#### RECEIVED

1:59 pm, Jul 05, 2007

July 3, 2007

Alameda County Environmental Health



Mr. Jerry Wickham Alameda County Environmental Health Services 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502

Re: Results of Forensic Analysis of Product Samples and Status of Free-Product Removal at Oakland-Glovatorium, 3815 Broadway, Oakland, California

#### Dear Jerry:

SOMA is submitting this letter to update you on the status of ongoing free-product removal activities and results of recent finger printing analysis of product samples at the above-referenced site. Free product has been actively monitored in temporary well B-8 since October 2001, and at well SOMA-4 since January 2002. Figure 1 shows the location of the site and of each well.

#### Status of Free Product Removal

Prior to installation of a skimmer pump in SOMA-4 in early 2004, there was over 10 feet of free product inside this well. On February 6, 2004, SOMA installed a flexible axial peristaltic pump (FAP system) in SOMA-4 to remove free product.

In August 2004, SOMA converted borings B-3 and B-8 into wells for removal of free product from these locations. The FAP system was installed in SOMA-4 and B-8 to remove free product from these locations. As of June 2007, approximately 1.835 gallons of free product and contaminated groundwater have been removed from these two wells, and transported off-site by NRC. SOMA has continued the freeproduct removal from SOMA-4 and B-8, including actively checking of product thicknesses and weekly or bi-weekly maintenance of the extraction pump and compressor. In early 2007, elevated levels of free product (up to 3 feet) were observed in B-8. As a result, in April 2007, the FAP in SOMA-4 was removed and installed in B-8. Since installation of the FAP, product thickness in B-8 has been significantly reduced. Table 1 shows field observations for SOMA-4 and B-8, and Figure 2 illustrates historical free-product thickness measurements in these wells. SOMA is actively checking the condition of SOMA-4 and B-8 and will continue until free product is completely removed.

Despite operation of the FAP, elevated free product thicknesses have historically been observed in SOMA-4. However, since April 2007 no significant levels of free product have been reported in SOMA 4 despite discontinuation of FAP operation at this well. Currently, only 0.8 feet of product is in SOMA-4. This observation suggests that the product volume around SOMA-4 has been significantly diminished. SOMA plans to install a new FAP on SOMA-4 shortly.

#### Results of Recent Forensic Analysis

On January 2007, SOMA collected two product samples for forensic analysis: one from SOMA-4, and the second from fresh product inside the solvent storage room as directed by the site operator, Mr. Eric Depper. The objective of this study was to compare the two product types and determine if their chemical composition is identical or totally different. On the day of sampling SOMA staff was denied access to the machine room to sample a used product from the cleaning machine. The samples were kept in an ice chest and shipped to Friedman & Bruya Inc. (FBI), a specialty laboratory in Seattle, Washington.

On March 12, 2007, FBI reported results of laboratory analysis including the chromatogram of the two product samples collected in January 2007. The two product samples were analyzed for paraffin, isoparaffin, aromatic, naphthalene and olefin (PIANO). Results indicated that product samples collected from SOMA-4 are not identical to the fresh product sample reportedly being used by Mr. Eric Depper.

On March 20, 2007, SOMA collected three additional used product samples from the dry-cleaning machine and sent them to FBI for forensic analysis. Results of laboratory analysis presented in FBI's report dated April 25, 2007 indicate that used product samples were identical to the fresh product sample collected in January but different from the product samples collected from SOMA-4. Appendix A Includes FBI reports along with laboratory analysis results and chain of custody forms.

In conclusion, the product level in SOMA-4 is not increasing, which indicates that we are getting closer to concluding our product removal activity at the site. Results of forensic analysis on free product samples showed that the product sample collected from SOMA-4 does not resemble the product sample currently being used by Mr. Eric Depper. If you have any questions or comments regarding this letter, please contact me or Senior Project Engineer Tony Perini, at 925-734-6400.

Sincerely,

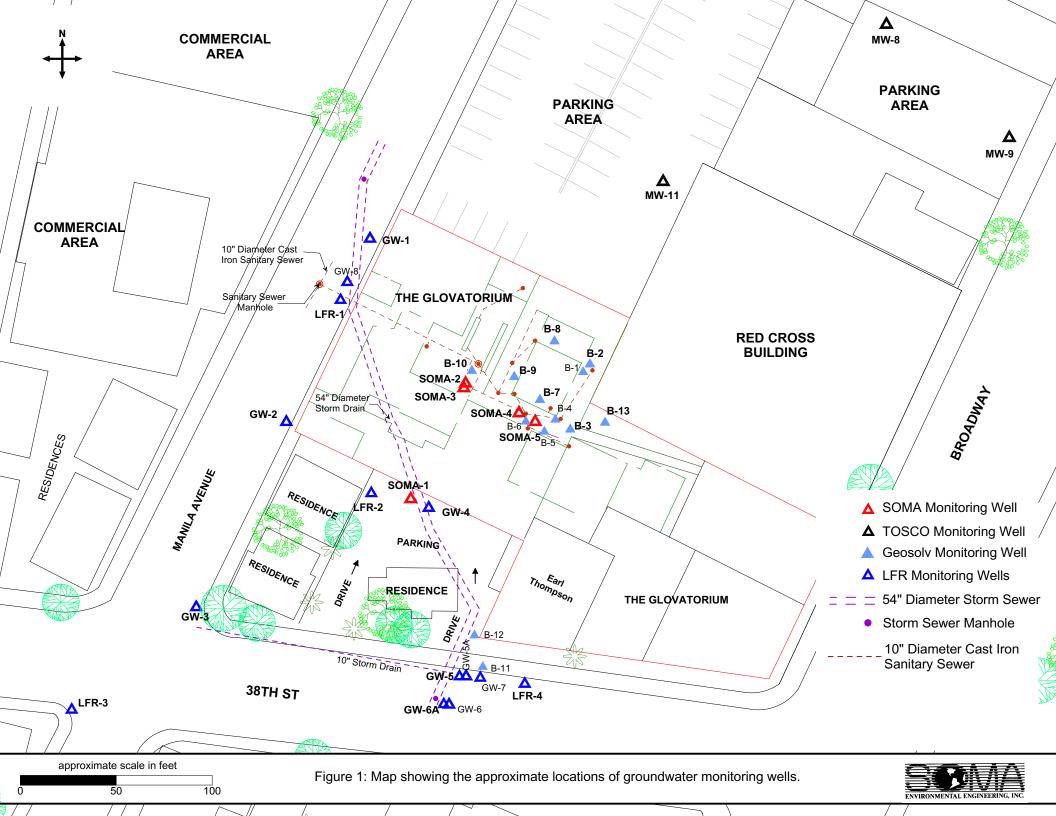
Mansour Sepehr, Ph.D., P.E. Principal Hydrogeologist

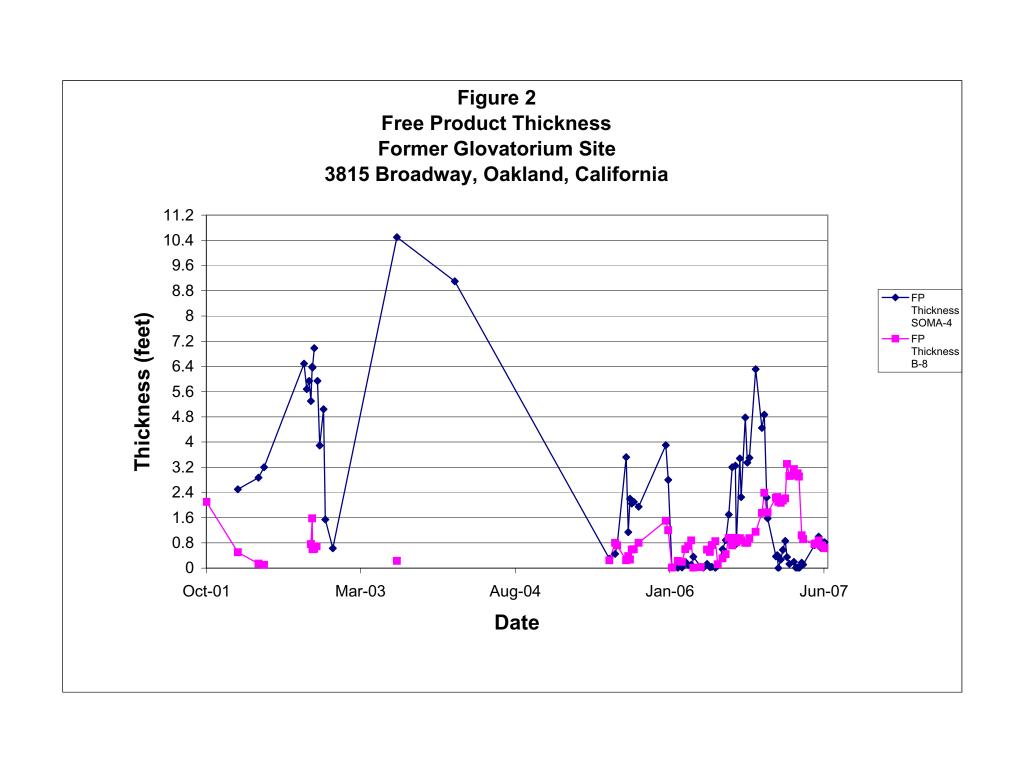
cc: Albert Cohen, Esq. Dr. Bruce W. Page Consulting

Attachments



## **Figures**





## **Table**

Table 1
Free Product Removal Log
Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)			
	SO	MA-4				
		002				
31-Jan-2002	11.30	8.80	2.50			
10-Apr-2002	12.45	9.58	2.87			
29-Apr-2002	13.00	9.80	3.20			
10-Sep-2002	16.75	10.26	6.49			
19-Sep-2002	16.32	10.64	5.68			
27-Sep-2002	16.59	10.65	5.94			
3-Oct-2002	16.95	11.65	5.30			
7-Oct-2002	17.40	11.01	6.39			
8-Oct-2002	17.11	10.75	6.36			
14-Oct-2002	17.51	10.53	6.98			
25-Oct-2002	16.90	10.96	5.94			
1-Nov-2002	15.59	11.70	3.89			
14-Nov-2002	16.24	11.20	5.04			
20-Nov-2002	13.44	11.90	1.54			
15-Dec-2002	12.73	12.10	0.63			
	2	003				
18-Jul-2003	17.70	7.20	10.50			

Table 1
Free Product Removal Log
Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)
	SO	MA-4	
	2	004	
28-Jan-2004	12.00	2.90	9.10
	2	005	
29-Jun-2005	10.40	10.10	0.30
18-Jul-2005	10.35	9.90	0.45
25-Jul-2005	10.75	10.00	0.75
1-Aug-2005	10.87	9.25	1.62
24-Aug-2005	13.47	9.95	3.52
31-Aug-2005	11.15	10.01	1.14
6-Sep-2005	12.98	10.78	2.20
12-Sep-2005	11.15	9.10	2.05
19-Sep-2005	12.90	10.80	2.10
5-Oct-2005	12.80	10.85	1.95
	2	006	
4-Jan-2006	12.50	8.60	3.90
12-Jan-2006	13.10	10.30	2.80
18-Jan-2006	13.64	10.50	3.14
24-Jan-2006	9.20	9.19	0.01
24-Jan-2006	began extrac	ting free product using	g GeoTech pump
26-Jan-2006	9.67	9.66	0.01
13-Feb-2006	10.24	10.23	0.01
27-Feb-2006	9.72	9.70	0.02
10-Mar-2006	8.90	8.70	0.20
20-Mar-2006	7.80	7.70	0.10
30-Mar-2006	8.30	8.20	0.10

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Free Product Removal Log
Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)					
SOMA-4								
		006						
6-Apr-2006	7.01	6.65	0.36					
18-Apr-2006		eoTech pump from SC						
1-May-2006	7.60	7.56	0.04					
10-May-2006	8.64	8.63	0.01					
22-May-2006	8.53	8.40	0.13					
1-Jun-2006	8.64	8.61	0.03					
7-Jun-2006	8.86	8.82	0.04					
19-Jun-2006	9.39	9.38	0.01					
27-Jun-2006	10.54	10.46	0.08					
13-Jul-2006	10.75	10.15	0.60					
24-Jul-2006	11.05	10.16	0.89					
3-Aug-2006	12.02	10.32	1.70					
14-Aug-2006	13.08	9.88	3.20					
14-Aug-2006	began extrac	ting free product using	GeoTech pump					
25-Aug-2006	13.95	10.70	3.25					
28-Aug-2006	11.50	10.73	0.77					
9-Sep-2006	14.23	10.75	3.48					
13-Sep-2006	12.95	10.70	2.25					
27-Sep-2006	15.78	11.00	4.78					
4-Oct-2006	14.61	11.26	3.35					
11-Oct-2006	14.25	10.75	3.50					
1-Nov-2006	17.23	10.92	6.31					
22-Nov-2006	14.98	10.53	4.45					
30-Nov-2006	15.16	10.29	4.87					
8-Dec-2006	13.54	11.30	2.24					
11-Dec-2006	12.24	10.66	1.58					

Table 1
Free Product Removal Log
Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)					
SOMA-4								
	2	007						
8-Jan-2007	11.15	10.78	0.37					
12-Jan-2007	10.79	10.38	0.41					
16-Jan-2007	11.00	11.00	0.00					
24-Jan-2007	11.10	10.83	0.27					
31-Jan-2007	11.02	10.44	0.58					
8-Feb-2007	11.50	10.64	0.86					
14-Feb-2007	9.60	9.25	0.35					
22-Feb-2007	9.94	9.81	0.13					
9-Mar-2007	9.73	9.53	0.20					
16-Mar-2007	10.02	10.01	0.01					
22-Mar-2007	9.93	9.91	0.02					
26-Mar-2007	10.67	10.67	0.00					
26-Mar-2007		racting free product from						
	ivioved G	GeoTech pump from SOI	VIA-4 10 D-0					
4-Apr-2007	10.56	10.39	0.17					
9-Apr-2007	10.71		0.17					
17-May-2007		10.60						
=	16.05	15.32	0.73					
21-May-2007	16.06	15.30	0.76					
31-May-2007	16.31	15.31	1.00					
8-Jun-2007	16.73	16.09	0.64					
11-Jun-2007	16.85	16.02	0.83					
20-Jun-2007	16.44	15.62	0.82					
20 Can 2007		3-8	0.02					
		001						
18-Oct-2001	12.31	10.21	2.10					
10 001 2001		002	20					
31-Jan-2002	6.79	6.29 I	0.50					
01 0411 2002								
10-Apr-2002	8.22	8.08	0.14					
29-Apr-2002	8.55	8.45	0.10					
3-Oct-2002	10.40	9.64	0.76					
7-Oct-2002	10.37	8.79	1.58					
8-Oct-2002	10.28	9.68	0.60					
14-Oct-2002	10.30	9.69	0.61					
22-Oct-2002	10.39	9.70	0.69					
		003						
18-Jul-2003	9.40	9.17	0.23					

Table 1
Free Product Removal Log
Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)							
	B-8									
	_	005								
29-Jun-2005	11.50	11.25	0.25							
18-Jul-2005	10.90	10.10	0.80							
25-Jul-2005	10.92	10.20	0.72							
1-Aug-2005	10.85	9.85	1.00							
24-Aug-2005	10.35	10.10	0.25							
31-Aug-2005	10.48	10.10	0.38							
6-Sep-2005	10.86	10.59	0.27							
12-Sep-2005	10.59	10.00	0.59							
19-Sep-2005	11.20	10.60	0.60							
5-Oct-2005	11.30	10.50	0.80							
	2	006								
4-Jan-2006	9.50	8.00	1.50							
12-Jan-2006	11.40	10.20	1.20							
18-Jan-2006	11.93	11.00	0.93							
24-Jan-2006	8.65	8.65	0.00							
26-Jan-2006	8.72	8.70	0.02							
13-Feb-2006	8.82	8.59	0.23							
27-Feb-2006	8.81	8.61	0.20							
10-Mar-2006	7.45	6.85	0.60							
20-Mar-2006	7.90	7.20	0.70							
30-Mar-2006	7.88	7.00	0.88							

Table 1
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Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)					
B-8								
2006								
6-Apr-2006	6-Apr-2006 7.91 7.90 0.01							
18-Apr-2006	began extrac	ting free product using						
1-May-2006	8.34	8.31	0.03					
22-May-2006	9.51	8.92	0.59					
1-Jun-2006	9.81	9.30	0.51					
7-Jun-2006	10.24	9.51	0.73					
14-Jun-2006	10.58	9.73	0.85					
27-Jun-2006	9.04	8.92	0.12					
27-Jun-2006	remo	oved GeoTech pump f	rom well					
13-Jul-2006	9.61	9.30	0.31					
24-Jul-2006	9.70	9.26	0.44					
3-Aug-2006	10.01	9.05	0.96					
14-Aug-2006	10.41	9.69	0.72					
25-Aug-2006	10.60	9.64	0.96					
28-Aug-2006	10.62	9.80	0.82					
7-Sep-2006	10.68	9.73	0.95					
13-Sep-2006	10.65	9.78	0.87					
27-Sep-2006	11.03	10.23	0.80					
4-Oct-2006	11.00	10.20	0.80					
11-Oct-2006	10.68	9.73	0.95					
1-Nov-2006	11.39	10.24	1.15					
22-Nov-2006	11.53	9.78	1.75					
30-Nov-2006	11.64	9.25	2.39					
8-Dec-2006	11.53	9.76	1.77					
11-Dec-2006	11.44	9.68	1.76					
	20	007						
8-Jan-2007	11.56	9.33	2.23					
12-Jan-2007	11.58	9.33	2.25					
16-Jan-2007	11.59	9.49	2.10					
24-Jan-2007	11.77	9.70	2.07					
31-Jan-2007	11.76	9.62	2.14					
8-Feb-2007	11.92	9.71	2.21					
14-Feb-2007	10.91	7.61	3.30					
22-Feb-2007	11.46	8.54	2.92					
9-Mar-2007	11.34	8.20	3.14					
16-Mar-2007	11.53	8.60	2.93					
22-Mar-2007	11.72	8.71	3.01					
26-Mar-2007	11.71	8.81	2.90					
26-Mar-2007		xtracting free product f						
	Moved G	eoTech pump from SC	DMA-4 to B-8					

Table 1
Free Product Removal Log
Former Glovatorium Site
3815 Broadway, Oakland, CA

Date	Depth to Water (feet)	Depth to Free Product (feet)	Thickness of Free Product (feet)
	E	3-8	
4-Apr-2007	10.71	9.67	1.04
9-Apr-2007	10.83	9.91	0.92
17-May-2007	13.98	13.22	0.76
21-May-2007	13.98	13.20	0.78
31-May-2007	14.78	13.90	0.88
8-Jun-2007	15.44	14.72	0.72
11-Jun-2007	15.50	14.80	0.70
20-Jun-2007	15.43	14.80	0.63

## **Attachment A**

										ANA	LYS	ES R	EQU	EST	ED	 	
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS						Notes
PRODUCT SOMA-4	01	124.07	(030		1 VOA					,	X						Please compare these
SOMA-4	02	1:24:07			i VOA						X	`					compare
		per Bill B	assett.	si .							ï						these
*		Comp	1/26/07	1	***												<i>two</i>
																	samples
•				(i)						8	1			0.0			
			er S									·					
										1							
			_065 857						ž.		i	***					
			>*								-						

Friedman & Bruya, Inc. 3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

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		· · · · · · · · · · · · · · · · · · ·	per B. Basset/MP1
SIGNATURE	PRINT NAME	COMPANY	DATE TIME
Relinquished by:	William Bassett	SOMA GUV.	1.2407 1600*
Received by: May am	- Whan Phan	FRBI	1/26/07 09:00
Relinquished by:		Samples receive	at 12 °C
Received by:			-

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

March 12, 2007

Bill Bassett, Project Manager SOMA Environmental 6620 Owens Dr., Suite A Pleasanton, CA 94588

Dear Mr. Bassett:

Included are the results from the testing of material submitted on January 26, 2007 from the 3820 Manila Ave., PO# 2513, F&BI 701249 project. The product samples submitted for forensic evaluation arrived in good condition. Upon arrival, the samples Product and SOMA-4 were placed in a refrigerator maintained at 4°C until removed for sample processing.

The samples Product and SOMA-4 were diluted and analyzed using a gas chromatograph with a flame ionization detector (GC/FID). The data generated yielded information on the boiling range and general chemical composition of the material present. The GC/FID traces are enclosed. A GC/FID trace of a standard consisting of normal alkanes is also provided for reference purposes.

In addition, the samples Product and SOMA-4 were analyzed for paraffin, isoparaffin, aromatic, naphthene, and olefin (PIANO) constituents using a GC fitted with a mass spectrometer (MS). The results of this testing are also enclosed.

Please contact us if additional consultation is needed by our firm in the interpretation of the analytical results provided. We appreciate this opportunity to be of service to you and hope you will call if you should have any questions. We will hold your samples for 30 days before disposal unless directed otherwise.

Sincerely,

FRIEDMAN & BRUYA, INC.

Crulale Postal Poquiz

Michele Costales Poquiz

Chemist

Enclosures NAA0312R

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Extracted: 01/31/07 Date Analyzed: 02/02/07

# RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID)

Sample ID

GC Characterization

Product

The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The patterns displayed by these peaks are indicative of petroleum solvent or similar materials.

The low boiling compounds appear as a ragged pattern of peaks eluting from n-C<sub>8</sub> to n-C<sub>11</sub> showing a maximum near n-C<sub>10</sub>. This correlates with a temperature range of approximately 130°C to 200°C with a maximum near 170°C. Within this range, the GC/FID trace showed the apparent absence of peaks characteristic of normal alkanes.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Extracted: 01/31/07 Date Analyzed: 02/02/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID)

Sample ID

GC Characterization

SOMA-4

The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The patterns displayed by these peaks are indicative of Stoddard solvent or similar materials.

The low boiling compounds appear as a ragged pattern of peaks eluting from n-C<sub>8</sub> to n-C<sub>12</sub> showing a maximum near n-C<sub>10</sub>. This correlates with a temperature range of approximately 130°C to 220°C with a maximum near 170°C. Within this range, peaks are present which are indicative of normal alkanes.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

Client ID Laboratory ID	Product 701249-01	
		Weight
Compound		Percent
Propane		< 0.01
Methanol		< 0.01
Isobutane		< 0.01
2-Methyl-1-propene		< 0.01
Ethanol		< 0.01
n-Butane		< 0.01
t-2-Butene		< 0.01
c-2-Butene		< 0.01
Isopropanol		< 0.01
3-Methyl-1-butene		< 0.01
Isopentane		< 0.01
tert-Butanol		< 0.01
1-Pentene		< 0.01
2-Methyl-1-butene		< 0.01
n-Propanol		< 0.01
n-Pentane		< 0.01
t-2-Pentene		< 0.01
c-2-Pentene		< 0.01
2-Methyl-2-butene		< 0.01
MTBE		< 0.01
sec-Butanol		< 0.01
4-Methyl-1-pentene		< 0.01
Isobutanol		< 0.01
2,3-Dimethylbutane	£	< 0.01
Cyclopentane		< 0.01
2-Methylpentane		< 0.01
DIPE		< 0.01
3-Methylpentane		< 0.01
1-Hexene		< 0.01
ETBE		< 0.01
n-Hexane		< 0.01

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

Client ID	Product	
Laboratory ID	701249-01	
		Weight
Compound	,	Percent
t-2-Hexene		< 0.01
2-Methyl-1-penten	e	< 0.01
2-Methyl-2-penten	е	< 0.01
c-2-Hexene		< 0.01
2,2-Dimethylpenta	ine	< 0.01
2,4-Dimethylpenta	ine	< 0.01
Methylcyclopentar	ne	< 0.01
2,2,3-Trimethylbu	tane	< 0.01
Benzene		< 0.01
1-Methylcyclopent	ene	< 0.01
TAME		< 0.01
3,3-Dimethylpenta	ine	< 0.01
Cyclohexane		< 0.01
2-Methylhexane		< 0.01
2,3-Dimethylpenta	ine	< 0.01
1,1-Dimethylcyclo	pentane	< 0.01
3-Methylhexane		< 0.01
c-1,3-Dimethylcyc	lopentane	< 0.01
3-Ethylpentane		< 0.01
Isooctane		< 0.01
t-1,2-Dimethylcyc	opentane	< 0.01
1-Heptene		< 0.01
n-Heptane		< 0.01
t-3-Heptene		< 0.01
c-3-Heptene		< 0.01
t-2-Heptene		< 0.01
c-2-Heptene		< 0.01
2,2-Dimethylhexa	ne	< 0.01
2,5-Dimethylhexa	ne	< 0.01
Methylcyclohexan	е	< 0.01
2,4-Dimethylhexa	ne	< 0.01
Ethylcyclopentane	2	< 0.01

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

Client ID	Product
Laboratory ID	701249-01

	Weight
Compound	Percent
t-1,c-2,4-Trimethylcyclopentane	< 0.01
t-1,c-2,3-Trimethylcyclopentane	< 0.01
2,3,4-Trimethylpentane	< 0.01
Toluene	< 0.01
2,3-Dimethylhexane	< 0.01
2-Methylheptane	< 0.01
3-Methylheptane	< 0.01
4-Methylheptane	< 0.01
3-Ethylhexane	< 0.01
1-Octene	< 0.01
1,2,3-Trimethylcyclopentane	< 0.01
t-1,2-Dimethylcyclohexane	< 0.01
n-Octane	< 0.01
1-Ethyl-1-methylcyclopentane	< 0.01
c-2-Octene	< 0.01
c-1,2-Dimethylcyclohexane	< 0.01
Isopropylcyclopentane	< 0.01
2,5-Dimethylheptane	0.01
3,5-Dimethylheptane	< 0.01
n-Propylcyclopentane	< 0.01
Ethylbenzene	< 0.01
2,3-Dimethylheptane	0.02
3,4-Dimethylheptane	< 0.01
2-Methyloctane	< 0.01
m-Xylene	< 0.01
p-Xylene	< 0.01
3-Methyloctane	< 0.01
1-Nonene	< 0.01
3,3-Diethylpentane	< 0.01
t-3-Nonene	< 0.01
c3-Nonene	< 0.01
o-Xylene	< 0.01

## **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR PARAFFINS, ISOPARAFFINS, OLEFINS, NAPHTHENES, AND AROMATICS Results Reported as % by Weight

Client ID Product Laboratory ID 701249-01

	Weight
Compound	Percent
n-Nonane	< 0.01
Isobutylcyclopentane	< 0.01
t-2-Nonene	< 0.01
c-2-Nonene	< 0.01
Isopropylbenzene	< 0.01
3,3-Dimethyloctane	6.08
n-Butylcyclopentane	< 0.01
n-Propylbenzene	< 0.01
2,3-Dimethyloctane	< 0.01
1-Methyl-3-ethylbenzene	< 0.01
1-Methyl-4-ethylbenzene	< 0.01
2-Methylnonane	< 0.01
3-Ethyloctane	< 0.01
3-Methylnonane	10.09
1,3,5-Trimethylbenzene	< 0.01
1-Methyl-2-ethylbenzene	< 0.01
1,2,4-Trimethylbenzene	< 0.01
tert-Butylbenzene	< 0.01
n-Decane	< 0.01
Isobutylbenzene	< 0.01
Isopropylcyclohexane	< 0.01
sec-Butylbenzene	< 0.01
1-Methyl-3-isopropylbenzene	< 0.01
Isobutylcyclohexane	< 0.01
1-Methyl-4-isopropylbenzene	< 0.01
1,2,3-Trimethylbenzene	< 0.01
Indan	< 0.01
1-Methyl-3-n-propylbenzene	< 0.01
1-Methyl-4-n-propylbenzene	< 0.01
n-Butylbenzene	< 0.01
1,3-Dimethyl-5-ethylbenzene	< 0.01
1,2-Diethylbenzene	< 0.01

## **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

Client ID	Product
Laboratory ID	701249-01

	Weight
Compound	Percent
1-Methyl-2-n-propylbenzene	< 0.01
1,4-Dimethyl-2-ethylbenzene	< 0.01
1,2-Dimethyl-4-ethylbenzene	< 0.01
1,3-Dimethyl-2-ethylbenzene	< 0.01
1,2-Dimethyl-3-ethylbenzene	< 0.01
n-Undecane	< 0.01
1,2,4,5-Tetramethylbenzene	< 0.01
2-Methylbutylbenzene	< 0.01
n-Pentylbenzene	< 0.01
Methylindan	< 0.01
1-tert-Butyl-3,5-dimethylbenzene	< 0.01
1-tert-Butyl-4-ethylbenzene	< 0.01
n-Dodecane	< 0.01
1,3,5-Triethylbenzene	< 0.01
1,2,4-Triethylbenzene	< 0.01
Naphthalene	< 0.01
n-Hexylbenzene	< 0.01
2-Methylnaphthalene	< 0.01
n-Tridecane	< 0.01
1-Methylnaphthalene	< 0.01
n-Tetradecane	< 0.01
n-Pentadecane	< 0.01

## **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR PARAFFINS, ISOPARAFFINS, OLEFINS, NAPHTHENES, AND AROMATICS Results Reported as % by Weight

Client ID

Product

Laboratory ID

701249-01

#### PIANO SUMMARY

	Weight
	Percent
Total Identified Compounds	16.20
Oxygenated Compounds	0.00
Hydrocarbon Compounds	16.20
Unidentified Compounds	83.80
Total	100

	PARA	AFFINS	ISOPARAF OLE	FINS ARON		NAPHTHENES
C3	< 0.01					< 0.01
C4	< 0.01	< 0.01			< 0.01	< 0.01
C5	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01
C6	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C7	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C8	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C9	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.02
C10	< 0.01	16.18	< 0.01	< 0.01		16.18
C11	< 0.01		< 0.01			< 0.01
C12	< 0.01		< 0.01			< 0.01
C13	< 0.01					< 0.01
C14	< 0.01					< 0.01
C15	< 0.01					< 0.01
Total	< 0.01	16.20	< 0.01	< 0.01	< 0.01	16.20

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

Laboratory ID Client ID	701249-02 SOMA-4	
		Weight
Compound		Percent
Propane		< 0.01
Methanol		< 0.01
Isobutane		< 0.01
2-Methyl-1-propene		< 0.01
Ethanol		< 0.01
n-Butane		< 0.01
t-2-Butene		< 0.01
c-2-Butene		< 0.01
Isopropanol		< 0.01
3-Methyl-1-butene		< 0.01
Isopentane		< 0.01
tert-Butanol		< 0.01
1-Pentene		< 0.01
2-Methyl-1-butene		< 0.01
n-Propanol		< 0.01
n-Pentane		< 0.01
t-2-Pentene		< 0.01
c-2-Pentene		< 0.01
2-Methyl-2-butene		< 0.01
MTBE		< 0.01
sec-Butanol		< 0.01
4-Methyl-1-pentene		< 0.01
Isobutanol		< 0.01
2,3-Dimethylbutane		< 0.01
Cyclopentane		< 0.01
2-Methylpentane		< 0.01
DIPE		< 0.01
3-Methylpentane		< 0.01
1-Hexene		< 0.01
ETBE		< 0.01
n-Hexane		< 0.01

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

Laboratory ID	701249-02
Client ID	SOMA-4

	Weight
Compound	Percent
t-2-Hexene	< 0.01
2-Methyl-1-pentene	< 0.01
2-Methyl-2-pentene	< 0.01
c-2-Hexene	< 0.01
2,2-Dimethylpentane	< 0.01
2,4-Dimethylpentane	< 0.01
Methylcyclopentane	< 0.01
2,2,3-Trimethylbutane	< 0.01
Benzene	< 0.01
1-Methylcyclopentene	< 0.01
TAME	< 0.01
3,3-Dimethylpentane	< 0.01
Cyclohexane	< 0.01
2-Methylhexane	< 0.01
2,3-Dimethylpentane	< 0.01
1,1-Dimethylcyclopentane	< 0.01
3-Methylhexane	< 0.01
c-1,3-Dimethylcyclopentane	< 0.01
3-Ethylpentane	< 0.01
Isooctane	< 0.01
t-1,2-Dimethylcyclopentane	< 0.01
1-Heptene	< 0.01
n-Heptane	< 0.01
t-3-Heptene	< 0.01
c-3-Heptene	< 0.01
t-2-Heptene	< 0.01
c-2-Heptene	< 0.01
2,2-Dimethylhexane	< 0.01
2,5-Dimethylhexane	< 0.01
Methylcyclohexane	0.02
2,4-Dimethylhexane	< 0.01
Ethylcyclopentane	< 0.01

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR PARAFFINS, ISOPARAFFINS, OLEFINS, NAPHTHENES, AND AROMATICS Results Reported as % by Weight

Laboratory ID 701249-02 Client ID SOMA-4

Compound t-1,c-2,4-Trimethylcyclopentane t-1,c-2,3-Trimethylpentane 2,3,4-Trimethylpentane Toluene 2,3-Dimethylhexane 2-Methylheptane 3-Methylheptane 4-Methylheptane 3-Ethylhexane 1-Octene 1,2,3-Trimethylcyclopentane t-1,2-Dimethylcyclohexane n-Octane 1-Ethyl-1-methylcyclopentane c-2-Octene c-1,2-Dimethylcyclohexane Isopropylcyclopentane 2,5-Dimethylheptane 3,5-Dimethylheptane n-Propylcyclopentane Ethylbenzene	Weight Percent 0.01 0.01 0.01 <0.01 0.01 0.01 0.01 <0.01 <0.01 0.07 0.04 0.01 0.05 0.01 0.12 0.03 0.03 <0.01
A SEM FROM BUILDING SEMENTING AND A PART OF A SEMENTING AND A SEMENTING A SEME	
	<0.01 0.16
3,4-Dimethylheptane	< 0.01
2-Methyloctane m-Xylene p-Xylene 3-Methyloctane	<0.01 0.03 0.03 0.84 <0.01
1-Nonene 3,3-Diethylpentane t-3-Nonene c3-Nonene o-Xylene	<0.01 <0.01 0.15 0.04 <0.01

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR PARAFFINS, ISOPARAFFINS, OLEFINS, NAPHTHENES, AND AROMATICS Results Reported as % by Weight

Laboratory ID 701249-02 Client ID SOMA-4

	Weight
Compound	Percent
n-Nonane	3.23
Isobutylcyclopentane	0.15
t-2-Nonene	< 0.01
c-2-Nonene	< 0.01
Isopropylbenzene	< 0.01
3,3-Dimethyloctane	0.33
n-Butylcyclopentane	0.86
n-Propylbenzene	< 0.01
2,3-Dimethyloctane	1.15
1-Methyl-3-ethylbenzene	< 0.01
1-Methyl-4-ethylbenzene	< 0.01
2-Methylnonane	4.13
3-Ethyloctane	1.93
3-Methylnonane	4.66
1,3,5-Trimethylbenzene	0.37
1-Methyl-2-ethylbenzene	< 0.01
1,2,4-Trimethylbenzene	< 0.01
tert-Butylbenzene	< 0.01
n-Decane	4.12
Isobutylbenzene	< 0.01
Isopropylcyclohexane	< 0.01
sec-Butylbenzene	< 0.01
1-Methyl-3-isopropylbenzene	< 0.01
Isobutylcyclohexane	< 0.01
1-Methyl-4-isopropylbenzene	< 0.01
1,2,3-Trimethylbenzene	0.94
Indan	0.05
1-Methyl-3-n-propylbenzene	0.67
1-Methyl-4-n-propylbenzene	0.43
n-Butylbenzene	< 0.01
1,3-Dimethyl-5-ethylbenzene	0.43
1,2-Diethylbenzene	0.07

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR PARAFFINS, ISOPARAFFINS, OLEFINS, NAPHTHENES, AND AROMATICS Results Reported as % by Weight

Laboratory ID 701249-02 Client ID SOMA-4

	Weight
Compound	Percent
1-Methyl-2-n-propylbenzene	0.36
1,4-Dimethyl-2-ethylbenzene	0.28
1,2-Dimethyl-4-ethylbenzene	0.31
1,3-Dimethyl-2-ethylbenzene	< 0.01
1,2-Dimethyl-3-ethylbenzene	< 0.01
n-Undecane	4.83
1,2,4,5-Tetramethylbenzene	0.13
2-Methylbutylbenzene	< 0.01
n-Pentylbenzene	0.03
Methylindan	0.04
1-tert-Butyl-3,5-dimethylbenzene	< 0.01
1-tert-Butyl-4-ethylbenzene	< 0.01
n-Dodecane	0.28
1,3,5-Triethylbenzene	< 0.01
1,2,4-Triethylbenzene	< 0.01
Naphthalene	0.04
n-Hexylbenzene	< 0.01
2-Methylnaphthalene	0.01
n-Tridecane	0.05
1-Methylnaphthalene	0.01
n-Tetradecane	0.02
n-Pentadecane	0.01

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 03/12/07 Date Received: 01/26/07

Project: 3820 Manila Ave., PO# 2513, F&BI 701249

Date Analyzed: 02/22/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR PARAFFINS, ISOPARAFFINS, OLEFINS, NAPHTHENES, AND AROMATICS Results Reported as % by Weight

Laboratory ID

701249-02

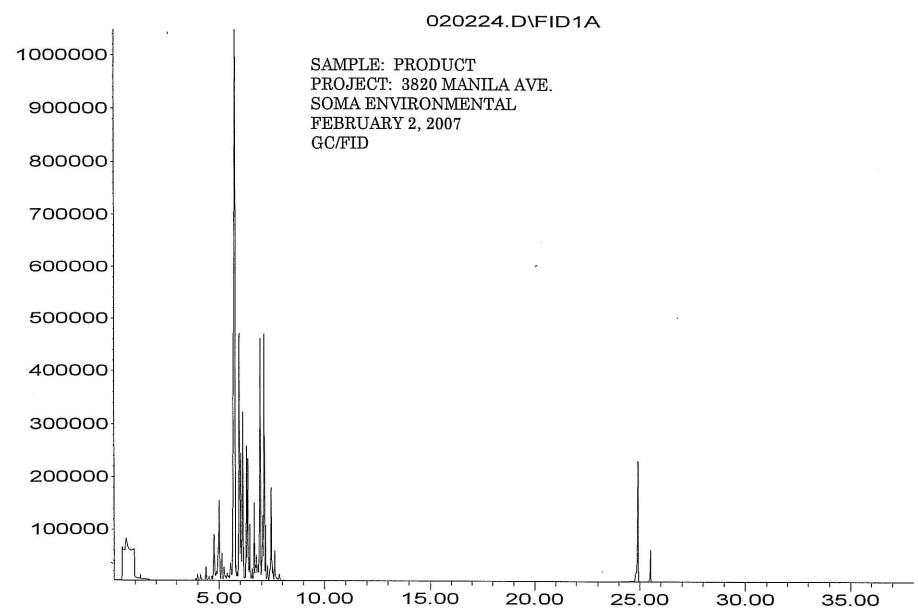
Client ID

SOMA-4

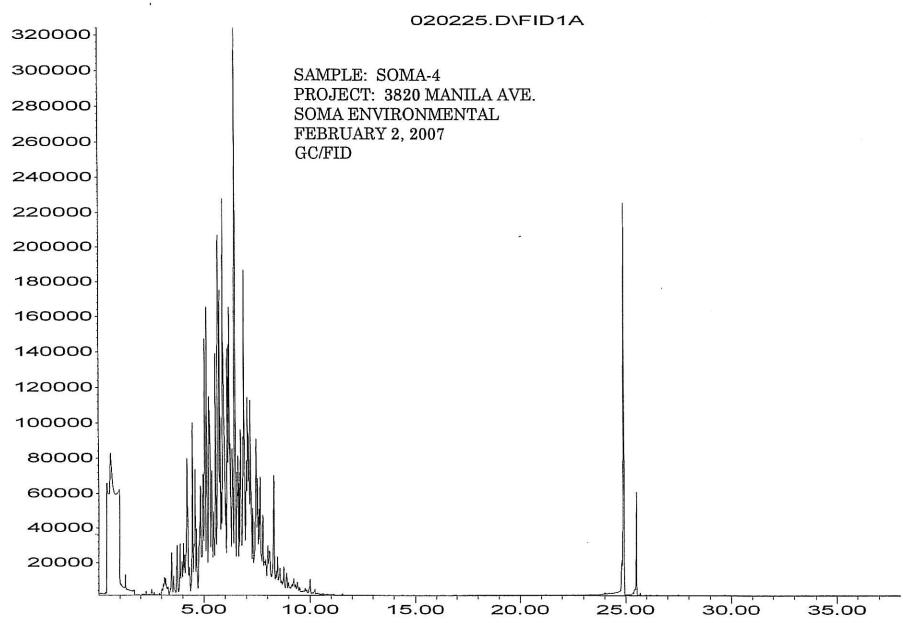
#### PIANO SUMMARY

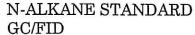
	Weight
	Percent
Total Identified Compounds	31.64
Oxygenated Compounds	0.00
Hydrocarbon Compounds	31.64
Unidentified Compounds	68.36
Total	100

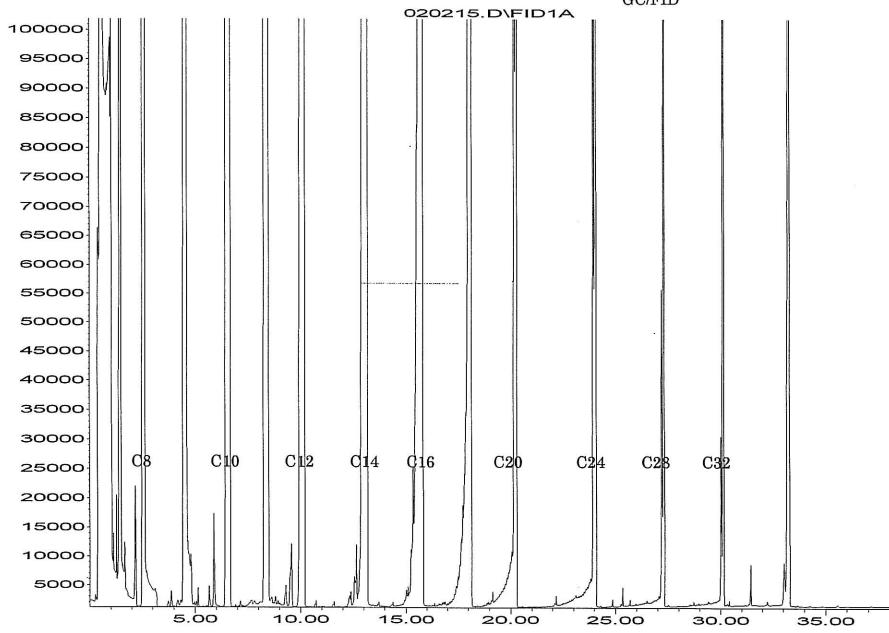
	PAR	AFFINS	ISOPARAF OLE	NAPHTHENES			
C3	< 0.01					< 0.01	
C4	< 0.01	< 0.01			< 0.01	< 0.01	
C5	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	
C6	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
C7	< 0.01	< 0.01	0.01	0.02	< 0.01	0.03	
C8	0.04	0.03	0.07	0.20	< 0.01	0.34	
C9	3.23	1.16	1.37	1.01	0.19	6.95	
C10	4.12	12.20	2.77	< 0.01		19.09	
C11	4.83		0.04			4.87	
C12	0.28		< 0.01			0.28	
C13	0.05					0.05	
C14	0.02					0.02	
C15	0.01					0.01	
Total	12.58	13.39	4.26	1.22	0.19	31.64	

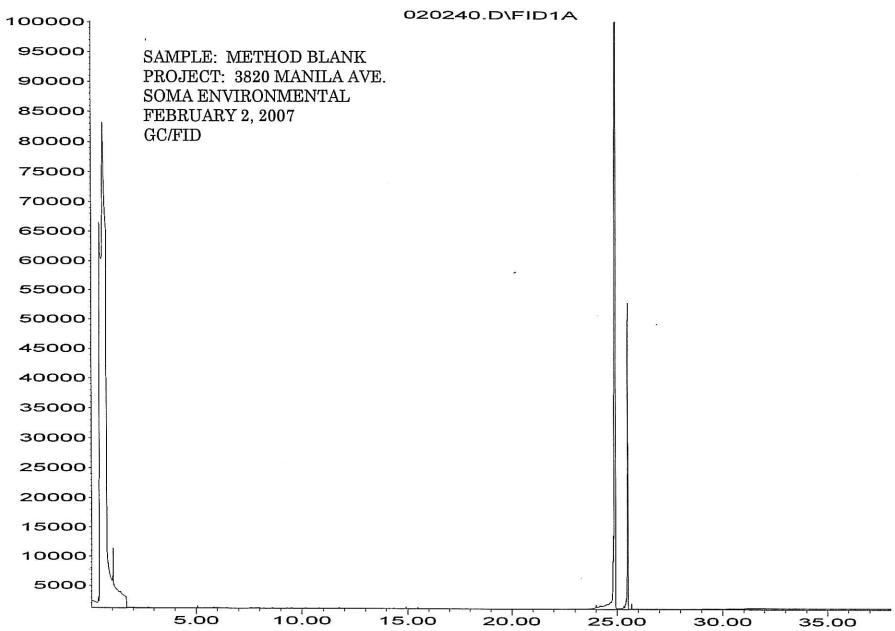


Time









Time

MP 03/22/07

Send Report To

Company SOMA Environmental Eng., Inc.

Address 6620 Owens. Dr. Suite A

City, State, ZIP Pleasanton, CA 94588

Phone #925-734-640 Fax #925-734-6401

SAMPLERS (signature) Brian Tim	าร์	Page # of TURNAROUND TIME
PROJECT NAME/NO.	PO#	Standard (2 Weeks)  RUSH
GIOVATOLIUNC	2513	Rush charges authorized by:
REMARKS	SAMPLE DISPOSAL  Dispose after 30 days	
EDF output requested	☐ Return samples ☐ Will call with instructions	

					ANALYSES REQUESTED				<u> </u>							
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Frage Prints		×		Notes
PD-1	01	2/28/07	Hidoar	Waste Product	- 1							1				
PD-2	02	2/28/07			ı		·					1				
PD-3	03	2/28/07	1[:10Am	: 6	1		,					1				
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Friedman & Bruya, Inc. 3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

SIGNATURE ,	PRINT NAME	COMPANY	DATE	TIME	
Relinquished by	Mansour Sepehr	SOMA Env.	3(20/07	4:00 pm	
Received by: May au	Mhan Phan	FeBI	3/22/07	10:00	
Relinquished by:			, ,		
Received by:	21	Samples received at			

FORMS\COC\COC.DOC

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

April 27, 2007

Mansour Sepehr, Project Manager SOMA Environmental 6620 Owens Dr., Suite A Pleasanton, CA 94588

Dear Mr. Sepehr:

Included is an amended cover letter for the report issued by Friedman and Bruya, Inc. (F&BI) on April 25, 2007 for the Glovatorium, PO# 2513, F&BI 703206 project.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Kurt Johnson Chemist

Enclosures

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

April 25, 2007

Mansour Sepehr, Project Manager SOMA Environmental 6620 Owens Dr., Suite A Pleasanton, CA 94588

Dear Mr. Sepehr:

Included are the results from the testing of material submitted on March 22, 2007 from the Glovatorium, PO# 2513, F&BI 703206 project. The product samples submitted for forensic evaluation arrived in good condition. Upon arrival, the samples PD-1, PD-2, and PD-3 were placed in a refrigerator maintained at 4°C until removed for sample processing.

The samples PD-1, PD-2, and PD-3 were diluted and analyzed using a gas chromatograph with a flame ionization detector (GC/FID). The data generated yielded information on the boiling range and general chemical composition of the material present. The GC/FID traces are enclosed. A GC/FID trace of a standard consisting of normal alkanes is also provided for reference purposes.

Based on the data generated, the samples PD-1, PD-2, and PD-3 contain a low boiling material such as petroleum solvent or similar materials. The samples also contain a higher boiling unknown material.

As requested, we have also reviewed the report issued by Friedman and Bruya, Inc. (F&BI) on March 12, 2007 for the 3820 Manila Ave., PO# 2513, F&BI 701249 project. This report included testing of the samples Product and SOMA-4 using GC/FID. Comparison of the GC/FID traces generated shows that the low boiling material present in the samples PD-1, PD-2, and PD-3 is consistent with that found in the sample Product, but is not consistent with that found in the sample SOMA-4.

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

April 25, 2007

Mansour Sepehr, Project Manager SOMA Environmental 6620 Owens Dr., Suite A Pleasanton, CA 94588

Dear Mr. Sepehr:

Included are the results from the testing of material submitted on March 22, 2007 from the Glovatorium, PO# 2513, F&BI 703206 project. The product samples submitted for forensic evaluation arrived in good condition. Upon arrival, the samples PD-1, PD-2, and PD-3 were placed in a refrigerator maintained at 4°C until removed for sample processing.

The samples PD-1, PD-2, and PD-3 were diluted and analyzed using a gas chromatograph with a flame ionization detector (GC/FID). The data generated yielded information on the boiling range and general chemical composition of the material present. The GC/FID traces are enclosed. A GC/FID trace of a standard consisting of normal alkanes is also provided for reference purposes.

Based on the data generated, the samples PD-1, PD-2, and PD-3 contain a low boiling material such as petroleum solvent or similar materials. The samples also contain a higher boiling unknown material.

As requested, we have also reviewed the report issued by Friedman and Bruya, Inc. (F&BI) on March 12, 2007 for the 3820 Manila Ave., PO# 2513, F&BI 701249 project. This report included testing of the sample Product using GC/FID. Comparison of the GC/FID traces generated shows that the low boiling material present in the samples PD-1, PD-2, and PD-3 is consistent with that found in the sample Product.

#### **ENVIRONMENTAL CHEMISTS**

Mansour Sepehr April 25, 2007 Page 2

Please contact us if additional consultation is needed by our firm in the interpretation of the analytical results provided. We appreciate this opportunity to be of service to you and hope you will call if you should have any questions. We will hold your samples for 30 days before disposal unless directed otherwise.

Sincerely,

FRIEDMAN & BRUYA, INC.

Kurt Johnson Chemist

Enclosures NAA0425R.DOC

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 04/25/07 Date Received: 03/22/07

Project: Glovatorium, PO# 2513, F&BI 703206

Date Extracted: 03/27/07 Date Analyzed: 03/27/07

# RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID)

#### Sample ID

#### GC Characterization

PD-1

The GC trace using the flame ionization detector (FID) showed the presence of low and high boiling compounds. The patterns displayed by these peaks are indicative of petroleum solvent or similar materials, as well as a higher boiling unknown material.

The low to medium boiling compounds appear as a regular pattern of peaks on top of a small hump or unresolved complex mixture (UCM). This material elutes from  $n\text{-C}_8$  to  $n\text{-C}_{11}$  showing a maximum near  $n\text{-C}_{10}$ . This correlates with a temperature range of approximately 130°C to 200°C with a maximum near 170°C. Within this range, a discernible pattern of peaks characteristic of the normal alkanes was not identified.

The high boiling compounds appear as an irregular pattern of peaks on top of a broad hump or UCM. This material elutes from  $n\text{-}C_{12}$  to beyond  $n\text{-}C_{36}$  showing a maximum near  $n\text{-}C_{32}$ . This correlates with a temperature range of approximately 220°C to beyond 500°C with a maximum near 470°C.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 04/25/07 Date Received: 03/22/07

Project: Glovatorium, PO# 2513, F&BI 703206

Date Extracted: 03/27/07 Date Analyzed: 03/27/07

## RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID)

#### Sample ID

#### GC Characterization

PD-2

The GC trace using the flame ionization detector (FID) showed the presence of low and high boiling compounds. The patterns displayed by these peaks are indicative of petroleum solvent or similar materials, as well as a higher boiling unknown material.

The low to medium boiling compounds appear as a regular pattern of peaks on top of a small hump or unresolved complex mixture (UCM). This material elutes from  $n\text{-}C_8$  to  $n\text{-}C_{11}$  showing a maximum near  $n\text{-}C_{10}$ . This correlates with a temperature range of approximately 130°C to 200°C with a maximum near 170°C. Within this range, a discernible pattern of peaks characteristic of the normal alkanes was not identified.

The high boiling compounds appear as an irregular pattern of peaks on top of a broad hump or UCM. This material elutes from  $n\text{-}\mathrm{C}_{12}$  to beyond  $n\text{-}\mathrm{C}_{36}$  showing a maximum near  $n\text{-}\mathrm{C}_{32}$ . This correlates with a temperature range of approximately 220°C to beyond 500°C with a maximum near 470°C.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 04/25/07 Date Received: 03/22/07

Project: Glovatorium, PO# 2513, F&BI 703206

Date Extracted: 03/27/07 Date Analyzed: 03/27/07

# RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID)

#### Sample ID

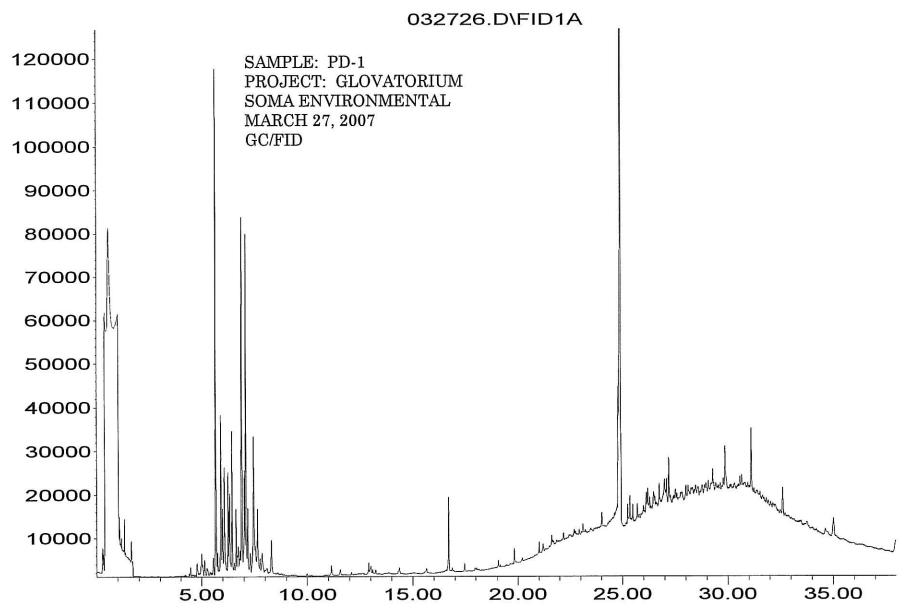
#### GC Characterization

PD-3

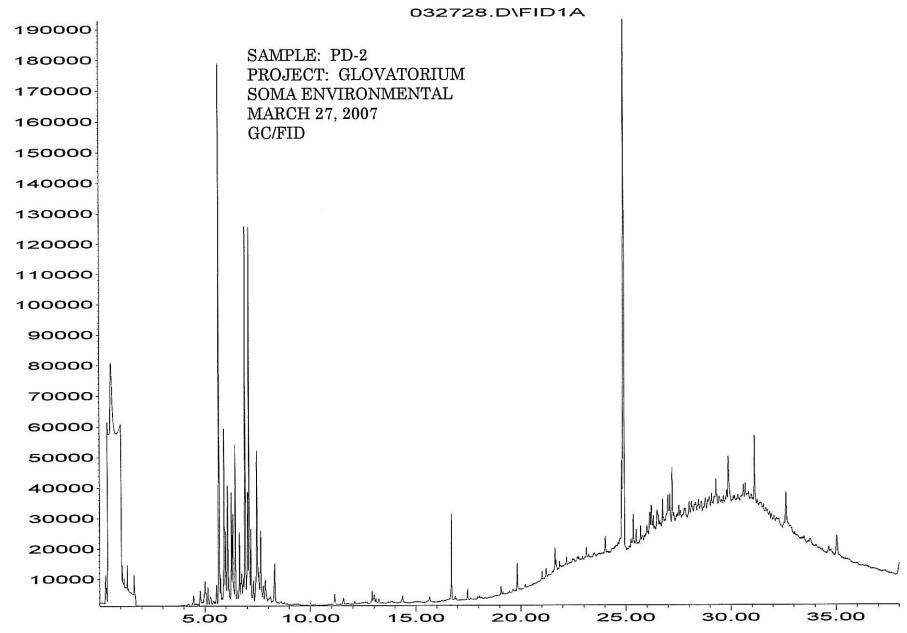
The GC trace using the flame ionization detector (FID) showed the presence of low and high boiling compounds. The patterns displayed by these peaks are indicative of petroleum solvent or similar materials, as well as a higher boiling unknown material.

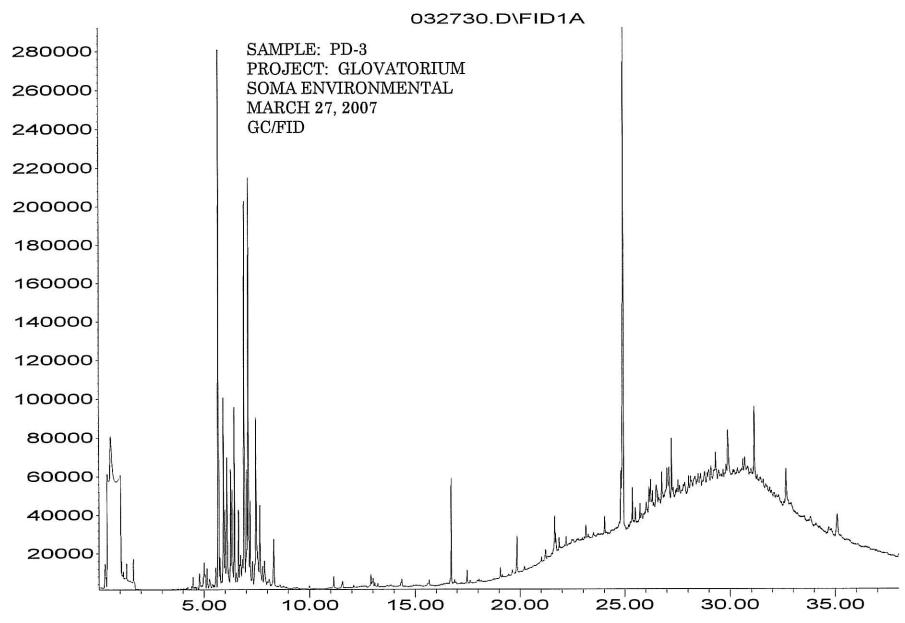
The low to medium boiling compounds appear as a regular pattern of peaks on top of a small hump or unresolved complex mixture (UCM). This material elutes from  $n\text{-}C_8$  to  $n\text{-}C_{11}$  showing a maximum near  $n\text{-}C_{10}$ . This correlates with a temperature range of approximately 130°C to 200°C with a maximum near 170°C. Within this range, a discernible pattern of peaks characteristic of the normal alkanes was not identified.

The high boiling compounds appear as an irregular pattern of peaks on top of a broad hump or UCM. This material elutes from  $n\text{-}C_{12}$  to beyond  $n\text{-}C_{36}$  showing a maximum near  $n\text{-}C_{32}$ . This correlates with a temperature range of approximately 220°C to beyond 500°C with a maximum near 470°C.

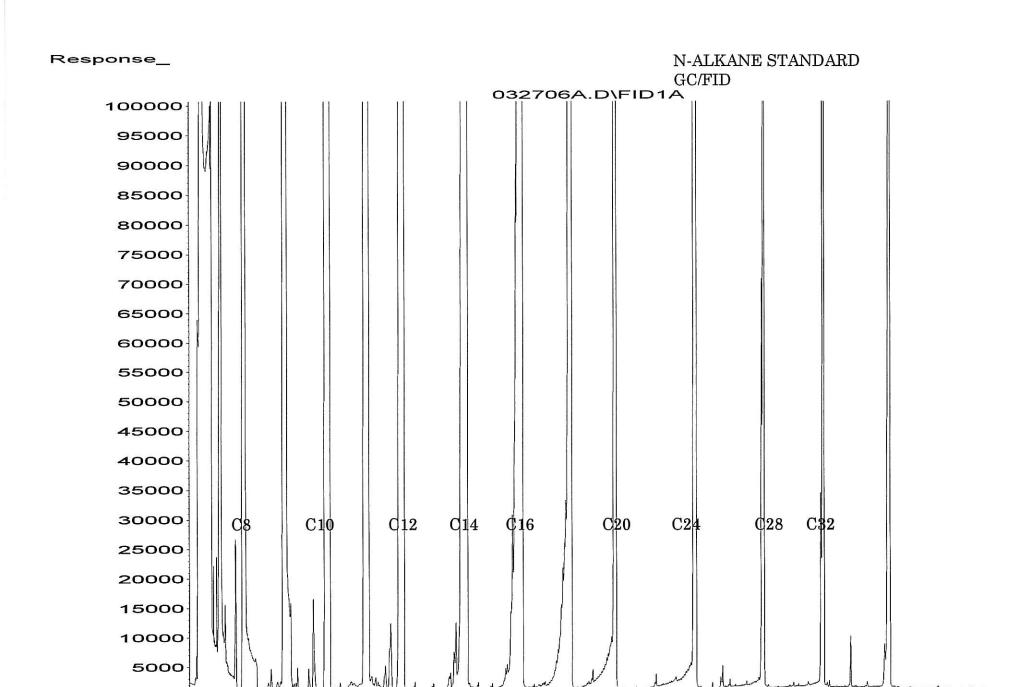


Time





Time



15.00

20.00

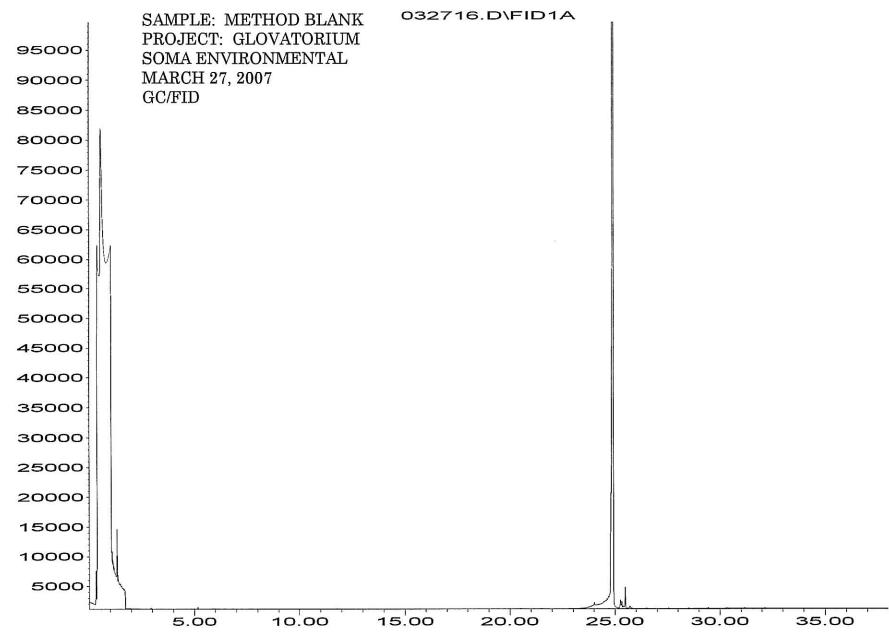
35.00

30.00

25.00

10.00

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Time