



**Shell Oil Products US**

November 18, 2002

20173

Amir Gholami  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

**Alameda County**

**NOV 21 2002**

**Environmental Health**

**Subject: Shell-branded Service Station**  
2120 Montana Street  
Oakland, California

Dear Mr. Gholami:

Attached for your review and comment is a copy of the *Third Quarter 2002 Monitoring Report* for the above referenced site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (559) 645-9306 with any questions or concerns.

Sincerely,

**Shell Oil Products US**

*Karen Petryna*

Karen Petryna  
Sr. Environmental Engineer

November 18, 2002

Amir Gholami  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Re: **Third Quarter 2002 Monitoring Report**  
Shell-branded Service Station  
2120 Montana Street  
Oakland, California  
Incident #98995740  
Cambria Project #244-0733-002



Dear Mr. Gholami:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US, Cambria Environmental Technology, Inc. (Cambria) is submitting this groundwater monitoring report in accordance with the reporting requirements of 23 CCR 2652d. The site is located at the northwest corner of Montana Street and Fruitvale Avenue in Oakland, California (Figures 1 and 2).

## REMEDIATION SUMMARY

**Mobile Groundwater Extraction (GWE):** As recommended in our August 15, 2001 *Agency Response*, Cambria began weekly GWE in August 2001 from wells MW-1 and TBW-N using a vacuum truck. Based on the lack of significant separate-phase hydrocarbons (SPH) in the wells, the mobile GWE frequency was reduced from weekly to biweekly in November 2001 and to monthly in January 2002. Cumulative groundwater purge volume and estimated mass removal data are presented in Table 1. Figures 3 and 4 show methyl tertiary butyl ether (MTBE) concentrations and mass removal estimates over time for wells MW-1 and TBW-N, respectively. The cumulative estimated mass of total petroleum hydrocarbons as gasoline and MTBE removed by GWE to date at the site is 9.66 pounds and 6.03 pounds, respectively. Additionally, approximately 2.68 pounds of SPH have been removed at the site through manual bailing and GWE.

Oakland, CA  
San Ramon, CA  
Sonoma, CA

**Cambria  
Environmental  
Technology, Inc.**

1144 65th Street  
Suite B  
Oakland, CA 94608  
Tel (510) 420-0700  
Fax (510) 420-9170

**THIRD QUARTER 2002 ACTIVITIES**

**Groundwater Monitoring:** Blaine Tech Services, Inc. (Blaine) of San Jose, California gauged and sampled the site wells, calculated groundwater elevations, and compiled the analytical data. Cambria prepared a vicinity map that includes previously submitted well survey information (Figure 1) and a groundwater elevation contour map (Figure 2). Blaine's report, presenting the laboratory report and supporting field documents, is included as Attachment A.

**Investigation and Pilot Test Report:** As proposed in our March 25, 2002 *Subsurface Investigation and Pilot Test Work Plan*, Cambria installed two groundwater monitoring wells at the site on June 21, 2002 and conducted a 5-day soil vapor extraction pilot test on tank backfill well TBW-E between June 24 and 28, 2002. On September 4, 2002, Cambria submitted a *Subsurface Investigation, Soil Vapor Extraction Pilot Test Report, and Interim Remediation Work Plan*.

**ANTICIPATED FOURTH QUARTER 2002 ACTIVITIES**

**Groundwater Monitoring:** Blaine will check for SPH, gauge and sample all wells, and tabulate the data. Cambria will prepare a monitoring report.

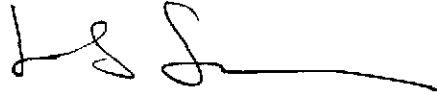
**Fixed GWE System Installation:** Our September 4, 2002 work plan proposed the installation of a fixed GWE system at the site. This work plan was approved in a September 19, 2002 Alameda County Health Care Services Agency letter. Cambria has begun the final design and permitting for the proposed GWE system.

**Mobile GWE:** Mobile GWE will be continued pending fixed GWE system installation at the site.

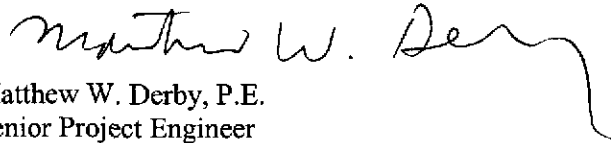
**CLOSING**

We appreciate the opportunity to work with you on this project. Please call Jacquelyn Jones at (510) 420-3316 if you have any questions or comments.

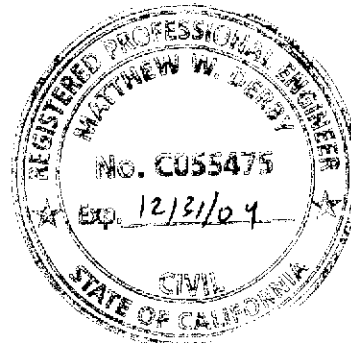
Sincerely,  
**Cambria Environmental Technology, Inc**



Jacquelyn L. Jones  
Project Geologist



Matthew W. Derby, P.E.  
Senior Project Engineer



- Figures:    1 - Vicinity/Area Well Survey Map  
              2 - Groundwater Elevation Contour Map  
              3 - MTBE and Mass Removal – Well MW-1  
              4 - MTBE and Mass Removal – Well TBW-N

Table:        1 - Groundwater Extraction – Mass Removal Data

Attachment: A - Blaine Groundwater Monitoring Report and Field Notes

cc:            Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869

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**EXPLANATION**

- MW-1 ◆ Monitoring well location
- TBW-N ✦ Tank backfill well location
- SB-1 ● Cambria soil boring location (10/99)
- D-1 ● Cambria soil sampling location (11/97)
- SPH Separate-phase hydrocarbons present in well, not sampled
- Groundwater flow direction
- XX.XX Groundwater elevation contour, in feet above mean sea level (msl), dashed where inferred

Well	Well designation
ELEV	Groundwater elevation, in feet above msl
Benzene	Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8260.
MTBE	

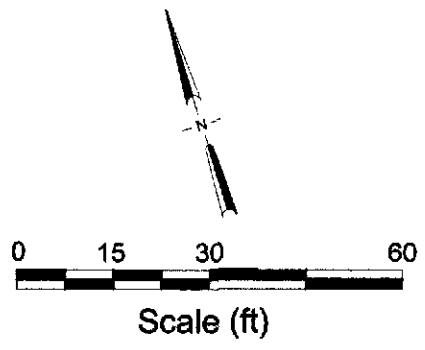
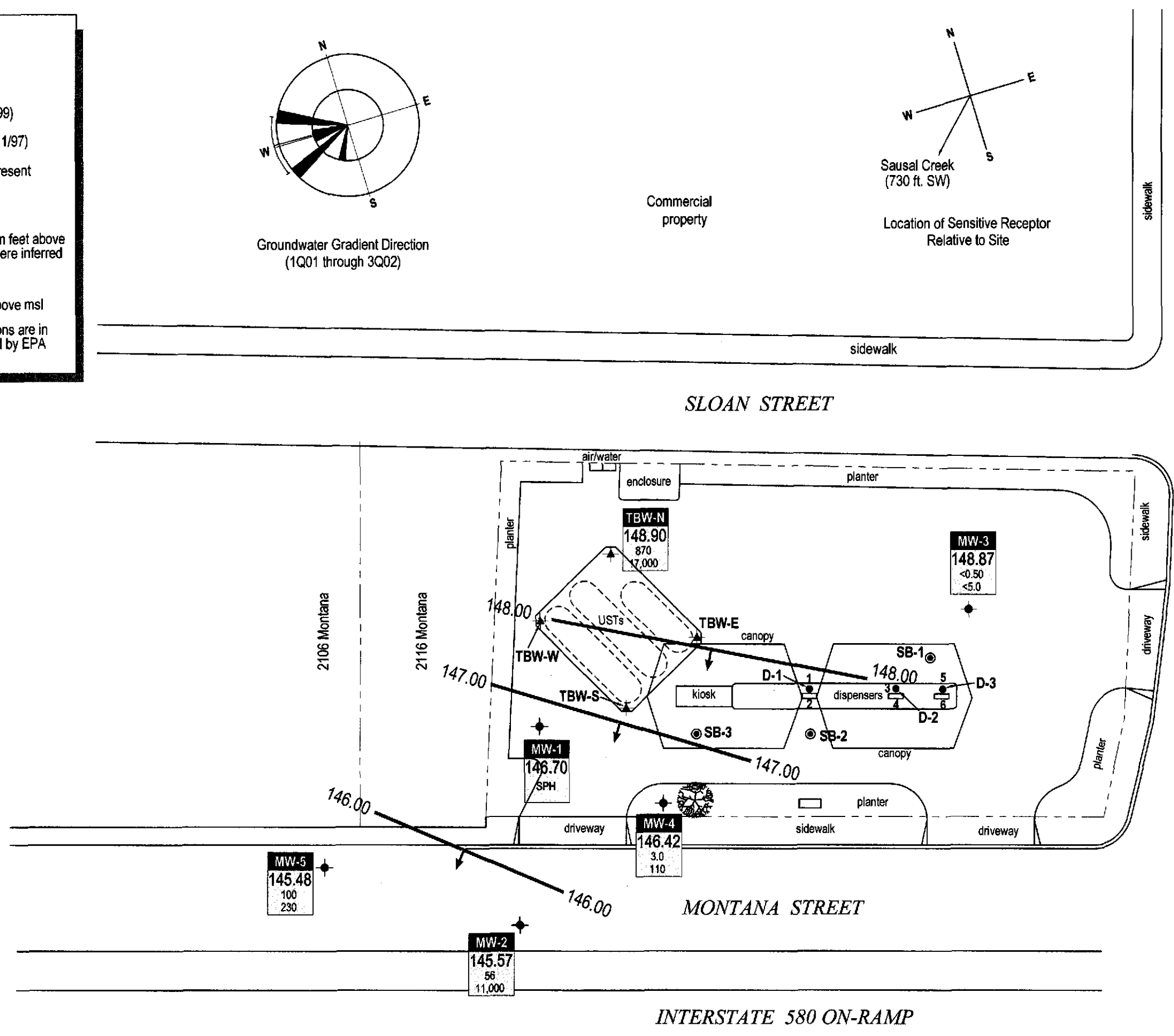
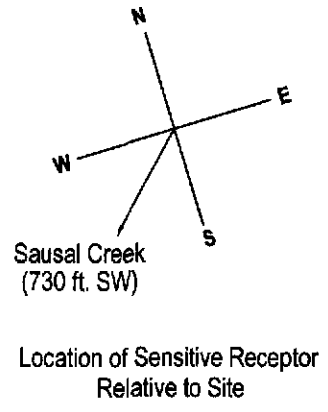
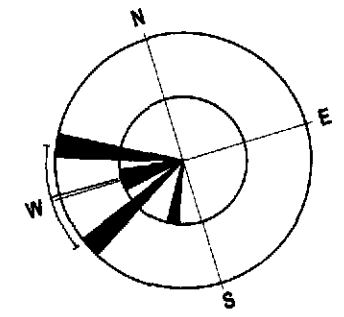
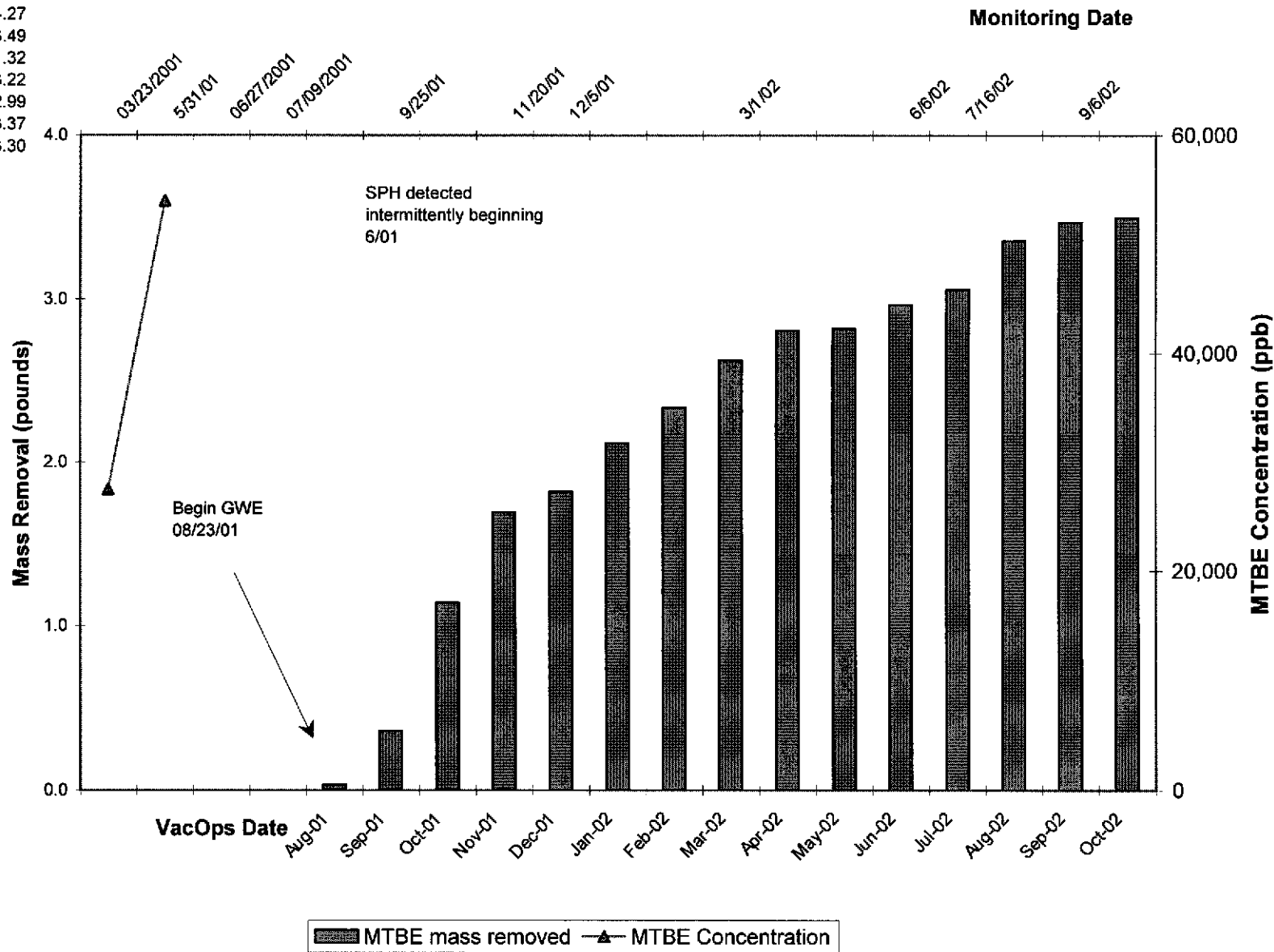


FIGURE 2

G:\OAKLAND\2120MONTANA\FIGURES\3010.MXD.MP.DWG

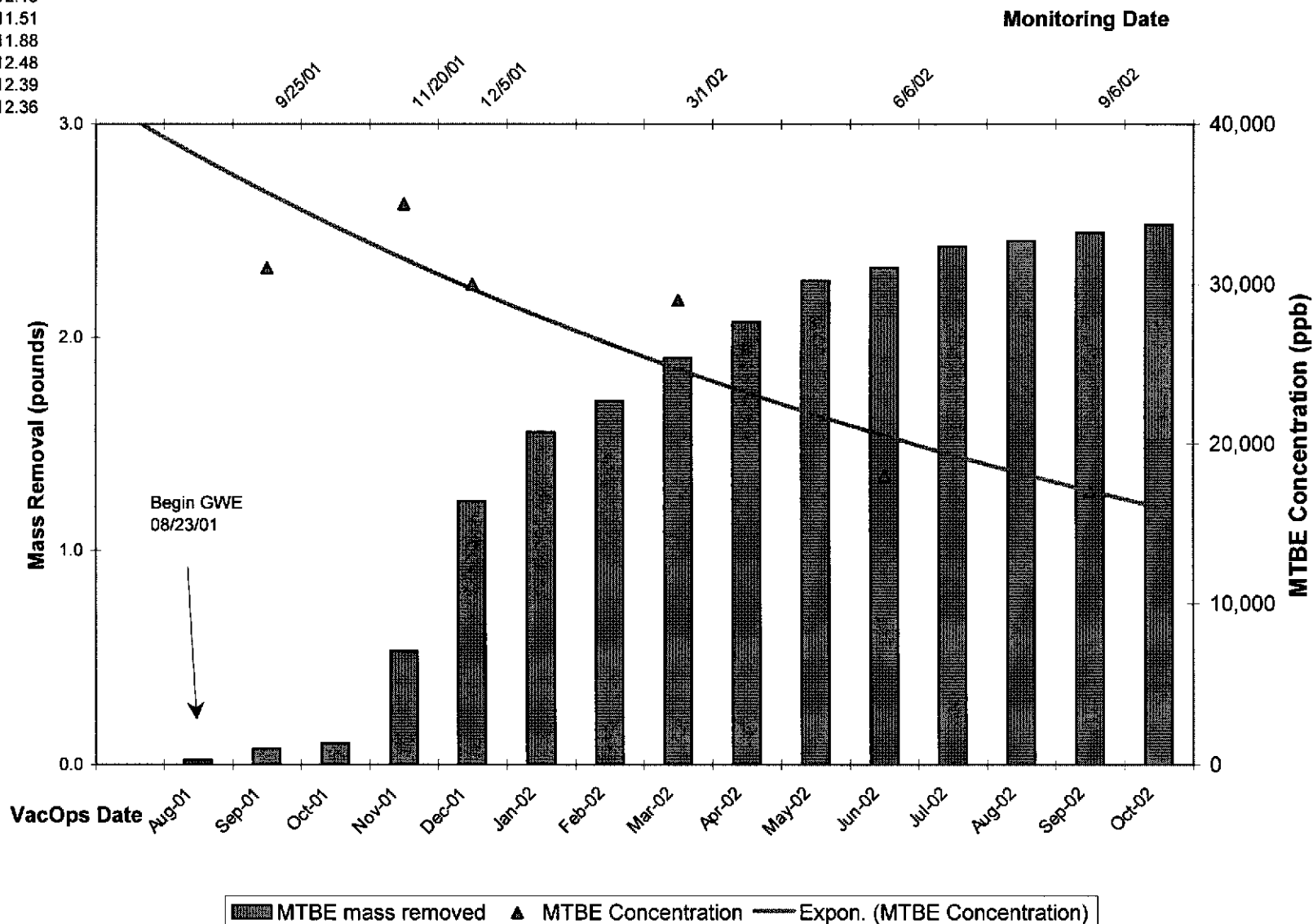
Date	DTW - ft
03/23/01	12.25
05/31/01	12.22
06/27/01	13.00
07/09/01	13.17
09/25/01	14.27
11/20/01	13.49
12/05/01	11.32
03/01/02	13.22
06/06/02	12.99
07/16/02	13.37
09/06/02	13.30

**Figure 3**  
**MTBE and Mass Removal**  
**Well MW-1**



**Figure 4**  
**MTBE and Mass Removal**  
**Well TBW-N**

Date	DTW - ft
09/25/01	12.25
11/20/01	12.13
12/05/01	11.51
03/01/02	11.88
06/06/02	12.48
07/16/02	12.39
09/06/02	12.36





**Table 1: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995740, 2120 Montana St., Oakland, California**

Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	TPPH			Benzene			MTBE		
					TPPH Concentration (ppb)	TPPH Removed (pounds)	TPPH Removed To Date (pounds)	Benzene Concentration (ppb)	Benzene Removed (pounds)	Benzene Removed To Date (pounds)	MTBE Concentration (ppb)	MTBE Removed (pounds)	MTBE Removed To Date (pounds)
08/23/01	MW-1	100	100	03/23/01	16,600	0.01385	0.01385	753	0.00063	0.00063	27,500	0.02295	0.02295
08/30/01	MW-1	40	140	03/23/01	16,600	0.00554	0.01939	753	0.00025	0.00088	27,500	0.00918	0.03213
09/09/01	MW-1	500	640	03/23/01	16,600	0.06926	0.08865	753	0.00314	0.00402	27,500	0.11473	0.14686
09/21/01	MW-1	320	960	03/23/01	16,600	0.04433	0.13298	753	0.00201	0.00603	27,500	0.07343	0.22029
09/29/01	MW-1	600	1,560	03/23/01	16,600	0.08311	0.21609	753	0.00377	0.00980	27,500	0.13768	0.35797
10/05/01	MW-1	362	1,922	03/23/01	16,600	0.05014	0.26623	753	0.00227	0.01208	27,500	0.08307	0.44104
10/12/01	MW-1	700	2,622	03/23/01	16,600	0.09696	0.36319	753	0.00440	0.01647	27,500	0.16063	0.60167
10/19/01	MW-1	350	2,972	03/23/01	16,600	0.04848	0.41167	753	0.00220	0.01867	27,500	0.08031	0.68198
10/29/01	MW-1	1,995	4,967	03/23/01	16,600	0.27634	0.68801	753	0.01254	0.03121	27,500	0.45779	1.13978
11/02/01	MW-1	700	5,667	03/23/01	16,600	0.09696	0.78497	753	0.00440	0.03561	27,500	0.16063	1.30041
11/16/01	MW-1	800	6,467	03/23/01	16,600	0.11081	0.89579	753	0.00503	0.04063	27,500	0.18358	1.48398
11/30/01	MW-1	900	7,367	03/23/01	16,600	0.12466	1.02045	753	0.00565	0.04629	27,500	0.20652	1.69050
12/14/01	MW-1	300	7,667	03/23/01	16,600	0.04155	1.06200	753	0.00188	0.04817	27,500	0.06884	1.75934
12/28/01	MW-1	250	7,917	03/23/01	16,600	0.03463	1.09663	753	0.00157	0.04974	27,500	0.05737	1.81671
01/12/02	MW-1	1,300	9,217	03/23/01	16,600	0.18007	1.27670	753	0.00817	0.05791	27,500	0.29831	2.11502
02/14/02	MW-1	950	10,167	03/23/01	16,600	0.13159	1.40830	753	0.00597	0.06388	27,500	0.21800	2.33302
03/11/02*	MW-1	1,258	11,425	03/23/01	16,600	0.17425	1.58255	753	0.00790	0.07179	27,500	0.28867	2.62169
04/01/02	MW-1	791	12,216	03/23/01	16,600	0.10957	1.69212	753	0.00497	0.07676	27,500	0.18151	2.80320
05/01/02	MW-1	60	12,276	03/23/01	16,600	0.00831	1.70043	753	0.00038	0.07713	27,500	0.01377	2.81697
06/05/02	MW-1	643	12,919	03/23/01	16,600	0.08907	1.78949	753	0.00404	0.08117	27,500	0.14755	2.96452
07/11/02	MW-1	400	13,319	03/23/01	16,600	0.05541	1.84490	753	0.00251	0.08369	27,500	0.09179	3.05631
08/12/02	MW-1	1,300	14,619	03/23/01	16,600	0.18007	2.02497	753	0.00817	0.09186	27,500	0.29831	3.35462
09/09/02	MW-1	500	15,119	03/23/01	16,600	0.06926	2.09423	753	0.00314	0.09500	27,500	0.11473	3.46935
10/08/02	MW-1	117	15,236	03/23/01	16,600	0.01621	2.11043	753	0.00037	0.09536	27,500	0.02685	3.49620
08/23/01	TBW-N	85	85	09/25/01	120,000	0.08511	0.08511	3,200	0.00227	0.00227	31,000	0.02199	0.02199
08/30/01	TBW-N	0	85	09/25/01	120,000	0.00000	0.08511	3,200	0.00000	0.00227	31,000	0.00000	0.02199
09/09/01	TBW-N	0	85	09/25/01	120,000	0.00000	0.08511	3,200	0.00000	0.00227	31,000	0.00000	0.02199

**Table 1: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995740, 2120 Montana St., Oakland, California**

Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	TPPH			Benzene			MTBE			
					TPPH Concentration (ppb)	TPPH Removed (pounds)	TPPH To Date (pounds)	Benzene Concentration (ppb)	Benzene Removed (pounds)	Benzene To Date (pounds)	MTBE Concentration (ppb)	MTBE Removed (pounds)	MTBE To Date (pounds)	
09/21/01	TBW-N	200	285	09/25/01	120,000	0.20026	0.28538	3,200	0.00534	0.00761	31,000	0.05174	0.07372	
09/29/01	TBW-N	0	285	09/25/01	120,000	0.00000	0.28538	3,200	0.00000	0.00761	31,000	0.00000	0.07372	
10/05/01	TBW-N	0	285	09/25/01	120,000	0.00000	0.28538	3,200	0.00000	0.00761	31,000	0.00000	0.07372	
10/12/01	TBW-N	100	385	09/25/01	120,000	0.10013	0.38551	3,200	0.00267	0.01028	31,000	0.02587	0.09959	
10/19/01	TBW-N	0	385	09/25/01	120,000	0.00000	0.38551	3,200	0.00000	0.01028	31,000	0.00000	0.09959	
10/29/01	TBW-N	5	390	09/25/01	120,000	0.00501	0.39052	3,200	0.00013	0.01041	31,000	0.00129	0.10088	
11/02/01	TBW-N	10	400	09/25/01	120,000	0.01001	0.40053	3,200	0.00027	0.01068	31,000	0.00259	0.10347	
11/16/01	TBW-N	400	800	09/25/01	120,000	0.40053	0.80106	3,200	0.01068	0.02136	31,000	0.10347	0.20694	
11/30/01	TBW-N	1,100	1,900	11/20/01	72,000	0.66087	1.46193	2,200	0.02019	0.04155	35,000	0.32126	0.52820	
12/14/01	TBW-N	2,000	3,900	12/05/01	76,000	1.26834	2.73027	1,600	0.02670	0.06826	30,000	0.50066	1.02886	
12/28/01	TBW-N	800	4,700	12/05/01	76,000	0.50734	3.23761	1,600	0.01068	0.07894	30,000	0.20026	1.22912	
01/12/02	TBW-N	1,300	6,000	12/05/01	76,000	0.82442	4.06203	1,600	0.01736	0.09629	30,000	0.32543	1.55455	
02/14/02	TBW-N	582	6,582	12/05/01	76,000	0.36909	4.43112	1,600	0.00777	0.10406	30,000	0.14569	1.70025	
03/11/02*	TBW-N	838	7,420	03/01/02	91,000	0.63632	5.06744	1,200	0.00839	0.11246	29,000	0.20278	1.90303	
04/01/02	TBW-N	700	8,120	03/01/02	91,000	0.53154	5.59898	1,200	0.00701	0.11946	29,000	0.16939	2.07242	
05/01/02	TBW-N	801	8,921	03/01/02	91,000	0.60823	6.20721	1,200	0.00802	0.12749	29,000	0.19383	2.26625	
06/05/02	TBW-N	400	9,321	06/06/02	100,000	0.33377	6.54098	2,100	0.00701	0.13449	18,000	0.06008	2.32633	
07/11/02	TBW-N	672	9,993	06/06/02	100,000	0.56074	7.10172	2,100	0.01178	0.14627	18,000	0.10093	2.42726	
08/12/02	TBW-N	165	10,158	06/06/02	100,000	0.13768	7.23940	2,100	0.00289	0.14916	18,000	0.02478	2.45205	
09/09/02	TBW-N	272	10,430	09/06/02	69,000	0.15661	7.39601	870	0.00197	0.15114	17,000	0.03858	2.49063	
10/08/02	TBW-N	272	10,702	09/06/02	69,000	0.15661	7.55262	870	0.00197	0.15311	17,000	0.03858	2.52922	
<b>Total Gallons Extracted:</b>			<b>25,938</b>	<b>Total Pounds Removed:</b>			<b>9.66305</b>	<b>Total Benzene Removed:</b>			<b>0.24848</b>	<b>Total MTBE Removed:</b>		<b>6.02542</b>
				<b>Total Gallons Removed:</b>			<b>1.58411</b>				<b>0.03404</b>			<b>0.97184</b>

**Table 1: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995740, 2120 Montana St., Oakland, California**

Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	<u>TPPH</u>			<u>Benzene</u>			<u>MTBE</u>			
					TPPH Concentration (ppb)	TPPH Removed (pounds)	TPPH Removed To Date (pounds)	Benzene Concentration (ppb)	Benzene Removed (pounds)	Benzene Removed To Date (pounds)	MTBE Concentration (ppb)	MTBE Removed (pounds)	MTBE Removed To Date (pounds)	

**Abbreviations & Notes:**

TPPH = Total purgeable hydrocarbons as gasoline

MtBE = Methyl tert-butyl ether

ppb = Parts per billion

gal = Gallons

\* = Volume pumped estimated.

Mass removed based on the formula: volume extracted (gal) x concentration (µg/L) x (g/10<sup>6</sup>µg) x (pound/453.6g) x (3.785 L/gal)

Volume removal data based on the formula: density (in gms/cc) x 9.339 (ccxlbs/gmsxgals)

TPPH, benzene, and MTBE analyzed by EPA Method 8260

Concentrations based on most recent groundwater monitoring results

If concentration is less than the laboratory detection limit, one half of the detection limit concentration is used in the mass removal calculation.

Groundwater extracted by vacuum trucks provided by Onyx. Water disposed of at a Martinez Refinery.

**ATTACHMENT A**

Blaine Groundwater Monitoring Report  
and Field Notes

**BLAINE  
TECH SERVICES, INC.**



1680 ROGERS AVENUE  
SAN JOSE, CA 95112-1105  
(408) 573-7771 FAX  
(408) 573-0555 PHONE  
CONTRACTOR'S LICENSE #746684  
www.blainetech.com

October 3, 2002

Karen Petryna  
Shell Oil Products US  
P.O. Box 7869  
Burbank, CA 91510-7869

Third Quarter 2002 Groundwater Monitoring at  
Shell-branded Service Station  
2120 Montana Street  
Oakland, CA

Monitoring performed on September 6, 2002

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Groundwater Monitoring Report **020906-EM-1**

This report covers the routine monitoring of groundwater wells at this Shell-branded facility. In accordance with standard procedures that conform to Regional Water Quality Control Board requirements, routine field data collection includes depth to water, total well depth, thickness of any separate immiscible layer, water column volume, calculated purge volume (if applicable), elapsed evacuation time (if applicable), total volume of water removed (if applicable), and standard water parameter instrument readings. Sample material is collected, contained, stored, and transported to the laboratory in conformance with EPA standards. Purgewater (if applicable) is, likewise, collected and transported to the Martinez Refining Company.

Basic field information is presented alongside analytical values excerpted from the laboratory report in the cumulative table of **WELL CONCENTRATIONS**. The full analytical report for the most recent samples and the field data sheets are attached to this report.

At a minimum, Blaine Tech Services, Inc. field personnel are certified on completion of a forty-hour Hazardous Materials and Emergency Response training course per 29 CFR 1910.120. Field personnel are also enrolled in annual eight-hour refresher courses.

Blaine Tech Services, Inc. conducts sampling and documentation assignments of this type as an independent third party. Our activities at this site consisted of objective data and sample collection only. No interpretation of analytical results, defining of hydrological conditions or formulation of recommendations was performed.

Please call if you have any questions.

Yours truly,

Leon Gearhart  
Project Coordinator

LG/jt

attachments: Cumulative Table of WELL CONCENTRATIONS  
Certified Analytical Report  
Field Data Sheets

cc: Anni Kreml  
Cambria Environmental Technology, Inc.  
1144 65<sup>th</sup> Street, Suite C  
Oakland, CA 94608-2411

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**2120 Montana Street**  
**Oakland, CA**

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)
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MW-1	03/19/3001	NA	NA	NA	NA	NA	NA	NA	159.59	12.14	147.45	ND
MW-1	03/23/2001	16,600	753	1,720	407	2,330	NA	27,500	159.59	12.25	147.34	ND
MW-1	05/31/2001	<20,000d	1,000d	920d	490d	2,000d	NA	54,000d	161.13	12.22	148.91	ND
MW-1	06/27/2001	NA	NA	NA	NA	NA	NA	NA	159.59	13.00b	NA	ND
MW-1	07/09/2001	NA	NA	NA	NA	NA	NA	NA	159.59	13.17	146.67	0.31
MW-1	09/25/2001	NA	NA	NA	NA	NA	NA	NA	159.59	14.27	145.66	0.43
MW-1	11/20/2001	NA	NA	NA	NA	NA	NA	NA	159.59	13.49	146.14	0.05
MW-1	12/05/2001	NA	NA	NA	NA	NA	NA	NA	159.59	11.32	148.31	0.05
MW-1	03/01/2002	NA	NA	NA	NA	NA	NA	NA	159.59	13.22	146.56	0.24
MW-1	06/06/2002	NA	NA	NA	NA	NA	NA	NA	159.59	12.99	147.00	0.50
MW-1	07/16/2002	NA	NA	NA	NA	NA	NA	NA	159.59	13.37	146.22	ND
<b>MW-1</b>	<b>09/06/2002</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>159.57</b>	<b>13.30</b>	<b>146.70</b>	<b>0.54</b>

MW-2	03/19/3001	NA	NA	NA	NA	NA	NA	NA	158.03	11.60	146.43	ND
MW-2	03/23/2001	4,450	280	41.0	62.1	63.0	NA	16,600	158.03	11.76	146.27	ND
MW-2	05/31/2001	<20,000a	820a	<200a	<200a	<200a	NA	63,000a	158.03	11.40	146.63	ND
MW-2	06/27/2001	<50,000	610	4.0	13	9.2	NA	47,000	158.03	12.65	145.38	ND
MW-2	09/25/2001	<2,000	41	<20	<20	<20	NA	6,400	158.03	12.89	145.14	ND
MW-2	12/05/2001	<2,000	74	<20	<20	<20	NA	8,400	158.03	10.40	147.63	ND
MW-2	03/01/2002	<1,000	<10	<10	<10	<10	NA	2,900	158.03	11.52	146.51	ND
MW-2	06/06/2002	<5,000	210	<50	<50	<50	NA	23,000	158.03	12.15	145.88	ND
MW-2	07/16/2002	NA	NA	NA	NA	NA	NA	NA	158.03	12.25	145.78	ND
<b>MW-2</b>	<b>09/06/2002</b>	<b>&lt;2,000</b>	<b>56</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>NA</b>	<b>11,000</b>	<b>158.01</b>	<b>12.44</b>	<b>145.57</b>	<b>ND</b>

MW-3	03/19/3001	NA	NA	NA	NA	NA	NA	NA	161.13	11.42	149.71	ND
MW-3	03/23/2001	<50.0	<0.500	<0.500	<0.500	<0.500	NA	1.26	161.13	11.42	149.71	ND
MW-3	05/31/2001	<50e	<0.50e	<0.50e	<0.50e	<0.50e	NA	<5.0e	159.59	13.00	146.59	ND
MW-3	06/27/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	161.13	12.32	148.81	ND

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**2120 Montana Street**  
**Oakland, CA**

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)
MW-3	09/25/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	161.13	12.50	148.63	ND
MW-3	12/05/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	161.13	10.13	151.00	ND
MW-3	03/01/2002	<50	<0.50	<0.50	<0.50	0.73	NA	<5.0	161.13	11.63	149.50	ND
MW-3	06/06/2002	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	161.13	11.55	149.58	ND
MW-3	07/16/2002	NA	NA	NA	NA	NA	NA	NA	161.13	11.72	149.41	ND
<b>MW-3</b>	<b>09/06/2002</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>NA</b>	<b>&lt;5.0</b>	<b>161.11</b>	<b>12.24</b>	<b>148.87</b>	<b>ND</b>
MW-4	07/10/2002	NA	NA	NA	NA	NA	NA	NA	NM	13.19	NA	ND
MW-4	07/16/2002	800	1.1	1.1	2.6	2.4	NA	450	NM	13.56	NA	ND
<b>MW-4</b>	<b>09/06/2002</b>	<b>1,100</b>	<b>3.0</b>	<b>1.8</b>	<b>8.0</b>	<b>4.6</b>	<b>NA</b>	<b>110</b>	<b>160.09</b>	<b>13.67</b>	<b>146.42</b>	<b>ND</b>
MW-5	07/10/2002	NA	NA	NA	NA	NA	NA	NA	NM	12.22	NA	ND
MW-5	07/16/2002	6,100	65	7.2	100	130	NA	410	NM	12.50	NA	ND
<b>MW-5</b>	<b>09/06/2002</b>	<b>5,900</b>	<b>100</b>	<b>8.1</b>	<b>41</b>	<b>32</b>	<b>NA</b>	<b>230</b>	<b>158.25</b>	<b>12.77</b>	<b>145.48</b>	<b>ND</b>
TBW-N	09/25/2001 c	120,000	3,200	2,800	4,000	18,000	NA	31,000	NM	12.25	NM	ND
TBW-N	11/20/2001	72,000	2,200	3,600	2,600	14,000	NA	35,000	NM	12.13	NM	ND
TBW-N	12/05/2001	76,000	1,600	3,200	2,900	15,000	NA	30,000	NM	11.51	NM	ND
TBW-N	03/01/2002	91,000	1,200	4,200	2,800	14,000	NA	29,000	NM	11.88	NM	ND
TBW-N	06/06/2002	100,000	2,100	8,200	3,400	17,000	NA	18,000	NM	12.48	NM	ND
TBW-N	07/16/2002	NA	NA	NA	NA	NA	NA	NA	NM	12.39	NM	ND
<b>TBW-N</b>	<b>09/06/2002</b>	<b>69,000</b>	<b>870</b>	<b>4,800</b>	<b>2,300</b>	<b>11,000</b>	<b>NA</b>	<b>17,000</b>	<b>161.26</b>	<b>12.36</b>	<b>148.90</b>	<b>ND</b>



**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**2120 Montana Street**  
**Oakland, CA**

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)
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Abbreviations:

TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B; prior to May 31, 2001, analyzed by EPA Method 8015.

BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B; prior to May 31, 2001, analyzed by EPA Method 8020.

MTBE = Methyl-tertiary-butyl ether

TOC = Top of Casing Elevation

GW = Groundwater

TBW-N = tank backfill well-north

NA = Not analyzed

ND = Not detected

NM = Not measured

ug/L = parts per billion

MSL = Mean sea level

ft = Feet

<n = Below detection limit

Notes:

a = Resampled on June 27, 2001, due to possible mislabeling.

b = Separate phase hydrocarbons encountered during purge; groundwater elevation may not be accurate.

c = Sample TBW-N was analyzed once within hold time, but the analyte concentrations all exceeded the instrument working ranges. The sample was diluted and re-analyzed out of hold time. The diluted analysis is reported because it more accurately reflects the concentrations present.

d = These results are listed as MW-3 on analytical report due to possible mislabeling in field or laboratory. Resampled on June 27, 2001, to confirm mislabeling.

e = These results are listed as MW-1 on analytical report due to possible mislabeling in field or laboratory. Resampled on June 27, 2001, to confirm mislabeling.

Survey data provided by Cambria Environmental Technology, May 2001.

Site surveyed February 12 and June 26, 2002, by Virgil Chavez Land Surveying of Vallejo, California.

When separate phase hydrocarbons are present, ground water elevation is adjusted using the relation:

corrected ground water elevation = Top-of-casing elevation - depth to water + (0.8 x hydrocarbon thickness).



Report Number : 28482

Date : 9/23/2002

Leon Gearhart  
Blaine Tech Services  
1680 Rogers Avenue  
San Jose, CA 95112-1105

Subject : 5 Water Samples  
Project Name : 2120 Montana Street, Oakland  
Project Number : 020906-EM1  
P.O. Number : 98995740

Dear Mr. Gearhart,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,



Joel Kiff



Report Number : 28482

Date : 9/23/2002

Subject : 5 Water Samples  
Project Name : 2120 Montana Street, Oakland  
Project Number : 020906-EM1  
P.O. Number : 98995740

## Case Narrative

Matrix Spike/Matrix Spike Duplicate Results associated with samples MW-4, MW-2, TBW-N, MW-5 for the analyte Methyl-t-butyl ether were affected by the analyte concentrations already present in the un-spiked sample.

Approved By:  \_\_\_\_\_  
Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 916-297-4800



Report Number : 28482

Date : 9/23/2002

Project Name : 2120 Montana Street, Oakland

Project Number : 020906-EM1

Sample : MW-2

Matrix : Water

Lab Number : 28482-01

Sample Date :9/6/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	56	20	ug/L	EPA 8260B	9/20/2002
Toluene	< 20	20	ug/L	EPA 8260B	9/20/2002
Ethylbenzene	< 20	20	ug/L	EPA 8260B	9/20/2002
Total Xylenes	< 20	20	ug/L	EPA 8260B	9/20/2002
Methyl-t-butyl ether (MTBE)	11000	200	ug/L	EPA 8260B	9/20/2002
TPH as Gasoline	< 2000	2000	ug/L	EPA 8260B	9/20/2002
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	9/20/2002
4-Bromofluorobenzene (Surr)	103		% Recovery	EPA 8260B	9/20/2002

Sample : MW-3

Matrix : Water

Lab Number : 28482-02

Sample Date :9/6/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	9/12/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	9/12/2002
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	9/12/2002
4-Bromofluorobenzene (Surr)	90.3		% Recovery	EPA 8260B	9/12/2002

Approved By:  Joel Kiff



Report Number : 28482

Date : 9/23/2002

Project Name : 2120 Montana Street, Oakland

Project Number : 020906-EM1

Sample : MW-4

Matrix : Water

Lab Number : 28482-03

Sample Date :9/6/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>3.0</b>	0.50	ug/L	EPA 8260B	9/20/2002
<b>Toluene</b>	<b>1.8</b>	0.50	ug/L	EPA 8260B	9/20/2002
<b>Ethylbenzene</b>	<b>8.0</b>	0.50	ug/L	EPA 8260B	9/20/2002
<b>Total Xylenes</b>	<b>4.6</b>	0.50	ug/L	EPA 8260B	9/20/2002
<b>Methyl-t-butyl ether (MTBE)</b>	<b>110</b>	5.0	ug/L	EPA 8260B	9/20/2002
<b>TPH as Gasoline</b>	<b>1100</b>	50	ug/L	EPA 8260B	9/20/2002
Toluene - d8 (Surr)	98.7		% Recovery	EPA 8260B	9/20/2002
4-Bromofluorobenzene (Surr)	104		% Recovery	EPA 8260B	9/20/2002

Sample : MW-5

Matrix : Water

Lab Number : 28482-04

Sample Date :9/6/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>100</b>	1.0	ug/L	EPA 8260B	9/20/2002
<b>Toluene</b>	<b>8.1</b>	1.0	ug/L	EPA 8260B	9/20/2002
<b>Ethylbenzene</b>	<b>41</b>	1.0	ug/L	EPA 8260B	9/20/2002
<b>Total Xylenes</b>	<b>32</b>	1.0	ug/L	EPA 8260B	9/20/2002
<b>Methyl-t-butyl ether (MTBE)</b>	<b>230</b>	10	ug/L	EPA 8260B	9/20/2002
<b>TPH as Gasoline</b>	<b>5900</b>	100	ug/L	EPA 8260B	9/20/2002
Toluene - d8 (Surr)	99.2		% Recovery	EPA 8260B	9/20/2002
4-Bromofluorobenzene (Surr)	91.8		% Recovery	EPA 8260B	9/20/2002

Approved By:  Joel Kiff



Report Number : 28482

Date : 9/23/2002

Project Name : 2120 Montana Street, Oakland

Project Number : 020906-EM1

Sample : TBW-N

Matrix : Water

Lab Number : 28482-05

Sample Date :9/6/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	870	25	ug/L	EPA 8260B	9/20/2002
Toluene	4800	25	ug/L	EPA 8260B	9/20/2002
Ethylbenzene	2300	25	ug/L	EPA 8260B	9/20/2002
Total Xylenes	11000	25	ug/L	EPA 8260B	9/20/2002
Methyl-t-butyl ether (MTBE)	17000	250	ug/L	EPA 8260B	9/20/2002
TPH as Gasoline	69000	2500	ug/L	EPA 8260B	9/20/2002
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	9/20/2002
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	9/20/2002

Approved By:  Joel Kiff

Report Number : 28482

Date : 9/23/2002

**QC Report : Method Blank Data**

Project Name : **2120 Montana Street, Oakland**

Project Number : **020906-EM1**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	9/20/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	9/20/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	9/20/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	9/20/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	9/20/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	9/20/2002
Toluene - d8 (Surr)	100		%	EPA 8260B	9/20/2002
4-Bromofluorobenzene (Surr)	94.1		%	EPA 8260B	9/20/2002
Benzene	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	9/12/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	9/12/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	9/12/2002
Toluene - d8 (Surr)	97.3		%	EPA 8260B	9/12/2002
4-Bromofluorobenzene (Surr)	92.2		%	EPA 8260B	9/12/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
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Approved By: Joel Kiff  


KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 28482

Date : 9/23/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 2120 Montana Street,

Project Number : 020906-EM1

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	28482-03	3.0	19.9	20.0	24.0	23.6	ug/L	EPA 8260B	9/20/02	105	103	2.26	70-130	25
Toluene	28482-03	1.8	19.9	20.0	22.1	21.7	ug/L	EPA 8260B	9/20/02	102	99.8	2.02	70-130	25
Tert-Butanol	28482-03	<5.0	99.7	99.8	122	105	ug/L	EPA 8260B	9/20/02	123	105	15.5	70-130	25
Methyl-t-Butyl Ether	28482-03	110	19.9	20.0	119	113	ug/L	EPA 8260B	9/20/02	43.7	12.7	110	70-130	25
Benzene	28481-01	<0.50	40.0	40.0	41.6	41.2	ug/L	EPA 8260B	9/12/02	104	103	0.894	70-130	25
Toluene	28481-01	<0.50	40.0	40.0	40.9	40.6	ug/L	EPA 8260B	9/12/02	102	102	0.614	70-130	25
Tert-Butanol	28481-01	<5.0	200	200	205	200	ug/L	EPA 8260B	9/12/02	102	100	2.28	70-130	25
Methyl-t-Butyl Ether	28481-01	9.4	40.0	40.0	49.5	49.6	ug/L	EPA 8260B	9/12/02	100	101	0.249	70-130	25

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  \_\_\_\_\_  
 Joel Kiff



Report Number : 28482

Date : 9/23/2002

QC Report : Laboratory Control Sample (LCS)

Project Name : 2120 Montana Street,

Project Number : 020906-EM1

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	9/20/02	104	70-130
Toluene	40.0	ug/L	EPA 8260B	9/20/02	99.8	70-130
Tert-Butanol	200	ug/L	EPA 8260B	9/20/02	81.8	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	9/20/02	98.1	70-130
Benzene	40.0	ug/L	EPA 8260B	9/12/02	96.6	70-130
Toluene	40.0	ug/L	EPA 8260B	9/12/02	96.2	70-130
Tert-Butanol	200	ug/L	EPA 8260B	9/12/02	87.3	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	9/12/02	83.4	70-130

KIFF ANALYTICAL, LLC

Approved By:  Joel Kiff

Lab Identification (if necessary):

Address:

City, State, Zip:

Shell Project Manager to be invoiced:

SCIENCE & ENGINEERING  
 TECHNICAL SERVICES  
 CRMT HOUSTON

Karen Petryna

28482

INCIDENT NUMBER (S&E ONLY)

9 8 9 9 5 7 4 0

SAP or CRMT NUMBER (TS/CRMT)

DATE:

9/6/02

PAGE:

1 of 1

SAMPLING COMPANY: **Blaine Tech Services** LOG CODE: **BTSS** SITE ADDRESS (Street and City): **2120 Montana Street, Oakland** GLOBAL ID NO.: **T0600101805**

ADDRESS: **1680 Rogers Avenue, San Jose, CA 95112** EDF DELIVERABLE TO (Responsible Party or Designee): **Anni Kraml** PHONE NO.: **510-420-3335** E-MAIL: **ShellOaklandEDF@cambria-env.com** CONSULTANT PROJECT NO.: **BTS 020906-EX1**

PROJECT CONTACT (Hardcopy or PDF Report to): **Leon Gearhart** SAMPLER NAME(S) (Print): **Eric McReynolds**

TELEPHONE: **408-573-0555** FAX: **408-573-7771** E-MAIL: **lgearhart@blainetech.com** LAB USE ONLY

TURNAROUND TIME (BUSINESS DAYS):  
 10 DAYS  5 DAYS  72 HOURS  48 HOURS  24 HOURS  LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT  LIST AGENCY:

GC/MS MTBE CONFIRMATION: HIGHEST \_\_\_\_\_ HIGHEST per BORING \_\_\_\_\_ ALL \_\_\_\_\_

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDO IS NOT NEEDED

REQUESTED ANALYSIS

TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	1,2-DCA (8260B)	EDB (8260B)	TPH - Diesel, Extractable (8015m)
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FIELD NOTES:  
 Container/Preservative or PID Readings or Laboratory Notes

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	1,2-DCA (8260B)	EDB (8260B)	TPH - Diesel, Extractable (8015m)	TEMPERATURE ON RECEIPT C°
		DATE	TIME													
	MW-2	9/6	13:25	GW	3	X	X	X								-01
	MW-3		13:00			X	X	X								-02
	MW-4		13:10			X	X	X								-03
	MW-5		13:40			X	X	X								-04
	TBW-N		12:40			X	X	X								-05

Relinquished by: (Signature) *Eric McReynolds* Received by: (Signature) \_\_\_\_\_ Date: **9/9/02** Time: **1149**

Relinquished by: (Signature) \_\_\_\_\_ Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished by: (Signature) \_\_\_\_\_ Received by: (Signature) *John Cottle Kiff Analytical* Date: **090902** Time: **1149**

## WELL GAUGING DATA

Project # 020906-EMX1 Date 9/6/02 Client Shell

Site 2120 Montana St.

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Free product
MW-1	2	Free	12.76	0.94	0 Sample	13.30	26.56	}	<del>12.76-13.17</del> Thickness = .43
MW-2	2					12.44	20.00		
MW-3	2					12.24	20.11		
MW-4	4					13.67	19.85		
MW-5	2					12.77	19.90		
TBW-N	4					12.36	13.23	↓	

MW-1 Needs new stinger.

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>020906-EM 21</u>	Site: <u>2120 Montana St</u>
Sampler: <u>EM</u>	Date: <u>9/6/02</u>
Well I.D.: <u>MW-1</u>	Well Diameter: <u>2</u> 3 4 6 8
Total Well Depth (TD): <u>—</u>	Depth to Water (DTW): <u>13.30</u>
Depth to Free Product: <u>12.76</u>	Thickness of Free Product (feet): <del>43</del> <u>0.54</u>
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer Disposable Bailer Middleburg Electric Submersible	Waterra Peristaltic Extraction Pump Other _____	Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: _____
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_____ (Gals.) X <u>3</u> = _____ Gals.   Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
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Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
						Product detected No Sample

Did well dewater? Yes No	Gallons actually evacuated: <u>—</u>
Sampling Date: <u>9/6/02</u>	Sampling Time: _____
Sample I.D.: _____	Laboratory: <u>Kiff</u> SPL Other _____
Analyzed for: <u>TPH-G BTEX MTBE</u> TPH-D Other: _____	
EB I.D. (if applicable): _____ @ _____ Time	Duplicate I.D. (if applicable): _____
Analyzed for: TPH-G BTEX MTBE TPH-D Other: _____	
D.O. (if req'd): Pre-purge: _____ mg/L	Post-purge: _____ mg/L
O.R.P. (if req'd): Pre-purge: _____ mV	Post-purge: _____ mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>020906-EMX1</u>	Site: <u>2120 Montana St</u>
Sampler: <u>EM</u>	Date: <u>9/6/02</u>
Well I.D.: <u>MW-2</u>	Well Diameter: <u>(2)</u> 3 4 6 8
Total Well Depth (TD): <u>20.00</u>	Depth to Water (DTW): <u>12.44</u>
Depth to Free Product:	Thickness of Free Product (feet): <del>3.95</del>
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>13.95</u>	

Purge Method: <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Disposable Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible	Water: <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other: _____	Sampling Method: <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
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$\frac{1.2 \text{ (Gals.)} \times 3}{\text{Specified Volumes}} = \frac{3.6 \text{ Gals.}}{\text{Calculated Volume}}$	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
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1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (µS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
11:58	66.1	6.8	250	7200	1.2	Grayish
12:02	66.2	6.8	240	7200	2.5	"
12:05	66.2	6.8	260	7200	3.6	"

Did well dewater? Yes  No  Gallons actually evacuated: 3.6

Sampling Date: 9/6/02 Sampling Time: 13:25 Depth to Water: 12.43

Sample I.D.: MW-2 Laboratory: Kiff SPL Other: \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>020906-EM X1</u>	Site: <u>2120 Montana St</u>
Sampler: <u>EM</u>	Date: <u>9/6/02</u>
Well I.D.: <u>MW-3</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>20.11</u>	Depth to Water (DTW): <u>12.24</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>13.81</u>	

Purge Method:  Bailer       Water      Sampling Method:  Bailer  
 Disposable Bailer       Peristaltic       Disposable Bailer  
 Middleburg       Extraction Pump       Extraction Port  
 Electric Submersible       Other \_\_\_\_\_       Dedicated Tubing

Other: \_\_\_\_\_

<u>1.3</u> (Gals.) X	<u>3</u> Specified Volumes	<u>3.9</u> Gals. Calculated Volume																
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Well Diameter	Multiplier	Well Diameter	Multiplier															
1"	0.04	4"	0.65															
2"	0.16	6"	1.47															
3"	0.37	Other	radius <sup>2</sup> * 0.163															

Time	Temp (°F)	pH	Cond. (mS or <u>µS</u> )	Turbidity (NTUs)	Gals. Removed	Observations
<u>10:43</u>	<u>71.2</u>	<u>6.4</u>	<u>644</u>	<u>7200</u>	<u>1.5</u>	<u>Brown</u>
<u>10:50</u>	<u>70.2</u>	<u>6.7</u>	<u>651</u>	<u>7200</u>	<u>3</u>	<u>"</u>
<u>10:57</u>	<u>69.8</u>	<u>6.6</u>	<u>653</u>	<u>7200</u>	<u>4</u>	<u>"</u>

Did well dewater? Yes  No  Gallons actually evacuated: 4

Sampling Date: 9/6/02 Sampling Time: 13:00 Depth to Water: 12.65

Sample I.D.: MW-3 Laboratory: Kiff SPL Other \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd): Pre-purge: \_\_\_\_\_ mg/L Post-purge: \_\_\_\_\_ mg/L

O.R.P. (if req'd): Pre-purge: \_\_\_\_\_ mV Post-purge: \_\_\_\_\_ mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>020906-EM 21</u>	Site: <u>2120 Montana St</u>
Sampler: <u>EM</u>	Date: <u>9/6/02</u>
Well I.D.: <u>MW-4</u>	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): <u>19.85</u>	Depth to Water (DTW): <u>13.67</u>
Depth to Free Product:	Thickness of Free Product (feet): <u>14.8</u>
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>14.90</u>	

Purge Method:  Bailer       Waterra      Sampling Method:  Bailer  
 Disposable Bailer       Peristaltic       Disposable Bailer  
 Middleburg       Extraction Pump       Extraction Port  
 Electric Submersible       Other \_\_\_\_\_       Dedicated Tubing  
 Other: \_\_\_\_\_

$4 \text{ (Gals.)} \times 3 = 12 \text{ Gals.}$	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														
I Case Volume      Specified Volumes      Calculated Volume																	

Time	Temp (°F)	pH	Cond. (mS or $\mu$ S)	Turbidity (NTUs)	Gals. Removed	Observations
11:22	68.5	6.3	294	196	4	clear
11:31	67.8	6.5	322	7200	8	less clear
11:40	67.2	6.7	421	7200	12	"

Did well dewater? Yes  No  Gallons actually evacuated: 12

Sampling Date: 9/6/02 Sampling Time: 13:10 Depth to Water: 13.92

Sample I.D.: MW-4 Laboratory:  Kiff  SPL Other \_\_\_\_\_

Analyzed for:  TPH-G  BTEX  MTBE  TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for:  TPH-G  BTEX  MTBE  TPH-D Other: \_\_\_\_\_

D.O. (if req'd): Pre-purge: \_\_\_\_\_ mg/L      Post-purge: \_\_\_\_\_ mg/L

O.R.P. (if req'd): Pre-purge: \_\_\_\_\_ mV      Post-purge: \_\_\_\_\_ mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>020906-EMXi</u>	Site: <u>2120 Montana St</u>
Sampler: <u>EM</u>	Date: <u>9/6/02</u>
Well I.D.: <u>MW-5</u>	Well Diameter: <u>2</u> 3 4 6 8
Total Well Depth (TD): <u>19.90</u>	Depth to Water (DTW): <u>12.77</u>
Depth to Free Product:	Thickness of Free Product (feet): <u>14.20</u>
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>14.20</u>	

Purge Method:  Bailer       Waterra      Sampling Method:  Bailer  
 Disposable Bailer       Peristaltic       Disposable Bailer  
 Middleburg       Extraction Pump       Extraction Port  
 Electric Submersible      Other \_\_\_\_\_       Dedicated Tubing

Other: \_\_\_\_\_

1.1 (Gals.) X 3 = 3.3 Gals.  
 I Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
12:16	65.7	6.9	18	7200	1.1	Brown/Blackish
12:20	66.5	6.8	23	7200	2.2	"
12:24	66.1	6.9	19	7200	3.3	"

Did well dewater? Yes  No  Gallons actually evacuated: 3.3

Sampling Date: 9/6/02 Sampling Time: 13:40 Depth to Water: 12.78

Sample I.D.: MW-5 Laboratory:  Kif      SPL      Other \_\_\_\_\_

Analyzed for:  TPH-G     BTEX     MTBE    TPH-D    Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Time      Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd): Pre-purge: \_\_\_\_\_ mg/L      Post-purge: \_\_\_\_\_ mg/L

O.R.P. (if req'd): Pre-purge: \_\_\_\_\_ mV      Post-purge: \_\_\_\_\_ mV



## SHELL WELL MONITORING DATA SHEET

BTS #: <u>020906-EM 81</u>	Site: <u>2120 Montana St</u>
Sampler: <u>EM</u>	Date: <u>9/6/02</u>
Well I.D.: <u>TBW-N</u>	Well Diameter: 2 3 <u>4</u> 6 8 <u>   </u>
Total Well Depth (TD): <u>13.23</u>	Depth to Water (DTW): <u>12.36</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>12.53</u>	

Purge Method: Bailer	Watera	Sampling Method: Bailer
Disposable Bailer	Peristaltic	Disposable Bailer
Middleburg	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: _____

<u>.5</u> (Gals.) X <u>3</u> = <u>1.5</u> Gals. I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
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2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (mS or <u>µS</u> )	Turbidity (NTUs)	Gals. Removed	Observations
12:37	71.2	6.9	3575	7200	.5	odor/green
12:41	70.7	6.8	1135	7200	1	"
12:45	71.1	6.8	2407	7200	1.5	"

Did well dewater? Yes  No  Gallons actually evacuated: 1.5

Sampling Date: 9/6/02 Sampling Time: 12:50 Depth to Water: 12.35

Sample I.D.: TBW-N Laboratory: KIT SPL Other \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

EB I.D. (if applicable): @ \_\_\_\_\_ Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd): Pre-purge:	mg/L	Post-purge:	mg/L
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O.R.P. (if req'd): Pre-purge:	mV	Post-purge:	mV
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