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January 30, 2007

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

Subject: Fuel Leak Case No. RO0000317-5725 Thornhill Drive, Oakland, CA

Dear Don:

SOMA's "First Quarter 2007 Groundwater Monitoring Report" for the subject property has been uploaded to the State's GeoTracker database and Alameda County's FTP site for your review.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 734-6400.

Sincerely,

Mansour Sepehr, Ph.D.,PE
Principal Hydrogeologist

REGISTERED PROFESSIONAL ENGINEER
MANSOUR SEPEHR
No. C042928
Exp. 3-31-08
CIVIL
STATE OF CALIFORNIA

cc: Mr. Mo Mashhoon w/report enclosure

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# First Quarter 2007
# Groundwater Monitoring Report

## Mash Petroleum Inc.

**5725 Thornhill Drive**

**Oakland, California**

January 30, 2007

Project 2831

Prepared for

**Mr. Mo Mashhoon**

**1721 Jefferson Street**

**Oakland, California 94612**

Prepared by

**SOMA Environmental Engineering, Inc.**

**6620 Owens Drive, Suite A**

**Pleasanton, California 94588**

## Certification

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mo Mashhoon, the property owner of 5725 Thornhill Drive, Oakland, California, to comply with the Alameda County Health Care Services and California Regional Water Quality Control Board's requirements for the First Quarter 2007 groundwater monitoring event.

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

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# 1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Mo Mashhoon, the property owner of 5725 Thornhill Drive, Oakland, California ("the Site") as shown in Figure 1. The Site is currently an active ARCO station that is located in an area consisting primarily of commercial and residential land uses.

This report summarizes the results of the First Quarter 2007 groundwater monitoring event conducted at the Site on January 8, 2007, and includes the field measurement results of the physical and chemical properties of the groundwater at the time of sampling and the laboratory analytical results on the groundwater samples.

The groundwater monitoring activities for this quarter were performed in accordance with the general guidelines of the California Regional Water Quality Control Board (CRWQCB) and the Alameda County Health Care Services (ACHCS). Appendix A details the groundwater monitoring procedures used during this monitoring event.

## 1.1 Previous Activities

In November 1998, Penn Environmental (Penn) removed a 550-gallon steel underground waste oil tank (WOT) from the Site. Soil samples collected from the WOT excavation contained up to 1,100,000 μg/Kg of total petroleum hydrocarbons as gasoline (TPH-g), 2,700,000 μg/Kg of total petroleum hydrocarbons as diesel (TPH-d), and 4,200,000 μg/Kg of total petroleum hydrocarbons as motor oil (TPH-mo). On February 4, 1999, Penn Environmental over-excavated the contaminated soil surrounding the former WOT. Aqua Science Engineers, Inc. (ASE) collected confirmation soil samples from two sidewalls of the excavation. The only compound detected in one of these two soil samples was Methyl tertiary Butyl Ether (MtBE) at 40 μg/Kg.

In July 1999, ASE drilled borehole BH-A in the vicinity of the former WOT. On September 6, 2000, ASE drilled soil boreholes BH-B and BH-C. On October 23, 2000, ASE drilled soil boreholes BH-D and BH-E. ASE also collected water samples from Temescal Creek. No hydrocarbons were detected in the water sample collected from Temescal Creek. Figure 2 shows the locations of the borings.

On March 1 and 2, 2004, SOMA oversaw Gregg Drilling & Testing (Gregg) advance nine temporary well boreholes, HP-1 through HP-7, HP-9 and HP-10. Proposed hydropunch HP-8, which was to be installed in the street, was not drilled due to traffic hazards. Three on-site wells were decommissioned in March 2004, and three additional wells (SOMA-1 to SOMA-3) were installed. The locations of the boreholes and wells are shown in Figure 2.

The results of the March 2004 investigation and details of the well installations are presented in SOMA's report entitled "Soil and Groundwater Investigation and Monitoring Well Installation Report at 5725 Thornhill Drive, Oakland, California," dated April 16, 2004.

On April 25, 2005, SOMA conducted a sensitive receptor survey to identify any water bodies or domestic, irrigation or water supply wells within a quarter mile radius of the Site. Based on the State Department of Water Resources and Alameda County Public Works Agency's records, no drinking water, domestic or irrigation wells were within a quarter-mile radius of the Site.

In May 2005, CPT/MIP boreholes (CPT-1 through CPT-5 and CPT-7 through CPT-11) were advanced under the supervision of SOMA. CPT-6 could not be drilled due to physical constraints and obstruction of local traffic. Ten boreholes, designated as GS-1 through GS-5 and GS-7 through GS-11 were advanced at their corresponding CPT borehole locations. Monitoring well SOMA-4 was also installed. Figure 2 shows the locations of the CPT boreholes and SOMA-4.

The results of the May 2005 site investigation and well installation are presented in SOMA's report entitled "Additional Soil and Groundwater Investigation and Monitoring Well Installation Report at 5725 Thornhill Drive, Oakland, California," dated June 13, 2005.

## 2.0 RESULTS

The following sections provide the results of the field measurements and laboratory analyses for the January 8, 2007 groundwater monitoring event.

### 2.1 Field Measurements

As shown in Table 1, the depth to groundwater ranged from 6.19 feet in SOMA-1 to 7.86 feet in SOMA-4. The corresponding groundwater elevations ranged from 564.79 feet in SOMA-4 to 570.28 feet in SOMA-1. The contour map of the groundwater elevations is presented in Figure 3. The groundwater flows southwesterly across the Site, with an average gradient of 0.026 feet/feet. The groundwater gradient and flow direction are consistent with the previous (Fourth Quarter 2006) monitoring event.

The field notes in Appendix B show the detailed measurements of the physical and chemical parameters of the groundwater for each well during this monitoring event.

## 2.2 Laboratory Analyses

Table 1 presents the results of the laboratory analyses for total petroleum hydrocarbons as gasoline (TPH-g), total petroleum hydrocarbons as diesel (TPH-d), total petroleum hydrocarbons as motor oil (TPH-mo), benzene, toluene, ethylbenzene, total xylenes (BTEX), and Methyl tertiary Butyl Ether (MtBE). Table 2 presents the results of the gasoline oxygenates and lead scavengers analysis.

TPH-g was below the laboratory reporting limit in wells SOMA-1 and SOMA-3. Detectable TPH-g concentrations ranged from 1,720 ug/L in SOMA-2 to 2,280 ug/L in SOMA-4. Figure 4 displays the contour map of TPH-g concentrations in the groundwater. TPH-g appears to have originated at the pump islands, as observed by the TPH-g concentration in well SOMA-2, and has migrated to off-site well SOMA-4. The southwesterly migration can be attributed to the groundwater flow direction across the Site.

TPH-d was below the laboratory reporting limit in well SOMA-1. Detectable TPH-d concentrations ranged from 181 ug/L in SOMA-3 to 1,010 ug/L in SOMA-2. During analytical testing for TPH-d results, several variations were observed. These variations included, but were not limited to, the presence of unidentified hydrocarbons and irregular chromatographic patterns in reference to the standard diesel patterns. Refer to the laboratory report in Appendix C for further clarification on the diesel testing and results.

Figure 5 displays the contour map of TPH-d concentrations in the groundwater. Due to the southwesterly groundwater flow direction from the pump islands, TPH-d has migrated off-site to well SOMA-4. Since the previous monitoring event, TPH-d appears to have slightly decreased in wells SOMA-3 and SOMA-4.

TPH-mo was below the laboratory reporting limit throughout the Site. Even though TPH-mo was detected for the first time in well SOMA-2 during the previous monitoring event, it decreased to below the laboratory reporting limit during this monitoring event.

The following BTEX analytes were observed during this monitoring event:

- All BTEX analytes were below the laboratory reporting limit in wells SOMA-1, SOMA-3, and SOMA-4; and
- In well SOMA-2, all BTEX analytes were below the laboratory reporting limit, with the exception of ethylbenzene (2.75 ug/L).

MtBE was detected at trace concentrations in all of the groundwater samples collected during this monitoring event. Detectable MtBE concentrations ranged from 3.07 ug/L in well SOMA-1 to 36 ug/L in well SOMA-4. Due to the minimal MtBE concentrations detected, no iso-concentration figure was drawn for MtBE.

As shown in Table 2, all gasoline oxygenates and lead scavengers, which include Isopropyl Ether (DIPE), Ethyl tertiary Butyl Ether (EtBE), Methyl tert-Amyl Ether (TAME), 1,2-Dichloroethane (1,2-DCA), 1,2-Dibromoethane (EDB), and ethanol were below the laboratory reporting limit throughout the Site. Tert-Butyl-Alcohol (TBA) was detected in wells SOMA-2 and SOMA-4 at 22.2 ug/L and 233 ug/L, respectively, but was below the laboratory reporting limit in wells SOMA-1 and SOMA-3. Due to the minimal TBA concentrations detected, no iso-concentration figure was drawn for TBA.

Appendix C contains the laboratory report and chain-of-custody (COC) form from this monitoring event.

## 3.0 CONCLUSIONS & RECOMMENDATIONS

The findings of the First Quarter 2007 groundwater monitoring event can be summarized as follows:

- The groundwater flow direction has remained southwesterly across the Site.

- Based on previous site investigations and the results of the quarterly monitoring events, both the hydrocarbon and MtBE plumes have migrated off-site, southwesterly, with the flow of groundwater.

- Based on the recent workplan submitted to the ACHCS, SOMA is planning to conduct an additional investigation around the utility lines in order to investigate the extent of the MtBE plume in the sewer line trench backfill material.

## 4.0 REPORT LIMITATIONS

This report is the summary of work done by SOMA, including observations and descriptions of the Site's conditions. It includes the analytical results produced by Pacific Analytical Laboratory in Alameda, for the current groundwater monitoring event. The number and locations of the wells were selected to provide the required information, but may not be completely representative of the entire site's conditions. All conclusions and recommendations are based on the results of the laboratory analysis. Conclusions beyond those specifically stated in this document should not be inferred from this report.

SOMA warrants that the services provided were done in accordance with the generally accepted practices in the environmental engineering and consulting field at the time of this sampling.

# Tables

# Table 1
## SOMA Historical Groundwater Elevation Data
## & Analytical Results (Hydrocarbons, BTEX, & MtBE)
### 5725 Thornhill Drive, Oakland California

| Monitoring Well | Date | Top of Casing Elevation (feet) | Depth to Groundwater (feet) | Groundwater Elevation (feet) | TPH-g (µg/L) | TPH-d (µg/L) | TPH-mo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethyl-Benzene (µg/L) | Total Xylenes (µg/L) | MtBE* 8260B (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SOMA-1** | 4/22/2004 | 576.47 | 5.75 | 570.72 | 63 | <50 | <300 | <0.5 | <0.5 | <0.5 | <0.5 | 7.7 |
| | 7/27/2004 | 576.47 | 6.21 | 570.26 | <50 | <50 | <300 | <0.5 | <0.5 | <0.5 | <0.5 | 9.1 |
| | 10/28/2004 | 576.47 | 5.76 | 570.71 | <50 | <1.0 | <1.0 | <0.5 | <0.5 | <0.5 | <1.0 | 6.4 |
| | 1/11/2005 | 576.47 | 3.73 | 572.74 | <50 | 200 HY | 900 | <0.5 | <0.5 | <0.5 | <0.5 | 4.7 |
| | 4/12/2005 | 576.47 | 4.72 | 571.75 | <200 | <50 | <300 | <0.5 | <0.5 | <0.5 | <1.0 | 7.49 |
| | 7/19/2005 | 576.47 | 5.87 | 570.60 | <200 | <50 | <300 | <0.5 | <2.0 | <0.5 | <1.0 | 4.94 |
| | 10/18/2005 | 576.47 | 6.12 | 570.35 | <50 | <50 | <300 | <0.5 | <2.0 | <0.5 | <1.0 | 5.33 |
| | 2/6/2006 | 576.47 | 5.10 | 571.37 | <50 | 920LY | <300 | <0.5 | <2.0 | <0.5 | <1.0 | 2.74 |
| | 4/26/2006 | 576.47 | 4.71 | 571.76 | <50 | <50 [1] | <250 [1] | <0.5 | <2.0 | <0.5 | <1.0 | 5.28 |
| | 8/3/2006 | 576.47 | 5.96 | 570.51 | <50 | <50 | <250 | <0.5 | <2.0 | <0.5 | <1.0 | 4.52 |
| | 10/30/2006 | 576.47 | 6.22 | 570.25 | <50 | <50 | <250 | <0.5 | <2.0 | <0.5 | <1.0 | 3.38 |
| | **1/8/2007** | **576.47** | **6.19** | **570.28** | **<50** | **<50 [4]** | **<250 [4]** | **<0.5** | **<2.0** | **<0.5** | **<2.0** | **3.07** |
| | | | | | | | | | | | | |
| **SOMA-2** | 4/22/2004 | 575.50 | 7.40 | 568.10 | 1,900 | 690 LY | <300 | <0.5 | <0.5 | 5.2 | 9.9 | 1,900 |
| | 7/27/2004 | 575.50 | 7.92 | 567.58 | 1,500 | 710 LY | <300 | 8.9 C | <0.5 | 1.5 C | 2.9 C | 740 |
| | 10/28/2004 | 575.50 | 7.62 | 567.88 | 955 | 790 LY | <1.0 | <2.5 | <2.5 | <2.5 | < 5 | 785 |
| | 1/11/2005 | 575.50 | 5.70 | 569.80 | 3,700 | 2100 LY | 380 | 3.7 | <2.0 | 3.5 | 102 | 310 |
| | 4/12/2005 | 575.50 | 6.28 | 569.22 | 5,960 | 1200 LY | <300 | 1.19 | <0.5 | 20.6 | 25 | 241 |
| | 7/19/2005 | 575.50 | 7.42 | 568.08 | 2,480 | 800 LY | <300 | 1.09 | <2.0 | 2.65 | 0.73 | 162 |
| | 10/18/2005 | 575.50 | 7.70 | 567.80 | 2,710 | 1,100 LY | <300 | 1.41 | <2.0 | 2.24 | 0.64 | 130 |

# Table 1
## SOMA Historical Groundwater Elevation Data
## & Analytical Results (Hydrocarbons, BTEX, & MtBE)
### 5725 Thornhill Drive, Oakland California

| Monitoring Well | Date | Top of Casing Elevation (feet) | Depth to Groundwater (feet) | Groundwater Elevation (feet) | TPH-g (µg/L) | TPH-d (µg/L) | TPH-mo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethyl-Benzene (µg/L) | Total Xylenes (µg/L) | MtBE* 8260B (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SOMA-2** cont. | 2/6/2006 | 575.50 | 6.71 | 568.79 | 2,730 | 66Y | <300 | 0.68 | <2.0 | 0.71 | 6.33 | 49 |
| | 4/26/2006 | 575.50 | 6.32 | 569.18 | 6,490 | 1,580 [1,2,3] | <250 [1] | <0.5 | <2.0 | 15.3 | 8.49 | 38.5 |
| | 8/3/2006 | 575.50 | 7.39 | 568.11 | 3,580 | 286 [1,3] | <250 | 0.8 | 0.7 | 2.65 | 0.7 | 44.8 |
| | 10/30/2006 | 575.50 | 7.60 | 567.90 | 1,680 | 608 [2,3] | 448 | <0.5 | <2.0 | 3.78 | <1.0 | 51.4 |
| | **1/8/2007** | **575.50** | **7.18** | **568.32** | **1,720** | **1010 [3,Y]** | **<250** | **<0.5** | **<2.0** | **2.75** | **<2.0** | **33.3** |
| | | | | | | | | | | | | |
| **SOMA-3** | 4/22/2004 | 575.92 | 7.14 | 568.78 | 190 | 120 Y | <300 | <0.5 | <0.5 | <0.5 | <0.5 | 5.1 |
| | 7/27/2004 | 575.92 | 7.95 | 567.97 | 130 | 120 LY | <300 | <0.5 | <0.5 | <0.5 | <0.5 | 9.1 |
| | 10/28/2004 | 575.92 | 7.60 | 568.32 | 57 | 280 LY | <1.0 | <0.5 | <0.5 | <0.5 | <2 | 11.3 |
| | 1/11/2005 | 572.92 | 5.45 | 567.47 | 140 | 210 Y | <300 | <0.5 | <0.5 | <0.5 | <0.5 | 5.8 |
| | 4/12/2005 | 572.92 | 6.02 | 566.90 | <200 | <50 | <300 | <0.5 | <0.5 | <0.5 | <1.0 | 4.53 |
| | 7/19/2005 | 572.92 | 7.49 | 565.43 | <200 | 120 Y | <300 | <0.5 | <2.0 | <0.5 | <1.0 | 4.69 |
| | 10/18/2005 | 572.92 | 7.63 | 565.29 | 50.1 | 120 Y | <300 | <0.5 | <2.0 | <0.5 | <1.0 | 8.63 |
| | 2/6/2006 | 572.92 | 7.20 | 565.72 | 1,010 | 220Y | <300 | <0.5 | <2.0 | <0.5 | 2.06 | 32 |
| | 4/26/2006 | 572.92 | 6.13 | 566.79 | 121 | 123 [1,2,3] | <250 [1] | <0.5 | <2.0 | <0.5 | <1.0 | 5.49 |
| | 8/3/2006 | 572.92 | 7.35 | 565.57 | <50 | 60 [1,2] | <250 | <0.5 | <0.5 | <0.5 | <1.0 | 8.05 |
| | 10/30/2006 | 572.92 | 7.64 | 565.28 | <50 | 199 [2,3] | <250 | <0.5 | <2.0 | <0.5 | <1.0 | 7.37 |
| | **1/8/2007** | **572.92** | **7.82** | **565.10** | **<50** | **181 [3,Y]** | **<250** | **<0.5** | **<2.0** | **<0.5** | **<2.0** | **8.65** |
| | | | | | | | | | | | | |
| **SOMA-4** | 7/19/2005 | 572.65 | 8.10 | 564.55 | 3,350 | 1,200 LY | <300 | <1.0 | <4.0 | <1.0 | <2.0 | 455 |
| | 10/18/2005 | 572.65 | 8.15 | 564.50 | 1,580 | 1,200 LY | <300 | <2.15 | <8.6 | <2.15 | <4.3 | 425 |
| | 2/6/2006 | 572.65 | 7.68 | 564.97 | 1,940 | 830LY | <300 | <2.15 | <8.60 | <2.15 | <4.3 | 409 |
| | 4/26/2006 | 572.65 | 7.61 | 565.04 | 3,930 | 1,080 [1,2,3] | <250 [1] | <0.5 | <2.0 | <0.5 | <1.0 | 231 |
| | 8/3/2006 | 572.65 | 8.08 | 564.57 | 4,340 | 357 [1,3] | <250 | <0.5 | 0.52 | <0.5 | 0.52 | 34.2 |
| | 10/30/2006 | 572.65 | 8.11 | 564.54 | 4,320 | 1070 [2,3] | <250 | <0.5 | <2.0 | 3.34 | 0.54 | 37.4 |
| | **1/8/2007** | **572.65** | **7.86** | **564.79** | **2,280** | **977 [3,Y]** | **<250** | **<0.5** | **<2.0** | **<0.5** | **<2.0** | **36** |

# Table 1
## SOMA Historical Groundwater Elevation Data
## & Analytical Results (Hydrocarbons, BTEX, & MtBE)
### 5725 Thornhill Drive, Oakland California

| Monitoring Well | Date | Top of Casing Elevation (feet) | Depth to Groundwater (feet) | Groundwater Elevation (feet) | TPH-g (µg/L) | TPH-d (µg/L) | TPH-mo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethyl-Benzene (µg/L) | Total Xylenes (µg/L) | MtBE* 8260B (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

Notes:
<: not detected at or above laboratory reporting limits.
C: Presence confirmed, but RPD between columns exceeds 40%.
H: Heavier hydrocarbons contributed to the quantitation.
L: Lighter hydrocarbons contributed to the quantitation.
Y: Sample exhibits chromatographic pattern which did not resemble standard.

1 To reduce matrix interference , the sample extract has undergone silica-gel clean-up, method 3630, which is specific to polar compound contamination, diesel 2Q06.
2 The sample chromatographic pattern does not resemble fuel standard used for quantitation, diesel 2Q06 to 4Q06.
3 Unidentified hydrocarbons C9-C16, diesel 2Q06 to 1Q07.
4 Surrogate recovery for this sample is outside of established control limits due to sample matrix effect, diesel & motor oil 1Q07.

The Second Quarter 2004 was the first time SOMA monitored the site. Wells SOMA-1 to SOMA-3 were monitored at that time.
Well SOMA-4 was installed on May 27, 2005. The Third Quarter 2005 was the first time SOMA monitored this well.

# Table 2
## Groundwater Analytical Results
## Gasoline Oxygenates & Lead Scavengers
### 5725 Thornhill Drive,Oakland California

| Monitoring Well | Date | TBA (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | 1,2-DCA (µg/L) | EDB (µg/L) | Ethanol (µg/L) |
|---|---|---|---|---|---|---|---|---|
| **SOMA-1** | 4/22/2004 | <10 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1000 |
| | 7/27/2004 | <10 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1000 |
| | 10/28/2004 | <2.5 | <0.5 | <0.5 | <2 | <0.5 | <0.5 | <1.0 |
| | 1/11/2005 | <10 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1,000 |
| | 4/12/2005 | <2.5 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 7/19/2005 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 10/18/2005 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 2/1/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 4/26/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 8/3/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 10/30/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | **1/8/2007** | **<2.0** | **<0.5** | **<0.5** | **<2.0** | **<0.5** | **<0.5** | **<1000** |
| | | | | | | | | |
| **SOMA-2** | 4/22/2004 | <100 | <5.0 | <5.0 | 19.0 | <5.0 | <5.0 | <10000 |
| | 7/27/2004 | <33 | <1.7 | <1.7 | 9.8 | <1.7 | <1.7 | <3300 |
| | 10/28/2004 | 36.3 | <2.5 | <2.5 | 12.85 | <0.5 | <0.5 | <1.0 |
| | 1/11/2005 | 67 | <2.0 | <2.0 | 6.7 | <2.0 | <2.0 | <4,000 |
| | 4/12/2005 | 71 | <0.5 | <0.5 | 3.29 | <0.5 | <0.5 | <1000 |
| | 7/19/2005 | 74.2 | <0.5 | <0.5 | 2.82 | <0.5 | <0.5 | <1000 |
| | 10/18/2005 | 81.7 | <0.5 | <0.5 | 2.61 | <0.5 | <0.5 | <1000 |
| | 2/1/2006 | 37.8 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 4/26/2006 | 36.1 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 8/3/2006 | 32.4 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 10/30/2006 | 20.7 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | **1/8/2007** | **22.2** | **<0.5** | **<0.5** | **<2.0** | **<0.5** | **<0.5** | **<1000** |
| | | | | | | | | |

# Table 2
## Groundwater Analytical Results
## Gasoline Oxygenates & Lead Scavengers
### 5725 Thornhill Drive,Oakland California

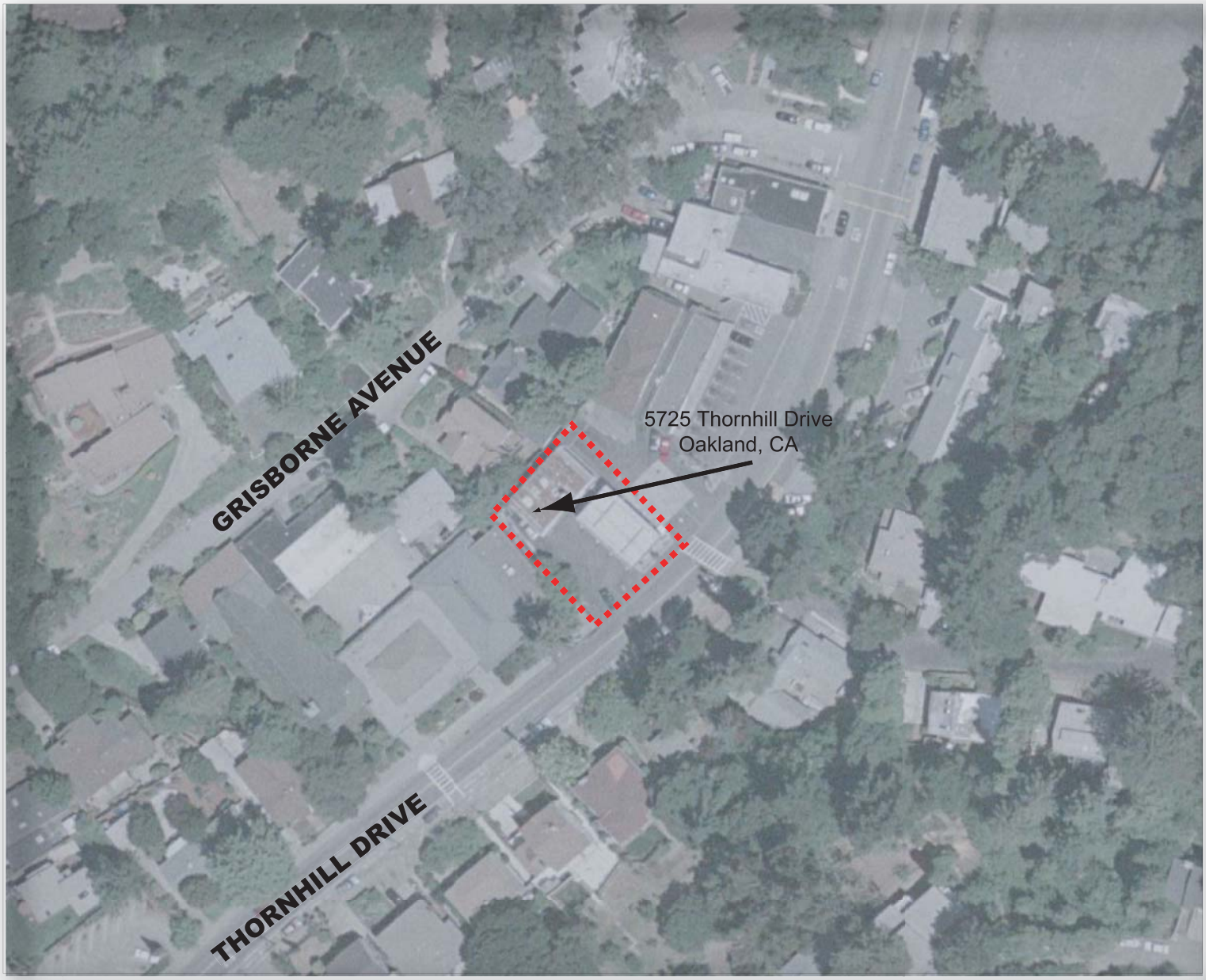
| Monitoring Well | Date | TBA (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | 1,2-DCA (µg/L) | EDB (µg/L) | Ethanol (µg/L) |
|---|---|---|---|---|---|---|---|---|
| **SOMA-3** | 4/22/2004 | <10 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1000 |
| | 7/27/2004 | <10 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1000 |
| | 10/28/2004 | <2.5 | <0.5 | <0.5 | <2 | <0.5 | <0.5 | <1.0 |
| | 1/11/2005 | <10 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1,000 |
| | 4/12/2005 | <2.5 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 7/19/2005 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 10/18/2005 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 2/1/2006 | 40.9 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 4/26/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 8/3/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 10/30/2006 | <10 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | **1/8/2007** | **<2.0** | **<0.5** | **<0.5** | **<2.0** | **<0.5** | **<0.5** | **<1000** |
| | | | | | | | | |
| **SOMA-4** | 7/19/2005 | 84.1 | <1.0 | <1.0 | 4.4 | <1.0 | <1.0 | <1000 |
| | 10/18/2005 | 314 | <2.15 | <2.15 | <8.6 | <2.15 | <2.15 | <4300 |
| | 2/1/2006 | 417 | <2.15 | <2.15 | <8.6 | <2.15 | <2.15 | <4300 |
| | 4/26/2006 | 357 | 0.59 | <0.5 | 2.1 | <0.5 | <0.5 | <1000 |
| | 8/3/2006 | 216 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | 10/30/2006 | 269 | <0.5 | <0.5 | <2.0 | <0.5 | <0.5 | <1000 |
| | **1/8/2007** | **233** | **<0.5** | **<0.5** | **<2.0** | **<0.5** | **<0.5** | **<1000** |

Notes:
<: Not detected above the laboratory reporting limit.
The Second Quarter 2004 was the first time SOMA monitored the site.
Wells SOMA-1 to SOMA-3 were monitored at that time.
Well SOMA-4 was installed on May 27, 2005. The Third Quarter 2005
was the first time SOMA monitored this well.

Gasoline Oxygenates:
TBA: tertiary butyl alcohol
DIPE: Di-Isopropyl ether
ETBE: Ethyl tertiary butyl ether
TAME: Methyl tertiary amyl ether
Ethanol

Lead Scavengers:
1,2-Dichloroethane
EDB: 1,2-Dibromoethane

# Figures




N

approximate scale in feet

0 100 200

Figure 1: Site vicinity map.

SOMA ENVIRONMENTAL ENGINEERING, INC.

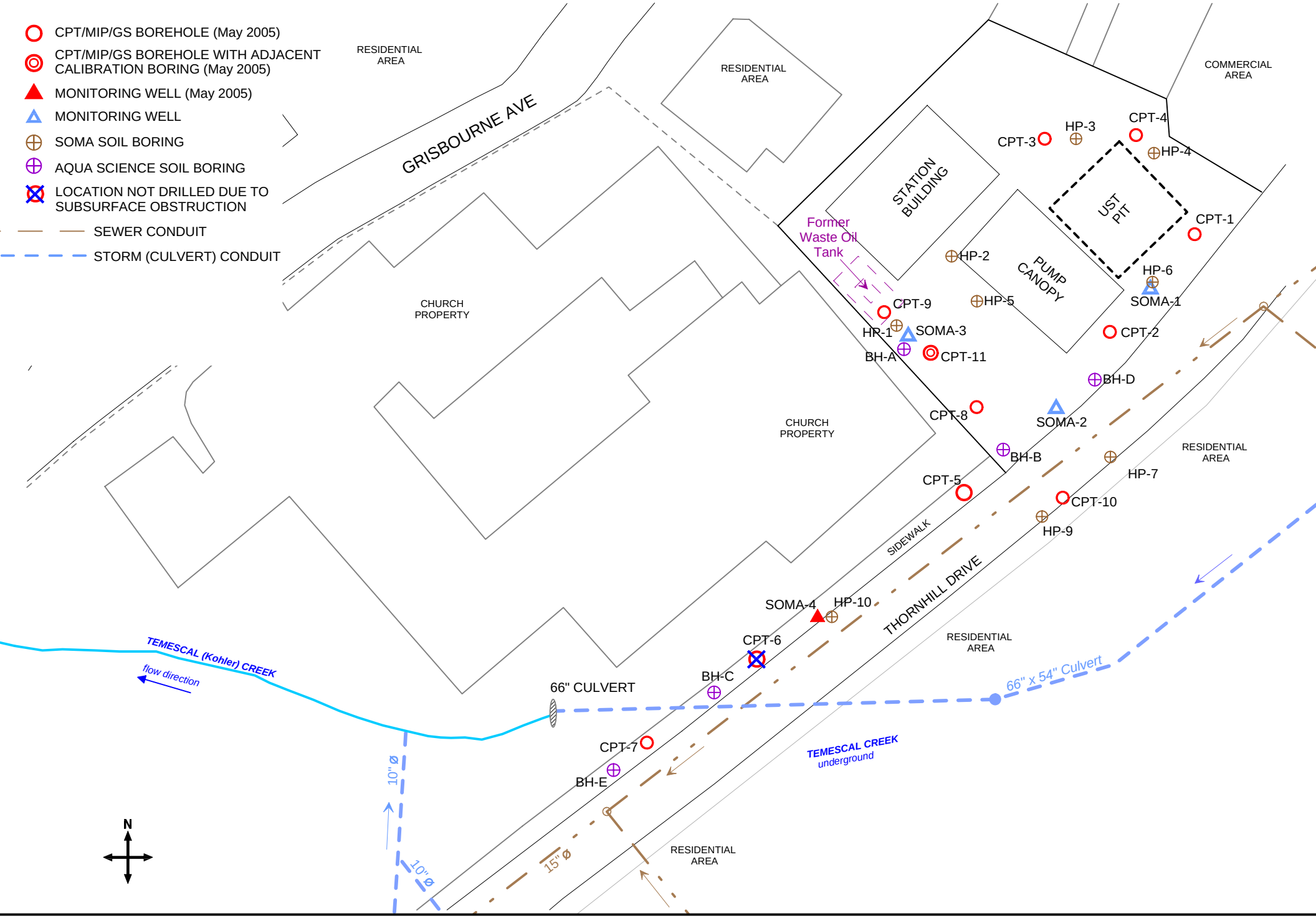
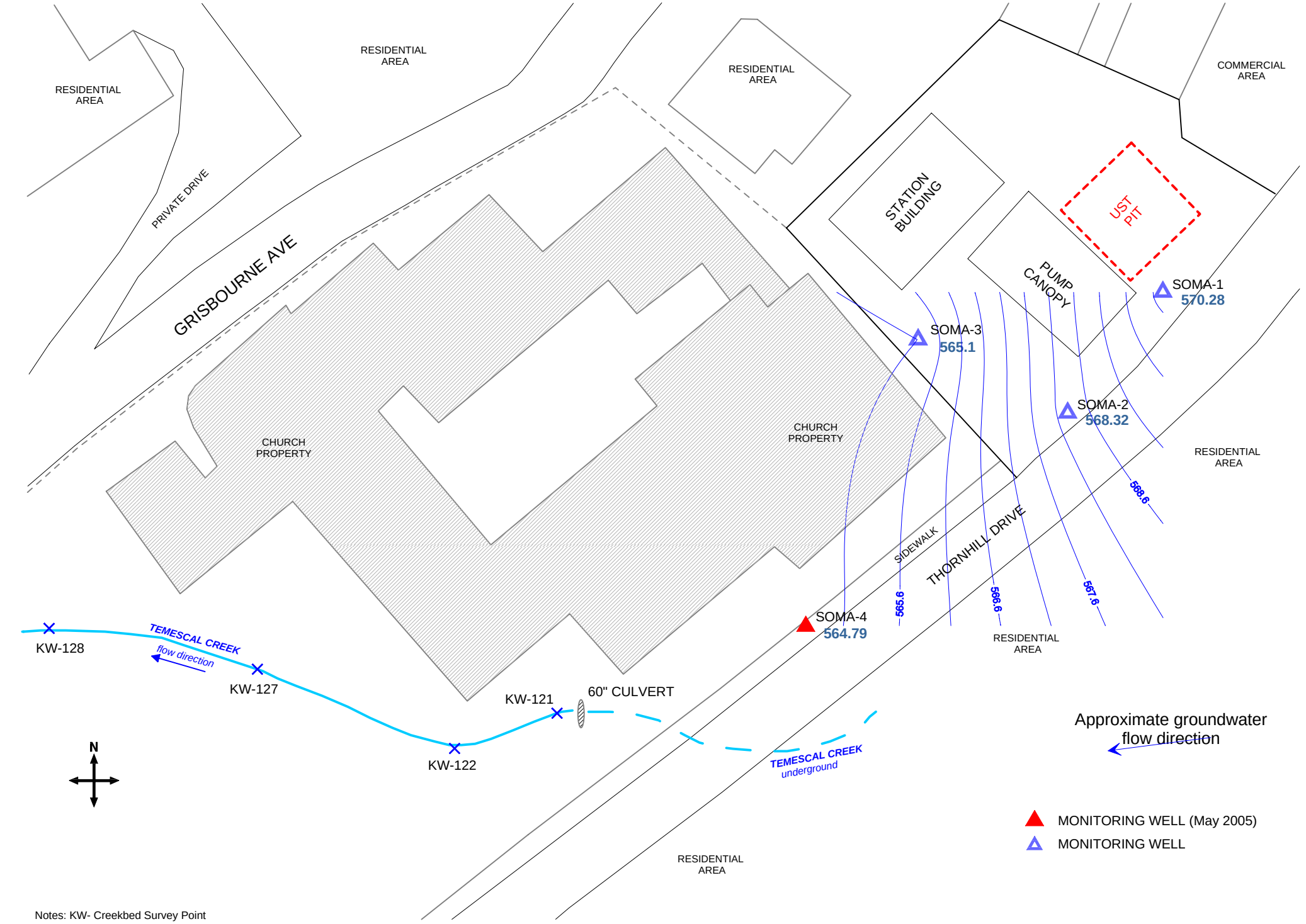



Figure 2: Site map showing locations of monitoring wells, soil borings, decomissioned wells, and CPT/MIP/GS boreholes.

SOMA ENVIRONMENTAL ENGINEERING, INC. SAN RAMON CA (925) 244 6600




Notes: KW- Creekbed Survey Point

approximate scale in feet

0 25 50

Figure 3: Groundwater elevation contour map in feet. January 8, 2007.

SOMA ENVIRONMENTAL ENGINEERING, INC. SAN RAMON CA (925) 244 6600


Notes: KW- Creekbed Survey Point

approximate scale in feet

0 25 50

Figure 4: Contour map of TPH-g concentrations in groundwater. January 8, 2007.

SOMA ENVIRONMENTAL ENGINEERING, INC. SAN RAMON CA (925) 244 6600


Notes: KW- Creekbed Survey Point

approximate scale in feet

0 25 50

Figure 5: Contour map of TPH-d concentrations in groundwater.
January 8, 2007.

SOMA ENVIRONMENTAL ENGINEERING, INC.
SAN RAMON CA (925) 244 6600

# APPENDIX A

SOMA's Groundwater Monitoring Procedures

## Field Activities

On January 8, 2007, a total of three on-site monitoring wells (SOMA-1 to SOMA-3), and one off-site well SOMA-4 were measured for depth to groundwater. On January 8, 2007, additional field measurements and grab groundwater samples were collected from all of the monitoring wells. This monitoring event was conducted in accordance with the procedures and guidelines of the California Regional Water Quality Control Board and the Alameda County Health Care Services.

Prior to measuring the groundwater depth at each well, equalization with the surrounding aquifer was achieved. The well cap was removed each well, and the pressure in each well was then allowed to dissipate. This allowed for a more stable water table level within the well. After a few minutes, and once the water level in the well stabilized, the depth to groundwater in each monitoring well was measured from the top of the casing to the nearest 0.01 foot using an electric sounder.

The top of the casing elevation data and the depth to groundwater in each monitoring well were used to calculate the groundwater elevation. The top of casing elevation was based on an elevation datum of 37 feet NAVD88. Appendix B shows the survey datum.

Prior to the collection of samples, each well was purged using a battery operated 2-inch diameter pump (Model ES-60 DC). In order to ensure that the final samples were in equilibrium with (and representative of) the surrounding groundwater, during purging, several samples were taken for field measurements of pH, temperature and EC. The field parameters were measured using a Hanna pH, conductivity, and temperature meter. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer.

Appendix B details the field measurements taken during the monitoring event.

The purging of the wells continued until the parameters for pH, temperature and EC stabilized or three casing volumes were purged. A disposable polyethylene bailer was used to collect sufficient samples from each well for laboratory analyses. The groundwater sample was transferred to three 40-mL VOA vials and preserved with hydrochloric acid. The vials were then sealed to prevent the development of air bubbles within the headspace. The groundwater sample collected from each well was also transferred into one 1-liter amber non-preserved glass container.

After the groundwater samples were collected they were placed on ice in an ice chest and maintained at $4^0$C. A chain of custody (COC) form was written for all

the samples. After the sampling was complete, on January 8, 2007, SOMA's field crew delivered the groundwater samples along with the COC form to Pacific Analytical Laboratory in Alameda, California.

## Laboratory Analysis

Pacific Analytical Laboratory, a state certified laboratory, analyzed the groundwater samples for TPH-g, TPH-d, TPH-mo, BTEX, MtBE, gasoline oxygenates, and lead scavengers.

TPH-g, BTEX, MtBE, gasoline oxygenates, and lead scavengers measurements were prepared using EPA Method 5030B and analyzed using EPA Method 8260B. Samples for TPH-d and TPH-mo measurements were analyzed using EPA Method 8015B modified.

# Appendix B

Table of Elevations & Coordinates on Monitoring Wells

&

Field Measurements of the Physical and Chemical

Properties of the Groundwater Samples

Collected During the First Quarter 2007

DATE: 4/28/04
JOB# A04549

# TABLE OF ELEVATIONS & COORDINATES ON MONITORING WELLS

SOMA ENVIRONMENTAL, PROJECT # 2830
5725 THORNHILL DRIVE, OAKLAND

| WELL ID # | NORTHING (FT.) / LATITUDE (D.M.S.) | EASTING (FT.) / LONGITUDE (D.M.S.) | ELEVATION (FT.) | DESCRIPTION |
|---|---|---|---|---|
| SOMA-1 | 2130799.64 | 6067141.82 | 576.47 | TOP PIPE , BLACK MARK N. SIDE (FELT TIP) (LOCKED AND TIGHT) |
| | N 37°50'03.73174" | W 122°12'44.98565" | 576.72 | RIM |
| | | | 576.70 | CONC. |
| SOMA-2 | 2130764.55 | 6067114.08 | 575.50 | TOP PIPE , BLACK MARK N. SIDE (FELT TIP) (LOCKED AND TIGHT) |
| | N 37°50'03.37985" | W 122°12'45.32339" | 575.74 | RIM |
| | | | 575.75 | CONC. |
| SOMA-3 | 2130785.85 | 6067071.01 | 575.92 | TOP PIPE , BLACK MARK N. SIDE (FELT TIP) (LOCKED AND TIGHT) |
| | N 37°50'03.58261" | W 122°12'45.86506" | 576.31 | RIM |
| | | | 576.30 | CONC. |

## ADDITIONAL POINTS

| PT# | NORTHING (FT.) | EASTING (FT.) | ELEVATION (FT.) | DESCRIPTION |
|---|---|---|---|---|
| 108 | 2130820.55 | 6067045.27 | N/A | BL< |
| 109 | 2130800.14 | 6067066.40 | N/A | BL< |
| 110 | 2130830.97 | 6067096.14 | N/A | BL< |
| 104 | 2130818.02 | 6067033.92 | N/A | BLOCK WALL 8" <PT |
| 105 | 2130808.04 | 6067041.66 | N/A | BLOCK WALL 8" END |
| 106 | 2130821.74 | 6067037.78 | N/A | BLOCK WALL 8" END |
| 107 | 2130821.83 | 6067037.75 | N/A | FNC-WD B-C CL |
| 111 | 2130872.58 | 6067067.64 | N/A | FNC-WD END CL |
| 112 | 2130837.52 | 6067194.12 | N/A | FOGL |
| 113 | 2130793.20 | 6067156.45 | N/A | FOGL |
| 114 | 2130759.63 | 6067123.75 | N/A | FOGL |
| 115 | 2130740.79 | 6067101.26 | N/A | FOGL END |
| 117 | 2130628.30 | 6066947.69 | N/A | TC |
| 116 | 2130738.69 | 6067095.34 | N/A | TC END |
| 128 | 2130693.29 | 6066817.93 | 558.29 | C/L CREEK +0.4' TO TOP OF WATER |
| 127 | 2130685.30 | 6066880.75 | 559.78 | C/L CREEK +0.4' TO TOP OF WATER |
| 122 | 2130664.83 | 6066937.67 | 562.81 | C/L CREEK +0.4' TO TOP OF WATER |
| 121 | 2130676.03 | 6066966.79 | 563.15 | C/L 60" CULVERT +0.5' TO TOP OF WATER |

**Kier & Wright Engineers Surveyors, Inc.**
1233 Quarry Lane, Suite 145, Pleasanton, CA 94566
Phone (925) 249-6555,
Fax (925) 249-6563

PRINTED: 6/9/2005
11:27 AM

DATE: 4/28/04
JOB# A04549

# TABLE OF ELEVATIONS & COORDINATES ON MONITORING WELLS

SOMA ENVIRONMENTAL, PROJECT # 2830
5725 THORNHILL DRIVE, OAKLAND

**BENCH MARK:** NGS Bench mark No.PID# HT2487
DESCRIPTION FROM NGS DATA SHEET:
DESCRIBED BY EAST BAY MUNICIPAL UTILITIES DISTRICT 1947 (SPH) THE AZIMUTH MARK IS AN EBMUD TRIANGULATION STATION DISC SET 1 FOOT BELOW THE SURFACE AND COVERED BY AN 8 INCH IRON CASTING WITH A REMOVABLE LID MARKED CITY MONUMENT. IT IS IN THE SIDEWALK IN FRONT OF A SAFEWAY STORE AT THE INTERSECTION OF GRAND AND WILDWOOD AVENUES. IT IS 1.5 FEET SOUTHEAST OF THE SOUTHEAST CURB OF WILDWOOD AVE., 6.2 FEET OF EAST CURB OF GRAND AVE. AND 10.4 FEET NORTHEAST OF POWERPOLE. THE MARK IS STAMPED LINDA AZIMUTH MARK 1947.

Elevation =37. FEET NAVD88 Datum
BY VERTCON

**HORIZONTAL CONTROL:**

**PID - AA5496**
NORTHING =1,988,577.07 , EASTING = 6,077,862.13 FEET; EPOCH DATE = 1991.35

**PID - HT2541**
NORTHING = 2,130,331.28 , EASTING = 6,062,624.49 FEET; EPOCH DATE = 1991.35

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

**Kier & Wright Engineers Surveyors, Inc.**
1233 Quarry Lane, Suite 145, Pleasanton, CA 94566
Phone (925) 249-6555,
Fax (925) 249-6563

PRINTED: 6/9/2005
11:27 AM

DATE: 8/17/05
Job No. 205048

DATE OF SURVEY 8/12/05
INSTRUMENT LEICA TCA 1100L

# TABLE OF ELEVATIONS & COORDINATES ON MONITORING WELLS

SOMA ENVIRONMENTAL, PROJECT # 2830
5725 THORNHILL DRIVE, OAKLAND

| WELL ID # | NORTHING (FT.) / LATITUDE (D.M.S.) | EASTING (FT.) / LONGITUDE (D.M.S.) | ELEVATION (FT.) | DESCRIPTION |
|---|---|---|---|---|
| SOMA-4 | 2130703.437 | 6067044.632 | 572.65 | TOP PIPE , BLACK MARK N. SIDE (FELT TIP) |
| | N 37°50'02.76318" | W 122°12'46.17502" | 573.03 | RIM |
| | | | 573.03 | CONC. |
| DECIMAL DEGREES | N 37°.83410088 | W 121°.21282639" | | |
| | | | | |
| LOCAL CONTROL | | | | |
| SOMA-2 | 2130764.55 | 6067114.08 | 575.50 | TOP PIPE |
| | N 37°50'03.37985" | W 122°12'45.32339" | | |
| SOMA-3 | 2130785.85 | 6067071.01 | 575.92 | TOP PIPE |
| | N 37°50'03.58261" | W 122°12'45.86506" | | |

BENCH MARK: NGS Bench mark No.PID# HT2487
DESCRIPTION FROM NGS DATA SHEET:
DESCRIBED BY EAST BAY MUNICIPAL UTILITIES DISTRICT 1947 (SPH) THE AZIMUTH MARK IS AN EBMUD TRIANGULATION STATION DISC SET 1 FOOT BELOW THE SURFACE AND COVERED BY AN 8 INCH IRON CASTING WITH A REMOVABLE LID MARKED CITY MONUMENT. IT IS IN THE SIDEWALK IN FRONT OF A SAFEWAY STORE AT THE INTERSECTION OF GRAND AND WILDWOOD AVENUES. IT IS 1.5 FEET SOUTHEAST OF THE SOUTHEAST CURB OF WILDWOOD AVE., 6.2 FEET OF EAST CURB OF GRAND AVE. AND 10.4 FEET NORTHEAST OF POWERPOLE. THE MARK IS STAMPED LINDA AZIMUTH MARK 1947.

Elevation -37. FEET NAVD88 Datum
BY VERTCON

ALIQUOT ASSOCIATES
1390 MAIN STREET STE 310
WALNUT CREEK, CA. 94596
925-476-2300

PRINTED: 8/25/2005
11:33 AM

DATE: 8/17/05
Job No. 205048

DATE OF SURVEY 8/12/05
INSTRUMENT LEICA TCA 1100L

# TABLE OF ELEVATIONS & COORDINATES ON MONITORING WELLS

SOMA ENVIRONMENTAL, PROJECT # 2830
5725 THORNHILL DRIVE, OAKLAND

HORIZONTAL CONTROL:

PID - AA5496
NORTHING -1,988,577.07 , EASTING - 6,077,862.13 FEET; EPOCH DATE - 1991.35

PID - HT2541
NORTHING - 2,130,331.28 , EASTING - 6,062,624.49 FEET; EPOCH DATE - 1991.35

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

NOTE
THE VALUES FOR SOMA-4 ARE DERIVED FROM LOCAL CONTROL BASED UPON CONTROL VALUE USED FROM THE PREVIOUS SITE SURVEY AS PROVIDED BY KIER AND WRIGHT

LICENSED LAND SURVEYOR
VINCENT D'ALO
No. 4210
Exp. 06-30-06
STATE OF CALIFORNIA



ALIQUOT ASSOCIATES
1390 MAIN STREET STE 310
WALNUT CREEK, CA. 94596
925-476-2300

ENVIRONMENTAL ENGINEERING, INC

| | | | |
|---|---|---|---|
| **Well No.:** | SOMA-1 | **Project No.:** | 2831 |
| **Casing Diameter:** | 2 inches | **Address:** | 5725 Thornhill Drive |
| **Depth of Well:** | 27.85 feet | | Oakland CA |
| **Top of Casing Elevation:** | 576.47 feet | **Date:** | January 8, 2007 |
| **Depth to Groundwater:** | 6.19 feet | **Sampler:** | Tony Perini |
| **Groundwater Elevation:** | 570.28 feet | | |
| **Water Column Height:** | 21.66 feet | | |
| **Purged Volume:** | 9 gallons | | |

| | | | | | |
|---|---|---|---|---|---|
| **Purging Method:** | **Bailer** ☐ | **Pump** ☑ | | | |
| **Sampling Method:** | **Bailer** ☑ | **Pump** ☐ | | | |
| **Color:** | **No** ☐ | **Yes** ☑ | **Describe:** | cloudy | |
| **Sheen:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |
| **Odor:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |

**Field Measurements:**

| Time | Vol (gallons) | pH | Temp ($^0$C) | E.C. (µs/cm) |
|---|---|---|---|---|
| 1:12 PM | start to purging well | | | |
| 1:14 PM | 2 | 6.57 | 16.20 | 780 |
| 1:16 PM | 4 | 6.45 | 16.50 | 760 |
| 1:18 PM | 6 | 6.48 | 16.30 | 760 |
| 1:21 PM | 9 | 6.46 | 16.50 | 760 |
| 1:25 PM | sampled | | | |

ENVIRONMENTAL ENGINEERING, INC

| | | | |
|---|---|---|---|
| **Well No.:** | SOMA-2 | **Project No.:** | 2831 |
| **Casing Diameter:** | 2 inches | **Address:** | 5725 Thornhill Drive |
| **Depth of Well:** | 28.00 feet | | Oakland CA |
| **Top of Casing Elevation:** | 575.50 feet | **Date:** | January 8, 2007 |
| **Depth to Groundwater:** | 7.18 feet | **Sampler:** | Tony Perini |
| **Groundwater Elevation:** | 568.32 feet | | |
| **Water Column Height:** | 20.82 feet | | |
| **Purged Volume:** | 9 gallons | | |

| | | | | | |
|---|---|---|---|---|---|
| **Purging Method:** | **Bailer** ☐ | **Pump** ☑ | | | |
| **Sampling Method:** | **Bailer** ☑ | **Pump** ☐ | | | |
| **Color:** | **No** ☐ | **Yes** ☑ | **Describe:** | Muddy | |
| **Sheen:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |
| **Odor:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |

**Field Measurements:**

| Time | Vol (gallons) | pH | Temp ($^0$C) | E.C. (µs/cm) |
|---|---|---|---|---|
| 1205 pm | Hanks purging well | | | |
| 1207 pm | 2 | 6.55 | 17.80 | 1000 |
| 1209 pm | 4 | 6.46 | 17.40 | 960 |
| 1211 pm | 6 | 6.51 | 17.30 | 950 |
| 1214 pm | 9 | 6.51 | 17.30 | 960 |
| 1218 pm | - sampled | | | |

ENVIRONMENTAL ENGINEERING, INC

| | | | |
|---|---|---|---|
| **Well No.:** | SOMA-3 | **Project No.:** | 2831 |
| **Casing Diameter:** | 2 inches | **Address:** | 5725 Thornhill Drive |
| **Depth of Well:** | 27.77 feet | | Oakland CA |
| **Top of Casing Elevation:** | 572.92 feet | **Date:** | January 8, 2007 |
| **Depth to Groundwater:** | 7.82 feet | **Sampler:** | Tony Perini |
| **Groundwater Elevation:** | 565.10 feet | | |
| **Water Column Height:** | 19.95 feet | | |
| **Purged Volume:** | 9 gallons | | |

| | | | | | |
|---|---|---|---|---|---|
| **Purging Method:** | **Bailer** ☐ | **Pump** ☑ | | | |
| **Sampling Method:** | **Bailer** ☑ | **Pump** ☐ | | | |
| **Color:** | **No** ☐ | **Yes** ☑ | **Describe:** | cloudy | |
| **Sheen:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |
| **Odor:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |

**Field Measurements:**

| Time | Vol (gallons) | pH | Temp (°C) | E.C. (µs/cm) |
|---|---|---|---|---|
| 1238 PM | Started purging well | | | |
| 1240 PM | 2 | 6.70 | 17.40 | 1180 |
| 1242 PM | 4 | 6.70 | 17.00 | 1130 |
| 1244 PM | 6 | 6.70 | 16.90 | 1110 |
| 1247 PM | 9 | 6.68 | 16.90 | 1090 |
| 1250 PM | sampled | | | |

ENVIRONMENTAL ENGINEERING, INC

| | | | |
|---|---|---|---|
| **Well No.:** | SoMA-4 | **Project No.:** | 2831 |
| **Casing Diameter:** | 2 inches | **Address:** | 5725 Thornhill Drive |
| **Depth of Well:** | 19.70 feet | | Oakland CA |
| **Top of Casing Elevation:** | 572.65 feet | **Date:** | January 8, 2007 |
| **Depth to Groundwater:** | 7.86 feet | **Sampler:** | Tony Perini |
| **Groundwater Elevation:** | 564.79 feet | | |
| **Water Column Height:** | 11.84 feet | | |
| **Purged Volume:** | 6 gallons | | |

| | | | | | |
|---|---|---|---|---|---|
| **Purging Method:** | **Bailer** ☐ | **Pump** ☑ | | | |
| **Sampling Method:** | **Bailer** ☑ | **Pump** ☐ | | | |
| **Color:** | **No** ☐ | **Yes** ☑ | **Describe:** | cloudy | |
| **Sheen:** | **No** ☑ | **Yes** ☐ | **Describe:** | | |
| **Odor:** | **No** ☐ | **Yes** ☑ | **Describe:** | slight petro odor | |

**Field Measurements:**

| Time | Vol (gallons) | pH | Temp ($^0$C) | E.C. (µs/cm) |
|---|---|---|---|---|
| 1135 AM | start to purging well | | | |
| 1137 AM | 2 | 6.66 | 17.60 | 1150 |
| 1139 AM | 4 | 6.73 | 16.50 | 1010 |
| 1141 AM | 6 | 6.41 | 16.50 | 1000 |
| 1145 AM | - samples | | | |
| | | | | |

# Appendix C

Chain of Custody Form and Laboratory Report

for the

First Quarter 2007 Monitoring Event

# CHAIN OF CUSTODY FORM



**PAL** Pacific Analytical Laboratory
851 West Midway Ave., Suite 201B
Alameda, CA 94501
510-864-0364 Telephone
510-864-0365 Fax

PAL
Login# 7010001

| Project No: 2831 | Sampler: Tony Perini | Analyses/Method |
|---|---|---|
| Project Name: 5725 Thornhill Drive Oakland, CA | Report To: Tony Perini | |
| | Company: SOMA Environmental Engineering, Inc. | |
| Turnaround Time: Standard | Tel: 925-734-6400<br>Fax: 925-734-6401 | |

| Lab No. | Sample ID | Sampling Date/Time: Date | Time | Matrix: Soil | Water | Waste | # of Containers | Preservatives: HCL | $H_2So4$ | NONE | ICE | Field Notes | TPHg, BTEX, MtBE 8260B | Gas Ox – Lead Scavenge | Ethanol | TPH-d, TPH-mo | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SOMA-1 | 1/8/07 | 125 PM | | X | | 2 L Amber<br>3 VOAs | X | | X | X | Grab Sample | X | X | X | X | | | | |
| | SOMA-2 | ↓ | 12/8 PM | | X | | 2 L Amber<br>3 VOAs | X | | X | X | Grab Sample | X | X | X | X | | | | |
| | SOMA-3 | | 1250 PM | | X | | 2 L Amber<br>3 VOAs | X | | X | X | Grab Sample | X | X | X | X | | | | |
| | SOMA-4 | | 1145 AM | | X | | 2L Amber<br>3 VOAs | X | | X | X | Grab Sample | X | X | X | X | | | | |

| Sampler Remarks: | Relinquished by: | Date/Time: | Received by: | Date/Time: |
|---|---|---|---|---|
| | Tony Perini | 245 PM<br>1/8/07 | James Zuniga | 2:45 PM<br>1/8/07 |

PAL Pacific Analytical Laboratory
851 West Midway Ave. Suite 201
Alameda, CA 94501 Phone (510) 864-0364

25 January 2007

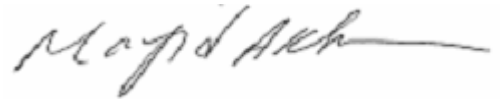
Mansour Sepehr
SOMA Environmental Engineering Inc.
6620 Owens Drive, Suite A
Pleasanton, CA 94588

RE: 5725 Thornhill Dr., Oakland

Work Order Number: 7010001

This Laboratory report has been reviewed for technical correctness and completeness. This entire report was reviewed and approved by the Laboratory Director or the Director's designee, as verified by the following signature.

Sincerely,



Maiid Akhavan
Laboratory Director

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| SOMA-1 | 7010001-01 | Water | 08-Jan-07 13:25 | 08-Jan-07 15:19 |
| SOMA-2 | 7010001-02 | Water | 08-Jan-07 12:18 | 08-Jan-07 15:19 |
| SOMA-3 | 7010001-03 | Water | 08-Jan-07 12:50 | 08-Jan-07 15:19 |
| SOMA-4 | 7010001-04 | Water | 08-Jan-07 11:45 | 08-Jan-07 15:19 |

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## Extractable Petroleum Hydrocarbons by 8015 DRO

## Pacific Analytical Laboratory

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SOMA-1 (7010001-01) Water Sampled: 08-Jan-07 13:25 Received: 08-Jan-07 15:19** | | | | | | | | | |
| Diesel (C10-C24) | ND | 50.0 | ug/l | 1 | BA71001 | 10-Jan-07 | 10-Jan-07 | EPA 8015M | |
| Motor Oil (C24-C36) | ND | 250 | " | " | " | " | " | " | |
| *Surrogate: Pentacosane* | | *41.6 %* | *70-130* | | *"* | *"* | *"* | *"* | *S-04* |
| **SOMA-2 (7010001-02) Water Sampled: 08-Jan-07 12:18 Received: 08-Jan-07 15:19** | | | | | | | | | |
| **Diesel (C10-C24)** | **1010** | 50.0 | ug/l | 1 | BA71001 | 10-Jan-07 | 10-Jan-07 | EPA 8015M | D-06, D-30 |
| Motor Oil (C24-C36) | ND | 250 | " | " | " | " | " | " | |
| *Surrogate: Pentacosane* | | *89.4 %* | *70-130* | | *"* | *"* | *"* | *"* | |
| **SOMA-3 (7010001-03) Water Sampled: 08-Jan-07 12:50 Received: 08-Jan-07 15:19** | | | | | | | | | |
| **Diesel (C10-C24)** | **181** | 50.0 | ug/l | 1 | BA71001 | 10-Jan-07 | 10-Jan-07 | EPA 8015M | D-06, D-30 |
| Motor Oil (C24-C36) | ND | 250 | " | " | " | " | " | " | |
| *Surrogate: Pentacosane* | | *84.8 %* | *70-130* | | *"* | *"* | *"* | *"* | |
| **SOMA-4 (7010001-04) Water Sampled: 08-Jan-07 11:45 Received: 08-Jan-07 15:19** | | | | | | | | | |
| **Diesel (C10-C24)** | **977** | 50.0 | ug/l | 1 | BA71001 | 10-Jan-07 | 10-Jan-07 | EPA 8015M | D-06, D-30 |
| Motor Oil (C24-C36) | ND | 250 | " | " | " | " | " | " | |
| *Surrogate: Pentacosane* | | *91.8 %* | *70-130* | | *"* | *"* | *"* | *"* | |

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## Volatile Organic Compounds by EPA Method 8260B

## Pacific Analytical Laboratory

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SOMA-1 (7010001-01) Water Sampled: 08-Jan-07 13:25 Received: 08-Jan-07 15:19** | | | | | | | | | |
| Gasoline (C6-C12) | ND | 50.0 | ug/l | 1 | BA71002 | 08-Jan-07 | 08-Jan-07 | EPA 8260B | |
| Benzene | ND | 0.500 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.500 | " | " | " | " | " | " | |
| m&p-Xylene | ND | 2.00 | " | " | " | " | " | " | |
| o-xylene | ND | 0.500 | " | " | " | " | " | " | |
| Toluene | ND | 2.00 | " | " | " | " | " | " | |
| **MTBE** | **3.07** | 0.500 | " | " | " | " | " | " | |
| DIPE | ND | 0.500 | " | " | " | " | " | " | |
| ETBE | ND | 0.500 | " | " | " | " | " | " | |
| TAME | ND | 2.00 | " | " | " | " | " | " | |
| TBA | ND | 2.00 | " | " | " | " | " | " | |
| 1,2-dichloroethane | ND | 0.500 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 0.500 | " | " | " | " | " | " | |
| Ethanol | ND | 1000 | " | " | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *80.4 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *128 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Perdeuterotoluene* | | *97.2 %* | | *70-130* | " | " | " | " | |
| **SOMA-2 (7010001-02) Water Sampled: 08-Jan-07 12:18 Received: 08-Jan-07 15:19** | | | | | | | | | |
| **Gasoline (C6-C12)** | **1720** | 50.0 | ug/l | 1 | BA71002 | 08-Jan-07 | 08-Jan-07 | EPA 8260B | |
| Benzene | ND | 0.500 | " | " | " | " | " | " | |
| **Ethylbenzene** | **2.75** | 0.500 | " | " | " | " | " | " | |
| m&p-Xylene | ND | 2.00 | " | " | " | " | " | " | |
| o-xylene | ND | 0.500 | " | " | " | " | " | " | |
| Toluene | ND | 2.00 | " | " | " | " | " | " | |
| **MTBE** | **33.3** | 0.500 | " | " | " | " | " | " | |
| DIPE | ND | 0.500 | " | " | " | " | " | " | |
| ETBE | ND | 0.500 | " | " | " | " | " | " | |
| TAME | ND | 2.00 | " | " | " | " | " | " | |
| **TBA** | **22.2** | 2.00 | " | " | " | " | " | " | |
| 1,2-dichloroethane | ND | 0.500 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 0.500 | " | " | " | " | " | " | |
| Ethanol | ND | 1000 | " | " | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *110 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *111 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Perdeuterotoluene* | | *105 %* | | *70-130* | " | " | " | " | |

Pacific Analytical Laboratory

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## Volatile Organic Compounds by EPA Method 8260B

## Pacific Analytical Laboratory

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SOMA-3 (7010001-03) Water Sampled: 08-Jan-07 12:50 Received: 08-Jan-07 15:19** | | | | | | | | | |
| Gasoline (C6-C12) | ND | 50.0 | ug/l | 1 | BA71002 | 08-Jan-07 | 08-Jan-07 | EPA 8260B | |
| Benzene | ND | 0.500 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.500 | " | " | " | " | " | " | |
| m&p-Xylene | ND | 2.00 | " | " | " | " | " | " | |
| o-xylene | ND | 0.500 | " | " | " | " | " | " | |
| Toluene | ND | 2.00 | " | " | " | " | " | " | |
| **MTBE** | **8.65** | 0.500 | " | " | " | " | " | " | |
| DIPE | ND | 0.500 | " | " | " | " | " | " | |
| ETBE | ND | 0.500 | " | " | " | " | " | " | |
| TAME | ND | 2.00 | " | " | " | " | " | " | |
| TBA | ND | 2.00 | " | " | " | " | " | " | |
| 1,2-dichloroethane | ND | 0.500 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 0.500 | " | " | " | " | " | " | |
| Ethanol | ND | 1000 | " | " | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *83.4 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *113 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Perdeuterotoluene* | | *96.8 %* | | *70-130* | " | " | " | " | |
| **SOMA-4 (7010001-04) Water Sampled: 08-Jan-07 11:45 Received: 08-Jan-07 15:19** | | | | | | | | | |
| **Gasoline (C6-C12)** | **2280** | 50.0 | ug/l | 1 | BA71002 | 08-Jan-07 | 08-Jan-07 | EPA 8260B | |
| Benzene | ND | 0.500 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.500 | " | " | " | " | " | " | |
| m&p-Xylene | ND | 2.00 | " | " | " | " | " | " | |
| o-xylene | ND | 0.500 | " | " | " | " | " | " | |
| Toluene | ND | 2.00 | " | " | " | " | " | " | |
| **MTBE** | **36.0** | 0.500 | " | " | " | " | " | " | |
| DIPE | ND | 0.500 | " | " | " | " | " | " | |
| ETBE | ND | 0.500 | " | " | " | " | " | " | |
| TAME | ND | 2.00 | " | " | " | " | " | " | |
| **TBA** | **233** | 2.00 | " | " | " | " | " | " | |
| 1,2-dichloroethane | ND | 0.500 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 0.500 | " | " | " | " | " | " | |
| Ethanol | ND | 1000 | " | " | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *104 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *106 %* | | *70-130* | " | " | " | " | |
| *Surrogate: Perdeuterotoluene* | | *102 %* | | *70-130* | " | " | " | " | |

Pacific Analytical Laboratory

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| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## Extractable Petroleum Hydrocarbons by 8015 DRO - Quality Control

## Pacific Analytical Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BA71001 - EPA 3510B** | | | | | | | | | | |
| **Blank (BA71001-BLK1)** | | | | Prepared & Analyzed: 10-Jan-07 | | | | | | |
| *Surrogate: Pentacosane* | *48.8* | | *ug/l* | *50.0* | | *97.6* | *70-130* | | | |
| Diesel (C10-C24) | ND | 50.0 | " | | | | | | | |
| Motor Oil (C24-C36) | ND | 250 | " | | | | | | | |
| **LCS (BA71001-BS1)** | | | | Prepared & Analyzed: 10-Jan-07 | | | | | | |
| *Surrogate: Pentacosane* | *55.5* | | *ug/l* | *50.0* | | *111* | *70-130* | | | |
| Diesel (C10-C24) | 980 | 50.0 | " | 1000 | | 98.0 | 50-130 | | | |
| **LCS Dup (BA71001-BSD1)** | | | | Prepared: 10-Jan-07 Analyzed: 11-Jan-07 | | | | | | |
| *Surrogate: Pentacosane* | *44.8* | | *ug/l* | *50.0* | | *89.6* | *70-130* | | | |
| Diesel (C10-C24) | 848 | 50.0 | " | 1000 | | 84.8 | 50-130 | 14.4 | 40 | |

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Pacific Analytical Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BA71002 - EPA 5030 Water MS** | | | | | | | | | | |
| **Blank (BA71002-BLK1)** | | | | Prepared & Analyzed: 10-Jan-07 | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *40.8* | | *ug/l* | *50.0* | | *81.6* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *63.6* | | *"* | *50.0* | | *127* | *70-130* | | | |
| *Surrogate: Perdeuterotoluene* | *48.9* | | *"* | *50.0* | | *97.8* | *70-130* | | | |
| MTBE | ND | 0.500 | " | | | | | | | |
| DIPE | ND | 0.500 | " | | | | | | | |
| ETBE | ND | 0.500 | " | | | | | | | |
| TAME | ND | 2.00 | " | | | | | | | |
| Gasoline (C6-C12) | ND | 50.0 | " | | | | | | | |
| TBA | ND | 2.00 | " | | | | | | | |
| 1,2-dichloroethane | ND | 0.500 | " | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 0.500 | " | | | | | | | |
| Ethanol | ND | 1000 | " | | | | | | | |
| Benzene | ND | 0.500 | " | | | | | | | |
| Ethylbenzene | ND | 0.500 | " | | | | | | | |
| m&p-Xylene | ND | 2.00 | " | | | | | | | |
| o-xylene | ND | 0.500 | " | | | | | | | |
| Toluene | ND | 2.00 | " | | | | | | | |
| **LCS (BA71002-BS1)** | | | | Prepared & Analyzed: 10-Jan-07 | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *43.5* | | *ug/l* | *50.0* | | *87.0* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *52.9* | | *"* | *50.0* | | *106* | *70-130* | | | |
| *Surrogate: Perdeuterotoluene* | *46.0* | | *"* | *50.0* | | *92.0* | *70-130* | | | |
| MTBE | 104 | 0.500 | " | 100 | | 104 | 70-130 | | | |
| ETBE | 77.2 | 0.500 | " | 100 | | 77.2 | 70-130 | | | |
| TAME | 84.8 | 2.00 | " | 100 | | 84.8 | 70-130 | | | |
| TBA | 539 | 2.00 | " | 500 | | 108 | 70-130 | | | |
| Gasoline (C6-C12) | 1970 | 50.0 | " | 2000 | | 98.5 | 70-130 | | | |
| Benzene | 96.2 | 0.500 | " | 100 | | 96.2 | 70-130 | | | |
| Toluene | 93.3 | 2.00 | " | 100 | | 93.3 | 70-130 | | | |

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Pacific Analytical Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BA71002 - EPA 5030 Water MS** | | | | | | | | | | |
| **LCS Dup (BA71002-BSD1)** | | | | Prepared & Analyzed: 10-Jan-07 | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *46.5* | | *ug/l* | *50.0* | | *93.0* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *50.8* | | *"* | *50.0* | | *102* | *70-130* | | | |
| *Surrogate: Perdeuterotoluene* | *45.0* | | *"* | *50.0* | | *90.0* | *70-130* | | | |
| MTBE | 108 | 0.500 | " | 100 | | 108 | 70-130 | 3.77 | 20 | |
| ETBE | 81.1 | 0.500 | " | 100 | | 81.1 | 70-130 | 4.93 | 20 | |
| TAME | 86.5 | 2.00 | " | 100 | | 86.5 | 70-130 | 1.98 | 20 | |
| TBA | 474 | 2.00 | " | 500 | | 94.8 | 70-130 | 12.8 | 20 | |
| Gasoline (C6-C12) | 2000 | 50.0 | " | 2000 | | 100 | 70-130 | 1.51 | 20 | |
| Benzene | 89.6 | 0.500 | " | 100 | | 89.6 | 70-130 | 7.10 | 20 | |
| Toluene | 88.0 | 2.00 | " | 100 | | 88.0 | 70-130 | 5.85 | 20 | |

| | | |
|---|---|---|
| SOMA Environmental Engineering Inc. | Project: 5725 Thornhill Dr., Oakland | |
| 6620 Owens Drive, Suite A | Project Number: 2831 | **Reported:** |
| Pleasanton CA, 94588 | Project Manager: Mansour Sepehr | 25-Jan-07 14:40 |

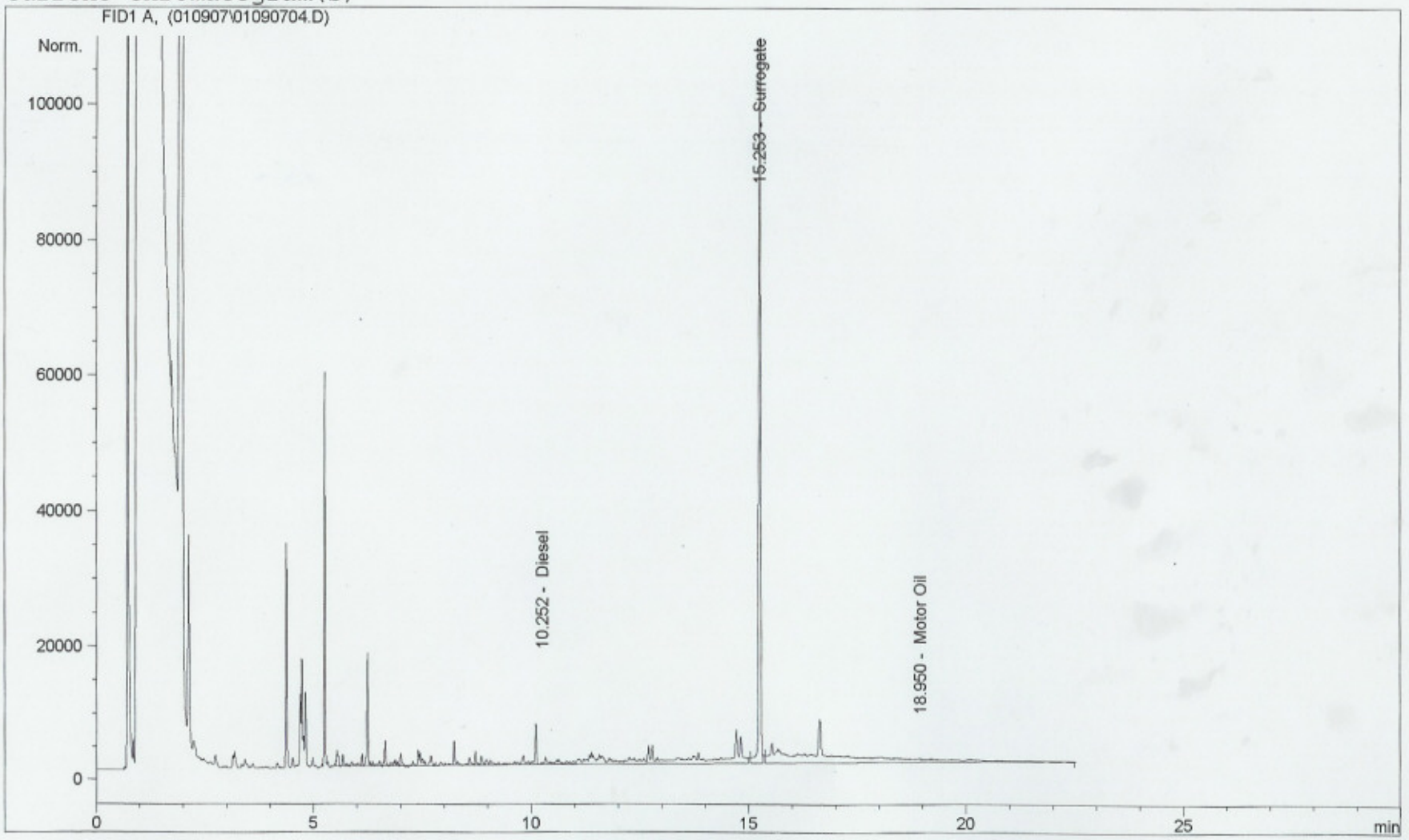
## Notes and Definitions

| | |
|---|---|
| S-04 | The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect. |
| D-30 | Unidentified hydrocarbons C9-C16. |
| D-06 | The sample chromatographic pattern does not resemble the fuel standard used for quantitation. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

Print of window 38: Current Chromatogram(s)

| | | | |
|---|---|---|---|
| Injection Date | : 1/10/07 10:56:42 AM | Seq. Line | : 3 |
| Sample Name | : BA71001-BLK1 | Vial | : 5 |
| Acq. Operator | : jz | Inj | : 1 |
| | | Inj Volume | : 2 ul |
| Acq. Method | : C:\HPCHEM\1\METHODS\GC100206.M | | |
| Last changed | : 11/7/06 11:14:49 AM by jz | | |
| Analysis Method | : C:\HPCHEM\1\METHODS\GC100206.M | | |
| Last changed | : 1/25/07 2:02:53 PM by jz (modified after loading) | | |

Current Chromatogram(s)

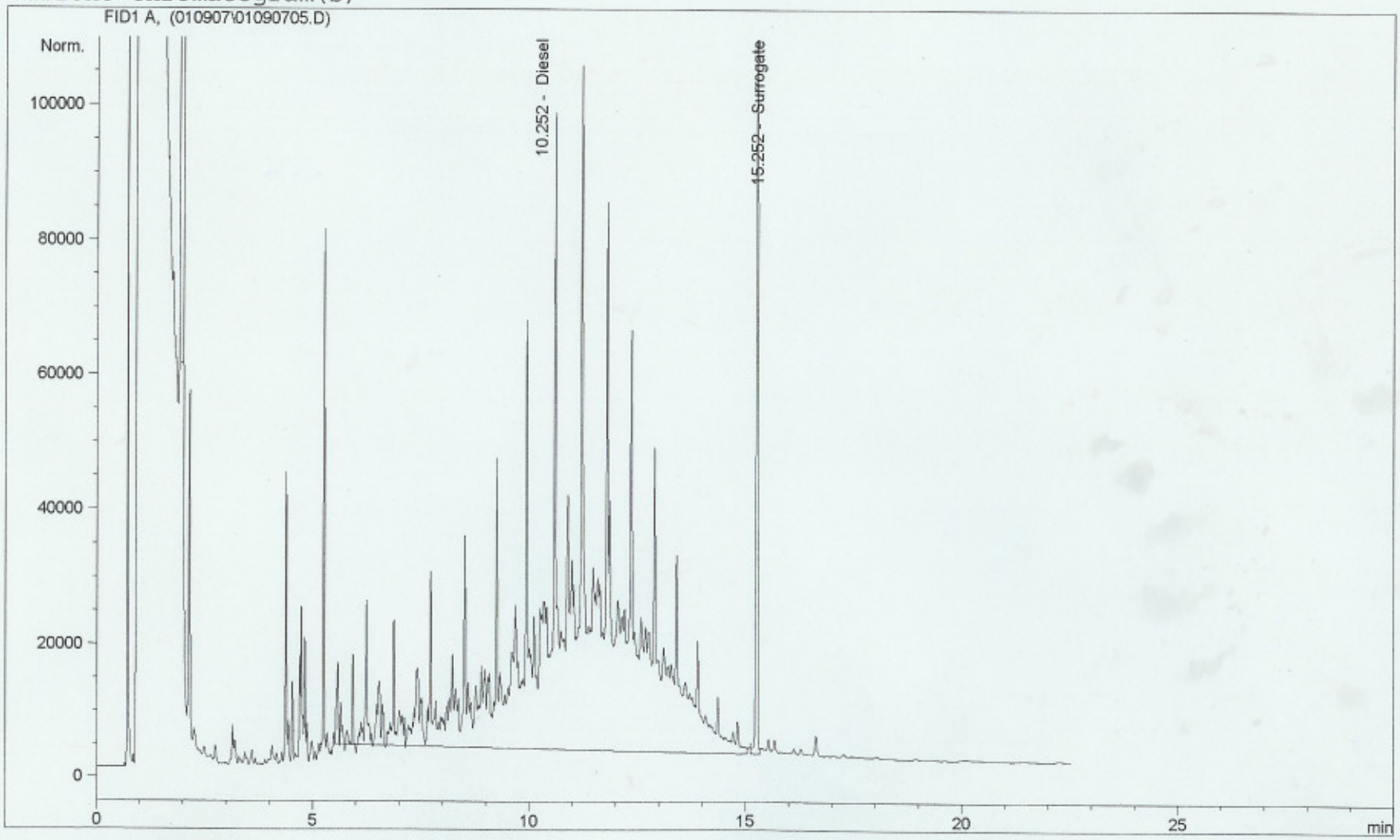



Instrument 1 1/25/07 2:14:41 PM jz

Print of window 38: Current Chromatogram(s)

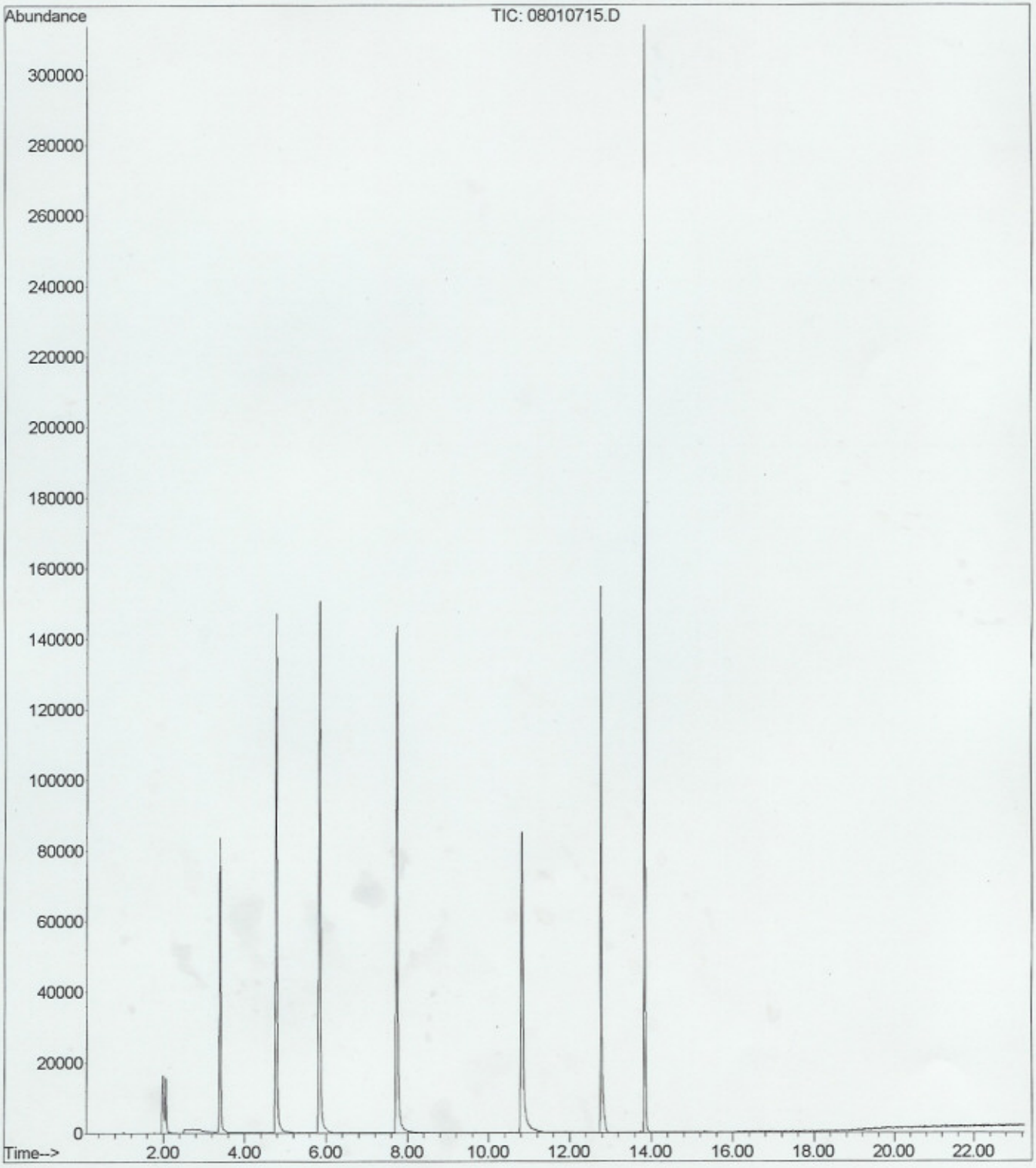
| | | | |
|---|---|---|---|
| Injection Date | : 1/10/07 11:28:17 AM | Seq. Line | : 4 |
| Sample Name | : BA71001-BS1 | Vial | : 6 |
| Acq. Operator | : jz | Inj | : 1 |
| | | Inj Volume | : 2 ul |
| Acq. Method | : C:\HPCHEM\1\METHODS\GC100206.M | | |
| Last changed | : 11/7/06 11:14:49 AM by jz | | |
| Analysis Method | : C:\HPCHEM\1\METHODS\GC100206.M | | |
| Last changed | : 1/25/07 2:02:53 PM by jz (modified after loading) | | |

Current Chromatogram(s)

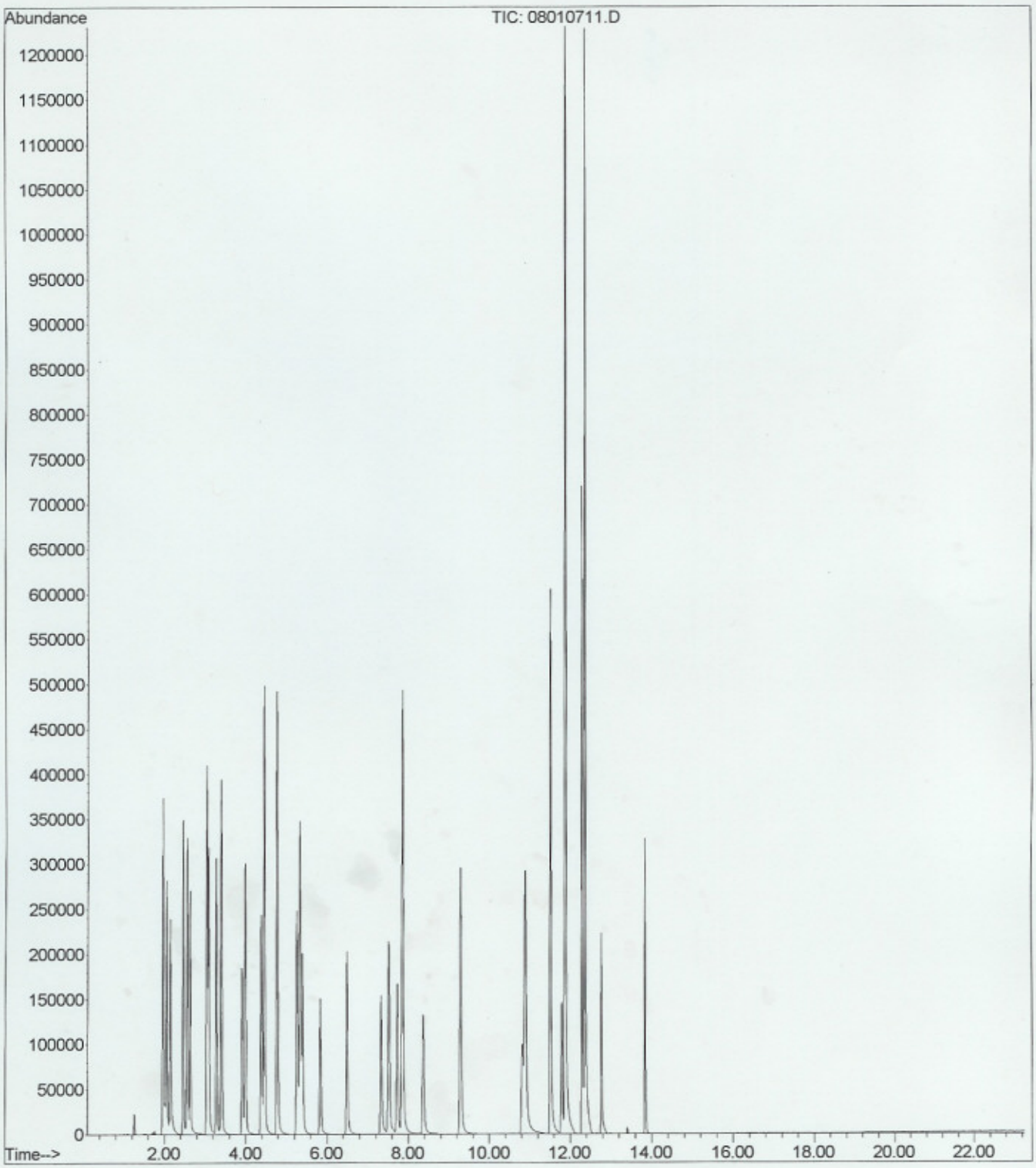



Instrument 1 1/25/07 2:14:52 PM jz

File :C:\MSDChem\1\DATA\2007-Jan-08-1100.b\08010715.D
Operator :
Acquired : 8 Jan 2007 8:16 pm using AcqMethod OXY21506.M
Instrument : PAL GCMS
Sample Name: BA71002-BLK1
Misc Info :
Vial Number: 15



File :C:\MSDChem\1\DATA\2007-Jan-08-1100.b\08010711.D
Operator :
Acquired : 8 Jan 2007 6:09 pm using AcqMethod OXY21506.M
Instrument : PAL GCMS
Sample Name: BA71002-BS1@voc
Misc Info :
Vial Number: 11



File :C:\MSDChem\1\DATA\2007-Jan-08-1100.b\08010712.D
Operator :
Acquired : 8 Jan 2007 6:41 pm using AcqMethod OXY21506.M
Instrument : PAL GCMS
Sample Name: BA71002-BS1@gas
Misc Info :
Vial Number: 12