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October 29, 2007

Mr. Steven Plunkett  
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 Mr. Plunkett:

SOMA's "Third 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



cc: Mr. Mohammad Mashhoon w/report enclosure

**Third Quarter 2007  
Groundwater Monitoring Report**

**Mash Petroleum Inc.  
5725 Thornhill Drive  
Oakland, California**

**October 29, 2007**

**Project 2831**

**Prepared for  
Mr. Mohammad Mashhoon  
1721 Jefferson Street  
Oakland, California 94612**



**ENVIRONMENTAL ENGINEERING, INC.**

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## CERTIFICATION

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



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



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## 1.0 INTRODUCTION

SOMA Environmental Engineering, Inc. (SOMA) has prepared this report on behalf of Mr. Mohammad Mashhoon, property owner of 5725 Thornhill Drive, Oakland, California (the Site, Figure 1). The Site is currently an active ARCO station located in an area of primarily commercial and residential land uses.

This report summarizes results of the Third Quarter 2007 groundwater monitoring event conducted at the Site on September 13, 2007, and includes field measurement results of physical and chemical properties of the groundwater at the time of sampling and laboratory analytical results for the groundwater samples.

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

### 1.1 Previous Activities

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).

February 4, 1999: Penn 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.

July 1999: ASE drilled borehole BH-A in the vicinity of the former WOT.

September 6, 2000: ASE drilled soil boreholes BH-B and BH-C.

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 locations of the borings.

March 2004: On March 1 and 2, SOMA oversaw advancement of nine temporary well boreholes (HP-1 through HP-7, HP-9 and HP-10) by Gregg Drilling & Testing (Gregg). 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 and

three additional wells (SOMA-1 to SOMA-3) were installed. Locations of boreholes and wells are shown in Figure 2.

Results of the March 2004 investigation and details of 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.

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 State Department of Water Resources and Alameda County Public Works Agency records, no drinking water, domestic or irrigation wells were within a quarter-mile radius of the Site.

May 2005: CPT/MIP boreholes (CPT-1 through CPT-5 and CPT-7 through CPT-11) were advanced under SOMA's supervision. CPT-6 could not be drilled due to physical constraints and obstruction of local traffic. Ten boreholes, designated 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 locations of CPT boreholes and SOMA-4.

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. RESULTS**

Following are results of field measurements and laboratory analyses for the September 13, 2007 groundwater monitoring event.

### **2.1 Field Measurements**

As shown in Table 1, depth to groundwater ranged from 6.31 feet in SOMA-1 to 8.46 feet in SOMA-4. Corresponding groundwater elevations ranged from 564.19 feet in SOMA-4 to 570.16 feet in SOMA-1. The contour map of the groundwater elevations is presented in Figure 3. Groundwater flows southwesterly across the Site, with an average gradient of 0.030 feet/feet. Since the previous monitoring event (Second Quarter 2007), the flow direction has remained southwesterly; however, the gradient has slightly increased.

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

## 2.2 Laboratory Analyses

Table 1 presents the laboratory analysis results for TPH-g, TPH-d and TPH-mo; benzene, toluene, ethylbenzene, total xylenes (BTEX); and MtBE. Table 2 presents results of the gasoline oxygenates and lead scavengers analysis.

TPH-g was below the laboratory-reporting limit in wells SOMA-1 and SOMA-3. It was detected in SOMA-2 and SOMA-4 at 906 µg/L and 2,670 µg/L, respectively. 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 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 wells SOMA-1 and SOMA-3. Detectable TPH-d concentrations ranged from 427 µg/L in SOMA-2 to 642 µg/L in SOMA-4. During analytical testing for TPH-d results, several variations were observed that 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 of 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 SOMA-2 and SOMA-4.

TPH-mo was below the laboratory-reporting limit throughout the Site.

The following BTEX analytes were observed during this monitoring event:

- All BTEX analytes were below the laboratory-reporting limit in SOMA-1 and SOMA-3.
- In SOMA-2 and SOMA-4, benzene and toluene were below the laboratory-reporting limit, and ethylbenzene and total xylenes were at low levels.

MtBE was detected at trace concentrations in all groundwater samples collected during this monitoring event. Detectable MtBE concentrations ranged from .85 µg/L in well SOMA-1 to 58 µg/L in SOMA-2. Due to the minimal 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), tertiary-amyl methyl ether (TAME), 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB), and ethanol, were below the laboratory reporting limit in all of the groundwater samples collected during the Third Quarter 2007 monitoring event. Tertiary-butyl alcohol (TBA) was detected in wells SOMA-2 and SOMA-4 at 61.1



µg/L and 278 µg/L, respectively; and below the laboratory-reporting limit in SOMA-1 and SOMA-3. Due to the minimal 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. CONCLUSIONS AND RECOMMENDATIONS**

Findings of the Third Quarter 2007 groundwater monitoring event are summarized as follows:

- The groundwater flow direction has remained southwesterly across the Site.
- Based on previous site investigations and results of quarterly monitoring events, MtBE at low concentration exists in subsurface.

**In September 2007, SOMA conducted additional site investigation and concluded that the site is a “Low Risk Petroleum Hydrocarbons Release Site”. The results of current groundwater monitoring data confirmed SOMA’s conclusions. As such, SOMA recommends that a “No Further Action” status to be adopted for the Site.**

### **4. REPORT LIMITATIONS**

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

SOMA warrants that the services were provided 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 <sup>1</sup>	<250 <sup>1</sup>	<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 <sup>4</sup>	<250 <sup>4</sup>	<0.5	<2.0	<0.5	<2.0	3.07
	6/14/2007	576.47	5.96	570.51	<50	<50 <sup>4</sup>	<250 <sup>4</sup>	<0.5	<2.0	<0.5	<2.0	1.91
9/13/2007	576.47	6.31	570.16	<50	<50 <sup>1</sup>	<250 <sup>1</sup>	<0.5	<2.0	<0.5	<2.0	0.85	

**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	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
	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 <sup>1,2,3</sup>	<250 <sup>1</sup>	<0.5	<2.0	15.3	8.49	38.5
	8/3/2006	575.50	7.39	568.11	3,580	286 <sup>1,3</sup>	<250	0.8	0.7	2.65	0.7	44.8
	10/30/2006	575.50	7.60	567.90	1,680	608 <sup>2,3</sup>	448	<0.5	<2.0	3.78	<1.0	51.4
	1/8/2007	575.50	7.18	568.32	1,720	1010 <sup>3,Y</sup>	<250	<0.5	<2.0	2.75	<2.0	33.3
	6/14/2007	575.50	7.39	568.11	988	427 <sup>3,4,Y</sup>	<250 <sup>4</sup>	<0.5	<2.0	4.80	2.46	28.9
<b>9/13/2007</b>	<b>575.50</b>	<b>7.91</b>	<b>567.59</b>	<b>906</b>	<b>427<sup>1,2,3</sup></b>	<b>&lt;250<sup>1</sup></b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>4.64</b>	<b>2.37</b>	<b>58</b>	
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

**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-3 cont	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 <sup>1,2,3</sup>	<250 <sup>1</sup>	<0.5	<2.0	<0.5	<1.0	5.49
	8/3/2006	572.92	7.35	565.57	<50	60 <sup>1,2</sup>	<250	<0.5	<0.5	<0.5	<1.0	8.05
	10/30/2006	572.92	7.64	565.28	<50	199 <sup>2,3</sup>	<250	<0.5	<2.0	<0.5	<1.0	7.37
	1/8/2007	572.92	7.82	565.10	<50	181 <sup>3,Y</sup>	<250	<0.5	<2.0	<0.5	<2.0	8.65
6/14/2007	572.92	7.31	565.61	<50	569 <sup>3,Y</sup>	<250	<0.5	<2.0	<0.5	<2.0	5.57	
	<b>9/13/2007</b>	<b>572.92</b>	<b>8.00</b>	<b>564.92</b>	<b>&lt;50</b>	<b>&lt;50<sup>1</sup></b>	<b>&lt;250<sup>1</sup></b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>8.55</b>
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 <sup>1,2,3</sup>	<250 <sup>1</sup>	<0.5	<2.0	<0.5	<1.0	231
	8/3/2006	572.65	8.08	564.57	4,340	357 <sup>1,3</sup>	<250	<0.5	0.52	<0.5	0.52	34.2
	10/30/2006	572.65	8.11	564.54	4,320	1070 <sup>2,3</sup>	<250	<0.5	<2.0	3.34	0.54	37.4
	1/8/2007	572.65	7.86	564.79	2,280	977 <sup>3,Y</sup>	<250	<0.5	<2.0	<0.5	<2.0	36
	6/14/2007	572.65	8.03	564.62	2,600	407 <sup>3,4,Y</sup>	<250 <sup>4</sup>	<0.5	<2.0	4.39	2.69	10.3
	<b>9/13/2007</b>	<b>572.65</b>	<b>8.46</b>	<b>564.19</b>	<b>2,670</b>	<b>642<sup>1,2,3</sup></b>	<b>&lt;250<sup>1</sup></b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>4.52</b>	<b>2.79</b>	<b>25.3</b>

**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)
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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 3Q07.

4 Surrogate recovery for this sample is outside of established control limits due to sample matrix effect, diesel & motor oil 1Q07, 2Q07.

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
	6/14/2007	<2.0	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	<b>9/13/2007</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>
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
	6/14/2007	35.6	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	<b>9/13/2007</b>	<b>61.1</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>

**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
	6/14/2007	<2.0	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
<b>9/13/2007</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>	
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
	6/14/2007	87.9	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
<b>9/13/2007</b>	<b>278</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>	

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

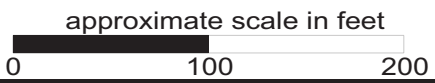
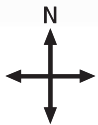
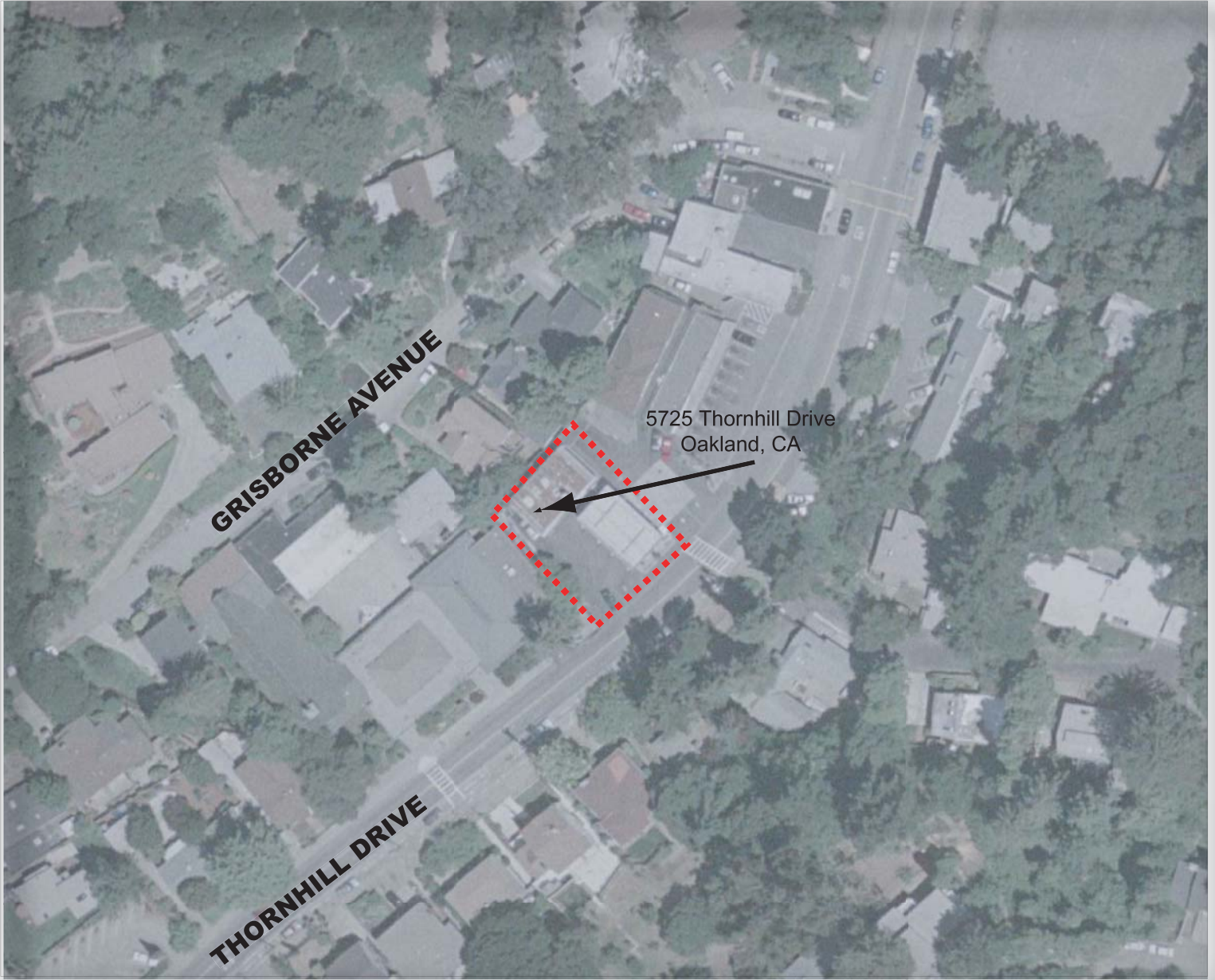


Figure 1: Site vicinity map.

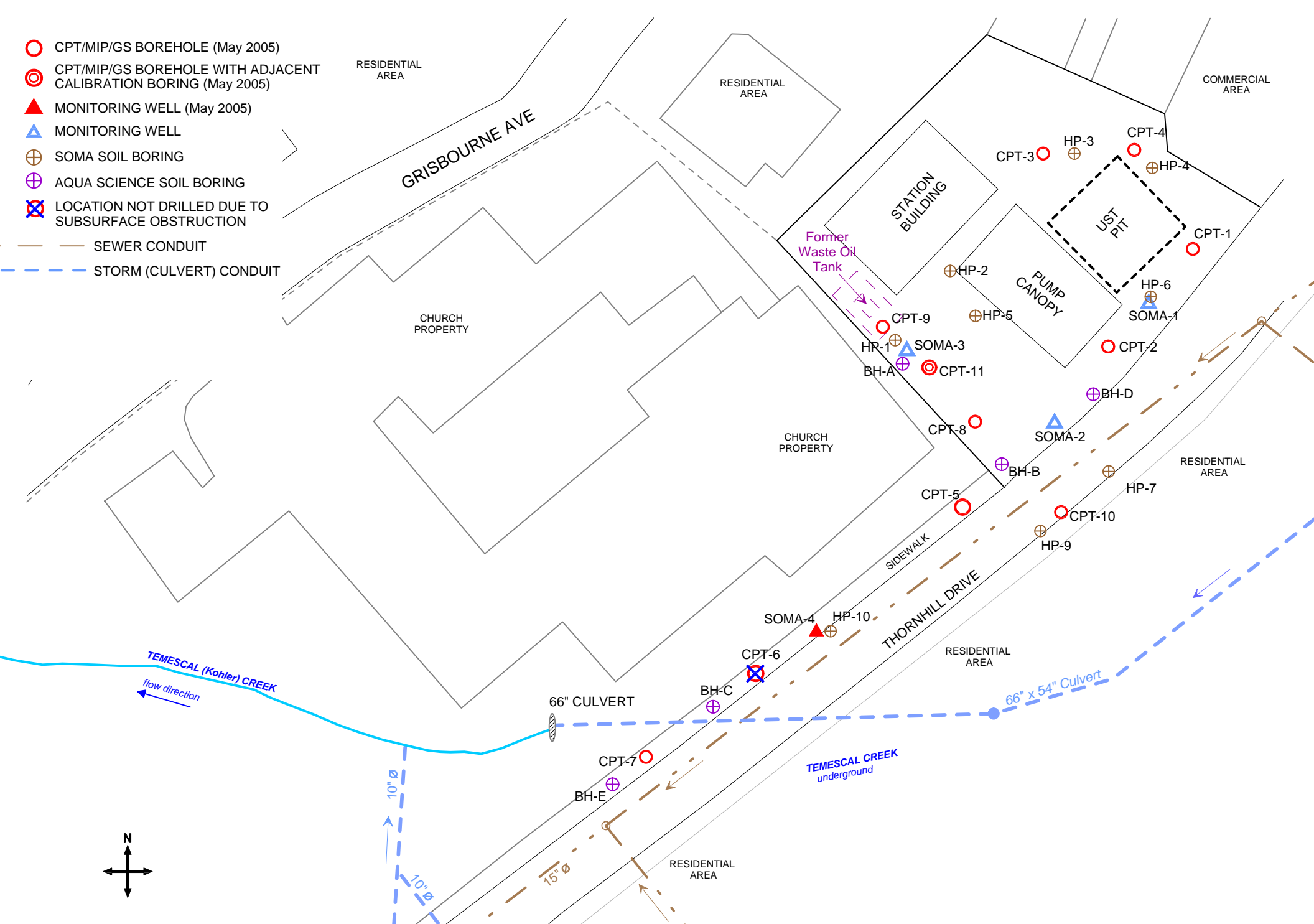
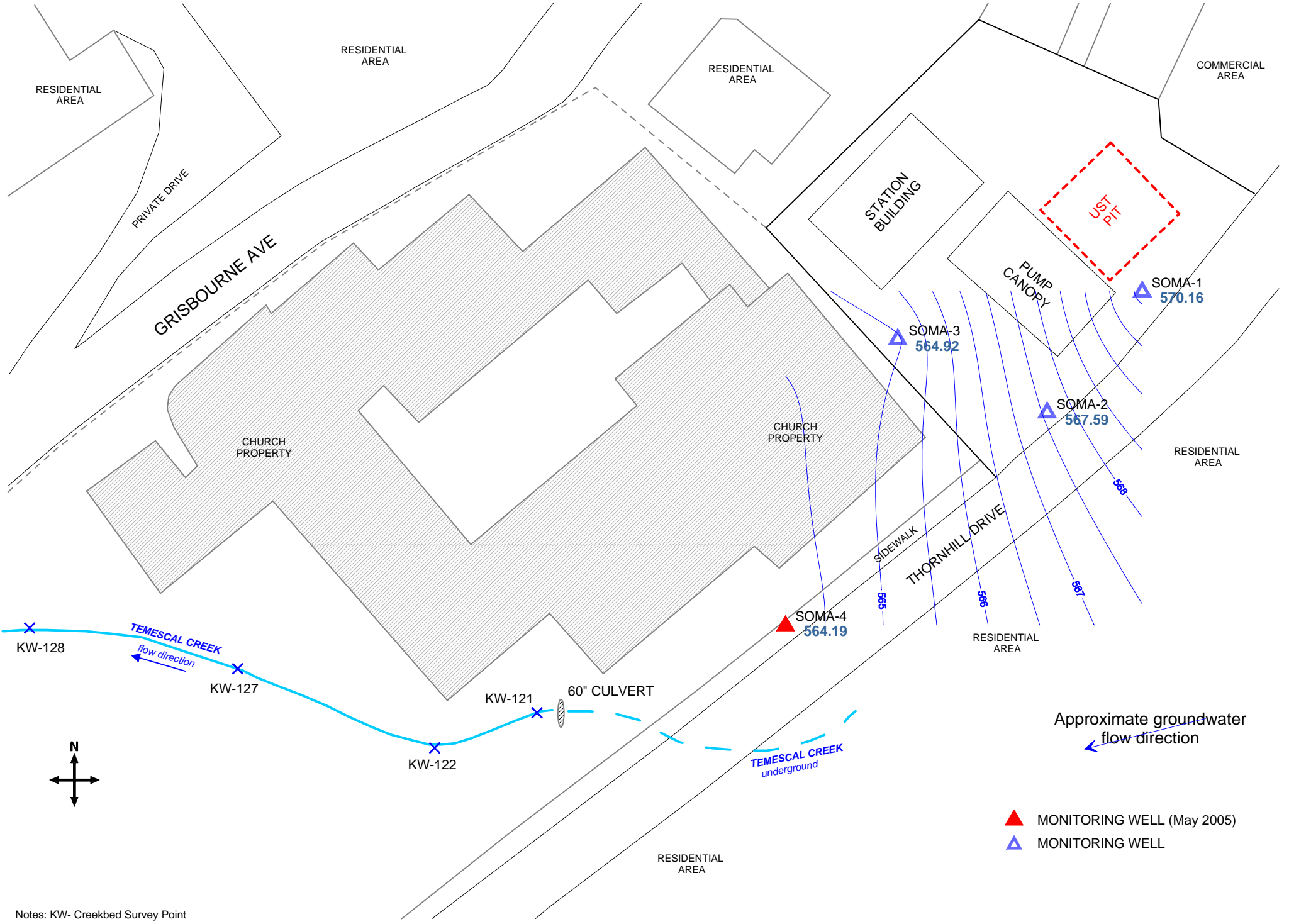


Figure 2: Site map showing locations of monitoring wells, soil borings, decommissioned wells, and CPT/MIP/GS boreholes.



Notes: KW- Creekbed Survey Point

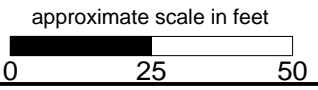
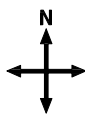
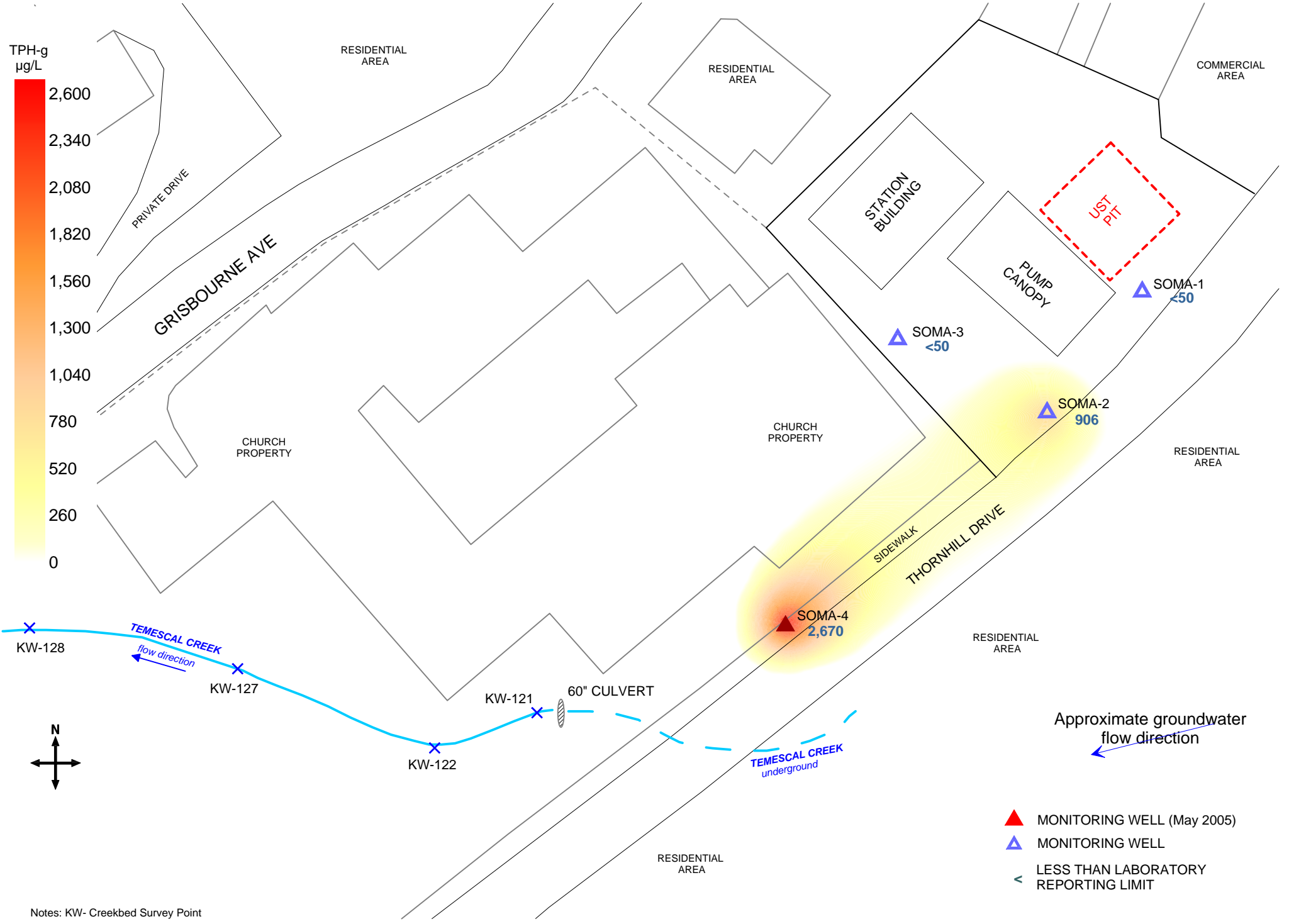
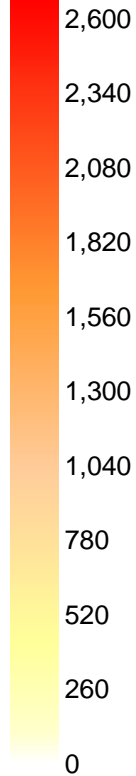


Figure 3: Groundwater elevation contour map in feet. September 13, 2007.

TPH-g  
µg/L



Approximate groundwater flow direction

- ▲ MONITORING WELL (May 2005)
- ▲ MONITORING WELL
- < LESS THAN LABORATORY REPORTING LIMIT

Notes: KW- Creekbed Survey Point

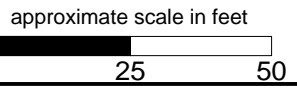


Figure 4: Contour map of TPH-g concentrations in groundwater. September 13, 2007.



Figure 5: Contour map of TPH-d concentrations in groundwater. September 13, 2007.

# **APPENDIX A**

## **SOMA's Groundwater Monitoring Procedures**

## **Field Activities**

On September 13, 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 September 13, 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 measurement of 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<sup>0</sup>C. A chain of custody (COC) form was written for all the samples. After the sampling was complete, on June 14, 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  
and  
Field Measurements of the Physical and Chemical  
Properties of the Groundwater Samples  
Collected During the Third Quarter 2007

**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	6067087.64	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

**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

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'		
<b>LOCAL CONTROL</b>				
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

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

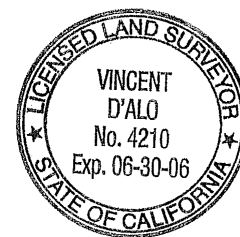
PID - HT2541

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





ENVIRONMENTAL ENGINEERING, INC

Well No.: SOMA-1  
 Casing Diameter: 2 inches  
 Depth of Well: 27.85 feet  
 Top of Casing Elevation: 576.47 feet  
 Depth to Groundwater: 6.31 feet  
 Groundwater Elevation: 570.16 feet  
 Water Column Height: 21.54 feet  
 Purged Volume: 13 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: September 13, 2007  
 Sampler: Lizzie Hightower

Purging Method: Bailer  Pump   
 Sampling Method: Bailer  Pump

Color: No  Yes  Describe: \_\_\_\_\_  
 Sheen: No  Yes  Describe: \_\_\_\_\_  
 Odor: No  Yes  Describe: \_\_\_\_\_

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
252 pm	Started purging well			
255 pm	4.5	6.67	18.7	820
259 pm	9	6.70	18.4	830
302 pm	13	6.65	18.2	850
305 pm	Sampled			



ENVIRONMENTAL ENGINEERING, INC

Well No.: SOMA-2  
 Casing Diameter: 2 inches  
 Depth of Well: 28.00 feet  
 Top of Casing Elevation: 575.5 feet  
 Depth to Groundwater: 7.91 feet  
 Groundwater Elevation: 567.59 feet  
 Water Column Height: 20.09 feet  
 Purged Volume: 10.5 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: September 13, 2007  
 Sampler: Lizzie Hightower

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

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
204 PM	Started purging well			
206 PM	2.5	7.07	20.1	1000
208 PM	5	6.94	19.6	1020
211 PM	8	6.91	19.3	1020
213 PM	10.5	6.90	19.5	1020
217 PM	Sampled			





ENVIRONMENTAL ENGINEERING, INC

Well No.: SOMA-3  
 Casing Diameter: 2 inches  
 Depth of Well: 27.77 feet  
 Top of Casing Elevation: 572.92 feet  
 Depth to Groundwater: 8.00 feet  
 Groundwater Elevation: 564.92 feet  
 Water Column Height: 19.77 feet  
 Purged Volume: 12 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: September 13, 2007  
 Sampler: Lizzie Hightower

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

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
340 pm	Started purging well			
343 pm	4	7.24	18.3	1180
347 pm	8	7.04	18.2	1110
351 pm	12	7.11	18.3	1100
355 pm	Sampled			



ENVIRONMENTAL ENGINEERING, INC

Well No.: SOMA-4  
 Casing Diameter: 2 inches  
 Depth of Well: 19.70 feet  
 Top of Casing Elevation: 572.65 feet  
 Depth to Groundwater: 8.46 feet  
 Groundwater Elevation: 564.19 feet  
 Water Column Height: 11.24 feet  
 Purged Volume: 8 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: September 13, 2007  
 Sampler: Lizzie Hightower

Purging Method: Bailer  Pump

Sampling Method: Bailer  Pump

Color: No  Yes  Describe: Grayish

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

Odor: No  Yes  Describe: Slight Petro Odor

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
124 Pm	Started purging well			
126 Pm	3	6.94	19.9	1020
128 Pm	6	6.76	18.9	1000
130 Pm	8	6.81	18.4	980
133 Pm	Sampled			

# Appendix C

Chain of Custody Form and Laboratory Report  
for the  
Third 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# *7090004*

Project No: 2831				Sampler: Lizzie Hightower								Analyses/Method								
Project Name: 5725 Thornhill Drive, Oakland				Report To: Joyce Bobek								TPHg, BTEX, MIBE 8260B	Gasoline Oxygenates, Lead Scavengers 8260B	Ethanol	TPHd 8015	TPHmo 3550/8015				
				Company: SOMA Environmental Engineering, Inc.																
Turnaround Time: Standard				Tel: 925-734-6400 Fax: 925-734-6401																
		Sampling Date/Time		Matrix			# of Containers	Preservatives				Field Notes								
Lab No.	Sample ID	Date	Time	Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE									
	SOMA-1	9/13/07	<i>305pm</i>		*		5 - VOAs	*			*									
	SOMA-2	9/13/07	<i>217 pm</i>		*		5 - VOAs	*			*									
	SOMA-3	9/13/07	<i>3355pm</i>		*		5 - VOAs	*			*									
	SOMA-4	9/13/07	<i>133 pm</i>		*		5 - VOAs	*			*									
	SOMA-1	9/13/07	<i>305pm</i>		*		2 - 1L Amber				*						*	*		
	SOMA-2	9/13/07	<i>217 pm</i>		*		2 - 1L Amber				*						*	*		
	SOMA-3	9/13/07	<i>355pm</i>		*		2 - 1L Amber				*						*	*		
	SOMA-4	9/13/07	<i>133 pm</i>		*		2 - 1L Amber				*						*	*		
<b>Sampler Remarks:</b>				<b>Relinquished by:</b>				<b>Date/Time:</b>		<b>Received by:</b>				<b>Date/Time:</b>						
Gasoline Oxygenates: DIPE, ETBE, TAME, TBA Lead Scavengers: EDB, 1,2-DCA Silica Gel Cleanup Method				<i>E. Hightower</i>				<i>9/13/07 507 pm</i>		<i>Vicki L. Vasquez</i>				<i>9/13/07 5:10 pm</i>						

08 October 2007

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

RE: 5725 Thornhill Dr., Oakland

Work Order Number: 7090004

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.  
6620 Owens Drive, Suite A  
Pleasanton CA, 94588

Project: 5725 Thornhill Dr., Oakland  
Project Number: 2831  
Project Manager: Mansour Sepehr

**Reported:**  
08-Oct-07 19:33

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SOMA-1	7090004-01	Water	13-Sep-07 15:05	13-Sep-07 17:10
SOMA-2	7090004-02	Water	13-Sep-07 14:17	13-Sep-07 17:10
SOMA-3	7090004-03	Water	13-Sep-07 15:55	13-Sep-07 17:10
SOMA-4	7090004-04	Water	13-Sep-07 13:33	13-Sep-07 17:10



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**Extractable Petroleum Hydrocarbons by 8015 DRO**  
**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SOMA-1 (7090004-01) Water    Sampled: 13-Sep-07 15:05    Received: 13-Sep-07 17:10</b>									
Diesel (C10-C24)	ND	50.0	ug/l	1	B172401	17-Sep-07	25-Sep-07	EPA 8015M	C-03
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	C-03
<i>Surrogate: Pentacosane</i>		87.4 %	50.4-137		"	"	"	"	
<b>SOMA-2 (7090004-02) Water    Sampled: 13-Sep-07 14:17    Received: 13-Sep-07 17:10</b>									
<b>Diesel (C10-C24)</b>	<b>322</b>	50.0	ug/l	1	B172401	17-Sep-07	25-Sep-07	EPA 8015M	C-03, D-06, D-30
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	C-03
<i>Surrogate: Pentacosane</i>		74.8 %	50.4-137		"	"	"	"	
<b>SOMA-3 (7090004-03) Water    Sampled: 13-Sep-07 15:55    Received: 13-Sep-07 17:10</b>									
Diesel (C10-C24)	ND	50.0	ug/l	1	B172401	17-Sep-07	25-Sep-07	EPA 8015M	C-03
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	C-03
<i>Surrogate: Pentacosane</i>		99.2 %	50.4-137		"	"	"	"	
<b>SOMA-4 (7090004-04) Water    Sampled: 13-Sep-07 13:33    Received: 13-Sep-07 17:10</b>									
<b>Diesel (C10-C24)</b>	<b>642</b>	50.0	ug/l	1	B172401	17-Sep-07	25-Sep-07	EPA 8015M	C-03, D-06, D-30
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	C-03
<i>Surrogate: Pentacosane</i>		39.0 %	50.4-137		"	"	"	"	S-04



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### Volatile Organic Compounds by EPA Method 8260B

#### Pacific Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SOMA-1 (7090004-01) Water</b> Sampled: 13-Sep-07 15:05    Received: 13-Sep-07 17:10									
Gasoline (C6-C12)	ND	50.0	ug/l	1	BI72402	17-Sep-07	24-Sep-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	"	"	"	"	"	"	
<b>MTBE</b>	<b>0.850</b>	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	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		108 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		97.0 %		70-130	"	"	"	"	
<b>SOMA-2 (7090004-02) Water</b> Sampled: 13-Sep-07 14:17    Received: 13-Sep-07 17:10									
<b>Gasoline (C6-C12)</b>	<b>906</b>	50.0	ug/l	1	BI72402	17-Sep-07	24-Sep-07	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>4.64</b>	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	2.00	"	"	"	"	"	"	
<b>o-xylene</b>	<b>2.37</b>	0.500	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
<b>MTBE</b>	<b>58.0</b>	0.500	"	"	"	"	"	"	
DIPE	ND	0.500	"	"	"	"	"	"	
ETBE	ND	0.500	"	"	"	"	"	"	
TAME	ND	2.00	"	"	"	"	"	"	
<b>TBA</b>	<b>61.1</b>	2.00	"	"	"	"	"	"	
1,2-dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.500	"	"	"	"	"	"	
Ethanol	ND	1000	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		118 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		107 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		104 %		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.





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### Volatile Organic Compounds by EPA Method 8260B

#### Pacific Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SOMA-3 (7090004-03) Water</b> Sampled: 13-Sep-07 15:55 Received: 13-Sep-07 17:10									
Gasoline (C6-C12)	ND	50.0	ug/l	1	BI72402	17-Sep-07	24-Sep-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	"	"	"	"	"	"	
<b>MTBE</b>	<b>8.55</b>	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	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.6 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		107 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		98.0 %		70-130	"	"	"	"	
<b>SOMA-4 (7090004-04) Water</b> Sampled: 13-Sep-07 13:33 Received: 13-Sep-07 17:10									
<b>Gasoline (C6-C12)</b>	<b>2670</b>	50.0	ug/l	1	BI72402	17-Sep-07	24-Sep-07	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>4.52</b>	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	2.00	"	"	"	"	"	"	
<b>o-xylene</b>	<b>2.79</b>	0.500	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
<b>MTBE</b>	<b>25.3</b>	0.500	"	"	"	"	"	"	
DIPE	ND	0.500	"	"	"	"	"	"	
ETBE	ND	0.500	"	"	"	"	"	"	
TAME	ND	2.00	"	"	"	"	"	"	
<b>TBA</b>	<b>278</b>	2.00	"	"	"	"	"	"	
1,2-dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.500	"	"	"	"	"	"	
Ethanol	ND	1000	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		126 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		104 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		108 %		70-130	"	"	"	"	

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**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
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**Batch BI72401 - EPA 3510B**

**Blank (BI72401-BLK1)**

Prepared & Analyzed: 25-Sep-07

Surrogate: Pentacosane	50.7		ug/l	50.0		101	50.4-137			
Diesel (C10-C24)	ND	50.0	"							
Motor Oil (C24-C36)	ND	250	"							

**LCS (BI72401-BS1)**

Prepared & Analyzed: 25-Sep-07

Surrogate: Pentacosane	50.3		ug/l	50.0		101	50.4-137			
Diesel (C10-C24)	859	50.0	"	1000		85.9	70-130			

**LCS Dup (BI72401-BSD1)**

Prepared & Analyzed: 25-Sep-07

Surrogate: Pentacosane	62.9		ug/l	50.0		126	50.4-137			
Diesel (C10-C24)	821	50.0	"	1000		82.1	70-130	4.52	40	



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**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
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**Batch BI72402 - EPA 5030 Water MS**

**Blank (BI72402-BLK1)**

Prepared & Analyzed: 24-Sep-07

Surrogate: 4-Bromofluorobenzene	47.3		ug/l	50.0		94.6	70-130			
Surrogate: Dibromofluoromethane	52.0		"	50.0		104	70-130			
Surrogate: Perdeuterotoluene	47.8		"	50.0		95.6	70-130			
MTBE	ND	0.500	"							
DIPE	ND	0.500	"							
ETBE	ND	0.500	"							
TAME	ND	2.00	"							
TBA	ND	2.00	"							
Gasoline (C6-C12)	ND	50.0	"							
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 (BI72402-BS1)**

Prepared & Analyzed: 24-Sep-07

Surrogate: 4-Bromofluorobenzene	56.8		ug/l	50.0		114	70-130			
Surrogate: Dibromofluoromethane	46.2		"	50.0		92.4	70-130			
Surrogate: Perdeuterotoluene	54.2		"	50.0		108	70-130			
MTBE	102	0.500	"	100		102	70-130			
ETBE	113	0.500	"	100		113	70-130			
TAME	115	2.00	"	100		115	70-130			
TBA	567	2.00	"	500		113	70-130			
Gasoline (C6-C12)	2410	50.0	"	2000		120	70-130			
Benzene	120	0.500	"	100		120	70-130			
Toluene	122	2.00	"	100		122	70-130			



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**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
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**Batch BI72402 - EPA 5030 Water MS**

**LCS Dup (BI72402-BSD1)**

Prepared & Analyzed: 24-Sep-07

Surrogate: 4-Bromofluorobenzene	60.1		ug/l	50.0		120	70-130			
Surrogate: Dibromofluoromethane	50.7		"	50.0		101	70-130			
Surrogate: Perdeuterotoluene	53.8		"	50.0		108	70-130			
MTBE	114	0.500	"	100		114	70-130	11.1	20	
ETBE	115	0.500	"	100		115	70-130	1.75	20	
TAME	113	2.00	"	100		113	70-130	1.75	20	
Gasoline (C6-C12)	2040	50.0	"	2000		102	70-130	16.6	20	
TBA	554	2.00	"	500		111	70-130	2.32	20	
Benzene	111	0.500	"	100		111	70-130	7.79	20	
Toluene	111	2.00	"	100		111	70-130	9.44	20	



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### Notes and Definitions

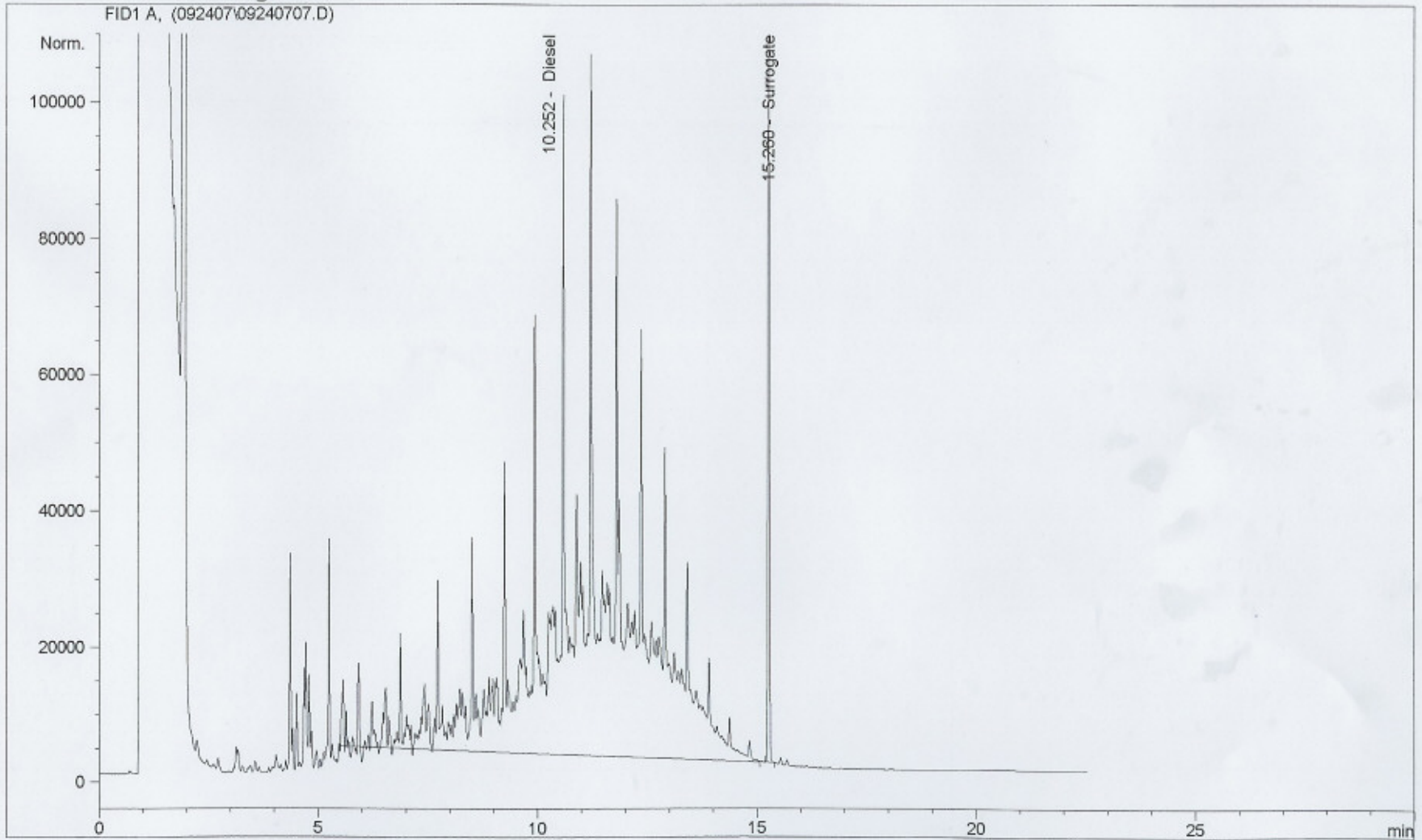
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- D-30 Unidentified hydrocarbons C9-C16.
- D-06 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- C-03 To reduce matrix interference, the sample extract has undergone silica-gel clean-up, method 3630, which is specific to polar compound contamination.
- 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



=====  
Injection Date : 9/24/07 9:20:03 PM                   Seq. Line : 3  
Sample Name : BI72401-BS1                               Vial : 6  
Acq. Operator : jz                                        Inj : 1  
  Inj Volume : 2 ul

Acq. Method : C:\HPCHEM\1\METHODS\GC071707.M  
Last changed : 9/5/07 7:27:56 PM by jz  
Analysis Method : C:\HPCHEM\1\METHODS\GC071707.M  
Last changed : 10/5/07 5:54:07 PM by jz  
(modified after loading)

Current Chromatogram(s)

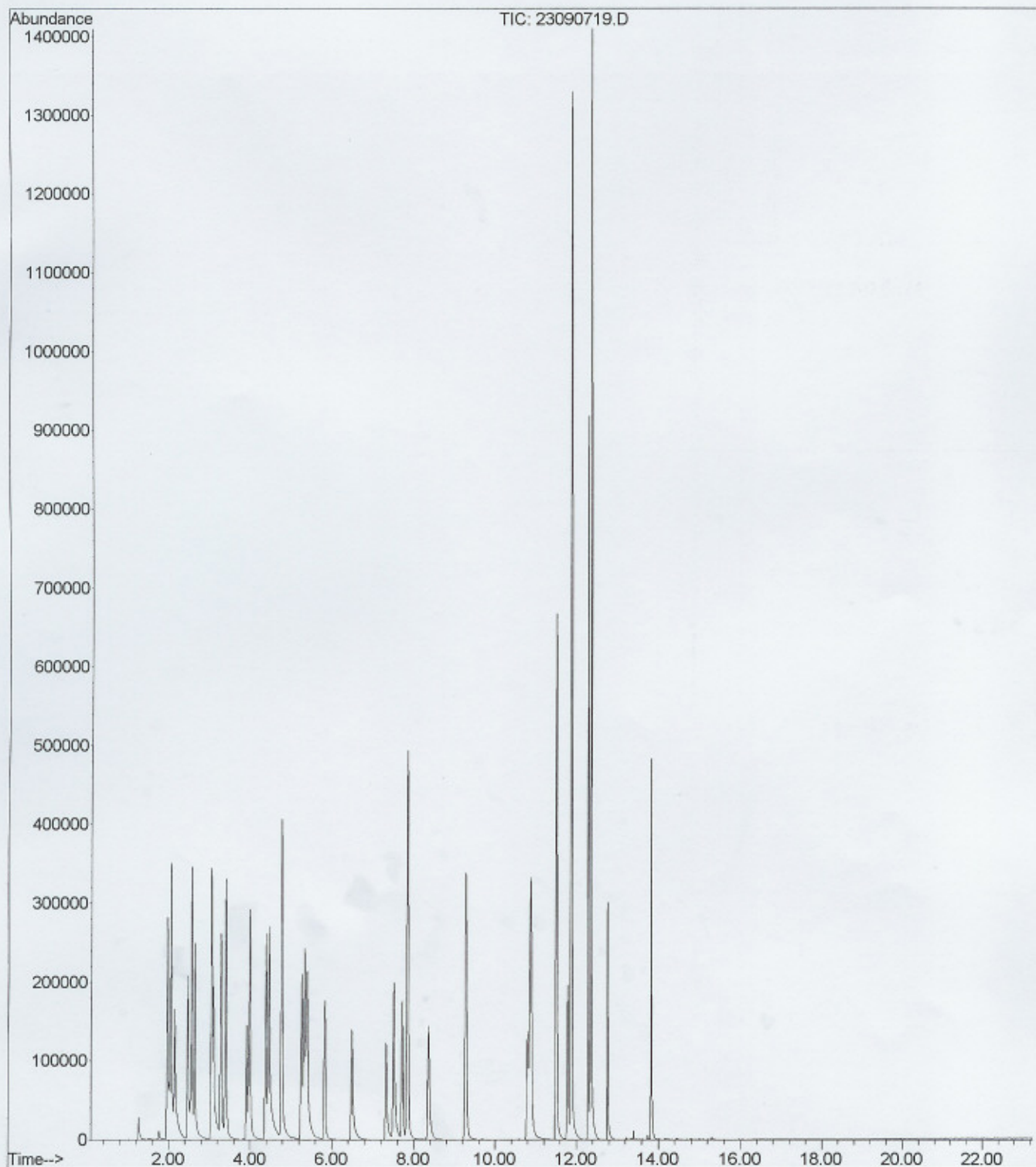


File : C:\MSDCHEM\1\DATA\2007-Sep-23-1157.b\23090722.D  
Operator : MA  
Acquired : 24 Sep 2007 12:06 am using AcqMethod OXY21506.M  
Instrument : PAL GCMS  
Sample Name: BI72402-BLK1  
Misc Info :  
Vial Number: 22





File : C:\MSDCHEM\1\DATA\2007-Sep-23-1157.b\23090719.D  
Operator : MA  
Acquired : 23 Sep 2007 10:31 pm using AcqMethod OXY21506.M  
Instrument : PAL GCMS  
Sample Name: BI72402-BS1@voc  
Misc Info :  
Vial Number: 19



File :C:\MSDCHEM\1\DATA\2007-Sep-23-1157.b\23090720.D  
Operator : MA  
Acquired : 23 Sep 2007 11:03 pm using AcqMethod OXY21506.M  
Instrument : PAL GCMS  
Sample Name: BI72402-BS1@gas  
Misc Info :  
Vial Number: 20

