

C A M B R I A

Alameda County

MAR 05 2003

February 28, 2003

Environmental Health

Mr. Barney Chan
Alameda County Department of Environmental Health
UST Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Fourth Quarter 2002 Monitoring Report**

Former ARCO Service Station (Bo Gin)
706 Harrison Street
Oakland, California
STID 3749
Cambria Project #230-0116



Dear Mr. Chan:

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this fourth quarter 2002 groundwater monitoring report for the above-referenced site. Presented in the report are the fourth quarter 2002 activities and results and the anticipated first quarter 2003 activities.

If you have any questions or comments regarding this report, please call me at (510) 420-3314.

Sincerely,
Cambria Environmental Technology, Inc.

Matthew A. Meyers
Senior Staff Geologist

Attachments: Fourth Quarter 2002 Monitoring Report

cc: Mr. Bo K. Gin, 288 11th Street, Oakland, California 94706

**Cambria
Environmental
Technology, Inc.**

5900 Hollis Street
Suite A
Emeryville, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

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Alameda County

MAR 05 2003

Environmental Health

FOURTH QUARTER 2002 MONITORING REPORT

**Former ARCO Service Station (Bo Gin)
706 Harrison Street
Oakland, California
STID 3749
Cambria Project #230-0116**



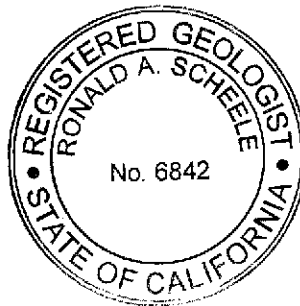
February 28, 2003

Prepared for:

Mr. Bo K. Gin
288 11th Street
Oakland, California 94706

Prepared by:

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, California 94608



Matthew A. Meyers
Senior Staff Geologist

Ron Scheele, RG
Senior Geologist

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FOURTH QUARTER 2002 MONITORING REPORT

Former ARCO Service Station (Bo Gin)
706 Harrison Street
Oakland, California
STID 3749
Cambria Project #230-0116

February 28, 2003



INTRODUCTION

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this fourth quarter 2002 groundwater monitoring report for the above-referenced site. Presented below are the fourth quarter 2002 activities and results and the anticipated first quarter 2003 activities.

FOURTH QUARTER 2002 ACTIVITIES

Monitoring Activities

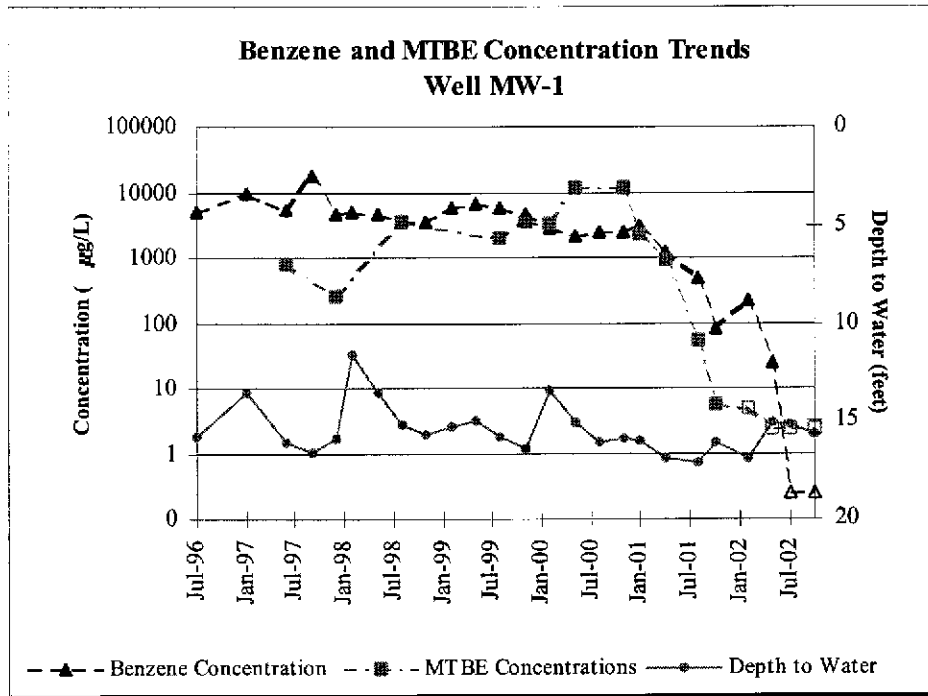
Field Activities: On October 2, 2002, Cambria conducted quarterly monitoring and sampling activities. Cambria gauged groundwater levels in monitoring wells MW-1 through MW-7 (see Figure 1). Groundwater samples were collected from wells MW-1, MW-2, and MW-4 according to the revised sampling schedule verbally approved by Mr. Barney Chan of the Alameda County Department of Environmental Health (ACDEH). Field Data Sheets are presented as Attachment A.

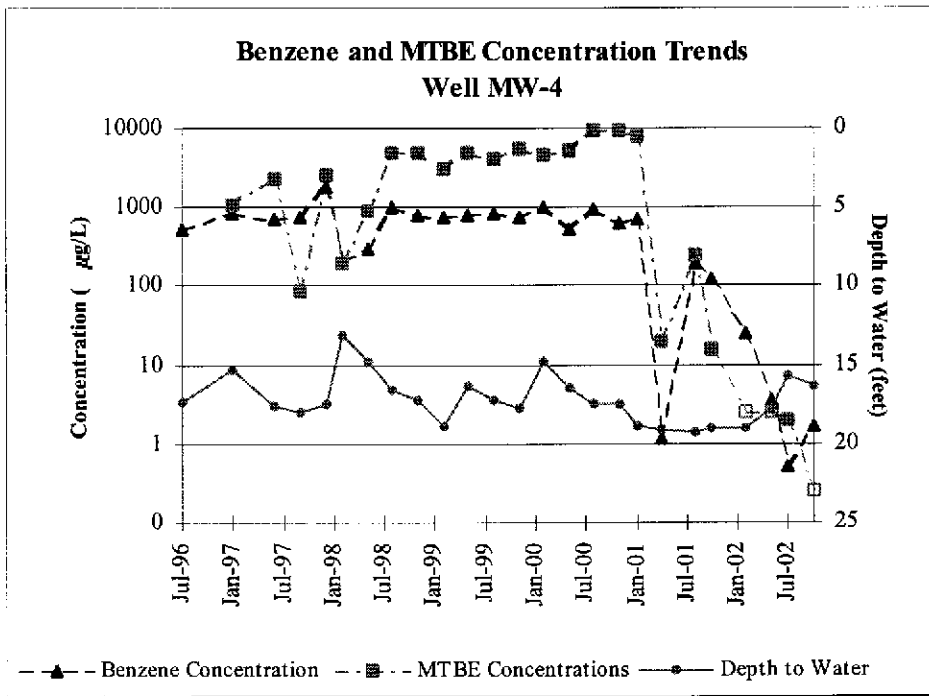
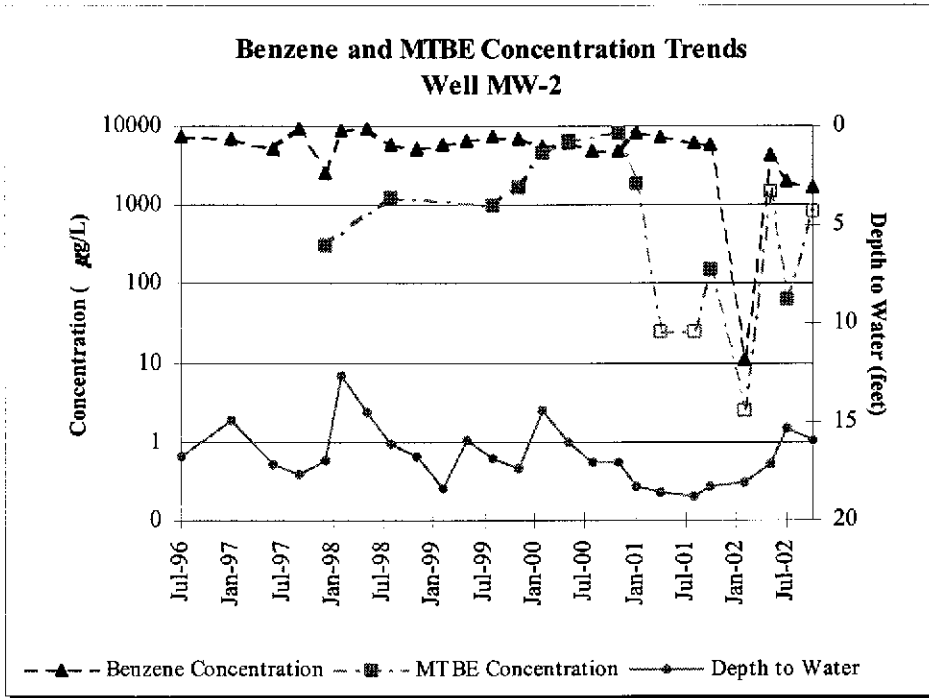
Sample Analyses: Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015; benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by EPA Method 8021B. The laboratory analytical report is included as Attachment B. Groundwater analytical results are shown on Tables 1 and summarized on Figure 1.

Monitoring Results

Groundwater Gradient: Based on depth-to-water measurements collected during Cambria's October 2, 2002 site visit, groundwater flows toward the southwest at a gradient of 0.031 ft/ft (Figure 1). The groundwater flow direction and gradient are consistent with the previous quarter's findings.

Hydrocarbon Distribution in Groundwater: Hydrocarbon concentrations were detected in two of the three wells sampled this quarter. A maximum TPHg and benzene concentration of 70,000 and 1,700 micrograms per liter ($\mu\text{g/L}$), respectively, were detected in well MW-2. MTBE was not detected in any well sampled during the fourth quarter sampling event. Overall, hydrocarbon concentrations were comparable to previous quarters. Wells MW-1, MW-2, and MW-4 continue to exhibit decreasing benzene and MTBE concentration trends as shown in the graphs below and in Attachment C. Please note that MTBE has been below laboratory detection limits in MW-1 the last four sampling events as indicated by the unshaded boxes.





Corrective Action Activities

Cambria operated a low flow rate air sparging system throughout the fourth quarter to enhance the natural attenuation of the remaining hydrocarbons. Air was injected into air sparge wells SP-3, SP-4, and SP-5 at a rate of approximately 2 to 3 cfm and at pressures ranging from 5 to 8 psi.

ANTICIPATED FIRST QUARTER 2003 ACTIVITIES**Monitoring Activities**

Cambria will gauge all wells, check the wells for SPH, and collect groundwater samples from scheduled wells (MW-1 through MW-7) that do not contain SPH. As per ACDEH, the well sampling schedule was revised so that MW-1, MW-2, and MW-4 are sampled quarterly and MW-3, MW-5, MW-6, and MW-7 are sampled annually. Groundwater samples will be analyzed for TPHg by Modified EPA Method 8015, and BTEX and MTBE by EPA Method 8020. Any samples containing MTBE will be confirmed by EPA Method 8260. Cambria will prepare a groundwater monitoring report summarizing the monitoring activities and results.

Corrective Action Activities

Cambria will prepare a work plan that will propose the collection of groundwater and air samples from borings in the vicinity of MW-2. The work plan will also include hydrogeologic cross-sections, hydrocarbon mass estimates, and a utility survey. A file review of the adjacent and upgradient service station site will be performed to obtain additional data to include in the preparation of hydrogeologic cross-sections.

Cambria plans to continue the operation of the air sparge system during the first quarter 2003. After reviewing the laboratory results of the proposed groundwater samples collected from the air sparge wells, Cambria will determine if continued operation of the air sparge system is warranted.

ATTACHMENTS

Figure 1 – Groundwater Elevation Contour Map

Table 1 – Groundwater Elevations and Analytical Data

Attachment A – Groundwater Monitoring Field Data Sheets

Attachment B – Laboratory Analytical Report

Attachment C – Benzene and MTBE Concentration Graphs

Attachment D – Electronic Delivery Confirmations



EXPLANATION

- ◆ Monitoring Well Location
- ⊕ Dual Well, SVE/Sparging Well
- ⊙ SVE Well

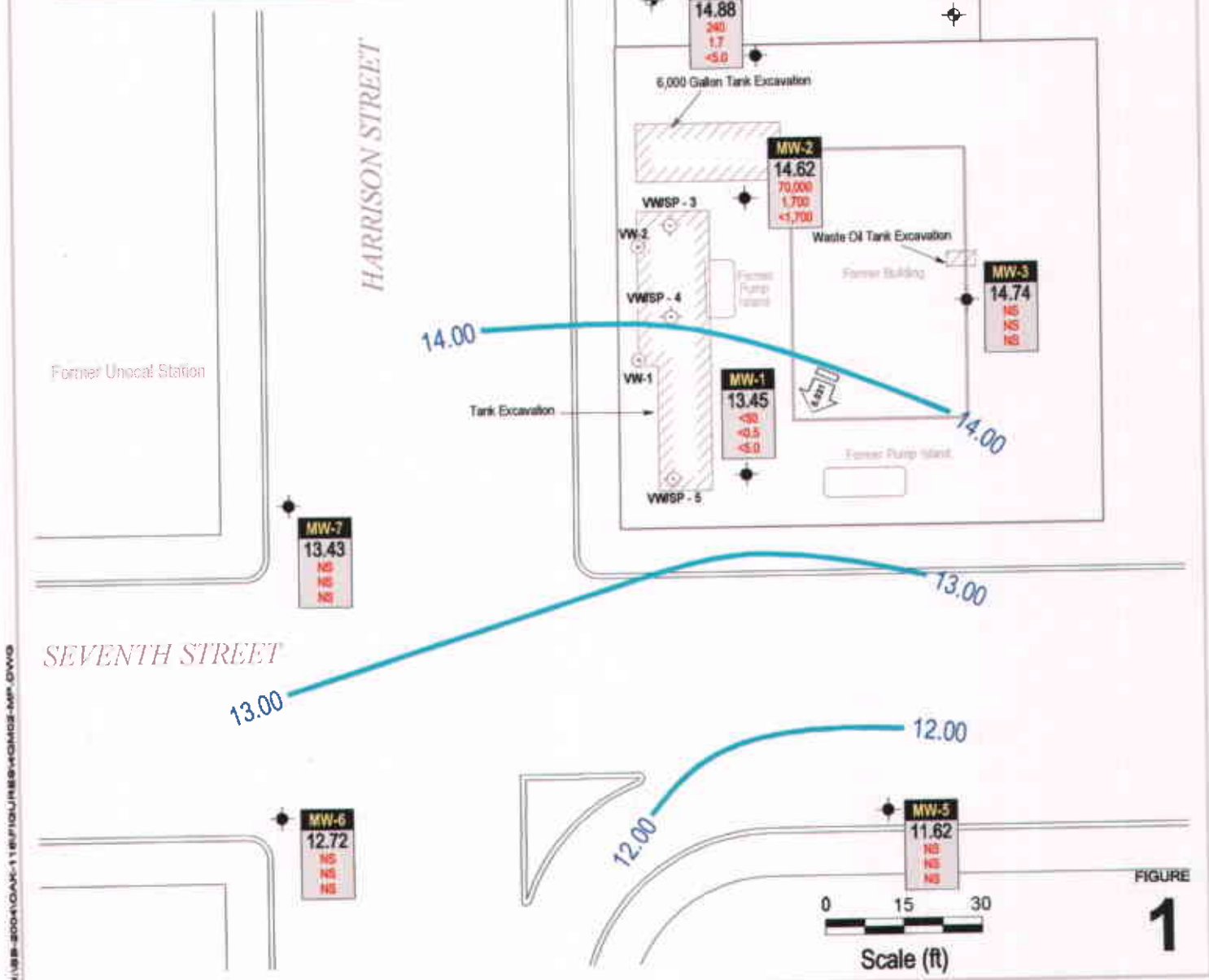
12.00 — Groundwater Elevation Contour, Dashed Where Inferred

→ Groundwater Flow Direction and Gradient (ft/ft)

Well ID
ELEV
TPHg
Benzene
MTBE

Well Identification
Groundwater elevation, in feet above mean sea level (msl).
TPHg, Benzene and MTBE concentrations are in micrograms per liter (µg/L)

NS Not Sampled



H:\WB-2004\OAK-118\FIGURES\GMM02-MP_GWG

Former Arco Station
706 Harrison Street
Oakland, California



C A M B R I A

Groundwater Elevation Contour Map
October 2, 2002

FIGURE
1

CAMBRIA

Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID	TOC	Elevation	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Date Sampled	(ft)	Elevation	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
Frequency												
MW-1	8/13/93	17.40	11.75	20,000	8,500	640	280	440	-	-		
29.15	12/14/93	17.27	11.88	17,000	9,200	1,200	4,400	540	-	-		
Quarterly	4/15/94	17.00	12.15	9,500	3,600	530	160	280	-	-		
	12/29/94	16.40	12.75	-	-	-	-	-	-	-		
	7/19/96	15.83	13.32	17,000	5,200	1,100	330	530	-	-		sheen/odor
	1/27/97	13.58	15.57	30,000	9,800	1,300	790	880	400	-		b, sheen/odor
	6/18/97	16.11	13.04	19,000	5,600	1,400	510	770	1,200	800		a, b
	9/18/97	16.62	12.53	48,000	18,000	4,400	1,000	1,700	<640	-		b
	12/10/97	15.93	13.22	22,000	4,900	1,300	580	650	460	260		a, b, odor
	2/18/98	11.56	17.59	16,000	5,000	750	400	780	1,800	-		b
	5/12/98	13.53	15.62	19,000	4,600	810	450	770	5,500	-		b, c
	8/18/98	15.19	13.96	12,000	3,600	1,300	300	570	5,100	3,700		a, b
	11/24/98	15.67	13.48	13,000	3,600	890	330	380	6,100	-		b
	2/4/99	15.31	13.84	20,000	5,900	830	450	500	4,900	-		b
	5/18/99	14.95	14.20	23,000	7,000	1,600	520	830	6,100	-		b
	8/27/99	15.84	13.31	19,000	5,800	1,700	410	710	1,800	2,100		a, b
	11/18/99	16.39	12.76	20,000	4,900	630	410	580	4,900	3,600		b
	2/29/00	13.43	15.72	12,000	2,800	24	290	170	3,100	3,400		a
	5/25/00	15.08	14.07	12,000	2,200	120	330	260	9,100	12,000		a, b
	8/9/00	16.09	13.06	13,000	2,500	44	310	140	16,000	-		b
	11/9/00	15.90	13.25	11,000	2,500	140	380	150	11,000	12,000		b
	1/29/01	16.05	13.10	9,600	3,100	100	77	200	2,600	2,400		b
	4/16/01	16.90	12.25	3,300	1,200	4.4	2.7	28	900	940		b
	8/14/01	17.13	12.02	2,000	500	3.4	24	7.8	68	53		a
	10/22/01	16.11	13.04	220	83	0.63	2.8	<0.5	<10	5.7		a
	2/1/02	16.93	12.22	640	220	1.7	4.7	0.57	<10	-		a
	5/10/02	15.09	14.06	230	26	0.97	<0.5	<0.5	<5.0	-		a
	7/8/02	15.20	13.95	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5		
	10/2/02	15.70	13.45	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-		

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Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID	TOC	Elevation	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Date Sampled	Water	Elevation	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
Frequency		(ft)										
MW-2	8/13/93	17.05	13.46		34,000	6,800	10,000	740	3,900	-	-	
30.51	12/14/93	18.28	12.23		16,000	3,200	4,200	500	1,700	-	-	
Quarterly	4/15/94	18.10	12.41		23,000	2,500	4,200	470	1,800	-	-	
	12/29/94	17.40	13.11		-	-	-	-	-	-	-	
	7/19/96	16.72	13.79		90,000	7,300	14,000	1,600	7,300	-	-	odor
	1/27/97	14.89	15.62		63,000	7,100	13,000	1,600	7,100	500	-	b, odor
	6/18/97	17.12	13.39		52,000	5,100	10,000	1,400	6,000	<200	-	b
	9/18/97	17.63	12.88		110,000	9,400	23,000	2,600	13,000	<890	-	b, sheen/odor
	12/10/97	16.98	13.53		39,000	2,600	5,300	940	3,900	780	320	b, odor
	2/18/98	12.61	17.90		85,000	9,000	19,000	2,300	11,000	2,400	-	b
	5/12/98	14.45	16.06		110,000	9,500	21,000	2,500	12,000	<1,200	-	b
	8/18/98	16.14	14.37		64,000	6,000	13,000	1,700	7,800	2,000	1,300	a, b
	11/24/98	16.70	13.81		78,000	5,300	14,000	2,300	11,000	<2,000	-	b, g
	2/4/99	18.39	12.12		66,000	5,800	16,000	2,600	12,000	3,000	-	b, g
	5/18/99	15.90	14.61		78,000	6,700	17,000	2,400	10,000	4,300	-	b
	8/27/99	16.79	13.72		91,000	7,400	17,000	2,300	11,000	1,200	1,000	a, b
	11/18/99	17.32	13.19		180,000	7,000	20,000	3,300	16,000	<6,000	1,700	b, g
	2/29/00	14.37	16.14		86,000	5,500	13,000	2,000	9,500	3,500	4,700	a
	5/25/00	16.01	14.50		110,000	6,300	14,000	2,400	10,000	7,500	6,500	a, b, g
	8/9/00	17.02	13.49		77,000	5,000	13,000	2,000	8,600	5,900	-	b
	11/9/00	17.00	13.51		70,000	4,800	12,000	1,900	8,000	9,400	8,300	b
	1/29/01	18.31	12.20		110,000	8,200	21,000	2,800	13,000	2,500	1,900	b, g
	4/16/01	18.59	11.92		97,000	7,400	15,000	2,500	12,000	<3,000	<50	b, g
	8/14/01	18.74	11.77		97,000	6,200	14,000	2,400	13,000	<250	<50	a, j
	10/22/01	18.27	12.24		71,000	5,900	15,000	2,400	12,000	<1,400	150	a
	2/1/02	18.05	12.46		1,400	11	88	44	210	<5.0	-	a
	5/10/02	17.15	13.36		97,000	4,500	15,000	2,500	12,000	<3,000	-	a, g
	7/8/02	15.30	15.21		42,000	2,100	6,500	2,200	8,800	<1,000	65	a
	10/2/02	15.89	14.62		70,000	1,700	5,700	1,900	8,300	<1,700	-	a

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Well ID	TOC	Elevation	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Date Sampled	(ft)	Elevation	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
Frequency												
MW-3	8/13/93	17.05	12.72	<50	<0.50	<0.50	<0.50	<0.50	<1.5	-	-	
29.77	12/14/93	17.70	12.07	<50	<0.50	<0.50	<0.50	<0.50	<1.5	-	-	
Bi-annually	4/15/94	17.40	12.37	<50	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	
	12/29/94	16.80	12.97	-	-	-	-	-	-	-	-	
	7/19/96	16.28	13.49	<50	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	
	1/27/97	13.83	15.94	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	6/18/97	16.53	13.24	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	9/18/97	17.07	12.70	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	12/10/97	16.15	13.62	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/18/98	11.80	17.97	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/12/98	13.85	15.92	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/18/98	15.57	14.20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/24/98	16.04	13.73	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/4/99	17.80	11.97	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/18/99	15.29	14.48	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/27/99	16.15	13.62	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/18/99	16.77	13.00	-	-	-	-	-	-	-	-	
	2/29/00	13.71	16.06	<50	2	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/25/00	15.46	14.31	-	-	-	-	-	-	-	-	
	8/9/00	16.46	13.31	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/9/00	16.25	13.52	-	-	-	-	-	-	-	-	
	1/29/01	16.52	13.25	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	4/16/01	16.95	12.82	-	-	-	-	-	-	-	-	
	8/14/01	17.11	12.66	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/22/01	16.50	13.27	-	-	-	-	-	-	-	-	
	2/1/02	16.90	12.87	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/10/02	15.03	14.74	-	-	-	-	-	-	-	-	
	7/8/02	14.45	15.32	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/2/02	15.03	14.74	-	-	-	-	-	-	-	-	

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Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID	TOC	Elevation	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Date Sampled	(ft)	Elevation	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
Frequency												
MW-4	12/16/94	18.10	13.08	2,500	32	6.5	4.5	17	-	-		
31.18	12/29/94	17.95	13.23	-	-	-	-	-	-	-		
Quarterly	7/19/96	17.38	13.80	3,300	520	39	67	60	-	-		
	1/27/97	15.25	15.93	4,500	860	55	100	91	1,100	-		b
	6/18/97	17.61	13.57	2,700	700	52	81	76	2,200	2,300		a, b
	9/18/97	18.01	13.17	3,900	760	38	56	64	<170	-		b
	12/10/97	17.45	13.73	12,000	1,800	120	210	210	2,900	2,600		a, b
	2/18/98	13.09	18.09	1,700	210	8	6.7	16	200	-		b
	5/12/98	14.78	16.40	2,100	300	15	36	34	920	-		b, c
	8/18/98	16.59	14.59	4,700	1,000	130	110	150	5,200	4,900		a, b
	11/24/98	17.18	14.00	3,000	810	44	76	94	4,800	-		b
	2/4/99	18.90	12.28	2,800	770	50	69	69	3,100	-		b
	5/18/99	16.30	14.88	4,000	780	57	7.7	79	4,800	-		b
	8/27/99	17.21	13.97	4,100	870	51	74	99	3,300	4,100		a, b
	11/18/99	17.77	13.41	3,000	760	43	67	65	5,100	5,400		b
	2/29/00	14.85	16.33	4,600	1,000	64	94	170	4,100	4,600		a
	5/25/00	16.45	14.73	2,600	540	39	59	41	3,500	5,300		b
	8/9/00	17.47	13.71	4,400	930	66	98	79	9,400	-		b
	11/9/00	17.45	13.73	4,200	630	34	54	44	7,800	9,400		b
	1/29/01	18.90	12.28	3,100	710	34	66	51	9,400	8,000		b
	4/16/01	19.17	12.01	160	1.2	1.3	<0.5	12	22	20		b
	8/14/01	19.20	11.98	1,700	190	11	35	13	300	250		b
	10/22/01	18.95	12.23	1,100	120	3.7	29	7.9	<25	16		a
	2/1/02	19.05	12.13	2,600	25	43	21	280	<5.0	-		a
	5/10/02	17.69	13.49	490	3.5	2.0	2.1	2.2	<5.0	-		a
	7/8/02	15.75	15.43	170	0.51	0.62	1.6	1.2	<5.0	2.0		m
	10/2/02	16.30	14.88	240	1.7	2.0	2.2	0.88	<5.0	-		a

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Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID	TOC	Elevation	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Date Sampled	(ft)	Elevation	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
Frequency												
MW-5	12/16/94	16.07	11.97	<50	1.1	<0.5	<0.5	<0.5	2.4	-	-	
28.04	12/29/94	16.10	11.94	-	-	-	-	-	-	-	-	
Bi-annually	7/19/96	15.49	12.55	<50	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	
	1/27/97	13.60	14.44	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	6/18/97	15.55	12.49	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	9/18/97	16.16	11.88	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	12/10/97	15.41	12.63	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/18/98	10.93	17.11	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/12/98	13.25	14.79	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/18/98	14.75	13.29	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/24/98	15.15	12.89	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/4/99	14.61	13.43	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/18/99	14.15	13.89	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/27/99	15.43	12.61	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/18/99	15.97	12.07	-	-	-	-	-	-	-	-	
	2/29/00	13.16	14.88	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/25/00	14.72	13.32	-	-	-	-	-	-	-	-	
	8/9/00	15.68	12.36	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/9/00	15.39	12.65	-	-	-	-	-	-	-	-	
	1/29/01	15.97	12.07	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	4/16/01	16.24	11.80	-	-	-	-	-	-	-	-	
	8/14/01	17.39	10.65	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/22/01	15.90	12.14	-	-	-	-	-	-	-	-	
	2/1/02	16.55	11.49	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/10/02	15.12	12.92	-	-	-	-	-	-	-	-	
	7/8/02	15.92	12.12	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/2/02	16.42	11.62	-	-	-	-	-	-	-	-	

CAMBRIA

Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID	TOC	Elevation	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Date Sampled	(ft)	Water	Elevation	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
Frequency		(ft)	(ft)	(ft-msl)								
MW-6	12/16/94	17.74		11.36	-	-	-	-	-	-	-	
29.10	12/29/94	17.40		11.70	-	-	-	-	-	-	-	
Bi-annually	7/19/96	16.60		12.50	<50	<0.5	<0.5	<0.5	<0.5	-	-	
	1/27/97	14.88		14.22	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	6/18/97	16.73		12.37	51	22	<0.5	<0.5	<0.5	<5.0	-	c
	9/18/97	17.24		11.86	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	12/10/97	16.56		12.54	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/18/98	12.93		16.17	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/12/98	14.35		14.75	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/18/98	15.94		13.16	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/24/98	16.46		12.64	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/4/99	18.25		10.85	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/18/99	15.73		13.37	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/27/99	15.64		13.46	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/18/99	17.04		12.06	-	-	-	-	-	-	-	
	2/29/00	14.55		14.55	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/25/00	15.86		13.24	-	-	-	-	-	-	-	
	8/9/00	16.80		12.30	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/9/00	16.60		12.50	-	-	-	-	-	-	-	
	1/29/01	17.00		12.10	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	4/16/01	17.15		11.95	-	-	-	-	-	-	-	
	8/14/01	17.30		11.80	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/22/01	17.13		11.97	-	-	-	-	-	-	-	
	2/1/02	16.57		12.53	70	37	<0.5	<0.5	<0.5	<5.0	-	a
	5/10/02	15.25		13.85	-	-	-	-	-	-	-	
	7/8/02	15.79		13.31	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/2/02	16.38		12.72	-	-	-	-	-	-	-	

CAMBRIA

Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID											
TOC											
Elevation		Depth to	Groundwater								
Monitoring		Water	Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	
Frequency	Date Sampled	(ft)	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	Notes
MW-7	12/16/94	17.07	12.60	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
29.67	12/29/94	17.65	12.02	-	-	-	-	-	-	-	
Bi-annually	7/19/96	16.44	13.23	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	1/27/97	15.09	14.58	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	6/18/97	16.59	13.08	73	<0.5	0.55	<0.5	<0.5	<5.0	-	d
	9/18/97	17.06	12.61	94	<0.5	<0.5	<0.5	<0.5	<5.0	-	e, f
	12/10/97	16.58	13.09	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	2/18/98	12.60	17.07	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/12/98	14.81	14.86	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	8/18/98	15.67	14.00	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/24/98	16.30	13.37	200	<0.5	<0.5	<0.5	<0.5	<5.0	-	d
	2/4/99	15.99	13.68	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/18/99	15.42	14.25	200	<0.5	<0.5	<0.5	<0.5	<5.0	-	d
	8/27/99	16.35	13.32	140	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/18/99	16.81	12.86	--	--	--	--	--	--	-	
	2/29/00	14.16	15.51	100	<0.5	<0.5	<0.5	<0.5	<5.0	-	f
	5/25/00	15.54	14.13	--	--	--	--	--	--	-	
	8/9/00	16.56	13.11	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	11/9/00	16.45	13.22	-	-	-	-	-	-	-	
	1/29/01	16.92	12.75	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	4/16/01	17.03	12.64	-	-	-	-	-	-	-	
	8/14/01	17.27	12.40	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/22/01	16.95	12.72	-	-	-	-	-	-	-	
	2/1/02	16.14	13.53	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	5/10/02	15.30	14.37	-	-	-	-	-	-	-	
	7/8/02	15.73	13.94	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
	10/2/02	16.24	13.43	-	-	-	-	-	-	-	
Trip Blank	11/9/00	-	-	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	

CAMBRIA

Table 1. Groundwater Elevations and Analytical Data - Former ARCO Station - 706 Harrison Street, Oakland, California

Well ID											
TOC		Depth to	Groundwater								
Elevation		Water	Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	
Monitoring		(ft)	(ft-msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	Notes
Frequency	Date Sampled										

<u>Abbreviations and Analyses:</u>	<u>Notes</u>
TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015	a = Analytical laboratory notes that unmodified or weakly modified gasoline is significant.
Benzene, ethylbenzene, toluene and xylenes by EPA Method 8020.	b = Analytical laboratory notes that heavier gasoline range compounds are significant.
MTBE = Methyl tertiary butyl ether by EPA Method 8020 and/or 8260.	c = Analytical laboratory notes that lighter gasoline range compounds are significant.
µg/L = Micrograms per liter	d = Analytical laboratory notes that isolated peaks are present.
TOC = Top of casing elevation with respect to mean sea level	e = Analytical laboratory notes that heavier gasoline range compounds are significant.
- = not sampled	f = Analytical laboratory notes hydrocarbons with no recognizable patterns are present.
Data prior to 12/16/94 provided by previous consultant.	g = Analytical laboratory notes lighter than water immiscible sheen is present.
	j = Sample diluted due to high organic content.

C A M B R I A



ATTACHMENT A

Groundwater Monitoring Field Data Sheets

Groundwater Monitoring Field Sheet

Well ID	Time	DTP	DTW	Product Thickness	Amount of Product Removed	Casing Diam.	Comment
MW-1	3:25		15.70				
MW-2	3:20		15.89				
MW-3	3:10		15.03				
MW-4	3:15		16.30				
MW-5	2:55		16.42				
MW-6	2:40		16.38				
MW-7	2:30		16.24				

Project Name: Bo Gin

Project Number/Task: 230-0116-127

Measured By: S. Hill

Date: 10-2-02

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW-4
Project Number: 230-0116	Date: 10/02/02	Well Yield:
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method:	Well Diameter: 2" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 16.30	Total Well Depth: 25.40	Water Column Height: 9.1
Volume/ft: 0.16	1 Casing Volume: 1.45	3 Casing Volumes: 4.36
Purging Device: disposable bailer	Did Well Dewater?: 00	Total Gallons Purged: 4.5
Start Purge Time: 3:45	Stop Purge Time: 3:59	Total Time: 14mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp.	pH	Cond.	Comments
3:50	1.5	21.2	7.20	820	
3:55	3.5	20.9	7.18	1027	
4:00	4.5	21.0	7.15	1082	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	10/02/02	4:05	4VOAs	HCL	TPHg BTEX MTBE	8015/8020

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW-2
Project Number: 230-0116	Date: 10/02/02	Well Yield:
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method:	Well Diameter: 2" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 15.89	Total Well Depth: 25.50	Water Column Height: 9.61
Volume/ft: 0.16	1 Casing Volume: 1.53	3 Casing Volumes: 4.61
Purging Device: disposable bailer	Did Well Dewater?: NO	Total Gallons Purged: 4.5
Start Purge Time: 4:25	Stop Purge Time: 4:39	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp.	pH	Cond.	Comments
4:30	1.5	21.5	7.29	1217	
4:35	3.5	20.7	7.24	1420	
4:40	4.5	20.9	7.24	1471	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	10/02/02	4:45	4VOAs	HCL	TPHg BTEX MTBE	8015/8020

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW-1
Project Number: 230-0116	Date: 10/02/02	Well Yield:
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method:	Well Diameter: 2" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 15.70	Total Well Depth: 24.20	Water Column Height: 8.50
Volume/ft: 0.16	1 Casing Volume: 1.36	3 Casing Volumes: 4.08
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 4
Start Purge Time: 5:05	Stop Purge Time: 5:19	Total Time: 14mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp.	pH	Cond.	Comments
5:10	1.5	20.7	7.23	1810	
5:15	3	20.4	7.28	1305	
5:20	4	20.6	7.29	1319	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	10/02/02	5:25	4VOAs	HCL	TPHg BTEX MTBE	8015/8020

C A M B R I A



ATTACHMENT B

Laboratory Analytical Report



McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #230-0116-127; BoGin	Date Sampled: 10/02/02
		Date Received: 10/04/02
	Client Contact: Ron Scheele	Date Reported: 10/11/02
	Client P.O.:	Date Completed: 10/11/02

October 11, 2002

Dear Ron:

Enclosed are:

- 1). the results of 3 analyzed samples from your #230-0116-127; BoGin project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions please contact me. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager



QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0210121

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 4304		Spiked Sample ID: 0210120-006A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	103	102	0.717	103	102	0.720	80	120
MTBE	ND	10	90	94.2	4.61	96.3	86.5	10.8	80	120
Benzene	ND	10	98	101	3.04	101	94.4	7.06	80	120
Toluene	ND	10	100	103	2.60	104	96.9	6.69	80	120
Ethylbenzene	ND	10	98.8	104	5.02	104	97.5	6.51	80	120
Xylenes	ND	30	103	103	0	103	99.7	3.61	80	120
%SS:	91.5	100	91.7	95.9	4.47	95.9	89.9	6.45	80	120

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
 NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

% Recovery = $100 * (MS - Sample) / (Amount\ Spiked)$; RPD = $100 * (MS - MSD) / (MS + MSD) * 2$.

* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

02/10/21

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560

Telephone: (925) 798-1620

Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME:

RUSH 24 HOUR 48 HOUR 5 DAY

EDF Required? Yes No

Report To: **Ron Scheels** Bill To: **Cambria Env. Tech**

Company: Cambria Environmental Technology Inc.

6262 Hollis Street

Emeryville, CA 94608

E-mail:

Tele: 510-450-1983

Fax: 510-450-8295

Project #: 230-0116-127

Project Name: **BoGin**

Project Location: **706 Harrison St - Oakland, Ca**

Sampler Signature: **[Signature]**

Analysis Request

Other

Comments

BTEX & TPH as Gas (602/8020 + 8015)/MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239-2/6010)	RCI
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Confirm all MTBE in 6/22/20

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED			
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other
MW-1		10-2-02	5:25	4	VOA	x					x	x		
MW-2		10-2-02	4:45	4	VOA	x					x	x		
MW-4		10-2-02	4:05	4	VOA	x					x	x		

Relinquished By: [Signature]	Date: 10/4/02	Time: 5:30	Received By: Secure location
Relinquished By: [Signature]	Date: 10/9/02	Time: 11:48	Received By: D. Roth 235
Relinquished By: D Roth 235	Date: 10/4	Time: 1224	Received By: [Signature]

Remarks: PRESERVATION APPROPRIATE CONTAINERS PRESERVED IN LAB

HEAD SPACE ABSENT

DECHLORINATED IN LAB

O&G

METALS

OTHER

McCampbell Analytical Inc.

110 Second Avenue South, #D7
Pacheco, CA 94553-5560
(925) 798-1620

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0210121

Client:

Cambria Env. Technology
6262 Hollis St.
Emeryville, CA 94608

TEL: (510) 450-1983
FAX: (510) 450-8295
ProjectNo: #230-0116-127;
PO:

04-Oct-02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests			
					<>	8021B/8015		
0210121-001	MW-1	Water	10/2/02 5:25:00 PM		A	A		
0210121-002	MW-2	Water	10/2/02 4:45:00 PM			A		
0210121-003	MW-4	Water	10/2/02 4:05:00 PM			A		

Comments:

	Date/Time		Date/Time
Relinquished by:		Received by:	
Relinquished by:		Received by:	
Relinquished by:		Received by:	

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

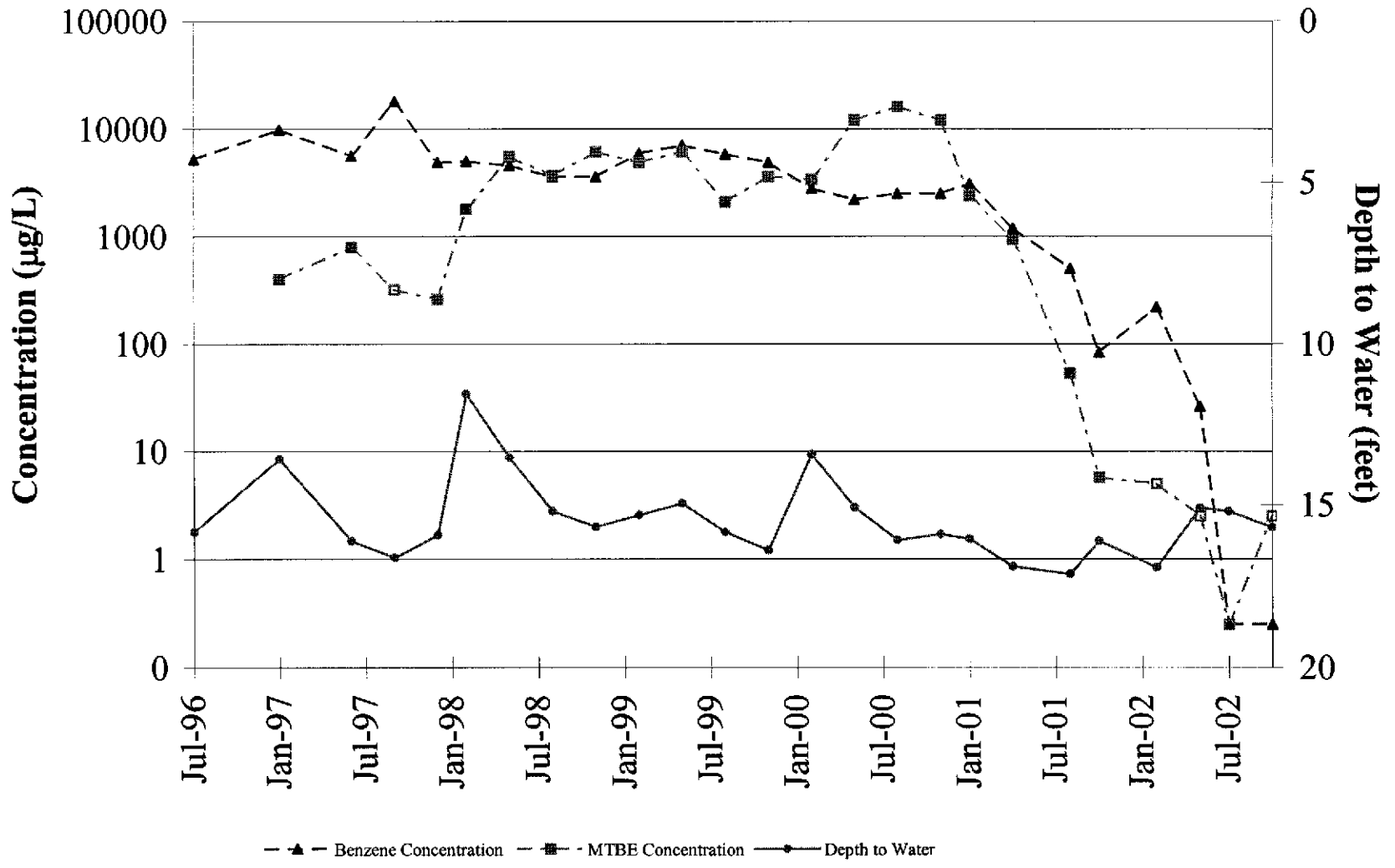
C A M B R I A



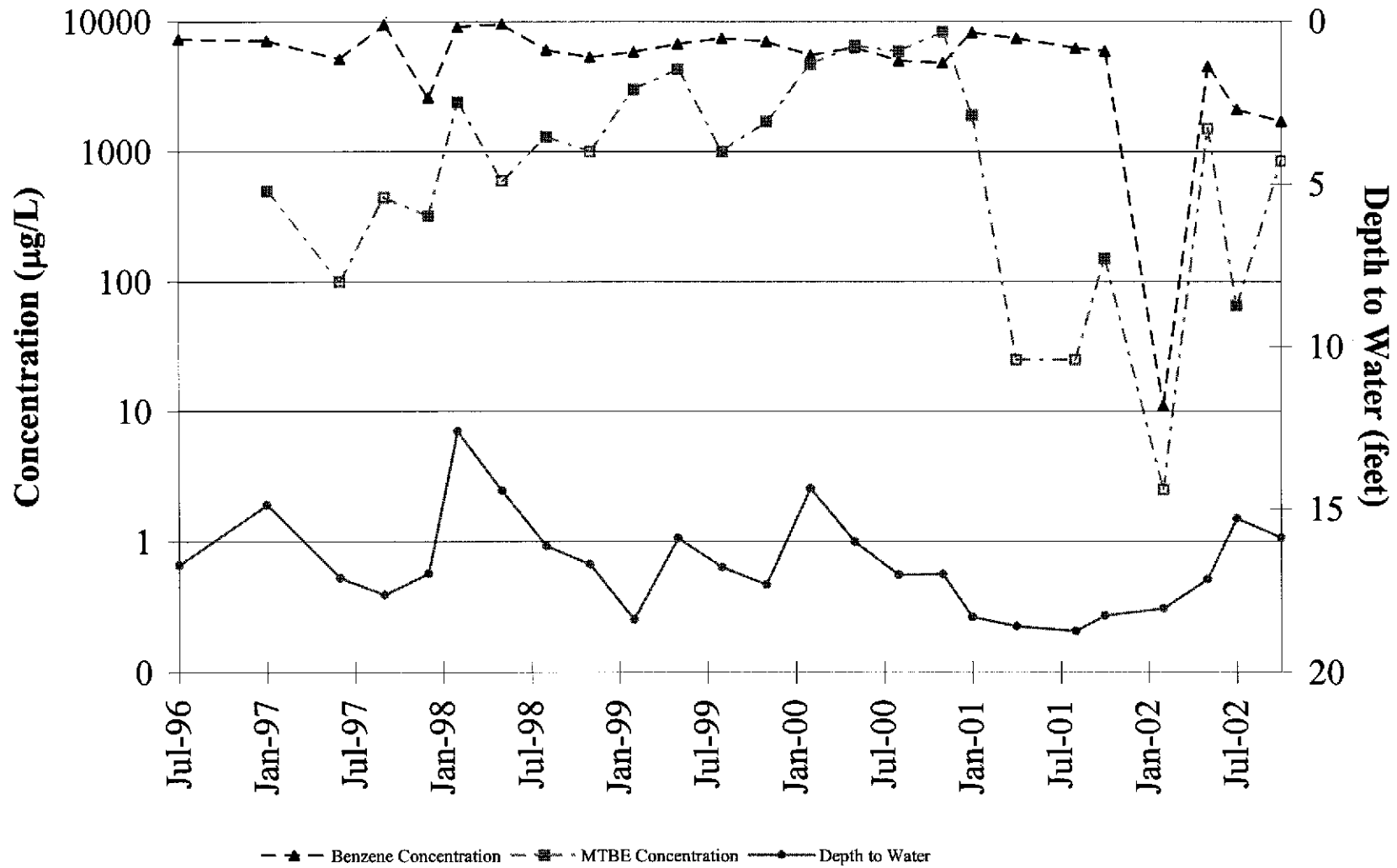
ATTACHMENT C

Benzene and MTBE Concentration Graphs

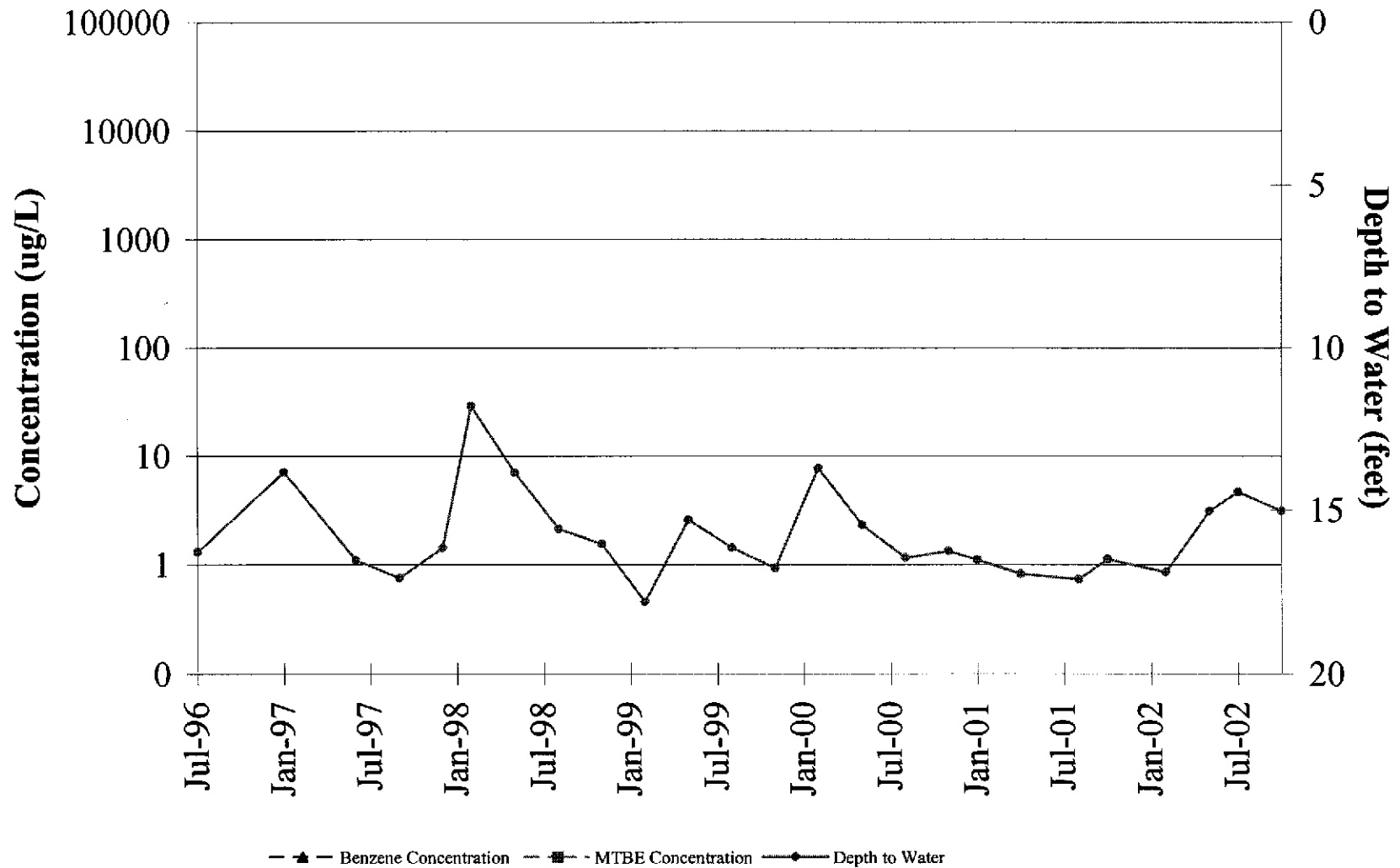
Benzene and MTBE Concentration Trends Well MW-1



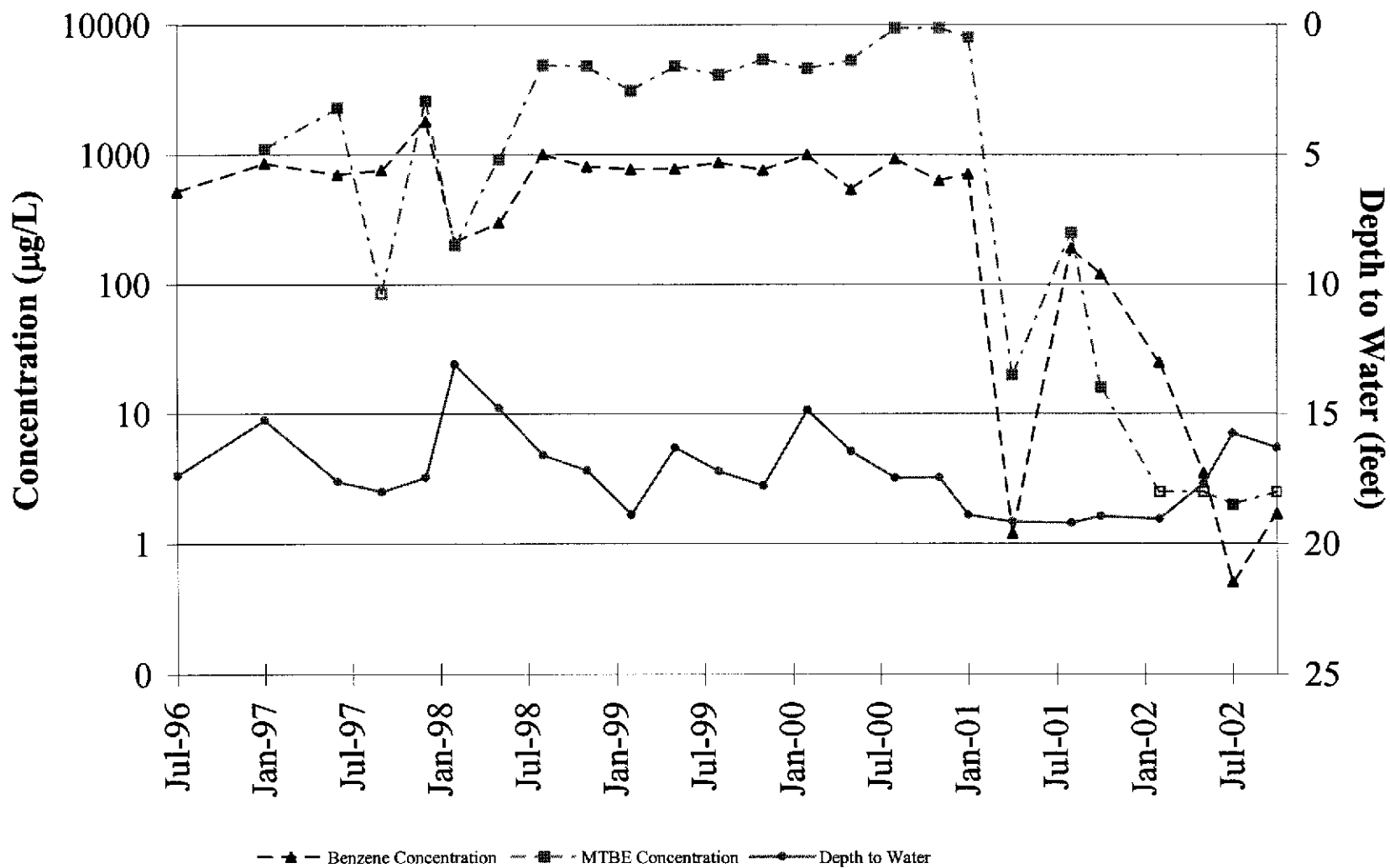
Benzene and MTBE Concentration Trends Well MW-2



Benzene and MTBE Concentration Trends Well MW-3



Benzene and MTBE Concentration Trends Well MW-4



C A M B R I A



ATTACHMENT D

Electronic Delivery Confirmations

AB2886 Electronic Delivery

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