-Oct-00	0.44	,	0	0	7.6		-22.2	
B-10-field		6.4	1,3	< 0.10	<2.0	7.7	24		1.3
B-10	31-Jan-01	0.46	1			İ		64	
B-10-field	31-Jan-01	0.9	0	o	0	1.25	3.9	-8	NM
B-10 Field	Jun-11-01	1.87	1.3	0	3	6.2	5.6	-22	
B-10 Field	Jul-26-01	2.32	1.5					77	ł
GW-2-field	1-Nov-00	3.8			ļ	1	0.041	l.	
GW-2	1-Feb-01	0.58	1		ļ			159	
GW-2-field	1-Feb-01	0.50	1 1	7.1	36	0.015	0.00022	152	NM
GW-2	Apr-26-01	1.93	ò	3.9	60	0	0.016	233	1
GW-2	Jul-26-01	1,93	1	5.0	1		0.00091	1	
GW-2 field	Not En. Sample	2.00	0	0.80	45	0.36	6.9	179	NM
GW-2	Jan-31-02	2.80	"	0.00	1		< 0.0005	395	· ·
GW-3	11-Aug-00	0.70		1 1	46		1		ļ
GW-3-field	11-Aug-00	0.72	1	·			· ·	1	Ì
GW-3	1-Nov-00	7.76	1		1		1	81	1 .
GW-3-field	/		1				0.012	İ	1
GW-3	29-Jan-01	8.8		1	1			235	Ì
GW-3-fleld	1-Feb-01	8.99	0	0.7	30	i o	0.015	212	NM
GW-3	Apr-27-01	2.9	0	2.4	52	0.12	0.0083	214	ļ
GW-3	Jul-26-01	2.48	0	5.2	4.9	O	0.0041	131	NM
GW-3 field	Oct-18-01	3.76	0.2	1.3	52	0.00	8.1	163	
GW-3	Jan-31-02	3.70	0.2	1.5	1 -		1	67	
GW-4-field	L	0,83		10.5	25	1.29	0.0028	-3	1
GW-4-field	1	2.59	0.2	10,5	0	4.8	4.8	-84	NM
GW-4-field		1	0.1 0.8	0.0	0.0	8.0	3500	-91.00	}
GW-4	Jan-31-02	0.90	0.8	0.0	1 0.0				

Table 9

Historical In-Situ and Ex-Situ Analyses Results for Bloattenuation Parameters

on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California (concentrations in milligrams per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Dissolved	Manganese	Nitrate	Sulfate	Ferrous Iron (Fe + 2)	Methane*	ORP (milliVolts)	Hydrogen (nano- Moles)
		Oxygan	(dissolved)	2.8	63	< 0.1	< 0.0005	476	
MW-11	10-Aug-00		1	4.1	67	1	1 2.3000		
MW-11-field	10-Aug-00	2.52			90	< 0.1	0.00004		130
MW-11	1-Nov-00	4.1	< 0.010	15	90 73	0.1	0.0000	87.4	
MW-11-field	1-Nov-00	4.01		3.3	73 94	< 1.0	0.00005	• • • • • • • • • • • • • • • • • • • •	1.1
MW-11	31-Jan-01	6.3	< 0.010	15	94 74	0	0.0000	319	• • • • • • • • • • • • • • • • • • • •
MW-11-field	1-Nov-00	3.97		27.3		١ ۵	0.0014	229	NM
viW-11 Field	Apr-26-01	7.4	O	6.8	52	"	0.0014	233	14141
√W-11 Field	Jul-26-01	1.85	0	5.2	77) 6	0.0048	155	NM
√W-11 Field	Oct-18-01	5.58	0	10.1	NM	1 -	7.7	218	, , , , ,
MW-11	31-Jan-02	4.90	0.	2.80	79	0.0	1.1	462	
LFR-1	9-Aug-00	ŀ	1				0.0000	402	
	11-Aug-00	1				ĺ	0.0096	!	1.5
LFR-1-field	9-Aug-00	3.63		5.5	30	` _			1.5
LFR-1	30-Oct-00	2.7	0.03	39	42	< 1.0	0.00038		
FR-1-field/sp	i	2.95	1	10.3/10.0	29/29	0.01/0.01		77.4	1
LFR-1 split	30-Oct-00	3.4	0.03	40	43	< 1.0	0.00069	,	م م
LFR-1	29-Jan-01	5.1	< 0.01	<0.10	51	<1.0	0.00012	l	0.43
LFR-1-fleld	29-Jan-01	3.78	0	ļ	36	0		383	
LFR-1-New	29-Jan-01	4.6	<0.01	<0.10	50	<1.0	0.000011	1	0,32
, ,	Apr-26-01	3.2	0.02	12.9	16	Q	0.0003	224	NM
LFR-1	Jul-26-01	1.07	0	8	25	0.01	0,0084	238	
LFR-1	Oct-18-01	1.03	٥	6.9	24	0.18	0.0054	119	MM
LFR-1 filed	Jan-31-02	1.80	0.3	5.50	31	0.00	6.2	163	i
LFR-1		1.60	0.0	0.20			6.6	270	1
LFR-2	11-Aug-00	0.48	1	1.5	-1	2.7	1	1	1200
LFR-2-field	11-Aug-00	2.2	8.8	0.33	5.4	5,3	8.5	1	ĺ
LFR-2	2-Nov-00	0.47	0,0	0,5	-1	6.05	i	-23.7	İ
LFR-2-field	2-Nov-00		8.9	1	8.3	4.6	4.6		1.1
LFR-2	30-Jan-01	4.4	10.7	2.9	-	1,02	ļ.	210	1
LFR-2-fleid	30-Jan-01	0.61	0.4	1.6	1 1	2.66	14	9	NM
LFR-2	Apr-27-01	1.4	0.4	0	اه	4.5	10	-20	
LFR-2	Jul-26-01	0.55	0.2	0	0	6.5	11	-75	NM
LFR-2 field		0.43	0.0	2,60	19	1.81	11,000	-14	1
LFR-2	Jan-31-02	1,00	0.0		64	< 0.1	0.00051	464	
LFR-3	10-Aug-00	1	1	2.4	04	-0.1	1 5.5555	< 0.0005	i
LFR-3 split	10-Aug-00		1	١.,		ı	1		850
LFR-3-field	10-Aug-00	1.3		2.4	64	< 1.0	0.00028		
LFR-3	1-Nov-00	4.7	0.022	8,8	74	0	0.00020	75.2	1
LFR-3-field	1-Nov-00	0.58	Į	1.8	57		0,00038		
LFR-3	31-Jan-01	4.1	<0.01	1.2	58	< 1.0	0.00036	195	!
LFR-3-field	30~Jan-01	1.75	1	0.023	44	0			l _{NM}
LFR-3 Flak		1	0	0.8	28	0	0.0086	201	i MM
LFR-3 Flek		1.29	0.4	0	51	0.6	0.0035	228	1
LFR-3 Field	1	0.54	0	0.8	30	0.11	0.0093	139	NM
LFR-3	Jan-31-02	0.80	0.4	2.60	32	0.00	7.2	212	

Historical In-Situ and Ex-Situ Analyses Results for Bloattenuation Parameters on Groundwater Samples

at the Former Glovatorium Site 3815 Broadway, Oakland, California

(concentrations in milligrams per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Dissolved Oxygen	Manganese (dissolved)	Nitrate	Sulfate	Ferrous iron (Fe + 2)	Methane*	ORP (milliVolts)	Hydrogen (nano- Moles)
LFR-4	11-Aug-00						0.062	402	
LFR-4-field	11-Aug-00	1.13		0.7	1	0.14			1.1
LFR-4	31-Oct-00	1.9	2.2	< 0.10	2.9	1.1	3.2		
LFR-4-field	31-Oct-00	0.64		1		0.61		-80	į
LFR-4	1-Feb-01	3.2	2.8	1.5	2.8	1.8	2.2		1.5
LFR-4-field	1-Feb-01	0.55	4.5	8	0	1.5		59	A)
LFR-4 Field	Apr-27-01	5.6	0	1.7	0	1.37	7	14	NM
LFR-4 Field	Jul-26-01	1.65	0	0	0	0.84	1.2	18	
SOMA-1	Oct-18-01	4.19	0.3	0.2	33	0.52	0.12	151	NM
SOMA-1	Jan-31-02	0.40	0.0	0.0	18	0.0	580	141	NM
SOMA-2	Oct-18-01	0.57	0	0.4	0	40	6.6	-89	NM
SOMA-2	Jan-31-02	0.70	3.8	0.80	0.0	9	13000	103	NM
SOMA-3	Oct-18-01	1.32	0	0	33	0.22	1	2	NM
SOMA-3	Jan-31-02	1.00	22	2.0	54	0.62	460	-71	NM
SOMA-4	Oct-18-01	0.83	4	22	17	0.22	1.2	88	NM
SOMA-5	Dry				<u> </u>			1	

Notes:

Samples with "field" in the well number indicate that the results are from field measurements obtained using a Hach spectrophotometer or a Hydrolab Quanta flow-through instrument.

since April 2001, field measurements have been obtained by a Hach Calorimeter

- *) Methane was messured in laboratory by Microseep Laboratory
- (1) Sample concentration was too dilute to be reproducibly measured using the Hach spectrophotometer.
- (2) Field measurement was not recorded.

FIGURES

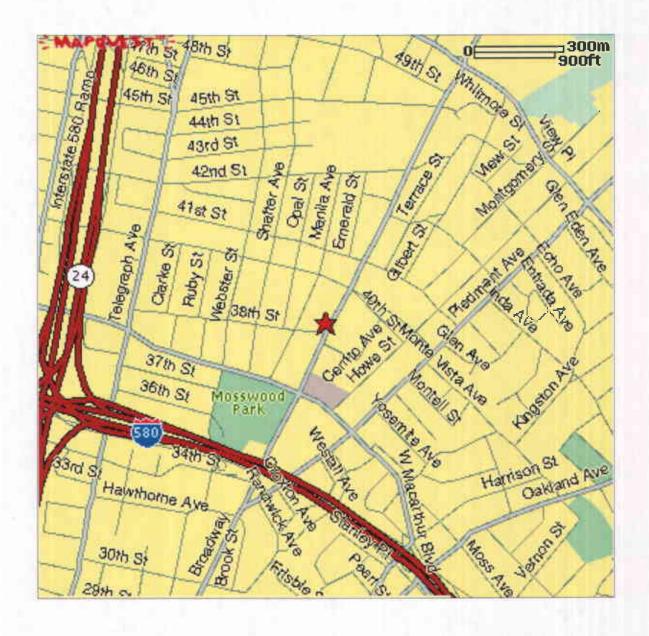


Figure 1: Site Location Map





Figure 2: Location of Groundwater Monitoring Wells



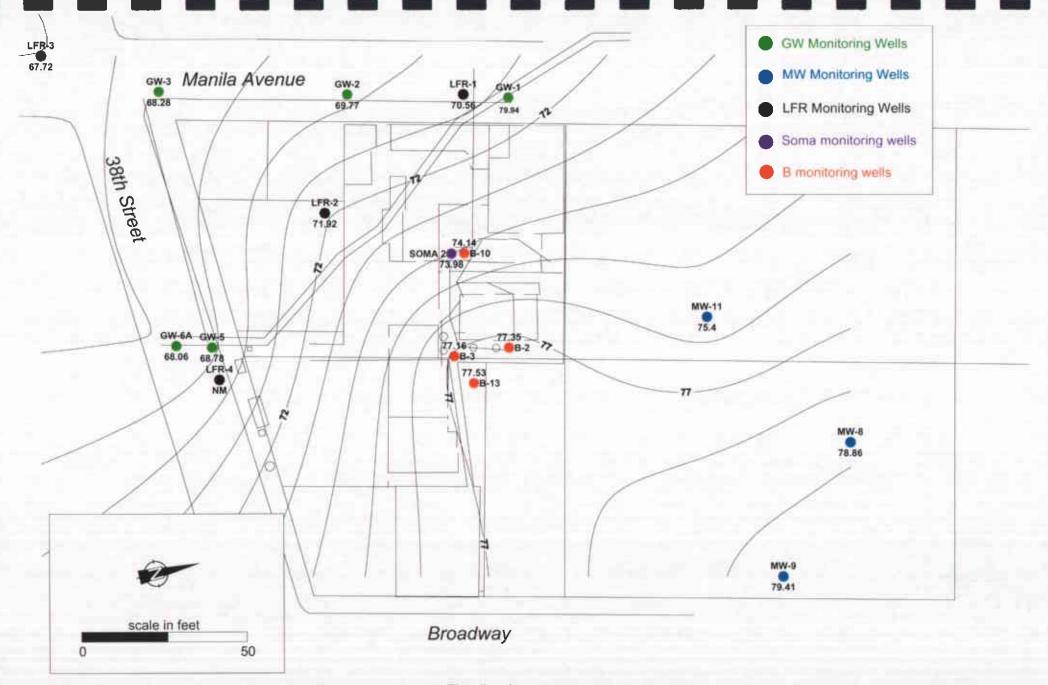
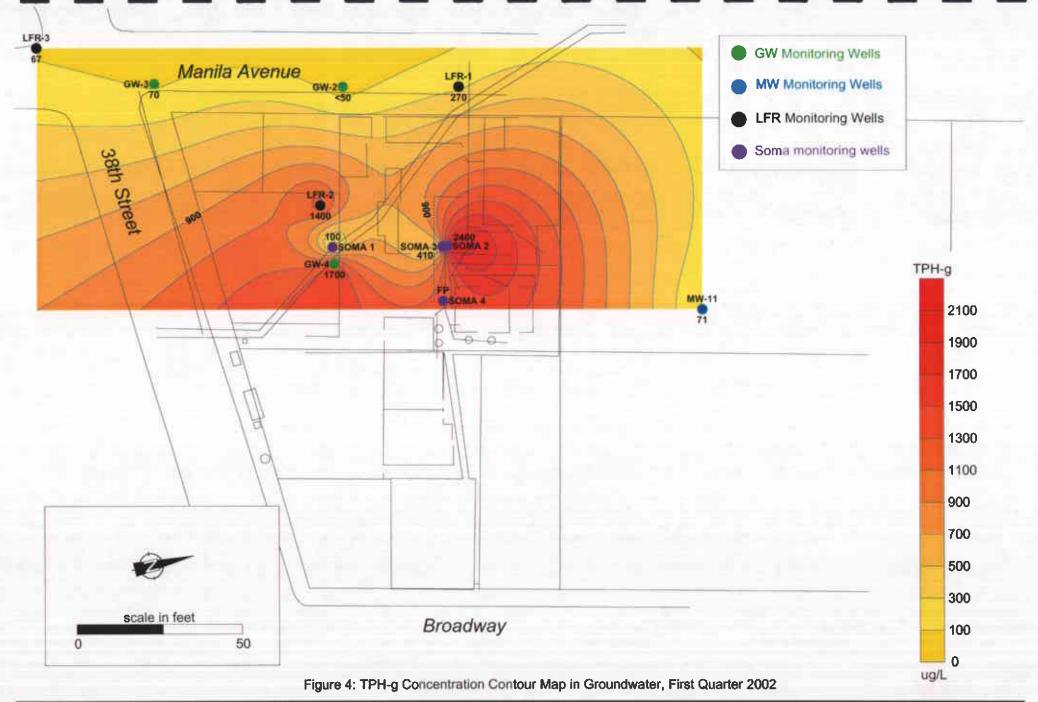
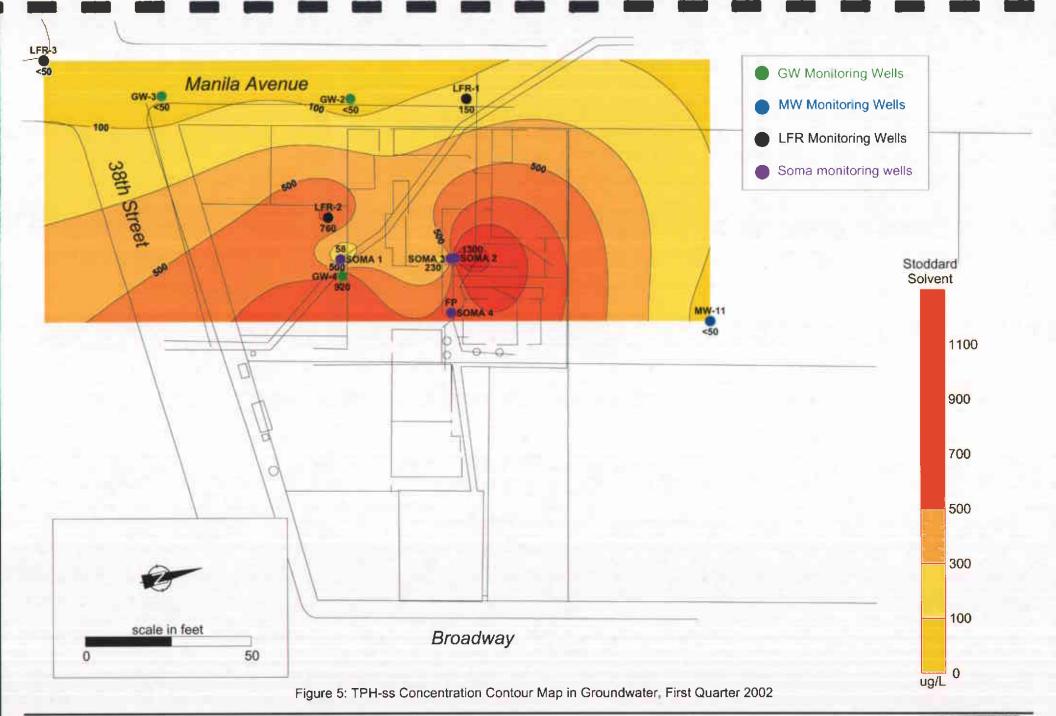


Figure 3: Groundwater Elevation Contour Map, January 30, 2002

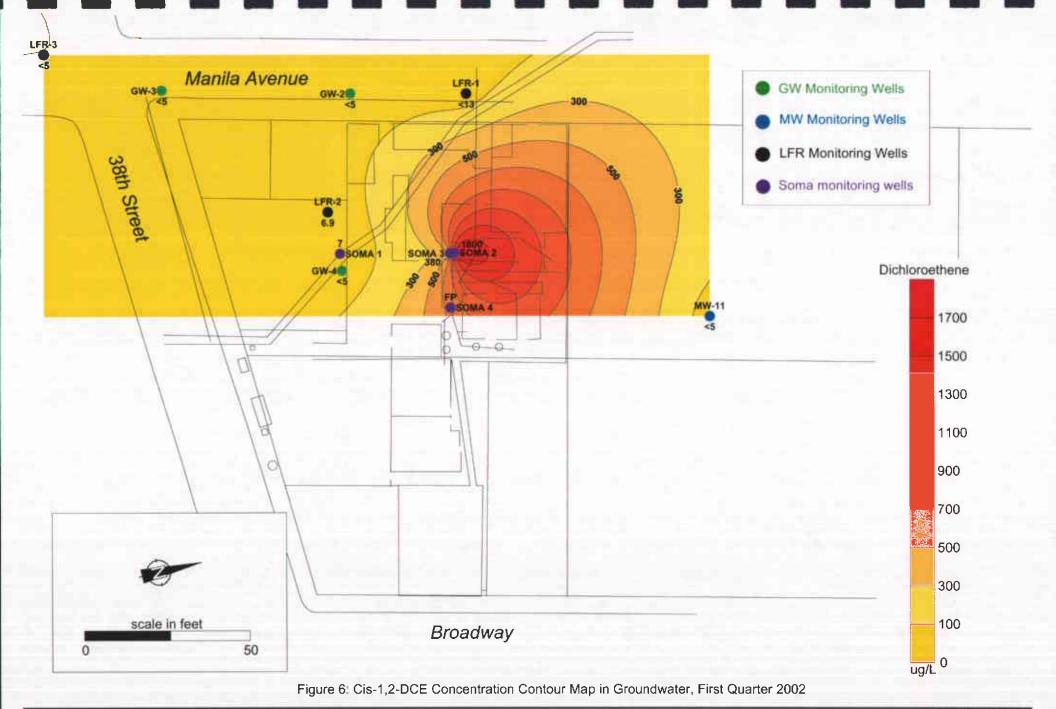




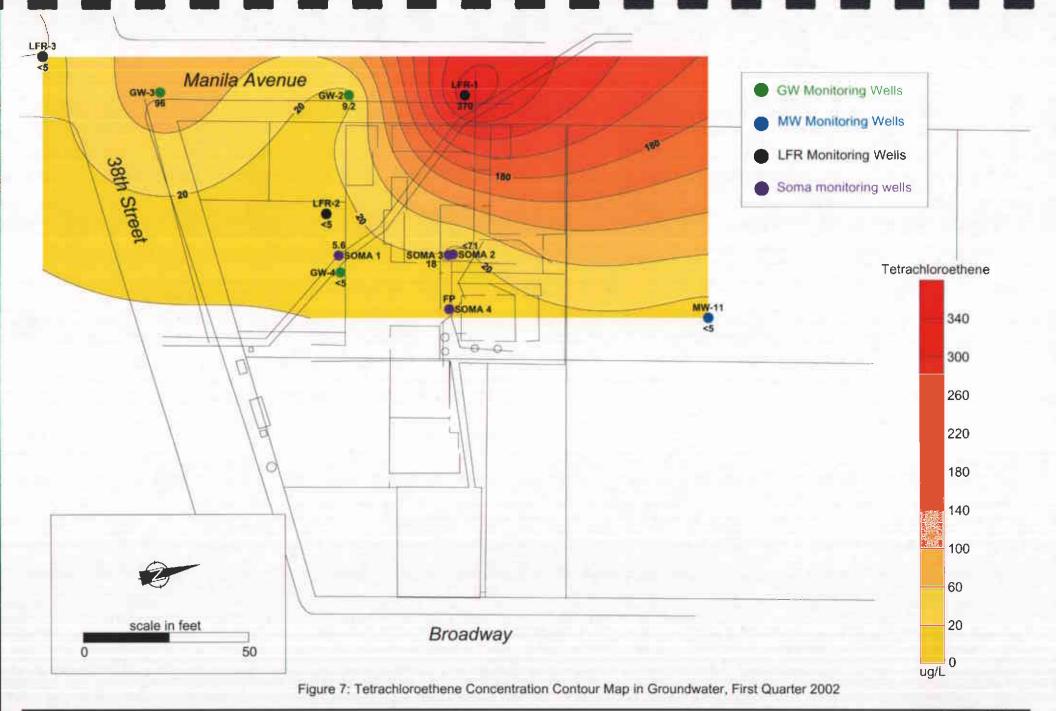














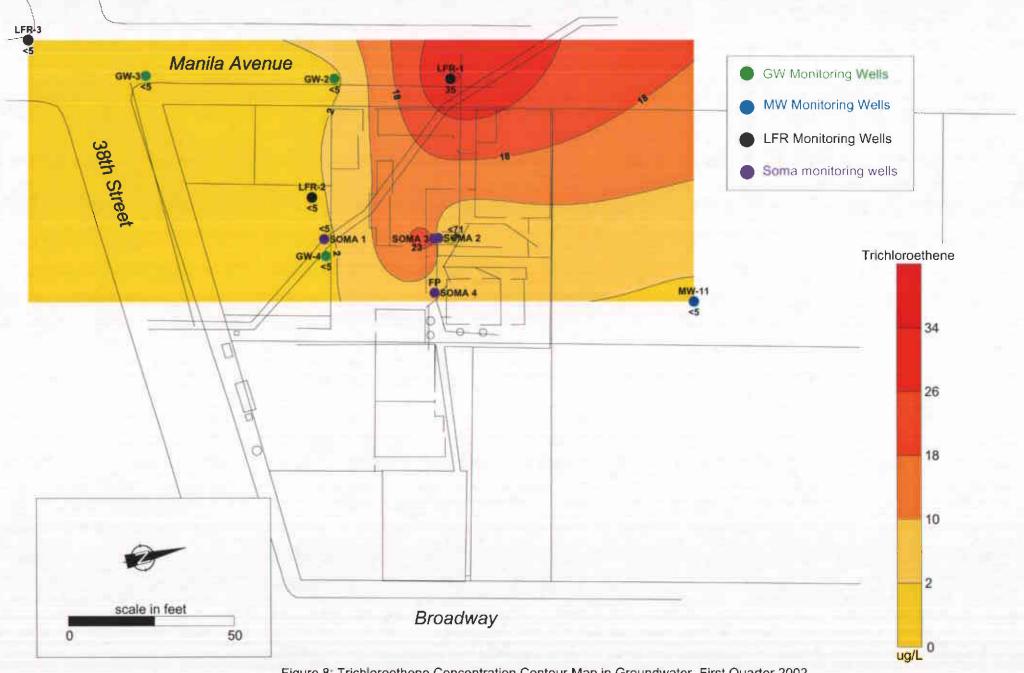


Figure 8: Trichloroethene Concentration Contour Map in Groundwater, First Quarter 2002



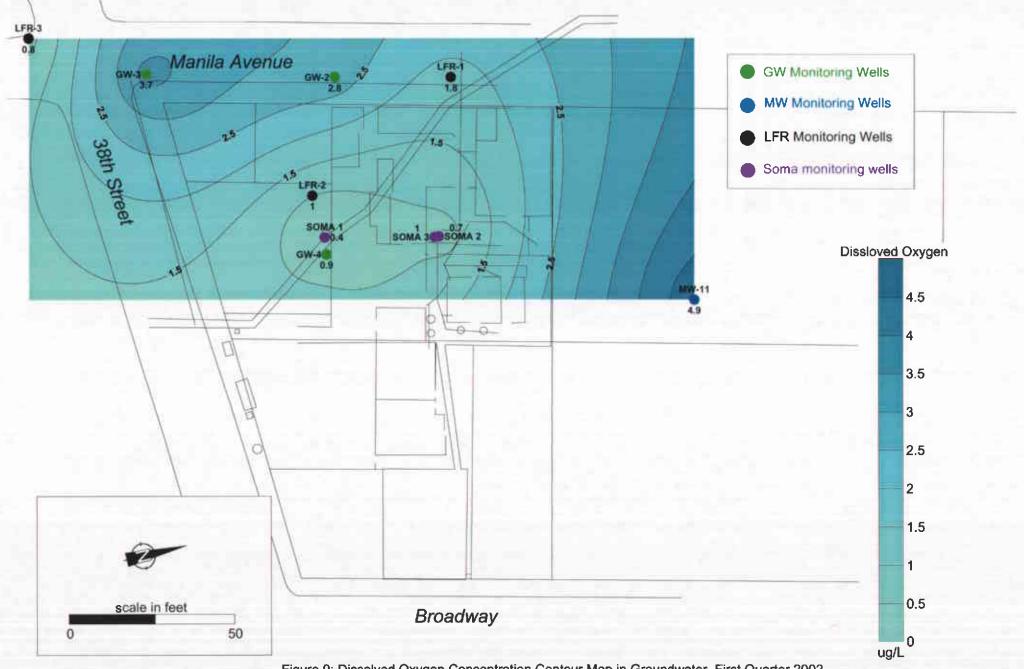


Figure 9: Dissolved Oxygen Concentration Contour Map in Groundwater, First Quarter 2002





Figure 10: Nitrate Concentration Contour Map in Groundwater, First Quarter 2002



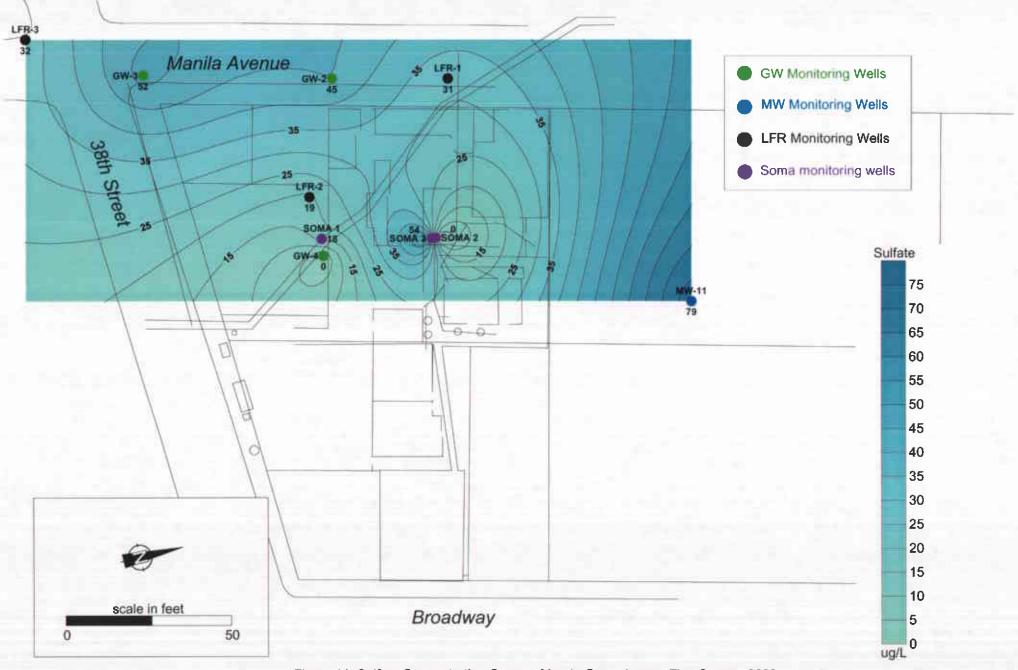


Figure 11: Sulfate Concentration Contour Map in Groundwater, First Quarter 2002



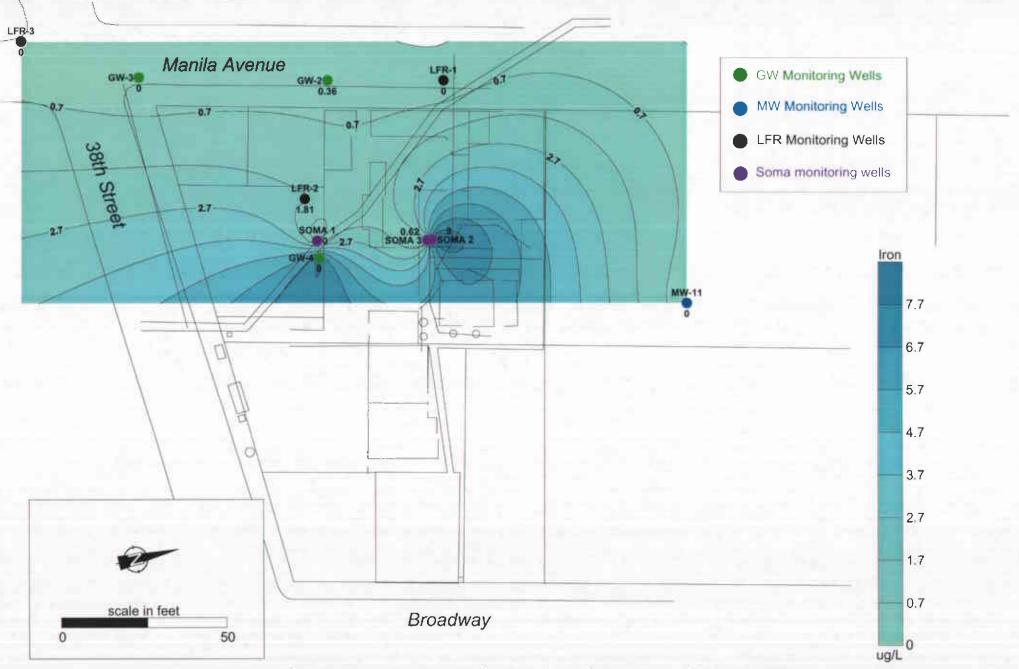


Figure 12: Ferrous Iron Concentration Contour Map in Groundwater, First Quarter 2002



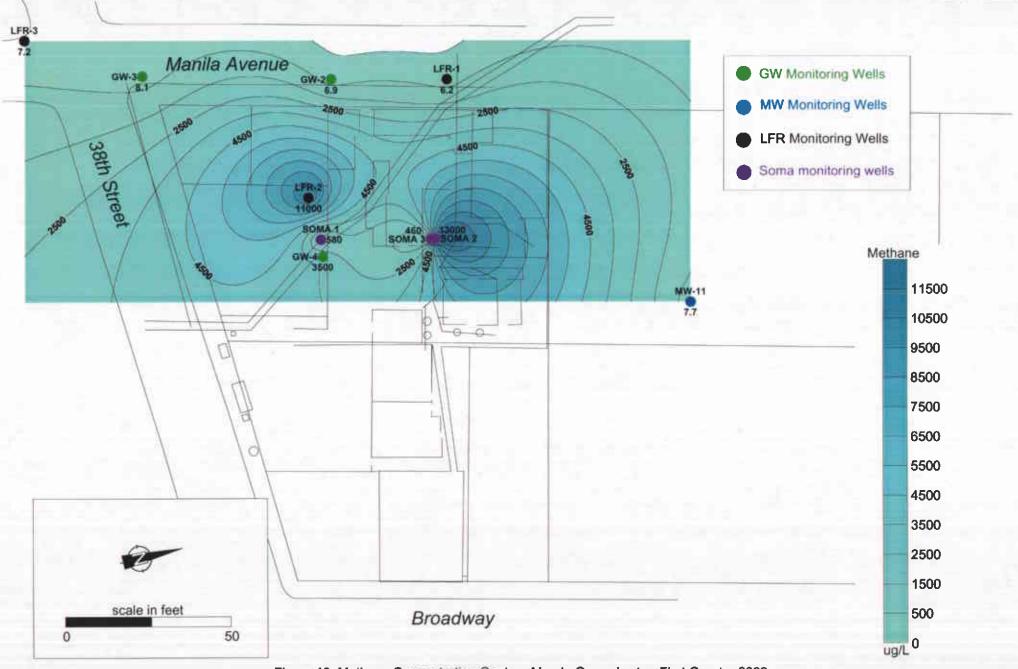


Figure 13: Methane Concentration Contour Map in Groundwater, First Quarter 2002



APPENDIX A

LABORATORY REPORTS, CHAIN
OF CUSTODY FORMS



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

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

ANALYTICAL REPORT

Prepared for:

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

Date: 04-MAR-02 Lab Job Number: 157104 Project ID: 2511

Location: Glovatorium

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

This package may be reproduced only in its entirety.

CA ELAP # 1459

Page 1 of <u>29</u>



Laboratory Number:

157104

Client:

Soma Environmental Engineering, Inc.

Project Name:

Glovatorium, Oakland

Project #:

2511

Receipt Date:

01/31/02

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for thirteen water samples received from the above referenced project on January 1st, 2002. The samples were received cold and intact.

Purgeable Organics by GCMS (EPA 8260B):

The 'b-flag' notation indicates that the analysis was carried out past the hold date. The client was duly informed and requested the analysis proceed. No analytical problems were encountered.

CURTIS & TOMPKINS, LTD. BERKELEY

LOGIN CHANGE FORM

	JIMIF KINO, E.D.				RO
Reason for change:	Client Request: By	Data Review	_Date/Time:	2-20-02;	_ Initials:/(

Current	Previous Lab ID	Client ID	Matrix	Add/Cancel	Analysis	Duedate
57/04-001	156784-001	LER-3	WATER	ADD	8260	2-25-02
~002	-062	NW-11		3		
-003	_003	6W-2	 			
-004	2004	LFR-1	1			
-005	_005	6W-3	 			
-pob	-066	6W-4	11-	 		
-007	-007	Song -1		1		
-008	-008	1/R-2				
049	-609	50NA-3 SONA-4 SONA-4		_		
-01a	-010	Sona-2		 		
-0 B	-011	SONA-4		+		
				_		
			# 85 et e 1			
		-	_			





		Purgeable Org	manics by GC/	'MS
Lab #: Client: Project#:	157104 SOMA Environmental 2511	Engineering Inc.	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B
Field ID: Lab ID: Matrix: Units: Diln Fac:	LFR-3 157104-001 Water ug/L 1.000		Batch#: Sampled: Received: Analyzed:	70362 01/30/02 01/31/02 02/25/02

Diin Fac: 1.000		
Analyte	Result	••
Freon 12	ND b	
Chloromethane	ND b	10
Vinyl Chloride		10
Bromomethane	ND b	10
Chloroethane	ND b	10
Trichlorofluoromethane	ND b	10
Acetone	ND b	5.0
	ND b	20
Freon 113	ND b	5.0
1,1-Dichloroethene	ND b	5.0
TMethylene Chloride	ND b	20
Carbon Disulfide	ND b	5.0
_MTBE	ND b	5.0
trans-1,2-Dichloroethene	ND b	5.0
Vinyl Acetate	ND b	50
T1,1-Dichloroethane	ND b	5.0
2-Butanone	ND b	10
cis-1,2-Dichloroethene	ND b	5.0
2,2-Dichloropropane	ND b	5.0
♥Chloroform	ND b	5.0
Bromochloromethane	ND b	10
<u>L</u> 1,1,1-Trichloroethane	ND b	5.0
1,1-Dichloropropene	ND b	5.0
Carbon Tetrachloride	ND b	5.0
T1,2-Dichloroethane	ND b	5.0
Benzene	ND b	5.0
Trichloroethene	ND b	5.0
l,2-Dichloropropane	ND b	5.0
Bromodichloromethane	ND b	5.0
Dibromomethane	ND b	5.0
_4-Methyl-2-Pentanone	ND b	10
cis-1,3-Dichloropropene	ND b	5.0
Toluene	ND b	5.0
trans-1,3-Dichloropropene	ND b	5.0
1,1,2-Trichloroethane	ND b	5.0
2-Hexanone	ND b	10
1,3-Dichloropropane	ND b	5.0
Tetrachloroethene	ND b	5.0
Dibromochloromethane	ND b	5.0
1,2-Dibromoethane	ND b	5.0
Chlorobenzene	ND b	5.0
1,1,1,2-Tetrachloroethane	ND b	· · · · · · · · · · · · · · · · · · ·
Ethylbenzene		5.0
m,p-Xylenes	ND b	5.0
m,p-xyrenes	ND b	5.0
Styrene	ND b	5.0
Bromoform	ND b	5.0
1	ND b	5.0
Isopropylbenzene	ND b	5.0
1,1,2,2-Tetrachloroethane	ND b	5.0
,2,3-Trichloropropane	ND b	5.0.
Propylbenzene	ND b	5.0
Bromobenzene	ND b	5.0
1,3,5-Trimethylbenzene	ND b	5.0
-Chlorotoluene	ND p	5.0
-Chlorotoluene	ND b	5.0

b= See narrative ND= Not Detected L= Reporting Limit age 1 of 2



lab #:	157104	Location:	Glovatorium
lient:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
roject#:	2511	Analysis:	EPA 8260B
ield ID:	LFR-3	Batch#:	70362
ab ID:	157104-001	Sampled:	01/30/02
atrix:	Water	Received:	01/31/02
nits:	ug/L	Analyzed:	02/25/02
iln Fac:	1.000	<u>.</u>	,,

Analyte	Result	RL
♥tert-Butylbenzene	ND b	5.0
1,2,4-Trimethylbenzene	ND b	5.0
_sec-Butylbenzene	ND b	5.0
para-Isopropyl Toluene	ND b	5.0
l,3-Dichlorobenzene	ND b	5.0
1,4-Dichlorobenzene	ND b	5.0
n-Butylbenzene	ND b	5.0
1,2-Dichlorobenzene	ND b	5.0
1,2-Dibromo-3-Chloropropane	ND b	5.0
1,2,4-Trichlorobenzene	ND b	5.0
Hexachlorobutadiene	ND b	5.0
⊥ Naphthalene	ND b	5.0
1,2,3-Trichlorobenzene	ND b	5.0

Surrogate	%REC	Limits	
Dibromofluoromethane	104 b	80-121	
■1,2-Dichloroethane-d4	102 b	77-130	
Toluene-d8	92 b	80-120	.
Bromofluorobenzene	106 b	80-120	



	Durgoshle O		iseo	
	Purgeable Org	anics by GC.	(Ma	
Lab #: 157104 Client: SOMA Environmental	Engineering Inc	Location:	Glovatorium	
<u> Project#: 2511</u>	Bugineering inc.	Prep: Analysis:	EPA 5030B EPA 8260B	
Field ID: MW-11 Lab ID: 157104-002		Batch#: Sampled:	70351	
Matrix: Water		Received:	01/30/02 01/31/02	
Units: ug/L Diln Fac: 1.000		Analyzed:	02/22/02	
		 .		
Analyte Freon 12	Result ND b	J	1 . 10	
Chloromethane	ND b		10	
Vinyl Chloride Bromomethane	ND b		10	
Chloroethane	ND b ND b		10 10	
Trichlorofluoromethane	ND b		5.0	
Acetone Freon 113	ND b ND b		20 5.0	
1,1-Dichloroethene	ND b		5.0	
Methylene Chloride Carbon Disulfide	ND b ND b		20	
MTBE	ND b		5.0 5.0	
trans-1,2-Dichloroethene	ND b		5.0	
Vinyl Acetate 1,1-Dichloroethane	ND b ND b		50 5.0	
-2-Butanone	ND P		10	
cis-1,2-Dichloroethene	ND b ND b		5.0	
Chloroform	ND P		5.0 5.0	
Bromochloromethane	ND b		10	
1,1,1-Trichloroethane 1,1-Dichloropropene	ND b ND b		5.0 5.0	
Carbon Tetrachloride	ND b		5.0	
1,2-Dichloroethane Benzene	ND b ND b		5.0	
Trichloroethene	ND b		5.0 5.0	
<pre>1,2-Dichloropropane Bromodichloromethane</pre>	ND b		5.0	
_Dibromomethane	ND b ND b		5.0 5.0	
-Methyl-2-Pentanone	ND b		10	
pis-1,3-Dichloropropene Toluene	ND b		5.0	
trans-1,3-Dichloropropene	ND b		5.0 5.0	i
1,1,2-Trichloroethane - Hexanone	ND b		5.0	
, 3-Dichloropropane	ND b		10 5.0	
Tetrachloroethene	ND b		5.0	
Dibromochloromethane ,2-Dibromoethane	ND b ND b		5.0 5.0	
hlorobenzene	ND b		5.0	
1,1,1,2-Tetrachloroethane Ethylbenzene	ND b ND b		5.0	
, p-Xylenes	ND b		5.0 5.0	
-Xylene	MD b		5.0	
■tyrene Bromoform	ND b		5.0 5.0	
Isopropylbenzene	ND b		5.0	
,1,2,2-Tetrachloroethane ,2,3-Trichloropropane	ND b ND b		5.0	
Propylbenzene	ND b		5.0 5.0	
Bromobenzene ,3,5-Trimethylbenzene	ND b		5.0	
-Chlorotoluene	ND b ND b		5.0 5.0	
-Chlorotoluene	ND b		5.0	

b= See narrative
N= Not Detected
N= Reporting Limit
Page 1 of 2



	Purgeable Org	manics by GC	/MS	
Lab #: 157104		T	<u> </u>	
	The set was and a Table	Location:	Glovatorium	
Client: SOMA Environmental Project#: 2511	Engineering inc.	Prep:	EPA 5030B	
Field ID: MW-11		Analysis:	EPA 8260B 70351	
Lab ID: 157104-002		Batch#: Sampled:	01/30/02	
Matrix: Water		Received:	01/30/02	
Units: ug/L		Analyzed:	02/22/02	
Diln Fac: 1.000		Analyzeu.	02/22/02	
Analyte	Result		RL	
tert-Butylbenzene	ND p		5.0	
1,2,4-Trimethylbenzene	ND b		5.0	
sec-Butylbenzene	ND b		5.0	
para-Isopropyl Toluene	ND b		5.0	
1,3-Dichlorobenzene	ND b		5.0	
1,4-Dichlorobenzene	ND b		5.0	
-n-Butylbenzene	ND b		5.0	
.,2-Dichlorobenzene	ND b		5.0	
2-Dibromo-3-Chloropropane	ND b		5.0	
1,2,4-Trichlorobenzene	MD b		5.0	•
_Hexachlorobutadiene	ND b		5.0	
Taphthalene	ND b		5.0	
.,2,3-Trichlorobenzene	ND b		5.0	
Surrogate	%REC Limits			
Pibromofluoromethane	97 b 80-122			
,2-Dichloroethane-d4	84 b 78-123			
Coluene-d8	95 b 80-110			
Bromofluorobenzene	104 b 80-115			



		Purgeable Org	anics by GC	/MS
Lab #: Client: Project#:	157104 SOMA Environmental 2511	Engineering Inc.	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B
rield ID: Lab ID: Matrix: Units:	GW-2 157104-003 Water		Batch#: Sampled: Received:	70351 01/31/02 01/31/02
iln Fac:	ug/L 1.000		Analyzed:	02/22/02

Analyte Freon 12		RI .
Chloromethane	d dM	10
invl Chloride	ND b	10
romomethane	ND b	10
Chloroethane	ND P	10
Trichlorofluoromethane	ND b	10
acetone	ND b	5.0
reon 113	ND p	20
,1-Dichloroethene	ND b	5.0
Methylene Chloride	ND p	5.0
Carbon Disulfide	ND b	20
TBE	ND b ND b	5,0
rans-1,2-Dichloroethene		5.0
Vinyl Acetate	ND b ND b	5.0
1,1-Dichloroethane	ND b	50
-Butanone	ND b	5.0 10
is-1,2-Dichloroethene	ND b	5.0
, 2-Dichloropropane	ND b	5.0
Chloroform	ND b	5.0
Bromochloromethane	ND b	10
,1,1-Trichloroethane	ND b	5.0
,1-Dichloropropene	ND b	5.0
Carbon Tetrachloride	ND b	5.0
1,2-Dichloroethane	ND b	5.0
Benzene	ND b	5.0
richloroethene	ND b	5.0
, 2-Dichloropropane	ND b	5.0
Bromodichloromethane	ND b	5.0
Dibromomethane	ND b	5.0
-Methyl-2-Pentanone	ND b	10
is-1,3-Dichloropropene	ND b	5.0
Toluene	ND b	5.0
trans-1,3-Dichloropropene	ND b	5.0
1,2-Trichloroethane	ND b	5.0
-Hexanone	ND b	10
, 3-Dichloropropane	ND b	5.0
Tetrachloroethene	9.2 b	5.0
<u>D</u> ibromochloromethane	ND p	5.0
,2-Dibromoethane	ND b	5.0
hlorobenzene	ND b	5,0
T,1,1,2-Tetrachloroethane	ND b	5.0
Ethylbenzene	ND b	5.0
, p-Xylenes	ND b	5.0
-Xylene	ND b	5.0
<pre>tyrene</pre>	ND b	5.0
Bromoform	ND b	5.0
Isopropylbenzene	ND b	5.0
,1,2,2-Tetrachloroethane	ND b	5.0
,2,3-Trichloropropane	ND b	5.0
Fropylbenzene	ND b	5.0
Bromobenzene	ND p	5.0
, 3,5-Trimethylbenzene	ND b	5.0
-Chlorotoluene	ND p	5.0
-Chlorotoluene	ND b	5.0

b= See narrative
N= Not Detected
R= Reporting Limit
Page 1 of 2



		Purgeable	Org	anics by G	C/MS
Lab #:	157104			Location:	Glovatorium
Client:	SOMA Environmental	Engineering	Inc.	Prep:	EPA 5030B
<u> </u>	2511			Analysis:	EPA 8260B
Field ID:	GW-2			Batch#:	70351
Lab ID:	157104-003			Sampled:	01/31/02
TMatrix:	Water			Received:	01/31/02
Units:	ug/L			Analyzed:	02/22/02
Diln Fac:	1.000	···		<u>.</u>	· · · · · · · · · · · · · · · · · · ·

Analyte	Result	RL
tert-Butylbenzene	ND b	5.0
L1,2,4-Trimethylbenzene	ND b	5.0
sec-Butylbenzen e	ND b	5.0
para-Isopropyl Toluene	ND b	5.0
71,3-Dichlorobenzene	ND b	5.0
1,4-Dichlorobenzene	ND b	5.0
n-Butylbenzene	ND b	5.0
1,2-Dichlorobenzene	ND b	5.0
1,2-Dibromo-3-Chloropropane	ND b	5.0
1,2,4-Trichlorobenzene	ND b	5.0
_Hexachlorobutadiene	ND b	5.0
Naphthalene	ND b	5.0
1,2,3-Trichlorobenzene	ND b	5.0

Surrogate	%REC	Limite
Dibromofluoromethane	96 b	80-122
1,2-Dichloroethane-d4	84 b	78-123
■Foluene-d8	96 b	80-110
Bromofluorobenzene	101 b	80-115

b= See narrative
b= Not Detected
l= Reporting Limit
Page 2 of 2



		Purgeable Org	anics by GC	/MS
Lab #: Client: Project#:	157104 SOMA Environmental 2511	Engineering Inc.	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B
Field ID: Lab ID: Matrix: Units: Diln Fac:	LFR-1 157104-004 Water ug/L 2.500		Batch#: Sampled: Received: Analyzed:	70351 01/31/02 01/31/02 02/22/02

2.500		
	Result	RL
Freon 12	ND b	25
Chloromethane	ND b	25
Vinyl Chloride	ND b	25
Bromomethane	ND b	25
Chloroethane	ND b	25
Trichlorofluoromethane	ND b	13
Acetone	ND þ	50
Freon 113	ND b	13
1-Dichloroethene	ND b	13
Methylene Chloride	ND b	50
Carbon Disulfide	ND b	13
MTBE	ND b	13
rans-1,2-Dichloroethene	ND b	13
Vinyl Acetate	ND b	130
1,1-Dichloroethane	ND b	13
-Butanone	ND b	2 5
cis-1,2-Dichloroethene	ND b	13
2.2-Dichloropropane	ND b	13
Chloroform	ND b	13
Bromochloromethane	ND b	25
1,1,1-Trichloroethane	ND b	13
	ND b	13
Carbon Tetrachloride	ND b	13
1,2-Dichloroethane	ND b	13
enzene	ND b	13
richloroethene	35 b	13
, 2-Dichloropropane	ND b	13
Bromodichloromethane	ND b	13
Dibromomethane	ND b	13
-Methyl-2-Pentanone	ND p	25
is-1,3-Dichloropropene	MDр	13
Toluene	ND p	13
trans-1,3-Dichloropropene	ND p	13
1,2-Trichloroethane	ND b	13
-Hexanone	ND b	25
,3-Dichloropropane	ND b	13
Tetrachloroethene	,370 b	13
Dibromochloromethane	и́D р	13
,2-Dibromoethane	ND b	13
hlorobenzene	йD р	13
1,1,1,2-Tetrachloroethane	ND b	13
Ethylbenzene	ND b	13
p-Xylenes	ND b	13
-Xylene	ND b	13
#tyrene	ND b	13
Bromoform Tsopropy benzene	ND p	13
Isopropylbenzene	ND b	13
1,1,2,2-Tetrachloroethane	ND b	13
,2,3-Trichloropropane Propylbenzene	ND b	13
Promobenzene Bromobenzene	ND b	13
a, 3, 5-Trimethylbenzene	ND b	13
-Chlorotoluene	ND b	13
-Chlorotoluene	ND b	13
	ND b	13

b= See narrative
N = Not Detected
P = Reporting Limit
Page 1 of 2



Lab #:	157104		Location:	Glovatorium
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
<u>Project#:</u>	2511		Analysis:	EPA 8260B
Field ID:	LFR-1		Batch#:	70351
Lab ID:	157104-004		Sampled:	01/31/02
Matrix:	Water		Received:	01/31/02
Units:	ug/L		Analyzed:	02/22/02
Diln Fac:	2,500			02/22/02

Analyte	Result	RL
tert-Butylbenzene	ND b	13
1,2,4-Trimethylbenzene	ND b	13
sec-Butylbenzene	ND b	13
para-Isopropyl Toluene	ND b	13
71,3-Dichlorobenzene	ND b	13
1,4-Dichlorobenzene	ND b	13
n-Butylbenzene	ND b	13
1,2-Dichlorobenzene	ND b	13
1,2-Dibromo-3-Chloropropane	ND P	13
1,2,4-Trichlorobenzene	ND b	13
_Hexachlorobutadiene	ND b	13
Naphthalene	ND b	13
1,2,3-Trichlorobenzene	ND b	13

Surrogate	%REC	Limits	********************	
Dibromofluoromethane	100 b	80-122		
1,2-Dichloroethane-d4	89 b	78-123		
Foluene-d8	_	80-110		
Bromofluorobenzene		80-115		
			 	

b= See narrative

| See Not Detected
| Reporting Limit
| Fage 2 of 2



	Purgeable Org	anics by GC	/MS
Lab #: 157104 Client: SOMA Environmental	_	Location:	Glovatorium
Client: SOMA Environmental Project#: 2511	Engineering Inc.	Prep: Analysis:	EPA 5030B
Field ID: GW-3 Lab ID: 157104-005 Matrix: Water Units: ug/L Diln Fac: 1.000		Batch#: Sampled: Received: Analyzed:	EPA 8260B 70351 01/31/02 01/31/02 02/22/02
Analyte Freon 12	Result ND b		u.
Chloromethane	ND p		10
Vinyl Chloride Bromomethane	ND b		10
Chloroethane	NL b ND b		10
Trichlorofluoromethane Acetone	ND b		5.0
Freon 113	ND b ND b		20 5.0

villyi Chioride	ND b	10	
Bromomethane	ND b	10	
Chloroethane	ND b	10	
Trichlorofluoromethane	ND P	5.0	
Acetone	ND b	20	
reon 113	ND b	5.0	
1,1-Dichloroethene	ND b	5.0	
Methylene Chloride	ND b	20	
Carbon Disulfide	ND b	5.0	
TTBE	ND b		
rans-1,2-Dichloroethene	ND b	5.0	
Vinyl Acetate	ND b	_5.0	
1,1-Dichloroethane	ND b	50	
-2-Butanone		5.0	
ris-1,2-Dichloroethene	ND b	10	i
,2-Dichloropropane	ND b	5.0	
Chloroform	ND b .	5.0	İ
	ND b	5.0	
Bromochloromethane	ND b	10	
,1,1-Trichloroethane	ND b	5.0	
,1-Dichloropropene	ND b	5.0	ľ
Carbon Tetrachloride	ND b	5.0	
1,2-Dichloroethane	ND b	5,0	i
Penzene	ND b	5.0	- 1
richloroethene	ND b	5.0	
2-Dichloropropane	ND b	5.0	
Bromodichloromethane	ND b	5.0	
Dibromomethane	ND b	5.0	
Methyl-2-Pentanone	ND b		
is-1,3-Dichloropropene	ND b	10	1
Toluene	ND b	5.0	- [
trans-1,3-Dichloropropene	ND b	5.0	1
1,1,2-Trichloroethane		5.0	
-Hexanone	ND b	5.0	
, 3-Dichloropropane	ND b	10	
Tetrachloroethene	ND b	5.0	
Dibromochloromethane	96 b	5.0	
Diblomochioromechane	ND P	5.0	- 1
,2-Dibromoethane	ND b	5.0	1
hlorobenzene	ND b	5.0	- 1
T,1,1,2-Tetrachloroethane	ND b	5.0	
Ethylbenzene	ND b	5.0	
m, p-Xylenes	ND b	5.0	
-Xylene	ND b	5.0	
tyrene	ND b	5.0	- 1
Bromoform	ND b	5.0	
Isopropylbenzene	ND b	5.0	- [
1,2,2-Tetrachloroethane	ND b	5.0	ľ
,2,3-Trichloropropane	ND b	· · · · · · · · · · · · · · · · · · ·	
Propylbenzene	ND b	5.0	
Bromobenzene	ND b	5.0	- 1
3,5-Trimethylbenzene	ND b	5.0	- 1
-Chlorotoluene	ND b	5.0	- [
-Chlorotoluene		5.0	- 1
	ND b	5.0	_

b= See narrative Not Detected Res Reporting Limit Puge 1 of 2



	Purgeable	Organics by G	c/ms	
Lab #: 157104 Client: SOMA Environmental Project#: 2511	Engineering	Location: Inc. Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B	
Field ID: GW-3 Lab ID: 157104-005 Matrix: Water		Batch#: Sampled: Received:	70351 01/31/02 01/31/02	
Units: ug/L Diln Fac: 1.000		Analyzed:	02/22/02	
Analyte tert-Butylbenzene	Resu	16	RIL	
1,2,4-Trimethylbenzene	ND b		5.0	
sec-Butylbenzene	ND b		5.0 5.0	
para-Isopropyl Toluene	ND b		5.0	
1,3-Dichlorobenzene	ND b		5.0	
1,4-Dichlorobenzene	ND b		5.0	
n-Butylbenzene	ND b		5.0	
1,2-Dichlorobenzene	ND b		5.0	
1,2-Dibromo-3-Chloropropane	ND b		5.0	
1,2,4-Trichlorobenzene	ND b		5.0	
LHexachlorobutadiene	ND b		5.0	
Naphthalene	ND b		5.0	,
1,2,3-Trichlorobenzene	ND b		5.0	
Surrogate	%REC Lim			200000000000000000000000000000000000000
Dibromofluoromethane	96 b 80-			
1,2-Dichloroethane-d4	84 b 78-			
,■Coluene-d8	95 b 80-			
Bromofluorobenzene	99 b 80-			



		Purgeable Org	anics by GO	:/MS
Lab #:	157104		Location:	Glovatorium
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2511		Analysis:	EPA 8260B
Field ID:	GW-4		Batch#:	70351
Lab ID:	157104-006		Sampled:	01/31/02
Matrix:	Water		Received:	01/31/02
Units:	uq/L	•	Analyzed:	02/22/02
Diln Fac:	1.000			01, 22, 01

1.000			
Analyte	D	-	
Freon 12	ND b	Ri	8888
Chloromethane	ND b	10	
Vinyl Chloride		10	
Bromomethane	ND b	10	
Chloroethane	ND b	10	
	йDр	10	
Trichlorofluoromethane	₩D p	5.0	
Acetone	ND b	20	
Freon 113	ND p	5.0	
1,1-Dichloroethene	ND b	5.0	
Methylene Chloride	ND b	20	
_Carbon Disulfide	ND b	5.0	
MTBE	ND b	5.0	
trans-1,2-Dichloroethene	ND b	5.0	
Vinyl Acetate	ND b	50	
1,1-Dichloroethane	ND p	5.0	
2-Butanone	ND b	10	
cis-1,2-Dichloroethene	ND b	5.0	
2,2-Dichloropropane	ND b	5.0	
Chloroform	ND b	5.0	
Bromochloromethane	ND b	10	
1,1,1-Trichloroethane	ND b	5.0	į
1,1-Dichloropropene	ND P	5.0	
Carbon Tetrachloride	ND b	5.0	
1,2-Dichloroethane	ND b	5.0	
Benzene	ND b	5.0	
Frichloroethene	ND b	5.0	- 1
1,2-Dichloropropane	ND b	5.0	
Bromodichloromethane	ND b	5.0	
Dibromomethane	ND b	5.0	
1-Methyl-2-Pentanone	ND b	10	
cis-1,3-Dichloropropene	ND b	5.0	
Toluene	ND b	5.0	
trans-1,3-Dichloropropene	ND b	5.0	
1,1,2-Trichloroethane	ND b	5.0	
2-Hexanone	ND b	10	
1,3-Dichloropropane	ND b	5.0	1
Tetrachloroethene	ND b	5.0	i
Dibromochloromethane	ND b		
1,2-Dibromoethane		5.0	ļ
Chlorobenzene	ND b	5.0	- 1
1,1,1,2-Tetrachloroethane	ND b	5.0	i
Ethylbenzene	ND b	5.0	- 1
	ND b	5.0	
n, p-Xylenes	ND p	5.0	- 1
o-Xylene	ND P	5.0	i
Styrene	йD р	5.0	l
Bromoform	ND b	5.0	ŀ
Isopropylbenzene	ND b	5.0	l
1,1,2,2-Tetrachloroethane	· MD p	5.0	
,2,3-Trichloropropane	ND p	5.0	
Propylbenzene	ND p	5.0	1
Bromobenzene	ND p	5.0	J
,3,5-Trimethylbenzene	ND b	5.0	Ì
-Chlorotoluene	ND p	5.0	ļ
-Chlorotoluene	ND b	5.0	

b= See narrative

| Not Detected
| Reporting Limit
| Page 1 of 2



			Purgeable Org	anics by GC/	MS
	15710			Location:	Glovatorium
Client:	SOMA	Environmental	Engineering Inc.	Prep:	EPA 5030B
_Project#:	2511			Analvsis:	EPA 8260B
Field ID:		GW-4		Batch#:	70351
Lab ID:		157104-006		Sampled:	01/31/02
Matrix:		Water		Received:	01/31/02
Units:		ug/L		Analyzed:	02/22/02
Diln Fac:		1.000		2	,,
					

Analyte	Re	sul		RL	
tert-Butylbenzene	MD b			5.0	
\perp 1,2,4-Trimethylbenzene	MD b			5.0	
sec-Butylbenzene		14	b	5.0	
para-Isopropyl Toluene	ND b			5.0	•
1,3-Dichlorobenzene	ND b			5.0	
1,4-Dichlorobenzene	ND b			5.0	
n-Butylbenzene		б	.6 b	5.0	
1,2-Dichlorobenzene	ND b			5.0	
1,2-Dibromo-3-Chloropropane	ND b			5.0	
1,2,4-Trichlorobenzene	ND b			5.0	
Hexachlorobutadiene	ND b			5.0	
Naphthalene	ND b			5.0	
1,2,3-Trichlorobenzene	ND b			5.0	

Surrogate	%REC	Gimits
Dibromofluoromethane	97 b	80-122
1,2-Dichloroethane-d4	85 b	78-123
Toluene-d8	95 b	80-110
Bromofluorobenzene	103 b	80-115
· · · · · · · · · · · · · · · · · · ·		



		Purgeable Org	anics by GC	/MS
Lab #: Client: Project#:	157104 SOMA Environmental 2511	Engineering Inc.	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B
Field ID: Lab ID: Matrix: Units: Diln Fac:	SOMA-1 157104-007 Water ug/L 1.000		Batch#: Sampled: Received: Analyzed:	70351 01/31/02 01/31/02 02/22/02

71111 Fac. 1.000		
Analyte	Result	KL .
Freon 12	ND b	10
Chloromethane	ND b	10
minyl Chloride	ND b	10
B romomethane	ND b	10
Thloroethane	ND b	10
Trichlorofluoromethane	ND b	5.0
acetone	ND b	20
reon 113	d DN	5.0
,1-Dichloroethene	ND b	5.0
Methylene Chloride	ND b	20
Carbon Disulfide	ND b	5.0
ITBE	110 b	5.0
rans-1,2-Dichloroethene	ND p	5.0
Vinyl Acetate	ND b	50
1,1-Dichloroethane	MD p	5.0
2-Butanone	ND p	10
is-1,2-Dichloroethene	7.0 b	5.0
, 2-Dichloropropane	ND b	5.0
Chloroform	ND p	5.0
Bromochloromethane	ND b	10
1 Dishlaman	MD p	5.0
,1-Dichloropropene	ND b	5.0
Tarbon Tetrachloride	ND b	5.0
Penzene	ND b	5.0
richloroethene	ND b	5.0
, 2-Dichloropropane	ND b	5.0
Bromodichloromethane	5.7 b	5.0
Dibromomethane	ND b ND b	5.0
Methyl-2-Pentanone	ND b	5.0
is-1,3-Dichloropropene	ND b	10
Toluene	ND b	5.0
trans-1,3-Dichloropropene	ND b	5.0 5.0
1,1,2-Trichloroethane	ND b	5.0
Hexanone	ND b	10
, 3-Dichloropropane	ND b	5.0
Tetrachloroethene	5.6 b	5.0
Dibromochloromethane	ND b	5.0
,2-Dibromoethane	ND b	5.0
hlorobenzene	ND b	5.0
T ,1,1,2-Tetrachloroethane	ND b	5.0
Ethylbenzene	ND b	5.0
p-Xylenes	ND b	5.0
-Xylene	ND b	5.0
tyrene	ND b	5.0
Bromoform	ND b	5.0
Isopropylbenzene	ND b	5.0
1,2,2-Tetrachloroethane	ND b	5.0
2,3-Trichloropropane	ND b	5.0
Propylbenzene	ND p	5.0
Bromobenzene	ND b	5.0
3,5-Trimethylbenzene	ND b	5.0
Chlorotoluene	ND b	5.0
-Chlorotoluene	ND b	5.0

b= See narrative N= Not Detected R= Reporting Limit Page 1 of 2



	Purgeable Org	panics by GC/MS	
Lab #: 157104 Client: SOMA Environmental Project#: 2511	Engineering Inc.	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B
Field ID: SOMA-1 Lab ID: 157104-007 Matrix: Water Units: ug/L Diln Fac: 1.000		Batch#: Sampled: Received: Analyzed:	70351 01/31/02 01/31/02 02/22/02
Analyte	Repult	RL	
tert-Butylbenzene 1,2,4-Trimethylbenzene	ND b ND b	5.	
sec-Butylbenzene	ND b	5. 5.	
para-Isopropyl Toluene	ND b	5.	
T1,3-Dichlorobenzene	ND b	5.	
1,4-Dichlorobenzene	ND b	5.	
n-Butylbenzene	ND b	5.	
1,2-Dichlorobenzene	ND b	5.	0
1,2-Dibromo-3-Chloropropane 1,2,4-Trichlorobenzene	ND b	5.	
1,2,4-111Chlorobenzene LHexachlorobutadiene	ND b	5.	0
Naphthalene	ND b ND b	5.	
1.2.3-Trichlorobenzene	ND b	5. 5.	
Surrogate	%REC Limits		
Dibromofluoromethane	100 b 80-122		
1,2-Dichloroethane-d4 Toluene-d8	91 b 78-123		
Bromofluorobenzene	94 b 80-110		

b= See narrative

Not Detected
Reporting Limit
rage 2 of 2



		Purgeable Org	anics by G	C/MS
Lab #:	157104		Location:	Glovatorium
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2511		Analysis:	EPA 8260B
Field ID:	LFR-2		Batch#:	70351
Lab ID:	157104-008		Sampled:	01/31/02
Matrix:	Water		Received:	01/31/02
Units:	ug/L		Analyzed:	02/22/02
Diln Fac:	1.000		-	

Analyte	Result	RL	
Freon 12	ND b	10	
_Chloromethane	ND b	10	ŀ
Vinyl Chloride	ND b	10	
Bromomethane	ND b	10	
T Chloroethane	ND b	10	
Trichlorofluoromethane	ND b	5.0	ŀ
Acetone	NTO b	20	
Freon 113	NTO b	5.0	i
1,1-Dichloroethene	ND b	5.0	
Methylene Chloride	ND b	20	
<u> </u>	ND b	5.0	
MTBE	ND b	5.0	- 1
trans-1,2-Dichloroethene	ND b	5.0	1
Vinyl Acetate	ND b	50	
1,1-Dichloroethane	NID b	5.0	l
2-Butanone	ND b	10	į
cis-1,2-Dichloroethene	6.9 b	5.0	ľ
2,2-Dichloropropane	ND b	5.0	
Chloroform	ND b	5.0	
<u>L</u> Bromochloromethane	ND b	10	
1,1,1-Trichloroethane	ND b	5.0	
1,1-Dichloropropene	ND b	5.0	
Carbon Tetrachloride	ND b	5.0	
1,2-Dichloroethane	ND b	5.0	
Benzene	ND b	5.0	
Trichloroethene	ND b	5.0	
■1,2-Dichloropropane	ND b	5.0	
Bromodichloromethane	ND b	5.0	l
Dibromomethane	ND b	5.0	ļ
4-Methyl-2-Pentanone	ND b	10	
cis-1,3-Dichloropropene	ND b	5.0	l
Toluene	ND b	5.0	j
trans-1,3-Dichloropropene	ND P	5.0	
1,1,2-Trichloroethane 2-Hexanone	ND b	5.0	
2-Hexanone	ND p	10	
1,3-Dichloropropane	ND b	5.0	
Tetrachloroethene	ND b	5.0	l
LDibromochloromethane	ND b	5.0	
1,2-Dibromoethane	ND b	5.0	- 1
Chlorobenzene	ND b	5.0	ſ
1,1,1,2-Tetrachloroethane	ND b	5.0	
Ethylbenzene	ND b	5.0	1
m,p-Xylenes	ND b	5.0	- 1
b-Xylene	ND b	5.0	
Styrene	ND b	5.0	
Bromoform	ND p	5.0	
Isopropylbenzene	ND b	5.0	
1,1,2,2-Tetrachloroethane	ND b	5.0	
1,2,3-Trichloropropane	ND b	5.0	
Propylbenzene	ND b	<u>5</u> .0	
Bromobenzene	ND b	5.0	1
1,3,5-Trimethylbenzene	ND b	5.0	
2-Chlorotoluene	ND b	5.0	
1-Chlorotoluene	ND b	5.0	

b= See narrative
b= Not Detected
L= Reporting Limit
Page 1 of 2



	57104		Location:	Glovatorium	
lient: SC	OMA Environmental	Engineering Inc.	Prep:	EPA 5030B	
roject#: 25	511		Analysis:	EPA 8260B	
ield ID:	LFR-2		Batch#:	70351	
ab ID: atrix:	157104-008		Sampled:	01/31/02	
atrix:	Water		Received:	01/31/02	
nits:	ug/L		Analyzed:	02/22/02	

Analyte	Result	RL
tert-Butylbenzene	ND b	5.0
1,2,4-Trimethylbenzene	ND b	5.0
ec-Butylbenzene	ND b	5.0
ara-Isopropyl Toluene	ND b	5.0
T,3-Dichlorobenzene	ND b	5.0
1,4-Dichlorobenzene	ND b	5.0
m -Butylbenzene	ND b	5.0
, 2-Dichlorobenzene	ND b	5.0
, 2-Dibromo-3-Chloropropane 1,2,4-Trichlorobenzene	ND b	5.0
1,2,4-Trichlorobenzene	ND b	5.0
<u>H</u> exachlorobutadiene	ND b	5.0
aphthalene	ND b	5.0
,2,3-Trichlorobenzene	ND b	5.0

Surrogate	*REC	Limits
Pibromofluoromethane	102 b	80-122
,2-Dichloroethane-d4	93 b	78-123
■bluene-d8	95 b	80-110
Bromofluorobenzene	105 b	80-115



) 		Purgeable Org	anics by GC	/ms	
	157104 SOMA Environmental 2511 SOMA-3 157104-011 Water ug/L 2.500	Engineering Inc.	Location: Prep: Analysis: Batch#: Sampled: Received: Analyzed:	Glovatorium EPA 5030B EPA 8260B 70362 01/31/02 01/31/02 02/25/02	
Freon 12 Chlorometha Vinyl Chlor 3romomethar Chloroethar	ride ne	Result ND b ND b ND b ND b ND b ND b ND b		25 25 25 25 25 25	

Analyte	Result	RL	
Freon 12	ND b	25	
Chloromethane	ND b	25	
Vinyl Chloride	ND b	25	
<pre>3romomethane</pre>	ND b	25	
Chloroethane	ND b	25	
Trichlorofluoromethane	ND b	13	
Acetone	ND b	50	
Freon 113	ND b	13	
1,1-Dichloroethene	ND b	13	
Methylene Chloride	ND b	50	
Carbon Disulfide	ND b	13	
MTBE	310 b	13	
trans-1,2-Dichloroethene	ND b	13	
Vinyl Acetate	ND b	130	
1,1-Dichloroethane	ND p	130	,
2-Butanone	ND b	25	•
cis-1,2-Dichloroethene	380 b	13	
2,2-Dichloropropane	ND b		
Chloroform	ND b	13	
Bromochloromethane	ND b	13	
1,1,1-Trichloroethane	ND b	25	
1,1-Dichloropropene	ND b	13	
Carbon Tetrachloride		13	
1,2-Dichloroethane	ND b	13	
Benzene	ND b	13	
Frichloroethene	ND b	13	
.,2-Dichloropropane	23 b	13	
Bromodichloromethane	ND b	13	
Dibromomethane	ND b	13	
	ND b	13	
-Methyl-2-Pentanone	ND P	25	į
:is-1,3-Dichloropropene Toluene	ND b	13	
trans-1,3-Dichloropropene	ND b	13	
1,1,2-Trichloroethane	ND b	13	
-Hexanone	ND b	13	
, 3-Dichloropropane	ND b	25	
	ND b	13	
Tetrachloroethene Dibromochloromethane	18 b	13	
	ND p	13	
.,2-Dibromoethane	ND b	13	
hlorobenzene	ND b	13	
1,1,1,2-Tetrachloroethane	ND p	13	
Ethylbenzene	ND b	13	
p.ylenes	ND P	13	
-Xylene	ND b	13	
■tyrene	ND b	13	
Bromoform	ND b	13	
Isopropylbenzene	ND P	13	
,1,2,2-Tetrachloroethane	ND b	13	
,2,3-Trichloropropane	ND b	13	
Propylbenzene	ND b	13	
Bromobenzene	ND b	13	
,3,5-Trimethylbenzene	ND b	13	1
-Chlorotoluene	MD p	13	•
-Chlorotoluene	ND b	13	

b= See narrative
N= Not Detected
N= Reporting Limit
rage 1 of 2



	Purgeable Or	ganics by GC/MS	
Lab #: 157104		Location:	Glovatorium
Client: SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#: 2511		Analysis:	EPA 8260B
Field ID: SOMA-3		Batch#:	70362
Lab ID: 157104-011		Sampled:	01/31/02
Matrix: Water		Received:	01/31/02
Units: ug/L		Analyzed:	02/25/02
Diln Fac: 2.500			
Analyte		100 a	
tert-Butylbenzene	Result ND b	RL	
1,2,4-Trimethylbenzene	ND b	13 13	
sec-Butylbenzene	ND b	13	i
para-Isopropyl Toluene	ND b	13	·
1,3-Dichlorobenzene	ND b	13	
1,4-Dichlorobenzene	ND b	13	
	ND b	13	
l,2-Dichlorobenzene	ND b	13	
■,2-Dibromo-3-Chloropropane	ND b	13	·
1,2,4-Trichlorobenzene	ND b	13	
_Hexachlorobutadiene	ND b	13	•
Taphthalene	ND b	1.3	
.,2,3-Trichlorobenzene	ND b	13	
_	000000000 NE V P 000000 100 100000 100000		
Surrogate Dibromofluoromethane	%RBC Limite		
1,2-Dichloroethane-d4	104 b 80-122		
Coluene-d8	102 b 78-123 92 b 80-110		
Bromofluorobenzene	92 b 80-110 102 b 80-115		



•				CU	Curtis & Tompkins, Ltd.
		Purgeable Org	vanics by GC/	/MS	
Lab #:	157104		Location:		
Client: Project#:	SOMA Environmental	Engineering Inc.	Prep: Analysis:	Glovatorium EPA 5030B EPA 8260B	
Field ID:	SOMA-2		Batch#:	70351	•
ab ID:	157104-012		Sampled:	01/31/02	
Matrix:	Water		Received:	01/31/02	
Units:	ug/L		Analyzed:	02/23/02	
Diln Fac:	14.29		· mar i boa ·	02/25/02	
Freon 12	Analyte			I.	
		ир р		.40	
Chlorometh		ND b		.40	
inyl Chlo		ND p		.40	
romometha		ND P	_	.40	
Chloroetha		ND b		.40	
	luoromethane	ND b		71	
cetone		йD р		90	
reon 113		ND b		71	
,1-Dichlo	roetnene	ND p		71	
Methylene		ND b		90	
Carbon Dis	sullide	и́р р		71	
ITBE	Dieblere	ND b		71	
	Dichloroethene	йор		71	
Vinyl Acet	ace	мDр		10	
1,1-Dichlo ■-Butanone		ND p		71	
	: .chloroethene	NDb		.40	
2-Dichlo	ropropane	1,800 b		71	
Chloroform	ropropane	ND b		71	
Bromochlor		ND p		71	
1 1 Tric	:hloroethane	ND b		40	
1-Dichlo	ropropene	ND p		71	
Tarbon Tet	rachloride	ND P		71	
1,2-Dichlo		ND p		71	
enzene €	LOCCHAILE	ND b		71	
richloroe	thene	ND b ND b		71 71	
	ropropane	ND b		71 71	
	oromethane	ND b		71 71	
Dibromomet		ND b		71 71	
	-Pentanone	ND b		40	
	chloropropene	ND P		71	
Toluene		ND b		71 71	
	Dighlaranena	ND P		1 -	

71

71

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ND b

ND b

ND b

ND b ND b ND b ND b

ND b ND b ND b

ND b

ND b

ND b ND b

MD b ND b

ND b ND b

ND b

ND b

	Tetrachloroethene
	Dibromochloromethane
	,2-Dibromoethane
	hlorobenzene
	1 ,1,1,2-Tetrachloroethane
i	Ethylbenzene
	, p-Xylenes
	-Xylene
	S tyrene

trans-1,3-Dichloropropene 1,1,2-Trichloroethane -Hexanone

, 3-Dichloropropane

Bromoform Isopropylbenzene
,1,2,2-Tetrachloroethane
,2,3-Trichloropropane Propylbenzene

-Chlorotoluene b= See narrative
N= Not Detected
N= Reporting Limit
Page 1 of 2

,3,5-Trimethylbenzene -Chlorotoluene

Bromobenzene



Lab #:	157104		Location:	Glovatorium	
Client:	SOMA Environmental I	ingineering Inc.	Prep:	EPA 5030B	
<u>Project#:</u>		· · · · · · · · · · · · · · · · · · ·	Analysis:	EPA 8260B	
ield ID:	SOMA-2		Batch#:	70351	
ab ID:	157104-012		Sampled:	01/31/02	
latrix:	Wațer		Received:	01/31/02	
Jnits:	ug/L		Analyzed:	02/23/02	
Diln Fac:	14.29		-	, ,	

Analyte	Result	RI
tert-Butylbenzene	ND b	71
1,2,4-Trimethylbenzene	ND b	71
sec-Butylbenzene	ND b	71
para-Isopropyl Toluene	ND b	71
1,3-Dichlorobenzene	ND b	71
1,4-Dichlorobenzene	ND b	71
m-Butylbenzene	ND b	71
l,2-Dichlorobenzene	ND b	71
1,2-Dibromo-3-Chloropropane	ND b	71
1.2.4-Trichlorobenzene	ND b	71
_Hexachlorobutadiene	ND P	71
Naphthalene	ND b	71
.,2,3-Trichlorobenzene	ND b	71

Dibromofluoromethane 100 b 80-122 1,2-Dichloroethane-d4 89 b 78-123 Coluene-d8 94 b 80-110	Surrogate	%REC	Limits
Coluene-d8 94 b 80-110	promorradiomethane	100 b	R0-122
	,2-Dichloroethane-d4	89 b	78-123
		94 b	80-110
Bromofluorobenzene 99 b 80-115	Bromofluorobenzene	99 b	00 113

b= See narrative
N= Not Detected
N= Reporting Limit
Page 2 of 2



	Purgeable (rganics by GC	/ms
Lab #:	157104	Location:	Glovatorium
Client:	SOMA Environmental Engineering In	c. Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC171139	Batch#:	70351
Matrix:	Water	Analyzed:	02/22/02
Units:	ug/L		

Analyte	Result	RL	
Freon 12	ИD	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	ИD	5.0	
rans-1,2-Dichloroethene	ND	5.0	
/inyl Acetate	ND	50	·
1,1-Dichloroethane	ND	5.0	
-2-Butanone	ND	10	
is-1,2-Dichloroethene	ND	5.0	
2,2-Dichloropropane	ND	5.0	
Chloroform	ND	5.0	
Promochloromethane	ИD	10	
,1,1-Trichloroethane	ND	5.0	
1,1-Dichloropropene	ND	5.0	
marbon Tetrachloride	ND	5.0	
.,2-Dichloroethane	ND	5.0	
Benzene	ND	5.0	
Trichloroethene	ND	5.0	
,2-Dichloropropane	ND	5.0	
-romodichloromethane	ND	5.0	•
Dibromomethane	ND	5.0	
-Methyl-2-Pentanone	ND	10	
is-1,3-Dichloropropene	ND	5.0	
Toluene	ND	5.0	
rans-1,3-Dichloropropene	ND	5.0	
,1,2-Trichloroethane	ND	5.0	·
2-Hexanone	ND	10	
1,3-Dichloropropane	ND	5.0	
etrachloroethene	ND	5.0	
■ibromochloromethane	ND	5.0	

N= Not Detected N= Reporting Limit Page 1 of 2



	Pt	irgeable Orga	anics by GC/MS	
Lab #:	157104		Location:	Glovatorium
	SOMA Environmental Eng	ineering Inc.	Prep:	EPA 5030B
Project#:	2511		Analysis:	EPA 8260B
Type:	BLANK		Diln Fac:	1.000
Lab ID:	QC171139		Batch#:	70351
/atrix:	Water		Analyzed:	02/22/02
Units:	ug/L		-	· '

Analyte	Result	RLi
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
.,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
→ -Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
,1,2,2-Tetrachloroethane	ND	5.0
,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
romobenzene	ND	5.0
,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
-Chlorotoluene	ИD	5.0
ert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ИD	5.0
ara-Isopropyl Toluene	ND	5.0
🖳,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
-Butylbenzene	ND	5.0
,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
exachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
, 2-Dichloroethane-d4	84	78-123
oluene-d8	· 92	80-110
Bromofluorobenzene	101	80-115

N = Not Detected R = Reporting Limit Page 2 of 2



1		Purgeable Org	anics by GC	/MS
Lab #:	157104		Location:	Glovatorium
Client:	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2511		Analysis:	EPA 8260B
Type:	BLANK		Diln Fac:	1.000
Lab ID:	QC171183		Batch#:	70362
Matrix:	Water		Analyzed:	02/25/02
Units:	ug/L		-	

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
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
l,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomerhane	ND	5.0
l-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
rans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	['] 5.0
2-Hexanone	ИĎ	10
_1,3-Dichloropropane	ND	5.0
etrachloroethene	ND	5.0
D ibromochloromethane	ND	5.0

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



			Purgeable Org	anics by 0	ec/ms
Lab #:	1571	04		Location:	Glovatorium
Client:	AMOS	Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	<u> </u>		Analysis:	EPA 8260B
Type:		BLANK	·-	Diln Fac:	1.000
Lab ID:		QC171183		Batch#:	70362
Matrix:		Water		Analyzed:	02/25/02
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
p-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
.,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
romobenzene	ND	5.0
.,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
-Chlorotoluene	ND	5.0
ert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
ara-Isopropyl Toluene	ND	5.0
,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
-Butylbenzene	ND	5.0
,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
exachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

0,2-Dichloroethane-d4 105 78-123 cluene-d8 93 80-110	Surrogate	REC	Limits
Coluene-d8 93 80-110	Dibromofluoromethane	110	80-122
1 00 110	, 2-Dichloroethane-d4	105	78-123
Bromofluorobenzene 104 80-115	oluene-d8	93	80-110
	Bromofluorobenzene	104	80-115



Purgeable Organics by GC/MS 157104 Lab #: Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2511 Analysis: EPA 8260B Matrix: Water Batch#: 70351 Units: ug/L Analyzed: 02/22/02 Diln Fac: 1.000

Type:

ВŞ

Lab ID:

QC171137

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	46.61	93	74-132
Benzene	50.00	50.15	100	80-116
Trichloroethene	50.00	47.72	95	80-119
Toluene	50.00	48.64	97	80-120
Chlorobenzene	50.00	51.97	104	80-117

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	82	78-123
Coluene-d8	90	80-110
Bromofluorobenzene	102	80-115

Type:

BSD

Lab ID:

QC171138

Analyte	Spiked	Result	%REC	Limits	RPD	Lin
,1-Dichloroethene	50.00	54.25	108	74-132	15	20
Benzene	50.00	49.26	99	80-116	2	20
Trichloroethene	50.00	43.95	88	80-119	8	20
oluene:	50.00	48.11	96	80-120	1	20
Chlorobenzene	50.00	47.65	95	80-117	9	20

Dibromofluoromethane 10 1,2-Dichloroethane-d4 84		80-122
1 2-Dichloroethane-d4 84		
		78-123
oluene-d8 96		80-110
romofluorobenzene 10:	1.	80-115



		Purgeable Org	anics by G	C/MS
Lab #:	157104		Location:	Glovatorium
	SOMA Environmental	Engineering Inc.	Prep:	EPA 5030B
Project#:	2511		Analysis:	EPA 8260B
Matrix:	Water		Batch#:	70362
Units:	ug/L		Analyzed:	02/25/02
biln Fac:	1.000			

BS

Lab ID: QC171181

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	46.09	92	74-132
Benzene	50.00	48.49	97	80-116
Trichloroethene	50.00	47.79	96	80-119
Coluene	50.00	49.27	99	80-120
Chlorobenzene	50.00	50.46	101	80-117

Surrogate	*REC	Limits	
Dibromofluoromethane	106	80-122	
1,2-Dichloroethane-d4	106	78-123	ł
Coluene-d8	95	80-110	ļ
3romofluorobenzene	102	80-115	

BSD

Lab ID: QC171182

Analyte	Spiked	Result	%REC	Limits	RPT	T. i.w
,1-Dichloroethene	50.00	50.24	100	74-132	9	20
Benzene	50.00	44.90	90	80-116	8	20
richloroethene	50.00	43.88	- 88	80-119	9	20
Coluene	50.00	46.03	92	80-120	7	20
Chlorobenzene	50.00	50.81	102	80-117	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	98	78-123
oluene-d8	94	80-110
romofluorobenzene	99	80-115



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

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

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

Date: 08-FEB-02 Lab Job Number: 156784 Project ID: 2511

Location: Glovatorium

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

This package may be reproduced only in its entirety.

CA ELAP # 1459

Page 1 of <u>27</u>



Laboratory Number:

156784

Client:

Soma Environmental Engineering, Inc.

Project Name:

Oakland - Glovatorium

Project #:

2511

Receipt Date:

01/31/02

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for eleven water samples received from the above referenced project on January 31st, 2002. The samples were received cold and intact.

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

The recoveries for the bromofluorobenzene surrogates were over the acceptable QC limits for client ID GW-4 (C&T ID 156784-006), client ID LFR-2 (C&T ID 156784-008) and client ID SOMA-2 (C&T ID T156784-010) due to coelution of sample hydrocarbons with this surrogate. No other analytical problems were encountered.

MBTXE (EPA 8021B):

The recovery for the bromofluorobenzene surrogate was over the acceptable QC limit for client ID LFR-2 (C&T ID 156784-008) due to coelution of sample hydrocarbons with this surrogate. No other analytical problems were encountered.

Hydrocarbon Fingerprint:

On February 5th, client ID Soma-4 (C&T ID 156784-011) was analyzed for gasoline and diesel range hydrocarbons by EPA modified 8015. Fuel identification is based on comparing the pattern of peaks observed in the sample at various retention time windows to the pattern observed in the same ranges for known fuel standards. This peak pattern is sometimes referred to as the hydrocarbon "fingerprint".

The chromatogram for this sample indicates the presence of hydrocarbon peaks within C7 – C12 range. The peak patterns of this sample most closely resemble the stoddard standard.

CHAIN OF CUSTODY FORM

Page ____of

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Laboratory Number	Sample ID.	Samp Da Tin	oling te ne	Soil	Waste	# of Containers	支	H ₂ SO	HNO3	핑		Field Notes	bHd	Thos	0.16	12.12						ļ	
	LFR-3	1/30/07		/		4	7	1		1	\vdash		++	\vdash	+-	╁	 	\vdash	 		\dashv	-	
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Signature



Gasoline by GC/FID CA LUFT

Lab #: 156784 Location: Glovatorium Client: EPA 5030B SOMA Environmental Engineering Inc. Prep: B015B(M) Analysis: Project#: 2511

69964 Water Batch#: Matrix: 01/31/02 Units: ug/L Received:

1.000 Diln Fac:

LFR-3 ield ID:

Sampled: Type: Lab ID: SAMPLE Analyzed: 156784-001

Analyte Result RL Gasoline C7-C12 67 Y 50 <u>50</u> Stoddard Solvent C7-C12 ND

%REC Limits Surrogate Trifluorotoluene (FID) 98 59-135 112 6<u>0-140</u> <u>Bromofluorobenzene (FID)</u>

ield ID:

MW-11 SAMPLE Sampled: Analyzed: 01/30/02 02/06/02

01/30/02

02/06/02

Type: Lab ID:

156784-002

Analyte Result RL Gasoline C7-C12 71 Y 50 50 Stoddard Solvent C7-C12 ND

%REC_Limits_ Surrogate Trifluorotoluene (FID) 104 59-135 60<u>-140</u> Bromofluorobenzene (FID)

ield ID:

Type:

GW-2 SAMPLE

Sampled: Analyzed:

01/31/02 02/06/02

156784-003 ab ID:

Result Analyte RL Gasoline C7-C12 ND 50 Stoddard Solvent C7-C12 ND

Surrogate %REC Limits Trifluorotoluene (FID) 109 59-135 60-140 Bromofluorobenzene (FID) 108

*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation

Y= Sample exhibits fuel pattern which does not resemble standard

Z= Sample exhibits unknown single peak or peaks

b= See narrative ND= Not Detected

RL= Reporting Limit

LR= Response exceeds instrument's linear range

age 1 of 4



Gasoline by GC/FID CA LUFT

Lab #:

SOMA Environmental Engineering Inc.

Location: Prep:

Glovatorium

Client: Project#:

2511

<u>Analysis</u>

EPA 5030B 8015B(M)

Matrix: Units: Diln Fac:

Water ug/L 1.000

Batch#: Received:

69964 01/31/02

ield ID:

LFR-1 SAMPLE Sampled:

01/31/02

ype: Lab ID:

156784-004

Analyzed:

02/07/02

Analyte Result Gasoline C7-C12 Stoddard Solvent 270 Y Z 150 Y Z 50 5.0

Surrogate %REC Limits Trifluorotoluene (FID) 99 59-135 Bromofluorobenzene (FID) 110 60-140

ield ID:

SAMPLE

Sampled:

01/31/02

уре: Lab ID:

156784-005

Analyzed:

02/07/02

Analyte	e Resu	L †	RL	
Gasoline C7-C12	70	0 Y Z	50	
<u> Stoddard Solvent (</u>	C7-C12 ND		50	

Surrogate %REC Limits Trifluorotoluene (FID) 110 59-135 60-140 Bromofluorobenzene (FID) 108

ield ID:

pe: ab ID: GW-4

SAMPLE

156784-006

Sampled:

01/31/02

Analyzed:

02/07/02

Analyte Result Gasoline C7-C12 1,700 H Y 920 50 Stoddard Solvent C7-C12 50

Surrogate	%PRC Timite	
Gulloqate	%REC Limits	
Trilluorotoluene (FID)	110 59-135	
	JJ 133	
TBromofluorobenzene (FID)	221 * STD & CA_14A	
DIOMOTIGOTODCHECHE (FID)	<u> </u>	

*= Value outside of QC limits; see narrative H= Heavier hydrocarbons contributed to the quantitation Y= Sample exhibits fuel pattern which does not resemble standard

Z= Sample exhibits unknown single peak or peaks

b= See narrative

ND= Not Detected

RL= Reporting Limit

LR= Response exceeds instrument's linear range

age 2 of 4



Gasoline by GC/FID CA LUFT 156784 Lab #: Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: Analysis: EPA 5030B 2511 Project#: 8015B(M) Water Matrix: Batch#: 69964 ug/L 1.000 Units: 01/31/02 Received:

ield ID:

Diln Fac:

SOMA-1

ype: ab ID: SAMPLE 156784-007 Sampled:

01/31/02

Analyzed:

02/07/02

	Analy	:e	Result	RL
Gasoline			100	50
Stoddard	Solvent	C7-C12	58	 50

Surrogate %REC Limits Trifluorotoluene (FID) Bromofluorobenzene (FID) 103 59-135 109 60-140

ield ID:

ype:

Lab ID:

LFR-2

SAMPLE 156784-008 Sampled:

01/31/02

Analyzed:

02/07/02

Analyte	Result	RL	
Gasoline C7-C12	1,400 H Y	50	
Stoddard Solvent C7-C12	760	50	

Surrogate Frifluorotoluene (FID) %REC Limits 113 59-135 <u>Bromofluorobenzene (FID)</u> 201 60-140

eld ID:

ηpe: ab ID: SOMA-3 SAMPLE

156784-009

Sampled:

01/31/02

Analyzed:

02/07/02

Analyte Result Gasoline C7-C12 410 H

Stoddard Solvent C7-C12		230	50	
Surrogate	%REC	Limits		
Trifluorotoluene (FID)	106	59-135		
Bromofluorobenzene (FID)	114	60-140		

*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation

Y= Sample exhibits fuel pattern which does not resemble standard Z= Sample exhibits unknown single peak or peaks

b= See narrative

ND= Not Detected

RL= Reporting Limit

R= Response exceeds instrument's linear range

age 3 of 4



Gasoline by GC/FID CA LUFT

Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B

Project#: 2511 8015B(M) <u>Analysis:</u> Matrix: Water Batch#: 69964 ug/L Units: 01/31/02 Received: Diln Fac: <u>1.000</u>

ield ID: ype:

Lab ID:

SOMA-2 SAMPLE

156784-010

Sampled: Analyzed: 01/31/02

02/07/02

Analyte Result RL. Gasoline C7-C12 2,400 H Y 50 <u> Stoddard Solvent C7-C12</u> 300 50

Surrogate **Limite** 59-135 Trifluorotoluene (FID) 110 Bromofluorobenzene (FID) 166 60-140

pe: ab ID:

BLANK QC169726 Analyzed:

02/06/02

Analyte	Regult	RL	
Gasoline C7-C12	ND	50	
Stoddard Solvent C7-C12	ND	50	

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	98	59-135	•
Bromofluorobenzene (FID)	94	60-140	<u> </u>

*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
Z= Sample exhibits unknown single peak or peaks

b= See narrative ND= Not Detected

RL= Reporting Limit

R= Response exceeds instrument's linear range

age 4 of 4



Gasoline by GC/FID CA LUFT

156784 Lab #:

Client: SOMA Environmental Engineering Inc.

Project#: 2511

LCS Type:

ab ID:

QC169727

Matrix: Units:

Water

ug/L

Location:

Prep:

Glovatorium

EPA 5030B

Analysis:

8015B(M)

Diln Fac: Batch#:

1.000 69964

Analyzed:

02/06/02

			%RBC		
Analyte	Spiked	REBULL	pribil	Limits	
Carolina C7-C12	2 000	1 890	95	73-121	
Gasoline C/-C12	2,000	±,000		70 202	

Surrogate		Limits
Trifluorotoluene (FID)	111	59-135
Bromofluorobenzene (FID)	108	60-140



			Gasoline	by (SC/FID CA LUFT	
Lab #:	15678	34			Icention	Gla-sesi-
Client:	SOMA	Environmental	Engineering 3	Inc.	Location: Prep:	Glovatorium EPA 5030B
Project#:	2511	-			Analysis:	8015B(M)
Field ID:		LFR-3			Batch#:	69964
MSS Lab II);	156784-001			Sampled:	01/30/02
Matrix:		Water			Received:	01/31/02
Units:		ug/L			Analyzed:	02/06/02
Diln Fac:		1.000				· · · · · · · · · · · · · · · · · · ·

pe:

MS

Lab ID:

QC169728

Analyte	MSS R	esult	Spiked	Result	%RE	I Limits
Gasoline C7-C12		67.13	2,000	1,926	93	65-131
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	118	59-135				
Bromofluorobenzene (FID)	118	60-140				

MSD

Lab ID:

QC169729

asoline C/-C12		2	,000	1,943	94	65-131	1	20	
					•				
Surrogat		3. π/.					***********		
Durrog at	9	Dally Market	GLIBLUS:						
frifluorotoluene (FID) 1:	1.8	59-135						

Surrogate	*REC	Limits
rifluorotoluene (FID)	118	59-135
Bromofluorobenzene (FID)	115	60-140
	-	



Ethylbenzene, Xylenes Benzene, Toluene, Glovatorium 156784 Location: ab #: **EPA 5030B** SOMA Environmental Engineering Inc. Prep: Client: EPA 8021B <u> Analysis:</u> roject#: 2511 1.000 Diln Fac: Water latrix: 01/31/02 ug/L Received: nits:

eld ID: pe:

Lab ID:

LFR-1 SAMPLE 156784-004 Batch#: Sampled: Analyzed:

69893 01/31/02 02/05/02

Result 2.0 ITBE 0.50 ND Benzene 0.50 Toluene ND thylbenzene 0.50 ND 0.50 ,p-Xylenes ND 0.50 -Xvlene ND

Limits Surrogate 56-142 rifluorotoluene (PID) 123 55-149 <u> Promofluorobenzene (PID)</u>

eld ID: pe:

Lāb ID:

GW-3 SAMPLE 156784-005 Batch#: Sampled: Analyzed:

69893 01/31/02 02/05/02

Result Analyte 2.0 TEE ND 0.50 ND Benzene 0.50 ND Toluene 0.50 ND Ethylbenzene ND 0.50 h,p-Xylenes 0.50 o-Xylene ND

Surrogate STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL STEEL ST 125 56-142 [rifluorotoluene (PID) <u>55-149</u> 130 romofluorobenzene (PID)

eld ID:

GW-4 SAMPLE Batch#:

69970 01/31/02 02/07/02

Type: Lab ID: 156784-006 Sampled: Analyzed:

Result RL Analyte 2.0 MTBE ND 0.50 ND Benzene 0.50 ND Toluene 0.50 ND Ethylbenzene 0.50 n,p-Xylenes ND 0.50 13 o-Xvlene

%REC Limits Surrogate 98 56-142 [rifluorotoluene (PID) <u> Bromofluorobenzene (PID)</u> 55-149

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

b= Not Detected L= Reporting Limit Page 2 of 4



Benzene, Toluene, Ethylbenzene, Xylenes Glovatorium ab #: 156784 Location: EPA 5030B SOMA Environmental Engineering Inc. Prep: Client: EPA 8021B <u> Analysis:</u> 2511 roject#: 1.000 Diln Fac: Water atrix: Received: 01/31/02 uq/L nits:

eld ID: oe: Lab ID:

LFR-3 SAMPLE 156784-001 Batch#: Sampled: Analyzed:

69893 01/30/02 02/04/02

Result Analyte ND 2.0 TBE 0.50 ND Benzene 0.50 ND Toluene 0.50 ND thylbenzene 0.50 ND ,p-Xylenes 0.50 <u>Xylene</u> ND.

Limits 56-142 Syrrogate 125 rifluorotoluene (PID) romofluorobenzene (PID) 131

eld ID: oe: Lab ID:

MW-11 SAMPLE 156784-002 Batch#:

Sampled: Analyzed: 69893

01/30/02 02/04/02

Ame light	Result	RI
TBE	ND	2.0
Benzene	ND ND	0.50 0.50
Toluene Thylbenzene	ND	0.50
,p-Xylenes	ND	0.50
-Xvlene	ND	0.30

*REC 8 **65 (11)** (8 60 (8) Surrogate 125 56-142 rifluorotoluene (PID) 55-149 romofluorobenzene (PID) 132

eld ID:

GW-2 SAMPLE Batch#: Sampled: 69893 01/31/02 02/05/02

pe: 156784-003 Analyzed: Lab ID:

Analyte	Result	Ri
TBE	ND	2.0
Benzene	ND	0.50 0.50
Toluene	ND ND	0.50
thylbenzene h,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	FREE	Mimites .	
rifluorotoluene (PID)	. 128	56-142	
romofluorobenzene (PID)	130	55-149	

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

Reporting Limit Page 1 of 4



Benzene, Toluene, Ethylbenzene, Xylenes Lab #: 156784 Location: Glovatorium Prep: Analysis: Client: EPA 5030B SOMA Environmental Engineering Inc. EPA 8021B Project#: Diln Fac: 1.000 Water Matrix: 01/31/02 uq/L <u> Units:</u> <u>Received:</u>

ield ID: ype: Lab ID:

SOMA-1 SAMPLE

156784-007

Batch#:

69893

01/31/02 02/05/02 Sampled: Analyzed:

Analyte	Result	KD	
MTBE	100	2.0	
Benzene	0.67	0.50	
Toluene	ND	0.50	
Ethylbenzene	ND	0.50	
m,p-Xylenes	ND	0.50	
b-Xvlene	ND	0.50	

Surroga; e	SREC	Lamets	
Trifluorotoluene (PID)	124	56-142	
Bromofluorobenzene (PID)	129	55-149	

eld ID: ype: Lab ID:

LFR-2

SAMPLE 156784-008 Batch#:

69893

Sampled: Analyzed: 01/31/02 02/05/02

Analyte	Result	PL	
MTBE	2.6	2.0	1
Benzene	0.92 C	0.50	
Toluene	ND	0.50	
Ethylbenzene	42 C	0.50	
m.p-Xvlenes	ND	0.50	
b-Xylene	25	0,50	

Surrogate	%REC	Limits	
Trifluorotoluene (PID)	129	56-142	
Bromofluorobenzene (PID)	171 *	<u>* 55-149</u>	

ield ID:

SOMA-3

SAMPLE

Batch#:

69893

Sampled:

ype: Lab ID: 156784-009

Analyzed:

01/31/02 02/05/02

Analyt	e Result	RE	
MTBE	ND	2.0	
Benzene	ND	0.50	
Toluene	ND	0.50	
Ethylbenzene	ND	0.50	
m,p-Xylenes	ND	0.50	j
b-Xvlene	ND	0.50	

Surrogate	#####################################	Limits		
Trifluorotoluene (PID)	122	56-142	•	•
Bromofluorobenzene (PID)	130	55-149		

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

D= Not Detected

L= Reporting Limit Page 3 of 4



	Benze	ene, Toluer	ie, E	thylbenzene	. Xylenes
Lab #: Client: Project#:	156784 SOMA Environmental 2511	Engineering	Inc.	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8021B
Matrix: Units:	Water ug/L			Diln Fac: Received:	1.000 01/31/02

eld ID: pe:

SOMA-2 SAMPLE Batch#:

69893 01/31/02

Sampled: Analyzed: 02/05/02 156784-010 Lab ID: Result Analyte 2.0 ITBE 3.7

7.3 0.50 Benzene 0.50 43 Toluene Ethylbenzene 21 C 0.50 n,p-Xylenes -Xylene 33 0.50

Surrogate Prifluorotoluene (PID) ***REC** 133 Main Mes 56-142 <u>14</u>7 <u> Bromofluorobenzene (PID)</u> 55-149

BLANK

Batch#:

69893

02/04/02 Analyzed: QC169455

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

Surrogate %REC Limits 56-142 rifluorotoluene (PID) 115 Bromofluorobenzene (PID) 116

BLANK QC169752 Batch#: Analyzed:

69970 02/07/02

1 malute	Resu	1 t		a in		
MTBE	ND			2.0		
Benzene	ΝĎ			0.50		
Foluene	ND .		 _ ,	0.50	 -	 4
Ethylbenzene	MD .	·	_	0.50		
m,p-Xylenes	NTO NTO			0.50		
o-xviene	 ND		 	0.50		

ational est Surrogate Trifluorotoluene (PID) 96 56-142 5<u>5-149</u> <u> Bromofluorobenzene (PID)</u>

D= Not Detected L= Reporting Limit Page 4 of 4

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



Benzene, Toluene, E	thylbenzene,	Xylenes
Lab #: 156784 Client: SOMA Environmental Engineering Inc. Project#: 2511	Location: Prep: Analysis:	Glovatorium EPA 5030B EPA 8021B
Type: LCS Lab ID: QC169454 Matrix: Water Units: ug/L	Diln Fac: Batch#: Analyzed:	1.000 69893 02/04/02

Analyte	Spiked	Result	*REC	I Limits
TBE	20.00	19.02	95	51-125
Benzene	20.00	17.04	85	67-117
Toluene	20.00	17.25	86	69-117
thylbenzene	20.00	17.03	85	68-124
m,p-Xylenes	40.00	34.54	86	70-125
o-Xylene	20.00	18.04	90	65-129

Surrogate	%rec	Limits		
Trifluorotoluene (PID)	117	56-142		
romofluorobenzene (PID)	119	55-149		



Benzene, Toluene, Ethylbenzene, Kylenes Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: 2511 Analysis: EPA 8021B Matrix: Water Batch#: 69970 Units: ug/L Analyzed: 02/07/02 Diln Fac: 1.000

Type:

BS

Lab ID:

QC169753

Analyte	Spiked	Result	%RB(: Limits
MTBE	20.00	18.26	91	51-125
Benzene	20.00	16.25	81	67-117
Toluene	20.00	15.57	78	69-117
Ethylbenzene	20.00	15.75	79	68-124
Ethylbenzene m,p-Xylenes	40.00	32.87	82	70-125
_o-Xylene	20.00	16.90	85	65-129

Surrogate	RREC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	97	55-149

vpe:

BSD

Lab ID:

QC169754

Analyte	Spiked	Result	%RE(! Limits	RPD	Lim
MTBE	20.00	18.35	92	51-125	ī	20
Benzene	20.00	16.85	84	67-117	4	20
Toluene	20.00	16.04	80	69-117	3	20
Ethylbenzene	20.00	16.19	81	68-124	3	20
m,p-Xylenes o-Xylene	40.00	34.17	85	70-125	4	20
o-Xylene	20.00	17.02	85	65-129	1	20

Surrogate	%RBC	Limits
Trifluorotoluene (PID)	97	56-142
Bromofluorobenzene (PID)	98	55-149

Sample #:

Date: 2/7/02 11:14 AM

Sample Name : mss, 156784-001, 69964, tvh+stodd

leName

: G:\GC19\DATA\037X006.raw

Page 1 of 1

Time of Injection: 2/6/02 08:30 PM thod : TVHBTXE High Point: 173.58 mV art Time : 0.00 min Low Point : 29.82 mV End Time : 26.80 min Plot Offset: 30 mV Plot Scale: 143.8 mV Scale Factor: 1.0 Response [mV] +CB =2.76 =3.11 -3.58C-6 -4.02=4.42 +HF -5:48 -6.79 -7:28 C-7 -8.41 TRIFLUO --9.42 =9.80 -10.5C-8 =11:1 -15.5 -16.6 -18.2 -18.5 BROMOF -_19.2 C-10 -20.7-21.5 -22.1 -22.7 -23.0 -23.7-24.3 =24.8 =25.8 _25.4 -26.1 -26.5

Sample Name : 156784-002,69964,tvh+stodd

ileName : G:\GC19\DATA\037X009.raw

ethod : TVHBTXE

tart Time : 0.00 min Scale Factor: 1.0

End Time : 26.80 min Plot Offset: 33 mV

Sample #:

Page 1 of 1

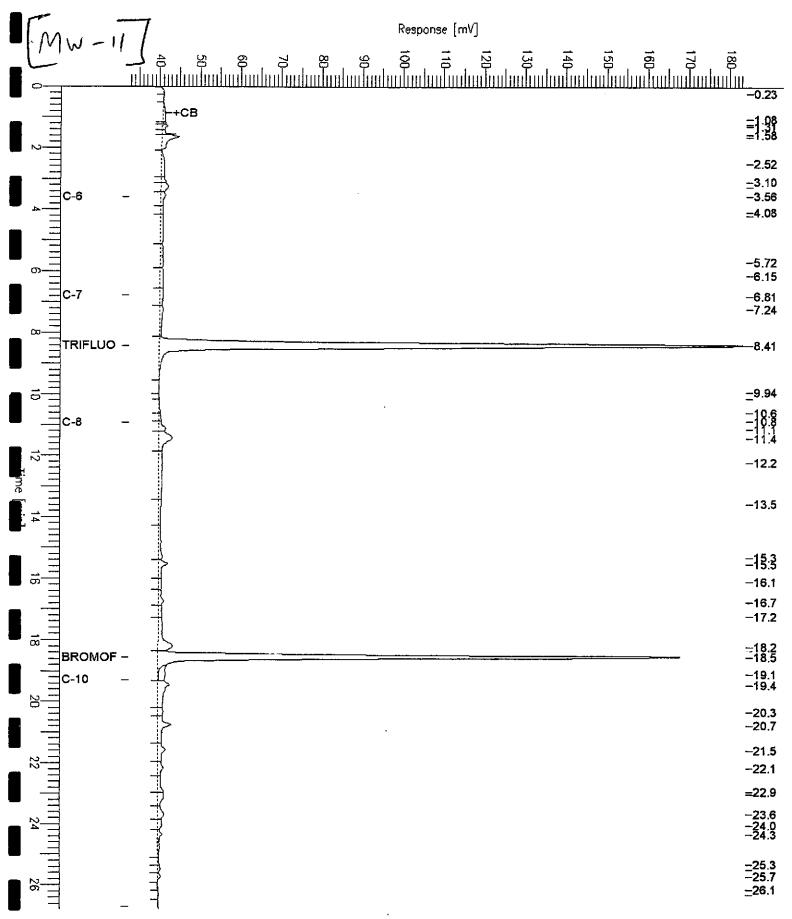
Date: 2/6/02 11:07 PM

Time of Injection: 2/6/02 10:40 PM

Low Point : 32.54 mV

High Point : 184.00 mV

Plot Scale: 151.5 mV



Sample Name: 156784-004,69964,tvh+stodd Page 1 of 1 Sample #: leName : G:\GC19\DATA\037X011.raw Date: 2/7/02 12:34 AM : TVHBTXE Time of Injection: 2/7/02 12:07 AM thod art Time : 0.00 min Low Point : 25.54 mV High Point: 316.53 mV End Time : 26.80 min Scale Factor: 1.0 Plot Offset: 26 mV Plot Scale: 291.0 mV Response [mV] +CB =1.24 =1.58 -2.56_3.11 -3.58-4.99-6.35 -7.32 TRIFLUO --9.50 -9₀95 =10.8 C-8 -11.4=12.3 ~12.7 -13.5-15.5-16.1-16.6-17.6-18.2 -18.5 BROMOF -C-10 -19.6 -20.1 -20.5 -21.6-23.1-23.7 -24.3

-25:3

Sample #:

Page 1 of 1

Sample Name: 156784-005,69964,tvh+stodd

leName : G:\GC19\DATA\037X012.raw Date: 2/7/02 01:17 AM : TVHBTXE Time of Injection: 2/7/02 12:50 AM thod High Point : 179.31 mV End Time : 26.80 min Low Point: 32.57 mV tart Time : 0.00 min Scale Factor: 1.0 Plot Offset: 33 mV Plot Scale: 146.7 mV Response [mV] +CB =1.23 =1.58 -5.42 -5.72 -6.08 -6.78 C-7 -8.09 -8.41 TRIFLUO -C-8 -11.4 -12.7-15.0 -15.3 -16.7-18.2 -18.5 **BROMOF** -C-10 _20.6 -21.5-23.0-23.7-26.5

Sample Name: 156784-006,69964,tvh+stodd Page 1 of 1 Sample #: : G:\GC19\DATA\037X013.raw leName Date: 2/7/02 11:14 AM thod : TVHBTXE Time of Injection: 2/7/02 01:33 AM End Time : 26.80 min art Time : 0.00 min High Point: 216.62 mV Low Point : 31.59 mV Scale Factor: 1.0 Plot Offset: 32 mV Plot Scale: 185.0 mV Response [mV] -0.29 +CB =1.13 **=1.58** -2.12 -2.42 _3.11 -3.57C-6 +HF -4.69 -5.00 -5.70 -6.05 =6.46 -6.78 -7.06 -7.89 TRIFLUO --8.41-8.90 -9.74 -10.4-10.9 C-8 -11.3-11.7 -12.5 -12.9 _13.3 -13.9-16.9 =17.4 -17.8 -18.1 _18.5 _18.8 **BROMOF-**C-10 _20.9 _21.1 _21.5 -22.0 -22.7 -23.5 -24.0-24.3 -24.8 -25.3-25.7-26.1

-26.4

Sample Name: 156784-007,69964,tvh+stodd : G:\GC19\DATA\037X018.raw l eName thod

: TVHBTXE

art Time : 0.00 min End Time : 26.80 min Scale Factor: 1.0 Plot Offset: 33 mV

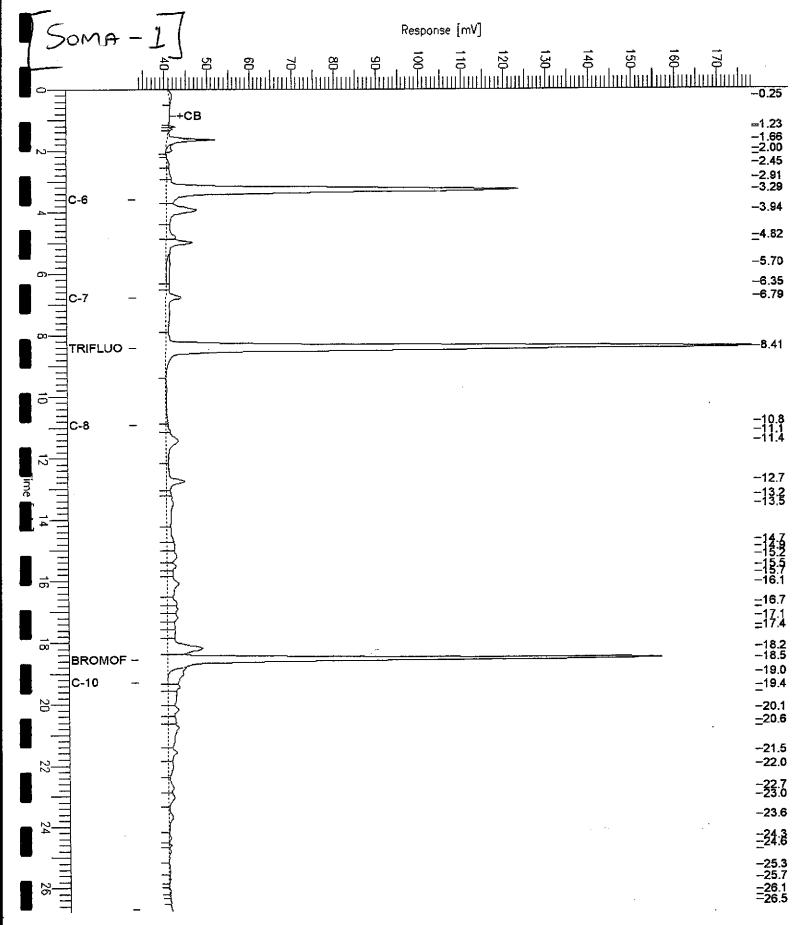
Page 1 of 1 Sample #:

Date: 2/7/02 05:37 AM

Time of Injection: 2/7/02 05:10 AM

High Point : 178.24 mV Low Point : 33.15 mV

Plot Scale: 145.1 mV



Sample Name: 156784-008,69964,tvh+stodd

: G:\GC19\DATA\037X019.raw

: TVHBTXE thod

ert Time : 0.00 min

Sample #:

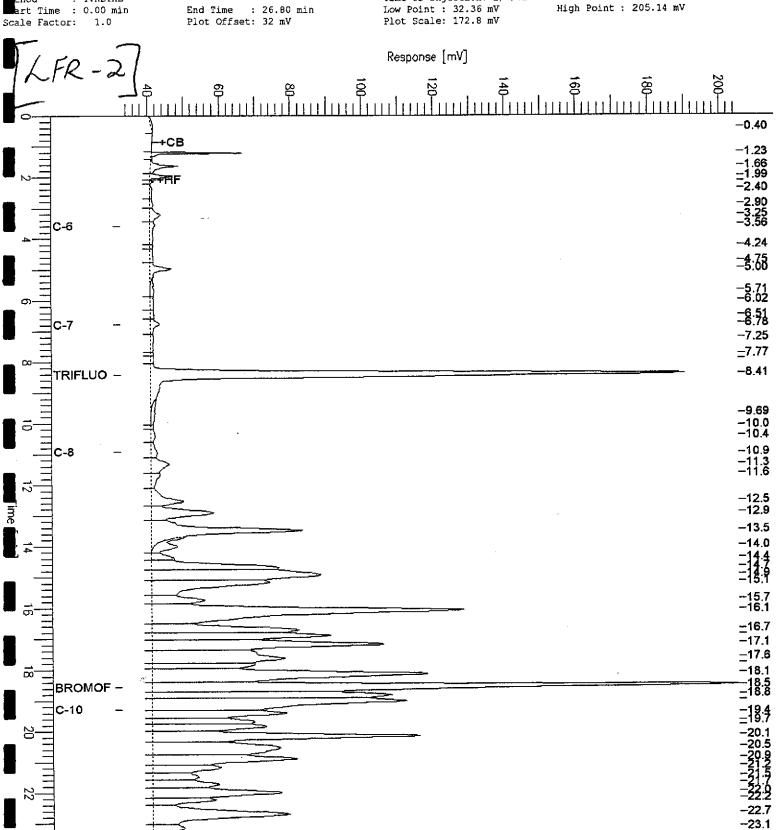
Date: 2/7/02 11:14 AM

Time of Injection: 2/7/02 05:53 AM

Page 1 of 1

-23.7

-26.1 -26.5



Sample Name : 156784-009,69964,tvh+stodd

: G:\GC19\DATA\037X020.raw

: TVHBTXE ethod

tart Time : 0.00 min Scale Factor: 1.0

End Time : 26.80 min

Plot Offset: 28 mV

Sample #:

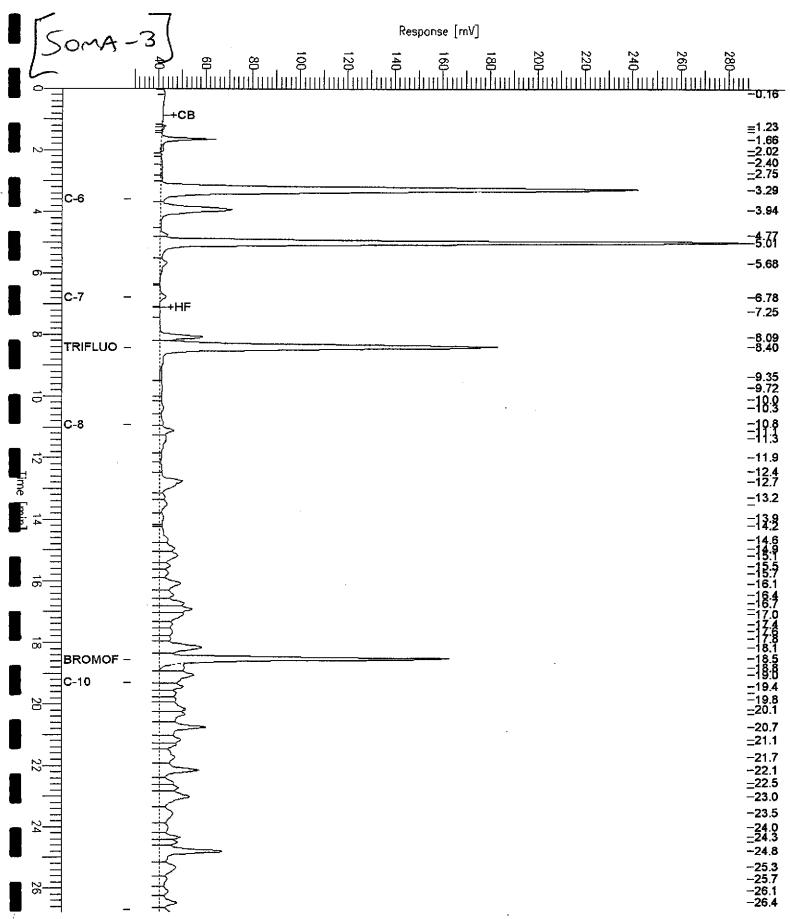
Page 1 of 1

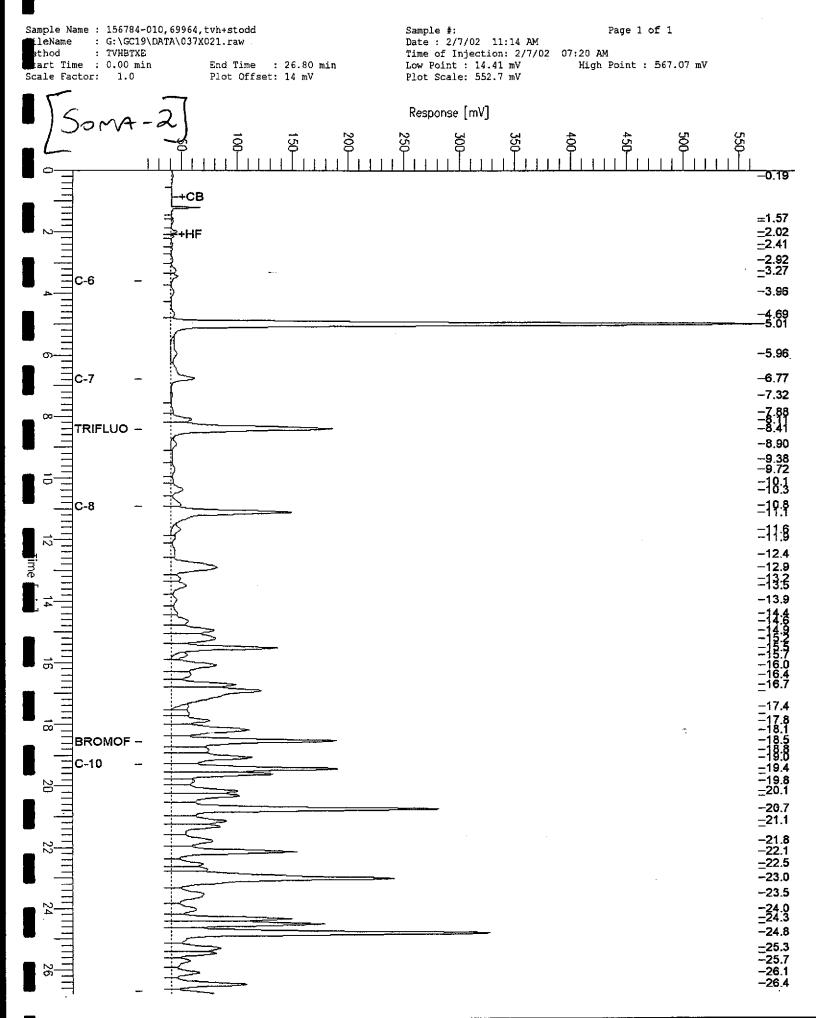
Date: 2/7/02 11:14 AM

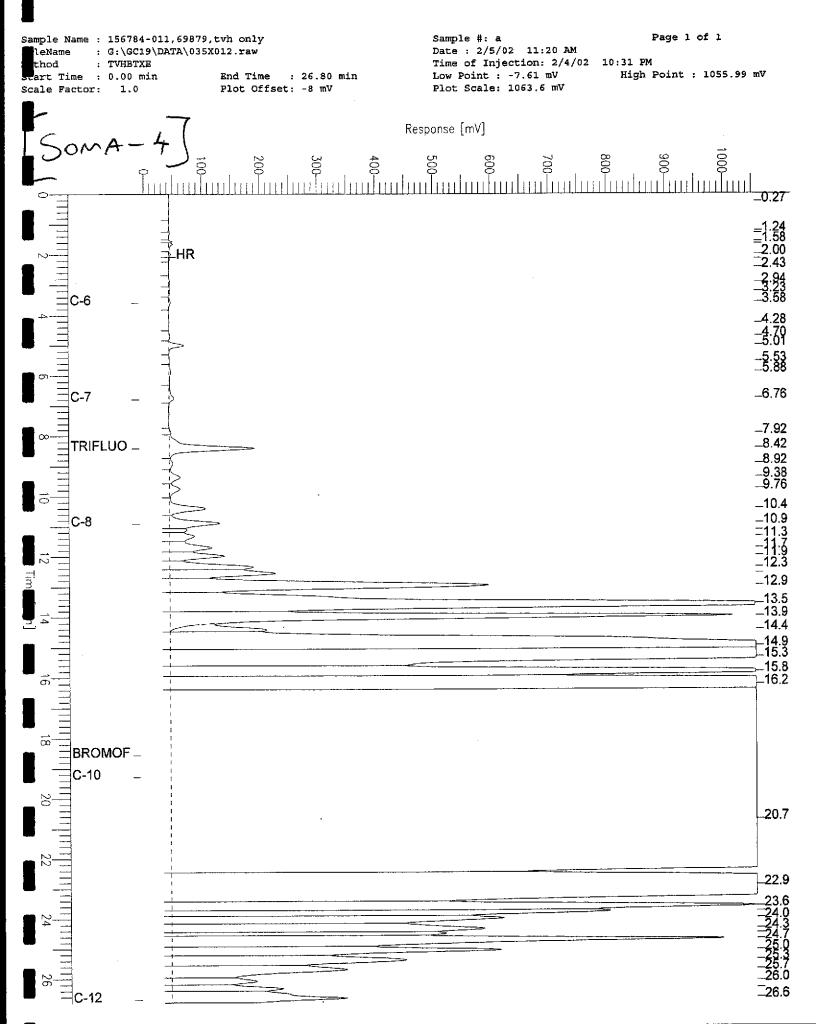
Time of Injection: 2/7/02 06:37 AM

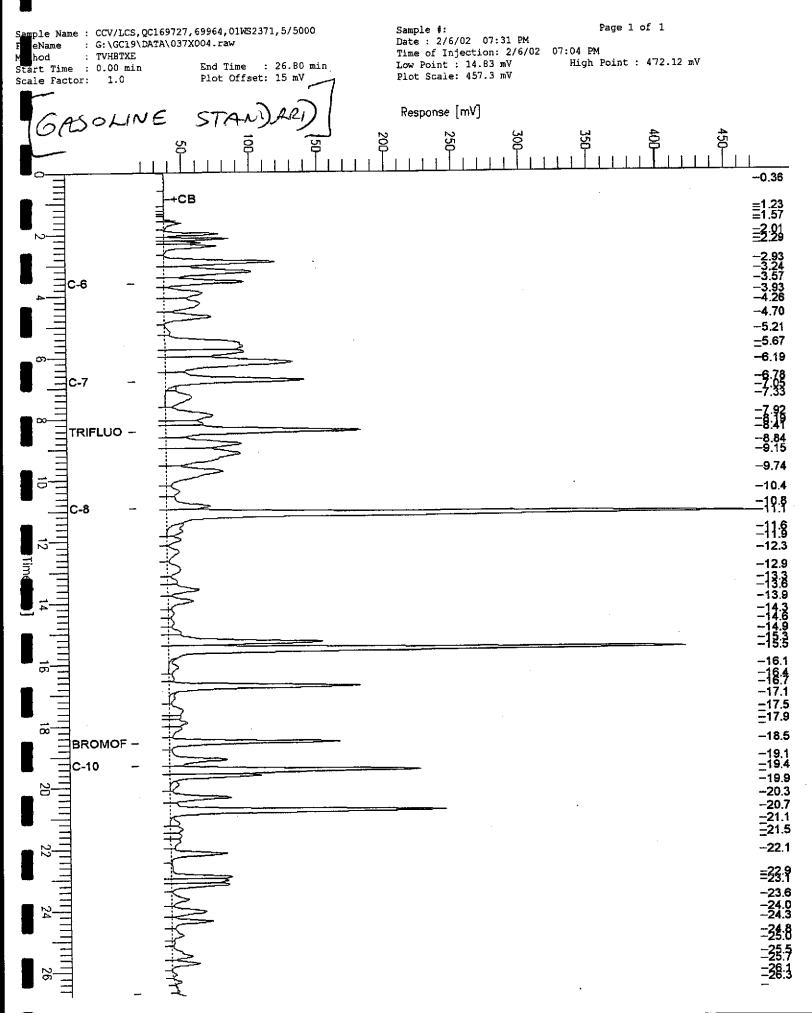
Low Point : 28.46 mV High Point: 288.05 mV

Plot Scale: 259.6 mV









Page 1 of 1

Sample Name : ccv, stodd, 69964, 01ws0137, 2.5/5000 Sample #: Date: 2/7/02 11:14 AM : G:\GC19\DATA\037X003.raw eName Time of Injection: 2/6/02 06:21 PM : TVHBTXE hod High Point: 278.50 mV Low Point : 23.03 mV rt Time : 0.00 min End Time : 26.80 min Scale Factor: 1.0 Plot Offset: 23 mV Plot Scale: 255.5 mV Response [mV] +¢B -1.04**≘1.48** +HF -3.56 -3.94 C-6 <u>-4.52</u> -5.68 -6.05 -6.40 -6.74 -7.29-8.41 TRIFLUO ---9.33 -9.77 -10.3C-8 -11.9-12.5 -12.9-13.5 -13.9 -14.6-15.1 -15.7 -16.1-16:4 -18.1 BROMOF -19.2 C-10 -21.2 _26.0



Gasoline by GC/FID CA LUFT Lab #: 156784 Location: Glovatorium SOMA Environmental Engineering Inc. Client: Prep: Analysis: EPA 5030B Project#: 2511 8015B(M) Matrix: 69964 Water Batch#: ug/L 1,000 Units: 01/31/02 Received: Diln Fac:

Field ID:

LFR-3

Type: Lab ID:

SAMPLE 156784-001 Sampled:

01/30/02

Analyzed:

02/06/02

	Result	RL.	
Gasoline C7-C12	67 Y	50	
Stoddard Solvent C7-C12	ND	50	

Surrogate	%RI	C Limits	
Trifluorotoluene (FID)	98	59-135	
Bromofluorobenzene (FID)	112	60-140	

Field ID:

MW-11 Type:

SAMPLE Lab ID: 156784-002 Sampled:

01/30/02

Analyzed:

02/06/02

Analyte	Result	~~~~ ````````````````````	
Gasoline C7-C12	71 Y	50	
Stoddard Solvent C7-C12	ND	50	

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	104	59-135	
Bromofluorobenzene (FID)	114	60-140	
		30 220	

Field ID:

Type:

GW-2SAMPLE

Lab ID: 156784-003 Sampled:

01/31/02

Analyzed:

02/06/02

Analyte	Result	RL	
Gasoline C7-C12	ND	50	*********
Stoddard Solvent C7-C12	ND	50	- 1

Surrogate Trifluorotoluene (FID) Bromofluorobenzene (FID)	%REC 109 108	Limits 59-135 60-140			
---	--------------------	----------------------------	--	--	--

*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard

Z= Sample exhibits unknown single peak or peaks

b= See narrative

ND= Not Detected

RL= Reporting Limit

LR= Response exceeds instrument's linear range

Page 1 of 4



Gasoline by GC/FID CA LUFT Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: Analysis: Batch#: 8015B(M) Matrix: Water 69964 ug/L Units: 01/31/02 Received: Diln Fac: 1.000

Field ID:

LFR-1

Type: Lab ID: SAMPLE 156784-004 Sampled:

Analyzed:

01/31/02 02/07/02

	Result	RI	
Gasoline C7-C12	270 Y Z	50	
Stoddard Solvent C7-C12	<u>150 Y Z</u>	50	

Surrogate	%REC	Limits	
Trifluorotoluene (FID)	99	59-135	
Bromofluorobenzene (FID)	110	60-140	

Field ID:

Lab ID:

GW-3 Type:

SAMPLE

156784-005

Sampled: Analyzed:

01/31/02 02/07/02

		RL	
Gasoline C7-C12	70 Y Z	50	
Stoddard Solvent C7-C12	ND ND	50	i

Surroque	%RE(
Trifluorotoluene (FID)	110	59-135	
Bromofluorobenzene (FID)	108	60-140	

Field ID:

GW-4 Type: Lab ID: SAMPLE

156784-006

Sampled:

01/31/02

Analyzed:

02/07/02

	Result	RT.	
Gasoline C7-C12	1,700 H Y	50	
Stoddard Solvent C7-C12	920	50	

Surrogate		
Trifluorotoluene (FID)	110 59-135	
Bromofluorobenzene (FID)	221 * >LR b 60-140]

*= Value outside of QC limits; see narrative

H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
Z= Sample exhibits unknown single peak or peaks

b= See narrative ND= Not Detected

RL= Reporting Limit

LR= Response exceeds instrument's linear range age 2 of 4



Gasoline by GC/FID CA LUFT Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. EPA 5030B Prep: Project#: 2511 8015B(M) Analysis: Matrix: Water Batch#: 69964 ug/L Units: 01/31/02 Received: Diln Fac: .000

Field ID: Type: Lab ID:

SOMA-1 SAMPLE

Sampled: Analyzed: 01/31/02 02/07/02

156784-007

Analyte Result RL Gasoline C7-C12 Stoddard Solvent 100 H Y 50 50 58

Surrogate %REC Limite Trifluorotoluene (FID) 103 59-135 Bromofluorobenzene (FID) 109 60-140

Field ID:

LFR-2

SAMPLE

Sampled: Analyzed: 01/31/02 02/07/02

Type: Lāb ID: 156784-008

Analyte Result Gasoline C7-C12 1,400 H Y 50 Stoddard Solvent C7-C12 760 50

Surrogate Limits Trifluorotoluene (FID) 113 59-135 Bromofluorobenzene (FID) 201

Field ID:

SOMA-3 SAMPLE

Sampled:

01/31/02

Type: Lāb ID:

156784-009

Analyzed:

02/07/02

Analyte Result Gasoline C7-C12 410 H Y 50 Stoddard Solvent C7-C12 230 50

Surrogate %REC Trifluorotoluene (FID) 106 59-135 Bromofluorobenzene (FID) 114 60-140

*= Value outside of QC limits; see narrative

H= Heavier hydrocarbons contributed to the quantitation Y= Sample exhibits fuel pattern which does not resemble standard

Z= Sample exhibits unknown single peak or peaks

b= See narrative ND= Not Detected

RL= Reporting Limit

LR= Response exceeds instrument's linear range

age 3 of 4



Gasoline by GC/FID CA LUFT Lab #: 156784 Location: Glovatorium Prep: Analysis: SOMA Environmental Engineering Inc. Client: **EPA 5030B** Project#: 8015B(M) 69964 Matrix: Water Batch#: 01/31/02 Units: ug/L Received: Diln Fac: 1.000

Field ID:

SOMA-2

Type: Lab ID:

SAMPLE

Sampled: Analyzed: 01/31/02 02/07/02

156784-010

Analyte
Gasoline C7-C12 Result RL.

2,400 H Y Stoddard Solvent C7-C12 ,300 50

Surrogate Trifluorotoluene (FID) Limite %REC 110 59-135 Bromofluorobenzene (FID) 166 60-140

Type: Lab ID:

BLANK QC169726 Analyzed:

02/06/02

Analyte Result RL Gasoline C7-C12 ND 50 Stoddard Solvent ND

Surrogate	%RE	C Limits	
Trifluorotoluene (FID)	98	59-135	
Bromofluorobenzene (FID)	94	60-140	

*= Value outside of QC limits; see narrative

H= Heavier hydrocarbons contributed to the quantitation Y= Sample exhibits fuel pattern which does not resemble standard

Z= Sample exhibits unknown single peak or peaks

b= See narrative

ND= Not Detected

RL= Reporting Limit

LR= Response exceeds instrument's linear range

Page 4 of 4



Benzene, Toluene, Ethylbenzene, Xylenes Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: Analysis: **EPA 5030B** Project#: 2511 EPA 8021B Water Matrix: Diln Fac: 1.000 Units: uq/L Received: 01/31/02

Field ID: Туре: Lab ID:

SOMA-2 SAMPLE 156784-010

Batch#: Sampled: Analyzed:

69893 01/31/02 02/05/02

Analyte Regulation 3.7 7.3 MTBE 2.0 Benzene 0.50 Toluene 0.50 43 21 C Ethylbenzene 0.50 m,p-Xylenes o-Xylene 33 0.50 50

eler kirje koja Surrogate 133 1<u>47</u> 56-142 55-149 Trifluorotoluene (PID) Bromofluorobenzene (PID)

Type: Lab ID:

BLANK QC169455 Batch#: Analyzed: 69893 02/04/02

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	i
o-Xylene	ND	0.50	

Surrogate 3:42(0) 44-4116 (3:22) 56-142 55-149 Trifluorotoluene (PID) 115 Bromofluorobenzene (PID)

ſype: ab ID: BLANK QC169752 Batch#: Analyzed: 69970 02/07/02

Analyte	Result	RL	
MTBE	ND	2.0	
Benzene	ND	0.50	
Toluene	ND	0.50	- 1
Ethylbenzene	ND	0.50	- 1
m,p-Xylenes	ND	0.50	
o-Xylene	ND	0.50	
			_

-10-00 Molecular (10-00 Molec	*REC	Litera Es	
Trifluorotoluene (PID)	96	56-142	
<u> Bromofluorobenzene (PID)</u>	97	55-149	

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

ND= Not Detected

RL= Reporting Limit Page 4 of 4



Benzene, Toluene, Ethylbenzene, Xylenes Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: EPA 5030B Project#: <u>Analysis:</u> EPA 8021B Matrix: Water Diln Fac: 1.000 Units: ug/L 01/31/02 Received:

Field ID: Type: Lab ID:

LFR-3 SAMPLE 156784-001 Batch#: Sampled: Analyzed:

69893 01/30/02 02/04/02

Analyse Result 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

Survocate RREC Limits Trifluorotoluene (PID) 125 56-142 Bromofluorobenzene (PID)

Field ID: Type: Lab ID:

MW-11 SAMPLE 156784-002 Batch#: Sampled: Analyzed:

69893 01/30/02 02/04/02

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

Surrogate SARC Limits Trifluorotoluene (PID) 125 56-142 Bromofluorobenzene (PID) 55-149

Field ID: l'ype :

Lab ID:

GW-2 SAMPLE 156784-003 Batch#: Sampled: Analyzed: 69893 01/31/02 02/05/02

Analyte Result MTBE ND 2.0 Benzene ND 0.50 Toluene ND0.50 Ethylbenzene ND 0.50 m,p-Xylenes o-Xylene ND 0.50

Surroqate RREC Limits 56-142 55-149 Trifluorotoluene (PID) 128 Bromofluorobenzene (PID) 130

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

ND= Not Detected

RL= Reporting Limit Page 1 of 4



Benzene, Toluene, Ethylbenzene, Kylenes Lab #: 156784 Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: Analysis: EPA 5030B Project#: **EPA 8021B** Matrix: Water 1.000 Diln Fac: ua/L Units: Received: 01/31/02

Field ID: Type: Lab ID:

LFR-1 SAMPLE 156784-004

Batch#: Sampled: Analyzed:

69893 01/31/02 02/05/02

MTBE 2.1 2.0 ND Benzene 0.50 Toluene 0.50 ND Ethylbenzene ND 0.50 m,p-Xylenes 0.50 0.50 ND o-Xylene ΝD

REC Limits Surrogate Trifluorotoluene (PID) 123 56-142 Bromofluorobenzene (PID) 131

Field ID: Type: Lab ID:

GW-3SAMPLE 156784-005 Batch#: Sampled: Analyzed:

69893 01/31/02 02/05/02

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

SPICE ISSUED Surrogate 125 130 Trifluorotoluene (PID) 56-142 Bromofluorobenzene (PID)

Field ID:

GW-4 SAMPLE Batch#:

69970

01/31/02 Type: Sampled: Lab ID: 156784-006 Analyzed: 02/07/02

Anauvte	Kesult	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	13	0.50
	· · · · · · · · · · · · · · · · · · ·	······································

Surrogate	*REC	Limits	C0000000000000000000000000000000000000
Trifluorotoluene (PID)	98	56-142	
Bromofluorobenzene (PID)	126	_55-149	

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

RL= Reporting Limit Page 2 of 4



Benzene, Toluene, Ethylbenzene, Xylenes 156784 Lab #: Location: Glovatorium Client: SOMA Environmental Engineering Inc. Prep: Analysis: EPA 5030B Project#: 2511 EPA 8021B Water Matrix: Diln Fac: Received: 1.000 01/31/02 Units: uq/L

Field ID: Туре: Lab ID:

SOMA-1 SAMPLE 156784-007

Batch#: Sampled: Analyzed: 69893 01/31/02 02/05/02

Analyte Result MTBE 2.0 100 Benzene 0.67 0.50 Toluene ИD 0.50 Ethylbenzene ND 0.50 m,p-Xylenes o-Xylene ND 0.50 ND 0.50

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

Field ID:

Type: Lab ID:

LFR-2 SAMPLE 156784-008 Batch#:

Sampled: Analyzed: 69893

01/31/02 02/05/02

Result MTBE 2.6 2.0 Benzene 0.92 C 0.50 Toluene ND 0.50 Ethylbenzene 42 C 0.50 m,p-Xylenes o-Xylene ND 0.50 25

Surrogate Trifluorotoluene (PID) 129 56-142 Bromofluorobenzene (PID) 171 55-149

Field ID: Type: Lab ID:

SOMA-3 SAMPLE 156784-009 Batch#: Sampled: Analyzed: 69893

01/31/02 02/05/02

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	*RI	C Limits	
T	rifluorotoluene (PID)	122	56-142	
. B	romofluorobenzene (PID)	130	55-149	

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

RL= Reporting Limit Page 3 of 4

Sample #:

Page 1 of 1

Sample Name : mss, 156784-001, 69964, tvh+stodd

: G:\GC19\DATA\037X006.raw

FileName

Date : 2/7/02 11:14 AM Method : TVHBTXE Time of Injection: 2/6/02 08:30 PM Start Time : 0.00 min End Time : 26.80 min Low Point : 29.82 mV High Point : 173.58 mV Scale Factor: 1.0 Plot Offset: 30 mV Plot Scale: 143.8 mV Response [mV] +CB =1.23 =1.58 =2.76 =3.11 C-6 -3.58 -4.02<u>-4.42</u> +HF 三3:48 C-7 -6.79 -7:28 TRIFLUO --8.41 -9.42=9.80 -10.5C-8 =11:1 -15.5-16.6 -18.2 -18.5 BROMOF -C-10 _19.2 -20.7 -21,5 -22.1 -22.7 -23.0 -23.7 ~24.3 <u>-24.8</u> _25.4 =26.1 =26.5

Sample Name : 156784-002,69954,tvh+stodd FileName

: G:\GC19\DATA\037X009.raw

: TVHBTXE Method

Start Time : 0.00 min Scale Factor: 1.0

: 26.80 min End Time Plot Offset: 33 mV

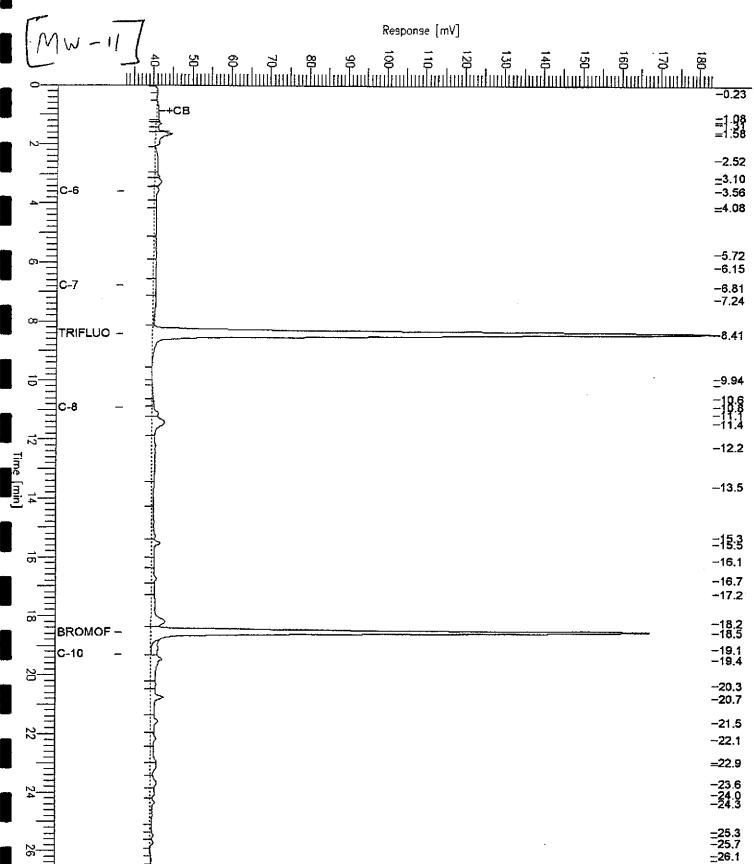
Sample #:

Page 1 of 1 Date: 2/6/02 11:07 PM

Time of Injection: 2/6/02 10:40 PM Low Point: 32.54 mV High P

Plot Scale: 151.5 mV

High Point : 184.00 mV



Sample #:

Page 1 of 1

Sample Name: 156784-004,69964,tvh+stodd

: G:\GC19\DATA\037X011.raw FileName Date: 2/7/02 12:34 AM Method : TVHBTXE Time of Injection: 2/7/02 12:07 AM Start Time : 0.00 min Low Point : 25.54 mV Plot Scale: 291.0 mV End Time : 26.80 min High Point : 316.53 mV Scale Factor: 1.0 Plot Offset: 26 mV Response [mV] -CB =1.24 =1.58 -2.56_3,11 C-6 -3.58-4.99-6.35 -7.32TRIFLUO --9.50-9.95 -10.2 =10.8-11.4 ± 12.3 -12.7 -13.5-15.5-16.1 -16.6-17.6-18.2 -18.5 BROMOF -C-10 ~19,6 -20.1 -20.5 -21.6 -23.1 -23.7 -24.3**=25:**3

Sample Name: 156784-005,69964,tvh+stodd FileName

: G:\GC19\DATA\037X012.raw

Method : TVHBTXE

Start Time : 0.00 min Scale Factor: 1.0

End Time : 26.80 min

Plot Offset: 33 mV

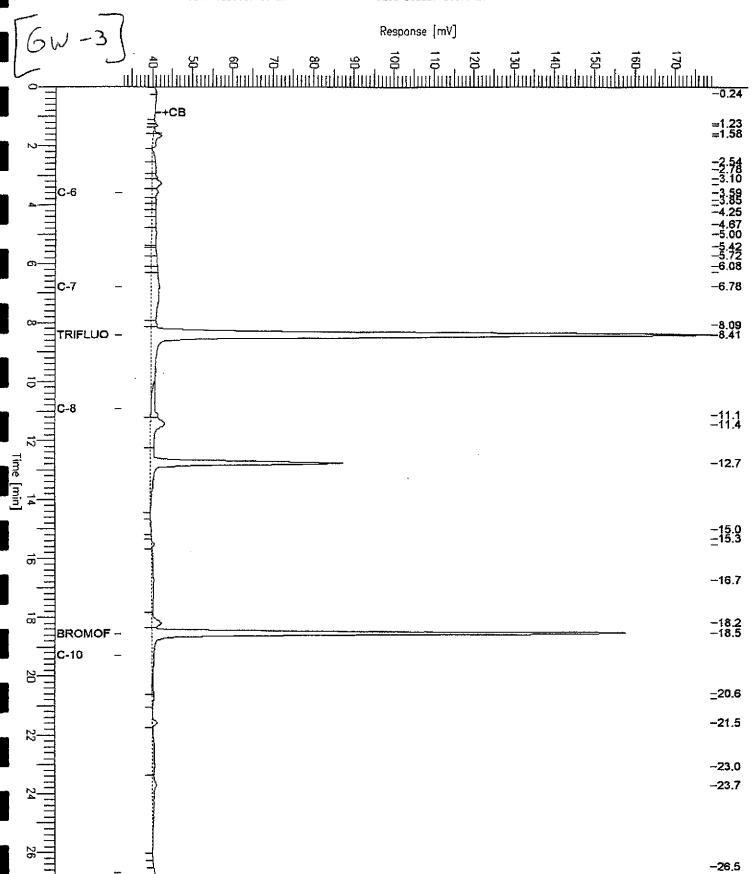
Sample #: Date : 2/7/02 01:17 AM

Time of Injection: 2/7/02 12:50 AM Low Point: 32.57 mV High P

High Point : 179,31 mV

Page 1 of 1

Plot Scale: 146.7 mV



Sample #:

Page 1 of 1

-26.4

Sample Name : 156784~006,69964,tvh+stodd

FileName : G:\GC19\DATA\037X013.raw Date: 2/7/02 11:14 AM Time of Injection: 2/7/02 01:33 AM Method : TVHBTXE Start Time : 0.00 min End Time : 26.80 mln Low Point : 31.59 mV High Point : 216.62 mV Scale Factor: Plot Offset: 32 mV 1.0 Plot Scale: 185.0 mV Response [mV] -0.29 +CB =1.13 =1.58 -2.12 -2.42 C-6 <u>-</u>3.11 -3.57-4.69 -5.00 -5.70 -6.05 =6.46 -6.78 -7.06 -7.89TRIFLUO --8.41-8.90-9.74-10.4C-8 -10.9 -11.3-11.7-12.5 -12.9 _13.3 -13.9 -14.6 -14.9 -15.7 -16.4 -16.9 -17.4 -17.8 -18.1 -18.5 -18.8 BROMOF -C-10 -19.8 -20.1 -20.4 _20.9 _21.1 _21.5 -22.0 -23:6 -23.5 -24.0 -24.3 -24.8 -25.3-25.7-26.1

Sample Name : 156784-007,69964,tvh+stodd Sample #: Page 1 of 1 : G:\GC19\DATA\037X018.raw FileName Date: 2/7/02 05:37 AM Method : TVHBTXE Time of Injection: 2/7/02 05:10 AM Start Time : 0.00 min End Time : 26.80 min Low Point : 33.15 mV High Point: 178.24 mV Scale Factor: 1.0 Plot Offset: 33 mV Plot Scale: 145.1 mV Response [mV] ~0.25 +CB =1.23-1.66 -2.00 -2.45-2.91 -3.29C-6 -3.94<u>-4.82</u> -5.70-6.35 C-7 -6.79 TRIFLUO --8.41 C-8 -10.8 -11.1 -12.7**-13:2** -14.7 -15.2 -15.5 -16.1 =16.7 -17.1 =17.4 -18.2 -18.5 BROMOF --19.0C-10 <u>--</u>19.4 -20.1 **_20.6** -21.5 -22.0 -22.7 -23.0 -23.6 <u>=34:8</u> -25.3 -25.7 -26.1 -26.5

Sample Name : 156784-008,69964,tvh+stodd

: G:\GC19\DATA\037X019.raw FileName

Method : TVHBTXE Start Time : 0.00 min

End Time : 26.80 min Scale Factor: 1.0

Plot Offset: 32 mV

Sample #:

Date: 2/7/02 11:14 AM

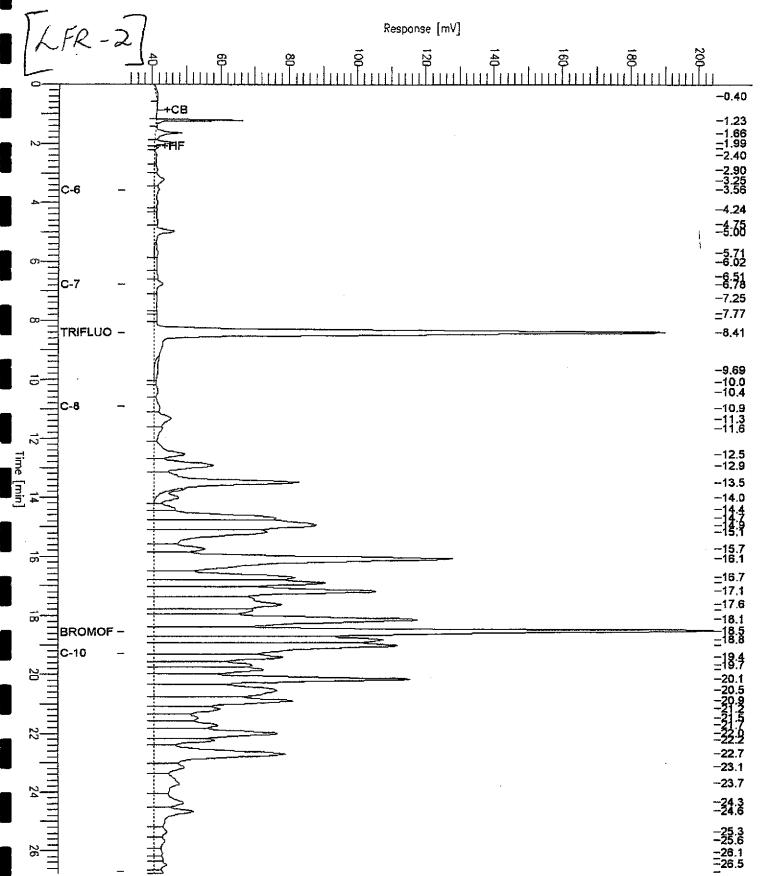
Time of Injection: 2/7/02 05:53 AM

Low Point : 32.36 mV

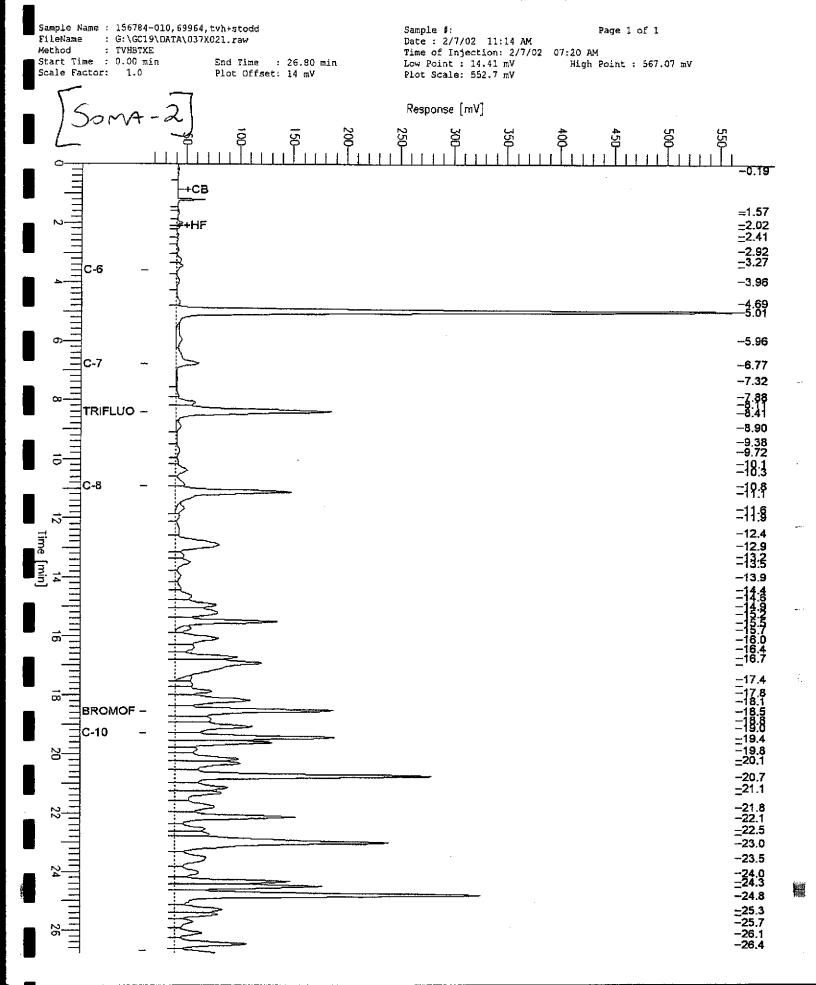
High Point : 205.14 mV

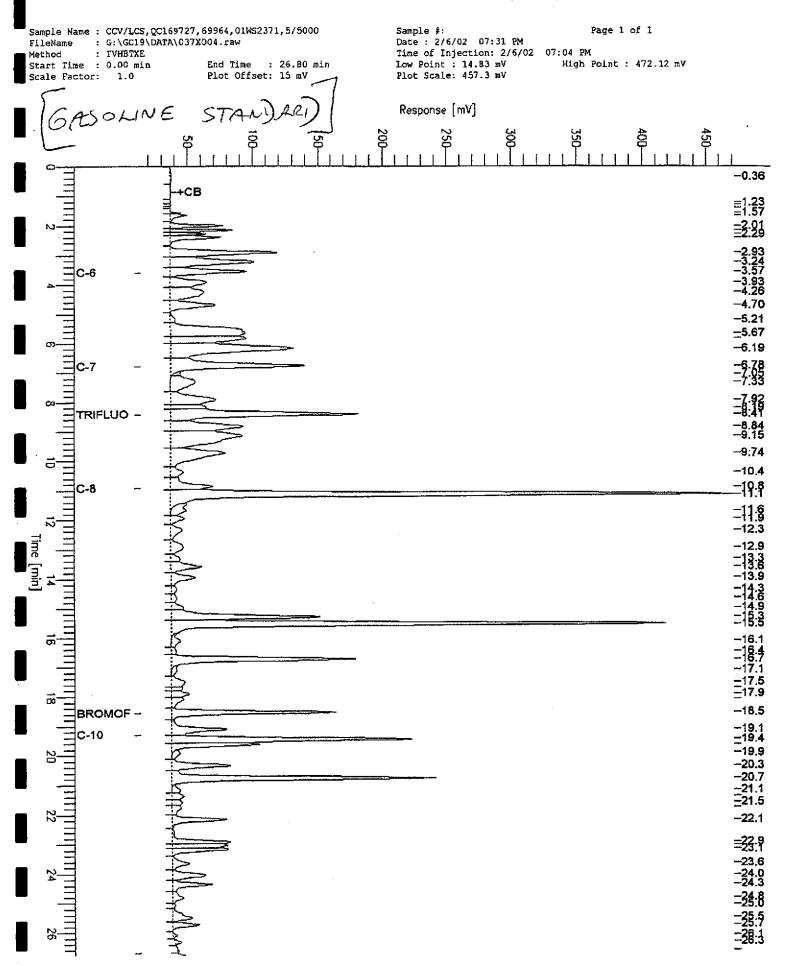
Page 1 of 1

Plot Scale: 172.8 mV



Sample Name : 156784-009,69964,tvh+stodd Sample #: Page 1 of 1 : G:\GC19\DATA\037X020.raw FileName Date: 2/7/02 11:14 AM Method : TVHBTXE Time of Injection: 2/7/02 06:37 AM Start Time : 0.00 min End Time : 26.80 min Low Point : 28.46 mV High Point : 288.05 mV Scale Factor: 1.0 Plot Offset: 28 mV Plot Scale: 259.6 mV Response [mV] +CB ≘1.23 −1.66 =2.02 -2.40 -2.75 -3.29C-6 -3.94 _2:37 -5.68 C-7 -6.78 -7.25-8.09 -8.40 TRIFLUO --9.35 -9.72 -10.0 -10.3 C-8 _13.2 -13:2 BROMOF -_19,4 -19.8 -20.1 -20.7 =21.1 -21.7 -22.1_22.5 -23.0-23.5 -24.0 -24.3 -24.8-25.3 -25.7 -26.1 -26.4





Sample #:

Page 1 of 1

;::

ample Name : ccv, stodd, 69964, 01ws0137, 2.5/5000

Date : 2/7/02 11:14 AM : G:\GC19\DATA\037X003.raw FileName : TVHBTXE Time of Injection: 2/6/02 06:21 PM Method tart Time : 0.00 min End Time : 26.80 min Low Point: 23.03 mV High Point : 278.50 mV cale Factor: 1.0 Plot Offset: 23 mV Plot Scale: 255.5 mV Response [mV] +CB -1.04**≘1.48** -2.34 -2.59 =2.91 -3.56 -3.94 C-6 _4.52 -5.68 -6.05 -6.40 -6.74 C-7 -7.29 TRIFLUO --8.41-9.33-9.77 -10.3-11.9-12.5-12.9-13.5 -13.9 -14.6-15.1 -15.7 -16.1 =16:4 =17:1 =17:4 -18.1 BROMOF -19.2 C-10 -19.7 -20.0 =28:5 -21.2-22.7 -23.0 -23.5 -23.9 -24.2 -24.6 -25.0 -25.6 _26.0

Sample #: a

Page 1 of 1

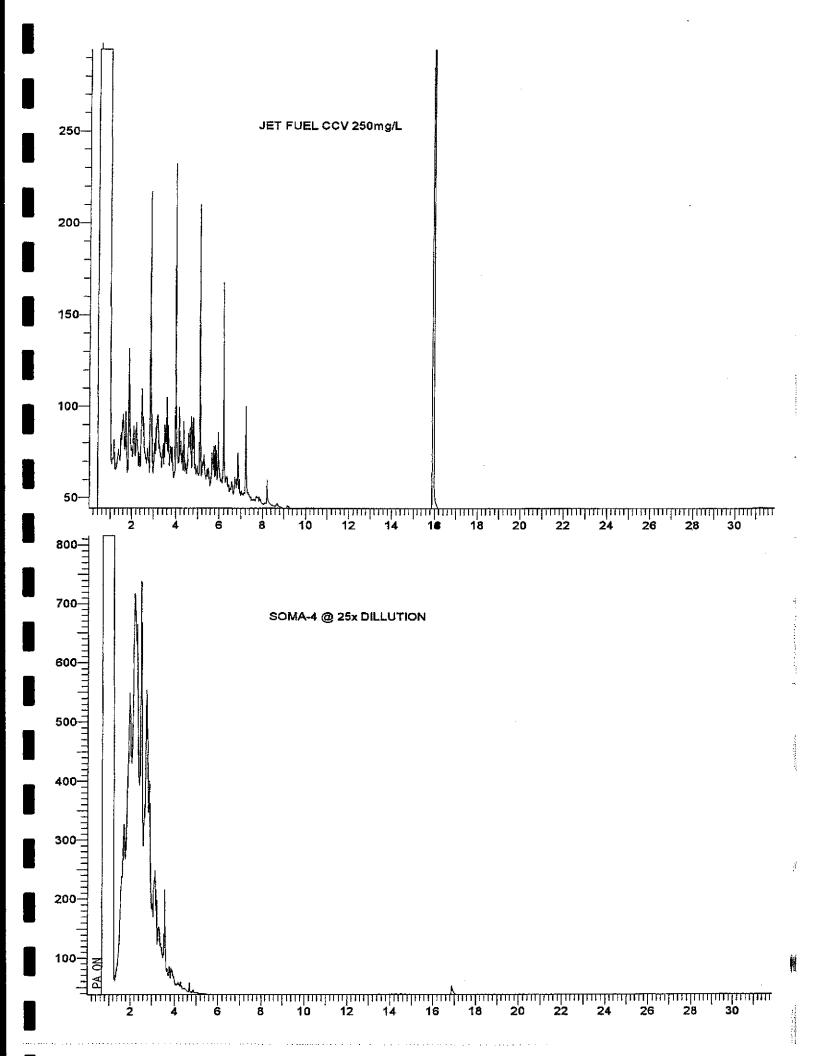
. .

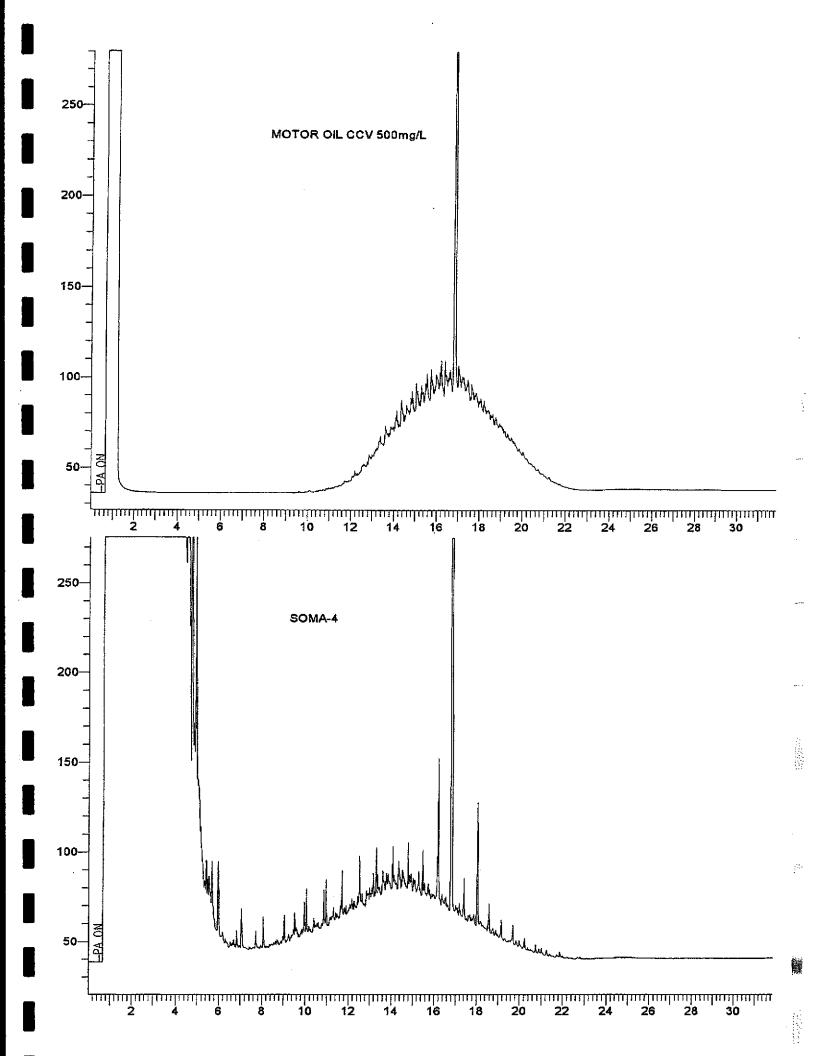
Sample Name : 156784-011,69879,tvh only

FileName

: G:\GC19\DATA\035X012.raw

Date : 2/5/02 11:20 AM Method : TVHBTXE Time of Injection: 2/4/02 10:31 PM Start Time : 0.00 min End Time : 26.80 min Low Point : -7.61 mV High Point : 1055.99 mV Scale Factor: 1.0 Plot Offset: -8 mV Plot Scale: 1063.6 mV Response [mV] ⊒-HR C-6 C-7 -6.76 -7.92TRIFLUO _ _8.42 _8.92 _9.38 _9.76 -10.4C-8 _10.9 =11.3 -11.7 -12.3 _12.9 _13.5 _13.9 $_{-14.4}$ _14.9 _15.3 ...15.8 |∟16.2 BROMOF _ C-10 -20,7 22.9 -26.6







Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

Page 1 of 11

P0202032 Order #: Report Date: 02/18/02

Client Proj Name:

Client Proj #:

Oakland CA 2511 Oakland CA 2511

San Ramon, CA 94583

Clebbie Halle

Sample Identification

Lab Sample # Client Sample ID

SOMA-2

P0202032-01 LFR-3 02032-02 MW-11 02032-03 GW-2 P0202032-04 LFR-1 102032-05 GW-3 02032-06 GW-4 P0202032-07 SOMA-1 P0202032-08 LFR-2 02032-09 SOMA-3 02032-10

Approved By:

CHAIN - OF - CUSTODY RECORD

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i. Location	: Paklear	i b					*							Invoice to :		
i. Number:	: Oaklan 2511		<u>-</u>				-	1						Som	harite s	100 May 2000
one # :	925-244-	Llow	Fax	#: 9	2.5-2	44-6	- 5 5 8			•] [من المعلق المن المعلق	200 J. 200	to 17
	<u> </u>					4	er se g æ	<i>1</i>		1 1		1		 -		
ınler's sion	nature:	 Desarro	and the same of th	ope.		ं स् कं°	· · ·	0				1 1				
pice a sign		27 2	والمستوانية والمتحدد	or the second			4	Whane]				Cooler ID	Leton	r Temp.
nple ID	Sample Descrip		Date	Time	Comp.	and the	/ Cont.								<u>.</u>	
	water		1	4446	Comp.	4.	er ar warren ja					╁		Ren	arka .	
7-3		r	1/2/1/2	1340						╁┼┼		╂╌╌┼		Š.		
w-/1		÷		1605							-	+		<u> </u>		
V-2		· · · · · · · · · · · · · · · · · · ·	-	0830		3	· · · ·				\dashv	1-1	_	:	<u>, , , , , , , , , , , , , , , , , , , </u>	
2-1			13/104	0905.				\vdash				+				
10-3			1-1-	1000					1	 		╁╌╁			<u> </u>	
W-V				1030				7			+-	1		:		
MA-1	A. A. A. A. A. A. A. A. A. A. A. A. A. A			12/5						 	_	1				
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MA 2			 	1600		-					+	1				· · · · · · · · · · · · · · · · · · ·
						<u> </u>						 		· · · · · · · · · · · · · · · · · · ·		
			<u> </u>		1	I	1			<u> </u>		 _			,	7m
	111 Janu Sa	Company	: A EW	S. Soft State	Date:	Time:	Received h	y . ∃				Comp	any :		Date:	Time :
equished by:					Date :	Time:	Received h		<u>, 1. (), 3</u>	<u></u>		Сопъ			Date :	ne .
	7	Company	2			T	I TOTAL PARTY IN	<i>y</i> •	1			I comb	ану:		Date:	Time :
nquished by :		Company	•									1				

Sample of the second

Page 2 of 11

Order #: P0202032

Report Date: 02/18/02

Client Proj Name:

Oakland CA 2511

Client Proj #:

Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

LER-3

Matrix

Sampled Date/Time

Lab Sample #:

Received

P0202032-01

Water

30 Jan. 02 13:40

	 				000	. 02
Analyte(s)	 Result	PQL	Units	Method #	Analyst	Analysis Date
RickAnalysis Water						
Methane	7.2	0.015	ug/Ĺ	AM20GAX	pd:	2/14/02

Page 3 of 11

Order #: P0202032

Report Date: 02/18/02

Client Proj Name: Client Proj #:

Oakland CA 2511 Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive Suite 203

San Ramon, CA 94583

Sample Description M**S**/-11

<u>Matrix</u>

Sampled Date/Time

Lab Sample #:

Received

P0202032-02

Water

30 Jan. 02 16:05

			- III 02 10.00	04 1 GD. UZ
Result	PQL	Units	Method #	Analyst Analysis Date
			<u> </u>	
7.7	0.015	ug/L	AM20GAX	pd 2/14/02
			Result PQL Units	

Page 4 of 11

Order #: P0202032

Client Proj Name:

Report Date: 02/18/02

Oakland CA 2511

Client Proj#:

Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive Suite 203

San Ramon, CA 94583

Sample Description

4/-2

Matrix Water

Sampled Date/Time

Lab Sample #:

Received

P0202032-03

30 Jan. 02 8:30

			 	· · · · · · · · · · · · · · · · · · ·	
Analyte(s)	Result	PQL	Units	Method #	Analyst Analysis Date
R is kAnalysis		·			
Veter					
Methane	6.9	0.015	ug/L	AM20GAX	pd 2/14/02
_			_		· · · · · · · · · · · · · · · · · · ·

Page 5 of 11

Order #: P0202032

Report Date: 02/18/02

Client Proj Name:

Oakland CA 2511

Client Proj #:

Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

Matrix

Sampled Date/Time

Lab Sample #:

Received

P0202032-04

R-1

Water

30 Jan. 02 9:05

					011 OD. 02	
Analyte(s)	Result	PQL	Units	Method #	Analyst Analysis D	ate
skAnalysis		······································				
Valter Methane	0.0					
Methane	6.2	0.015	ug/L	AM20GAX	pd 2/14/02	

Page 6 of 11

P0202032 Order #:

Report Date:

02/18/02

Client Proj Name:

Oakland CA 2511

Client Proj #:

Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

<u>Matrix</u>

Sampled Date/Time

Lab Sample #:

Received

P0202032-05

V-3

Water

30 Jan. 02 10:00

					0 1 1 OD. OZ.
Analyte(s)	Result	PQL	Units	Method #	Analyst Analysis Date
PiskAnalysis Vater					
Methane	8.1	0.015	ug/L	AM20GAX	pd 2/14/02

Page 7 of 11

P0202032 Order #:

Report Date:

02/18/02

Client Proj Name: Client Proj #:

ug/L

Oakland CA 2511 Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

<u>Matrix</u>

Sampled Date/Time

Lab Sample #:

Received

pd

P0202032-06

Water

30 Jan. 02 10:30

AM20GAX

04 Feb. 02

2/14/02

Analyte(s) Result PQL Units Method # **Analyst Analysis Date** skAnalysis ter Methane 3500

0.015

Page 8 of 11

Order #: P0202032 Report Date: 02/18/02

Client Proj Name: Oakland CA 2511

Client Proj #:

Oakland CA 2511

Client Name: Soma Environmental Engineering

Lab Sample #:

P0202032-07

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

MA-1

<u>Matrix</u> Water

Sampled Date/Time

Received

30 Jan. 02 12:15

Analyte(s)	Result	PQL	Units	Method #	Analyst Anal	ysis Date
RakAnalysis						
Water Methane	580	0.015	ug/L	AM20GAX	pd 2/14	/O2

Page 9 of 11

P0202032 Order #:

Report Date:

02/18/02

Client Proj Name:

Oakland CA 2511.

Client Proj #:

Oakland CA 2511

lient Name: Soma Environmental Engineering

Contact: Mansour Sepher

Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

<u>Matrix</u>

Sampled Date/Time

Lab Sample #:

Received

P0202032-08

LFE-2

Water

30 Jan. 02 13:30

Analyte(s)	Result	PQL	Units	Method #	Analys	t Analysis Date
RiskAnalysis Wer		· · · · · · · · · · · · · · · · · · ·			<u> </u>	
Water Methane	11000	0,015	ug/L	AM20GAX	pd	2/14/02
in the second se	11000	0.015	ug/L	AMZOGAX	pu	2/14/02

Page 10 of 11

Order #: P0202032

Report Date: 02/18/02

Client Proj Name: Client Proj #:

Oakland CA 2511 Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

MA-3

Matrix

Sampled Date/Time

Lab Sample #:

Received

P0202032-09

Water

30 Jan. 02 14:35 04 Feb. 02

Analyte(s)	Result	PQL.	Units	Method #	Analyst Analysis Date
RiskAnalysis Water					
Methane	460	0.015	ug/L	AM20GAX	pd 2/14/02

Page 11 of 11

Order #: P0202032

Report Date: 02/18/02

Client Proj Name:

Oakland CA 2511

Client Proj#:

Oakland CA 2511

Client Name: Soma Environmental Engineering

Contact: Mansour Sepher Address: 2680 Bishop Drive

Suite 203

San Ramon, CA 94583

Sample Description

Matrix

Sampled Date/Time

Lab Sample #:

Received

P0202032-10

MA-2

Water

30 Jan. 02 16:00

Analyte(s)	Result	PQL	Units	Method #	Analyst Analysis Date
RokAnalysis Weier					
Methane	13000	0.015	ug/L	AM20GAX	pd 2/14/02

APPENDIX B

Field Notes, Field Measured Physical and Chemical Parameter Values and DO Correction Tables

								•
	Project #:	2511	Address:	2815 E	Broadway	Date:	1/30	102
	Project Name:	Glovatorium	————	Oakla	and, CA	Sampler:		laser Pakrou
W-110		millio di		~				Tony Perini
Well/Sample ID: Mw-11		84.13 A	Purge:	Ø _{Pum}	٠	er		
Dup:	Well Depth:	19 ft	Sample:	Pum	p 🗵 Baile	∋r		
Blank:	DTW:	8.73 H	Odor:	₽ N	o 🗀 Ye	s Describe		
/	Water Table Elev.:		'' -	N I		s Describe		
Well Diameter: 2 かん	Height of Water:	10.27 f	Color:	IZ N	o □ Ye	s Describe		
(1/5)		/		· • · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
Laboratory: Curfis	+ Tomph			→		•		
Delivery:	2, Deliver	ed by son	NA ENVE	No				
Analysis/preservative;								
Sulfide:	1 Poly w/ Zn(C ₂ H ₃ O ₂) ₂ + NAOH	Disolved H ₂ :		1 Septum Vial		Alk, Cl-, Sulfate:	1 unpreserved poly L
Total Iron, Manganese:	1 HNO ₃ preserved p	oly	Dissolved Perm	Gases:	2 Unpreserved	VOAs	, =	r anti-ossived poly L
8260 (8010 list) & MtBE &	•	•	Cation & Anion v	v/ Nitrate & Nitrite		and 1 H2SO4 Poly	•	
BTEX & TPH-g & TPH-ss;	6 VOAs w/ HCL		Ferrous Iron:	Transco a marco.	1 HCI Pres. Poly			
					Thomas on			
SE TIME OF THE DIEW.	Vojujiji≣	SPATIENTRO PA	0(9)N(9)(U\$/(cm))	(100) (mc(b)	= € GIRP#(m\Vi)	- indication and (see in	70.	- ramina
Stabilization fusi successive aparem	jalete s tyllija			47. 10% PF				COMMENTS
3:41 PM 5	tarter p	V97719	1 13/0/2	neo-			= 0.5 24 0 US 10 3 S	F
3:43Pm	0.15	19.0	1090	6.2	188	* 6	61	<u>, , , , , , , , , , , , , , , , , , , </u>
3:47 PM	0,40	18,9	1090	5.1	193		6.6	
3,52 PM	1.0	18.5	1080	4.9	198	16	6.6	
31570M	2.2	18.3	1.090	5.0	205	30	6.6	
400	3.3	18.5	1.090	4.9	218	45	6,6	
469 cm	Sample		1 2 0 10		210	/3	6.6	

Result	Herralls Item	i i i i i i i i i i i i i i i i i i i	l (βμιεχίου)	Nitrite C	Silliato	Elisselve Mandane
4:05	00	୍ର ୬ <u>ଟ</u> ୍ର	2.8	0,036	79	0.0
				1		
Dilution:	<u> </u>			·		
Comments:						

Downhale D.O 4.89 [+ Pm)

Project #:	2511	Address:	2815 E	roadway	Date:			102-113	1/02
Project Nan	ne: Glovatorium		Oakla	and, CA	Sample	er:		laser Pakrou	
Well/Sample ID: 6W-2								Tony Perini	
106 El	EV: 79-14+	Purge:	. 🕡 Pum		Bailer			- · · · · · · · · · · · · · · · · · · ·	
Dup: Well Depth:	20 4	Sample:	□ _{Pumj}		Bailer		-		
Blank: DTW:	9-37 ft	Odor:	⊡ N	, D	Yes	Describe	•		
Purge Volume: 0.5 6AL Water Table	Elev.: 69.77 H	` Sheen:	Ø No	, D	Yes	Describe			
Well Diameter: 3/4 Pred Height of W.	4 44	Color:	Ø No	,	Yes	Describe			
Laboratory: Cirt 55 & Tom	aptions, L+D			·					
		Lu Cina	_	•					
Analysis/preservative:	es off at LAB.	by somm	<u>-</u>						
1	(C ₂ H ₃ O ₂) ₂ + NAOH	Disolved H ₂ :		40 4 3				•	1
Total Iron, Manganese: 1 HNO ₃ presi		_	_	1 Septum V		es.	Alk, CI-, Suifate:	1 unpreserved poly	y L
	егина роју	Dissolved Perm		2 Unpresen	•				- 1
8260 (8010 list) & MtBE &			w/ Nitrate & Nitrite:	1 Unpres. P	oly and 1 H25	O4 Poly			
BTEX & TPH-g & TPH-ss; 6 VOAs w/ H	CL	Ferrous Iron:		1 HCI Pres.	Poly			-	· [.
TIME DEW VOLUK		e (e.e)Nje)(jie)/em)	4 <u>0</u> (0)(1)(1)(4))/	e folkley(m	vi - 110]ets[[OLITÄ) Yatlo	es la militaria	GOMMENTS	
Statification is superstyred an incide with in-			<i>ij,</i> [6]/ ₂ .	* */ 10 m	1	VIJOP.	ATT 1000 PROCESS AND THE PARTY OF THE PARTY		
	ens of Mg								
3:06 0.10	1 /17.8	713	4.3	169		/	7.0		
3:08 0.15	17.4	683	7.7	169	•	9	6.9		
3:11 0.25	5 17.6	643	4.0	173		2	6.9		
3:14 0.5		797	2.8	179		7	6.7		
3.16 PRI				<u> </u>		<u> </u>	4.1	·	
1/31/02 0830 SAMPLE	70								
								 	

10 10	V 0 0	ESSENTIAL MANAGEMENT	A PART NITIBLE	Niff(E	Sa-Sulfate as a	Manganesi
5.30 1/31	V-36	1.05	₽ ; 9 ,	0.013	45	0.0
·						
Dilution:	<u> </u>	<u> </u>			,	
Comments:		···				

	Project#:	2511	Address:	2815 B	roadway	_Date:	1/301	loz - 1/31/02
	Project Name:	Glovatorium		Oakla	nd, CA	_Sampler:	N	laser Pakrou
Well/Sample ID: 6W-3		0 01		- ∕				Tony Perini
	_ /	77.92-Ct	Purge:	Ø Pump		r ·		•
Dup:	Well Depth:	20 ft.	Sample:	Pump	•	•		
Blank:	_DTW:	9.64 ft	Odor:	l⊠ No		Describe:	:	
Purge Volume: 0.60	Water Table Elev.:	68.28 ft	Sheen:	EZ No	Yes	Describe:	:	
Well Diameter: 3/4 mcl	Height of Water:	10.36 ft	Color:	© No	Yes	Describe:	·	
Laboratory: Curtis	& Tompkin	's Lto						
Delivery: 1/3//02		off at LAB	by Som	<i>'</i>		•		
Analysis/preservative:				'				
Sulfide:	1 Poly w/ Zn(C ₂ H ₃ O ₂)) ₂ + NAOH	Disolved H ₂ :		1 Septum Vial		Alk Cl. Sulfato	1 unpreserved poly L
Total Iron, Manganese:	1 HNO ₃ preserved po	oly	Dissolved Perm (Gases:	2 Unpreserved V	OAs	ring or a condition	t dubtaserved boly r
8260 (8010 list) & M(BE &				v/ Nitrate & Nitrite:	-			
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL		Ferrous Iron:		1 HCl Pres. Poly	•		·
a MME south	- PARTEUME SEEN	a stanka(as)	Zeroklavneske V	:40198(1010(84)	and the second	TibiRējipjiev (Krit)).		
Stabilization (Calaure sylvenoria)					《西西西·万里里》	10 (10 (10 (10 (10 (10 (10 (10 (10 (10 (COMMENTS
· · · · · · · · · · · · · · · · · · ·		orping wel	<i>N</i>					T
1435	0.05	18.2	5-45	5.2	128	17	6.9	<u> </u>
1437	0,10	17.9	479	4.6	152	/2	6.7	
1440	0,20	18	495	3.9	126	24	6.7	
1445	<u> </u>						000	
	0.60		593	77	162	37	67	1
		18.4	593	3.7	163	33	6.7	
1446 E	0.60		593	3.7	163	33	6.7	

Result	Figre (18) (19)	arei el II degra	Nitrate se se	Nimit	Spirate	Dissolved Manganese
A.32 (1.71	6.6	1019	1.3	V. 014	52	0.2
Dilution:	•					
Comments:						<u></u>

TO VEHICLE	Project #:	2511	Address:	2815 B	roadway	Date:	1/30	102-1/31/0
	Project Name:	Glovatorium	_	Oakla	nd, CA	- Sampler:		aser Pakrou
· · · · · · · · · · · · · · · · · · ·				_		_		Tony Perini
Well/Sample ID: 6W-4	- TOL ELEV:	82,37 ft	_ Purge;	Pump	p 🗆 Bailer	۲.		
Dup:	Well Depth:	12 ft	Sample:	O Pump	/	-		
Blank:	_DTW:	7.54 CH	 Odor:	₽ No	yes	Describe	:	4
Purge Volume: 0.9 GAL	Water Table Elev:	74.83 C+	Sheen:	□ No	O Yes	Describe:	:	
Well Diameter: 3/4 inch	Height of Water:	4.46 Ct	Color:	II No	Yės			
Laboratory: Ciry 475	& Tompk	ms Lto	***************************************			· ·		
Delivery: 1/31/02		Et at LAB	bu SomA			·		
Analysis/preservative:			7	•			•	
Sulfide:	1 Poly w/ Zn(C ₂ H ₃ O ₂)	2 + NAOH	Disolved H ₂ :		1 Septum Vial		Alk, Ci-, Sulfate:	1 unpreserved poly L
Total Iron, Manganese:	1 HNO ₃ preserved po	ply	Dissolved Perm	Gases:	2 Unpreserved V	OAs		- supressived pery 2
8260 (8010 list) & MtBE &			Cation & Anion v	v/ Nitrate & Nitrite:	1 Unpres. Poly a	nd 1 H2SO4 Poly		
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL		Ferrous Iron:		1 HCl Pres. Poly			- -
SOUTIME OF THE DIW	VOJEDNIE Z	naMp(Na)	e tetelMestustam)	्राविश्वात्वात्र	GRP (mV)		Tilat	e COMMENTS
Steftifizational Associations (vegetation	ialia savilajio					o de la companya de l		Service of the servic
4:45 star	Ko rum	omy wel	<i>X</i>					
4:48	0.05	12.3	411	3.3	-96	710	6.9	,
4:51	0.10	12.1	409	1.9	-90	250	6-7	
4854	0.13	12	415	1.5	-73	14	6.6	
1:59	0,20	12	432	12	-65	0	6.5	
5:06	0,45	11.9	436	1.1	-70	0	6.5	
5:13	0.90	1.2	414	0.9	-91	22	6.5	
1								
1/31/02 1030	Samples							

(Republic	lifemoli alioni	a Josephona	Niffate at 1	Nine	3 Sulfate	Dissolved Manganese
10:30 1131	8-0	12.7	0-0	0.010	Q - 0	0-8
	······					
Dilution:					-	
Comments:						
			(Results in mg/L)			<u> </u>

	Project #:	2511	_Address:		2815 Broa	dway	Date:	1/31/02
	Project Name:	Glovatorium	_		Oakland,	CA	Sampler:	Naser Pakrou
	in the second							Tony Perini
Well/Sample ID:	LFR-1 TOU ELEV:	79.97 Et	Purge:		Pump	Baile	er	
Dup:	Well Depth:	19 Ft	Sample:		Pump	⊠ _{Baile}	з г	
Blank:	DTW:	9.41.4	Odor:		No	F Ye	s Describe:	
Purge Volume:	3.5 GAL Water Table Elev.:	70.56 Ct	Sheen:		ß No	□ _{Ye}	es Describe:	
Well Diameter:	2 77th Height of Water:	9.59ft	_Color:		No No	□ Ye	s Describe:	
		•						

Curtis & Tomptons, Laboratory: off at LHB by somA Delivery:

Analysis/preservative:

Sulfide:

1 Poly w/ Zn(C₂H₃O₂)₂ + NAOH

Disolved H₂:

1 Septum Vial

Alk, Cl-, Sulfate: 1 unpreserved poty L

Total Iron, Manganese:

1 HNO₃ preserved poly

Dissolved Perm Gases:

2 Unpreserved VOAs

8260 (8010 list) & MtBE &

Cation & Anion w/ Nitrate & Nitrite: 1 Unpres. Poly and 1 H2SO4 Poly

BTEX & TPH-g & TPH-ss:

6 VOAs w/ HCL

Ferrous Iron:

1 HCl Pres. Poly

TIJME 10	NAM WEISPINE Gogyangeterswijting							
8:15 AM	Storks pins	Ma Ma		TELLIVO 19			Section Visite 1	
5:17 Am	0.05	15.2	971	5.7	167	53	5.6	
8;22 Am	0.25	15.9	962	3.5	174	130	6.2	
8:28 AM	0.70	16.4	924	3.1	185	74	6.1	
8:35 AM	1.50	16.4	918	2.8	178	52	6.2	
3:42 AM	2.30	16.4	849	2,4	171	65	6.3	
8:47 AM	3.00	16.4	850	2.3	167	47	6.4	
8:56 AM	3,50	16.5	379	1.8	163	51	6.5	
9:05	Semp k	· Ø						
		· · · · · · · · · · · · · · · · · · ·						

9-05	0- O	003	5.5	0.011	31	9.3
						. A
Dilution:	<u> </u>				•	
Comments:						

	Project #:	2511	Address:	2815 Broadway	Date:	1/31/02
	Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou
Well/Sample ID:	LFR-2 TOCELEVE	31.89A	Purge:	. Ef _{Pump} D g	ailer	Tony Penni
Dup:	Well Depth:	194	Sample:	(%) no/	ailer	and and along
Blank: Purge Volume:	DTW: 3.3 GAL Water Table Elev.:	71-92-ft	_Odor: _Sheen:	NO —	Yes Descri t Yes Descri t	os: Strong Petrioleum odov
Well Diameter:		9-03 C +	_Color:	☑ No □	Yes Des crib	e:

Curtis & Tomplans Laboratory:

1/3/102, Delivered to LAB Ly SomA Delivery:

Analysis/preservative:

Sulfide:

1 Poly w/ Zn(C₂H₃O₂)₂ + NAOH

Disolved H₂:

1 Septum Vial

Alk, CI-, Sulfate: 1 unpreserved poly L

Total Iron, Manganese:

1 HNO₃ preserved poly

Dissolved Perm Gases:

2 Unpreserved VOAs

8260 (8010 list) & MtBE &

Cation & Anion w/ Nitrate & Nitrite: 1 Unpres: Poly and 1 H2SO4 Poly

BTEX & TPH-g & TPH-ss:

6 VOAs w/ HCL

Ferrous Iron:

1 HCl Pres. Poly

	W. YOBUME	TEMP(Re)); pH. ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	
Stabilization (Gessive 12:55 PM		ama well	1/	TIG UV		76 07		
18M	0.05	17-2	960	4.2	-79	160	6.7	
1:06 PM	0.50	17.0	920	1.9	-65	47	6.6	
1:1180	1.10	16.7	717	1.6	-31	37	6.6	
1:16 PM	1,80	16.6	666	1.4	-18	18	6.5	
1121 PM	2,30	16.6	646	1.0	-/3	8	6.5	
1:28 PM	3.30	16.6	644	1.0	-14	0	6.5	
1:30 PM	Sample	D						

- i gragiji	Espolation	icialida.	Nitrate -	Villie	Sulfale	Bissolved Manganese
1:30	1.81	1.97	2.6	0.046	19.0	0.0
Dilution:					•	
Comments:						
	,		(Results in mg/L)			

	Project #:	2511 Address:	2815 Broadway	Date:	1/30/02
	Project Name:	Glovatorium	Oakland, CA	Sampler:	Naser Pakrou
	1 ER-2	دمد الارتجاء ومساوسة	-	_	Tony Perini
Well/Sample ID:	TOU ELEV	77.96 Et Purge:	Pump D Bailer		·
Dup:	Well Depth:	22 ff Sample:	Pump 🖾 Bailer		
Blank:	DTW:	10. 24 Ct Odor:	✓ No □ Yes	Describe:	
Purge Volume:	3.6 GAL Water Table Elev.:	67.72 ft Sheen:	No D Yes	Describe:	
Well Diameter:	2 mch Height of Water:	11.76 Ct Color:	No D Yes	Describe:	
			•		

& Tompkins, L+D Laboratory: Dropped off at LAB by SOMA Delivery:

Analysis/preservative:

Sulfide:

1 Poly w/ $Zn(C_2H_3O_2)_2 + NAOH$

Disolved H₂:

1 Septum Vial

Alk, Cl-, Sulfate: 1 unpreserved poly L

Total Iron, Manganese:

1 HNO₃ preserved poly

Dissolved Perm Gases:

2 Unpreserved VOAs

8260 (8010 list) & MtBE &

Cation & Anion w/ Nitrate & Nitrite: 1 Unpres. Poly and 1 H2SO4 Poly

BTEX & TPH-g & TPH-ss:

6 VOAs w/ HCL -

Ferrous Iron:

1 HCI Pres. Poly

TIME Slabijzatjonije saucea	DTW	VOLUME	TEMP:(*0) w	- (वर्गाख्य(क्रम्स्))	DO (mb/b)			I) — АрН — ее - 64%	
12:57	Star	, ,	9719				5 F 4 G		
1301		0.1	18,5	472	3.0	254	37	6.4	
1306		0.25	18.4	460	2,3	244	45	6.3	· · · · · · · · · · · · · · · · · · ·
1313		0.40	18.8	544	2.0	239	42	6.2	
1319		0.75	19.0	586	1,2	227	42	6.1	
1324		2,2	19.2	589	0.7	219	13	6.2	
1329	·	3,2	19.1	562	0.8	215	8	6.3	
1333		3.6	19.1	566	0.8	2/2	7	6.3	
1340		Sampla	>						
	<u></u>	- ţ		l			,		

Result	agayous (on	្សា ខ្មាញនៅនៅព្រះប្រទ	Nitrate sex		Sulfate	Dissolved Manganese
1940	00	g.06	26	0 024	32	0.4
Dilution:	·					
Comments:						
			(Results in mg/L)		,	

		,						
	Project #: 2511 Project Name: Glovatorium	Address:		Broadway	_Date: _Sampler:		31/02	
Well/Sample ID: SOMA. Dup: Blank: Purge Volume: 5 GAL Well Diameter: Mult		Sample: Odor: Sheen:	1 7	np Bailer No Yes No U Yes		e: STIONCY	Naser Pakrou Tony Perini Patrio Lecum	ole
Laboratory: Delivery: Analysis/preservative: Sulfide: Total Iron, Manganese: 8260 (8010 list) & MtBE &	25 & Tempkins, Lto Delivered to LAB & 1 Poly w/ Zn(C ₂ H ₃ O ₂) ₂ + NAOH 1 HNO ₃ preserved poly	Disolved H ₂ : Dissolved Perm Gases:		1 Septum Vial 2 Unpreserved VO	4s	Alk, Cl-, Sulfate:	1 unpreserved p	poly L
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Cation & Anion w/ Nitrate Ferrous Iron:	& Nitrite;	1 Unpres. Poly and 1 HCl Pres. Poly	1 H2SO4 Poly			•

DIME DIA Stabilization bios successive 1/220 AM	V Veldinge Erelmeterswichte	HAMP((G))	खग्रीम् (त्त्व्युटातु)	- 1904(meila) - 1904(meila)	- (9R±(mv)	unganlonggaran	a Capta (S	o gomments
11:24 AM 11:28 AM 11:34 AM	5tarko pui 0.10 0.40	16.7 16.8	1210	2,6	115	64	6,8	9 GOMMEATS
11:38 AM	2.10 3,50	16.8	1190	1.0	136	110 140 140	6.8 6.7 6.1	
12:06 AM 12:15 PM	7.00 3.00	17.5	1.170	0.70	143	140	6.7	
	Sample					7,70	6.7	

ĵ.,

Results demonstrate Telephone				New Presolved Se
12:15 0.0 0.0	O- O	Nitritia O O	E SULTATE S	Mangahese
Dilution:			19	0.0
nts:			·	
	(Results in mg/L)		-	

	Project #:	2511	Address:		2815 Broad	lway	Date:	·	1/3/1/02	
	Project Name:	Glovatorium			Oakland,	CA	Sampler:		Naser Pakrou	· · · · · · · · · · · · · · · · · · ·
Well/Sample ID:	SOMA-2			· D	~	r 1		··	Tony Perini	
	TOLER	81-39Et	Purge:		Pump	_	iler			
Dup:	Well Depth:	20 ft	_Sample:	. [Pump	Ø Ba	iler			٨
Blank:	DTW:	7-414	_Odor:	•	No T	W Y	es D	Describe: 8 TVON	& Petroleum	oplov
Purge Volume:	3.0 64LWater Table Elev.:	73.98 ft	Sheen:	[2	No	η.		escribe:	<u> </u>	
Well Diameter:	2 1/164 Height of Water:	12.59 Ct	_Color:	. 0	ar No		'ès D	lescribe:		
	· .									
l abandanı	Protect of	1-0-		q.				,		

Laboratory: LAB by SOMA Delivery:

Analysis/préservative:

Sulfide:

1 Poly w/ Zn(C₂H₃O₂)₂ + NAOH

Disolved H₂:

1 Septum Vial

Alk, Cl-, Sulfate: 1 unpreserved poly L

Total Iron, Manganese:

1 HNO₃ preserved poly

Dissolved Perm Gases:

2 Unpreserved VOAs

8260 (8010 list) & MtBE &

Cation & Anion w/ Nitrate & Nitrite: 1 Unpres. Poly and 1 H2SO4 Poly

BTEX & TPH-g & TPH-ss:

6 VOAs w/ HCL

Ferrous Iron:

1 HCl Pres. Poly

o al Maior de Sanda. Maior de la companya de la companya de la companya de la companya de la companya de la companya de la companya	Va Valdītjieki savikila	, TEMP((G))						gommen es
3:20 PM	1 7	TMY Wel	/	20 20 7/2 JU/0	# Illumites	44 (Dec)	1 = 42 = 44 = 10 = 12/2 = 12 = 1	
3527 PM	0.10	15.0	1150	2.0	-94	990	6.8	,
3132 Pr	12.25	15,1	1150	1.3	-94	400	6.8	
3:37 PM	0.50	15,0	1150	1.1	-94	£55	6.8	
3:42 PM	0.80	15.0	1150	11	-96	110	6.8	
3:48 Pm	1,20	15.0	1150	0.9	18	140	6.8	
3:52 PM	1.60	15.1	1140	0.8	-100	18	6.9	
3:55 PM	3.0	15.2	1140	0.7	-103	5	6.9	4-2
4 PM	Samples			- · · ·		,		
·						,		

and rejic	Berrous Ir o n	- Note Man	Nitrate 7	Nitiale	Sujala	es Dissolvéd Mandanes
Heop	9.0	10-5	0.8	0-344	0.0	3-8
Dilution:					•	
Comments:						,
			(Results in mg/L)	·	<u> </u>	,

	Project #:	2511	_Address:	2815 Broad	dway	_Date:	1/3/102
	Project Name:	Glovatorium		Oakland,	CA	_Sampler:	Naser Pakrou
Well/Sample (D; Dup: Blank: Purge Volume:	SOMA-3 TOC ELEV:	30 ft 9.96-ft	Purge: Sample: Odor: Sheen:	Pump Pump No	□ Bailer □ Bailer □ Yes	Describe	Tony Perini
Well Diameter:	3/4// Height of Water:	20.04	Color:	☐ No	□ Yes	Describe	:

Curtis & Tompkins, LtD 1/31/02, Dropped off at LAB by SOMA

Analysis/preservative:

Sulfide:

Laboratory:

Delivery:

1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH

Disolved H₂:

1 Septum Vial

Alk, Cl-, Sulfate: 1 unpreserved poly L

Total Iron, Manganese:

1 HNO₃ preserved poly

Dissolved Perm Gases;

2 Unpreserved VOAs

8260 (8010 list) & MtBE &

Cation & Anion w/ Nitrate & Nitrite: 1 Unpres. Poly and 1 H2SO4 Poly

BTEX & TPH-g & TPH-ss:

6 VOAs w/ HCL

Ferrous Iron:

1 HCl Pres. Poly

TAME Najvije skije suga	i juga Serversemilo	o WelenWie -	quality(49)	erol/lox(pts/cgn) 74-54	(199 (mg/s) / 197	(ORP (mV)	raeleisilojusta(lžedu saltoj) - sid(1323) 7503176	COMMENTS
2:10 PM	star fer	Annual Control of the	ma well		and the second s	**************************************			
2:17		0.15	15.9	1270	. 3.6	-132	76	7./	
2:20		0.20	15,8	1250	1.5	7/30	120	6.9	
2:25		0.35	15.4	1280	1,0	-1/2	150	6.8	
2,30		0.45	15.1	1300	10	796	90	6.6	
2:35		0.60	14.9	1325	1.0	-71	80	6.5	
2:35		amples							
			, .						
<i></i>			-					·	

2:35	062	0.78	2.0	0315	54	22
Dilution:	•				-	
Comments:						

		Project #:	2511	_Address:	2815 Broadway				Date:		1/30/02-1/31/02		
		Project Name:	Glovatorium	Glovatorium		Oakland, CA			Sample	r:	Naser Pakreu		
Well/Sample ID:	Can'A-	<i>d</i>	a1a t L				_				. 1	ony Perini	
	SOMA	_	81.09 feet			Pump		Bailer					•
Dup:		Well Depth:	20 teet	Sample:		Pump		Bailer			•		
Blank:		_DTW;	11.30 Cec		п	No		Yes		Describe	·		
Purgé Volume:	<u> </u>	Water Table Elev.:	69.79 fe	,		No		Yes		Describe			
Well Diameter:		Height of Water:	8.70 tee	Color:		No		Yès		Describe		<u></u>	·
Laboratory:			· · · · · · · · · · · · · · · · · · ·							······			
Delivery:	·								÷				
Amalysis/preservativ	/e:												-
Sulfide:		1 Poly w/ Zn(C ₂ H ₃ O ₂))₂ + NAOH	Disolved H ₂ :			1 Septum	Vial			Alk, Cl-, Sulfate:	1 unpreserved po	olv L.
Total Iron, Manganese:		1 HNO ₃ preserved poly		Dissolved Perm	lved Perm Gases: 2 Unpreserved			erved VC	•			,	·
8260 (8010 list) & MtE	BE &	•	•	Cation & Anion	w/ Nitrate &	Nitrite:	1 Unpres.	Poly and	d 1 H2S	O4 Poly		•	
BTEX & TPH-g &	TPH-ss:	6 VOAs w/ HCL		Ferrous iron:			1 HCl Pres	s. Poly					-
													.
		VOLUME.	S LaneMP(Ge)	. coldini st m		1000000000000000000000000000000000000	A CONTRACTOR OF THE PARTY OF TH			lios (Krij)		e de la Mile de	
Slabilization (1815) Electric	SS ve patami	ielewijihe .		T T				nV.		10%	2 - 14 0 N/A 2 P		
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	6	0.		1						· // ·			
	Free	-	4	5 feet v					u	e//		-	
	no			samp ing	11	#	-for	red	du	-7779	this	···· ,	4.
<u> </u>	Mo	ritoring e	vent (Fir	st Quar	te a	002)						
		-			-							·	
				<u> </u>						-			
					 								
<u> </u>		-			<u> </u>		·····		·				
							Dissol	ed 🐺				•	
is desired the second	ejrejleilon.	= statistics	Milate e a	e Militie	Spira		iolissoli Mangaji					* ,	
		· .										•	
Dilution:					·						•		
Comments:					1								

(Results in mg/L)

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 1.0 2.0 3.0 4.0 5.0 7.0 8.0 10.0 12.0 12.0 12.0 12.0 12.0 12.0 12		13.73 13.36 13.00 12.34 12.02 11.73 11.44 11.17 10.42 10.18 9.75 8.30 8.14 7.75 7.75 6.62 6.03 5.84 5.75 5.75 5.75 5.75 5.75 5.75 5.75 5.7	12.89 12.55 12.22 11.91 11.32 11.05 10.78 10.53 10.06 10.08	12.10 11.78 11.48 11.20 10.66 10.40 10.16 10.99 9.99 9.99 8.37 7.77 7.34 7.20 6.51 6.03 5.55 5.41 5.55 5.55 5.55 5.55 5.55 5.55	4.94	10.66 10.39