RO 484

CAMBRIA

October 11, 2001

OCT 18 2001

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

Re: **Third Quarter 2001 Monitoring Report**
Former Arco Service Station
706 Harrison Street
Oakland, California
STID 3749
Cambria Project #230-0116

Still v. high TPH in MW-2 area

Dear Mr. Chan:

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this third quarter 2001 groundwater monitoring report for the above-referenced site. Presented in the report are the third quarter 2001 activities and results and the anticipated fourth quarter 2001 activities.

If you have any questions or comments regarding this report, please call me at (510) 450-1983.

Sincerely,
Cambria Environmental Technology, Inc.

Ron Scheele, RG
Senior Geologist

Attachments: Third Quarter 2001 Monitoring Report

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

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

CAMBRIA

THIRD QUARTER 2001 MONITORING REPORT

706 Harrison Street
Oakland, California
STID 3749
Cambria Project #230-0116

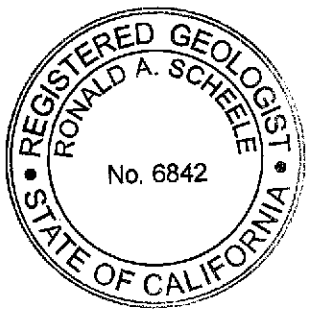
October 11, 2001

Prepared for:

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

Prepared by:

Cambria Environmental Technology, Inc.
6262 Hollis Street
Emeryville, CA 94102



Matthew A. Meyers
Staff Geologist

Ron Scheele, RG
Senior Geologist

THIRD QUARTER 2001 MONITORING REPORT

706 Harrison Street
Oakland, California
STID 3749
Cambria Project #230-0116

October 11, 2001

INTRODUCTION

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this third quarter 2001 groundwater monitoring report for the above-referenced site. Presented below are the third quarter 2001 activities and results and the anticipated fourth quarter 2001 activities.

SECOND QUARTER 2001 ACTIVITIES

Monitoring Activities

Field Activities: On August 14, 2001, Cambria conducted quarterly monitoring activities. Cambria gauged and inspected for separate-phase hydrocarbons (SPH) in monitoring wells MW-1 through MW-7 (see Figure 1). Groundwater samples were collected from scheduled wells not containing SPH. Field Data Sheets are presented as Appendix A.

Sample Analyses: Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by EPA Method 8020. Samples containing MTBE were further analyzed for MTBE using EPA Method 8260. Laboratory analytical results are included as Appendix B. Groundwater elevations are shown on Figure 1.

Monitoring Results

Groundwater Flow Direction: Groundwater flow this quarter is anomalous compared with historic trends. Historically, groundwater on the site flows in a southerly direction, with a nearly uniform gradient across the site. Based on depth-to-water measurements collected during Cambria's August 14, 2001 site visit, groundwater flow beneath the site is divided. Groundwater in the southern area of the site flows toward the south at a rate of 0.022 ft/ft. Groundwater in the northern area of the site flows toward the north-northeast at a rate of 0.025 ft/ft (Figure 1).

Hydrocarbon Distribution in Groundwater: Hydrocarbon concentrations detected this quarter are consistent with historic data with the exception of MTBE. MTBE concentrations decreased in well MW-1. No SPH were detected in any of the wells. The maximum TPHg and benzene concentrations were detected in well MW-2 at 97,000 and 6,200 micrograms per liter (µg/L), respectively. The maximum MTBE concentration was detected in well MW-4 at 250 µg/L as confirmed by EPA Method 8260.

Corrective Action Activities

Cambria operated the air sparging system during most the third quarter. Air was injected into air sparge wells SP-2, SP-3, and SP-4 at a rate of approximately 2 to 6 cfm and at pressures ranging from 5 to 10 psi. From September 17 to 21, 2001, the air sparge system was shutdown temporarily to replace the capacitors on the air compressor.

ANTICIPATED FOURTH QUARTER 2001 ACTIVITIES

Monitoring Activities

Cambria will gauge all wells, check the wells for SPH, and collect groundwater samples from scheduled wells that do not contain SPH. 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.

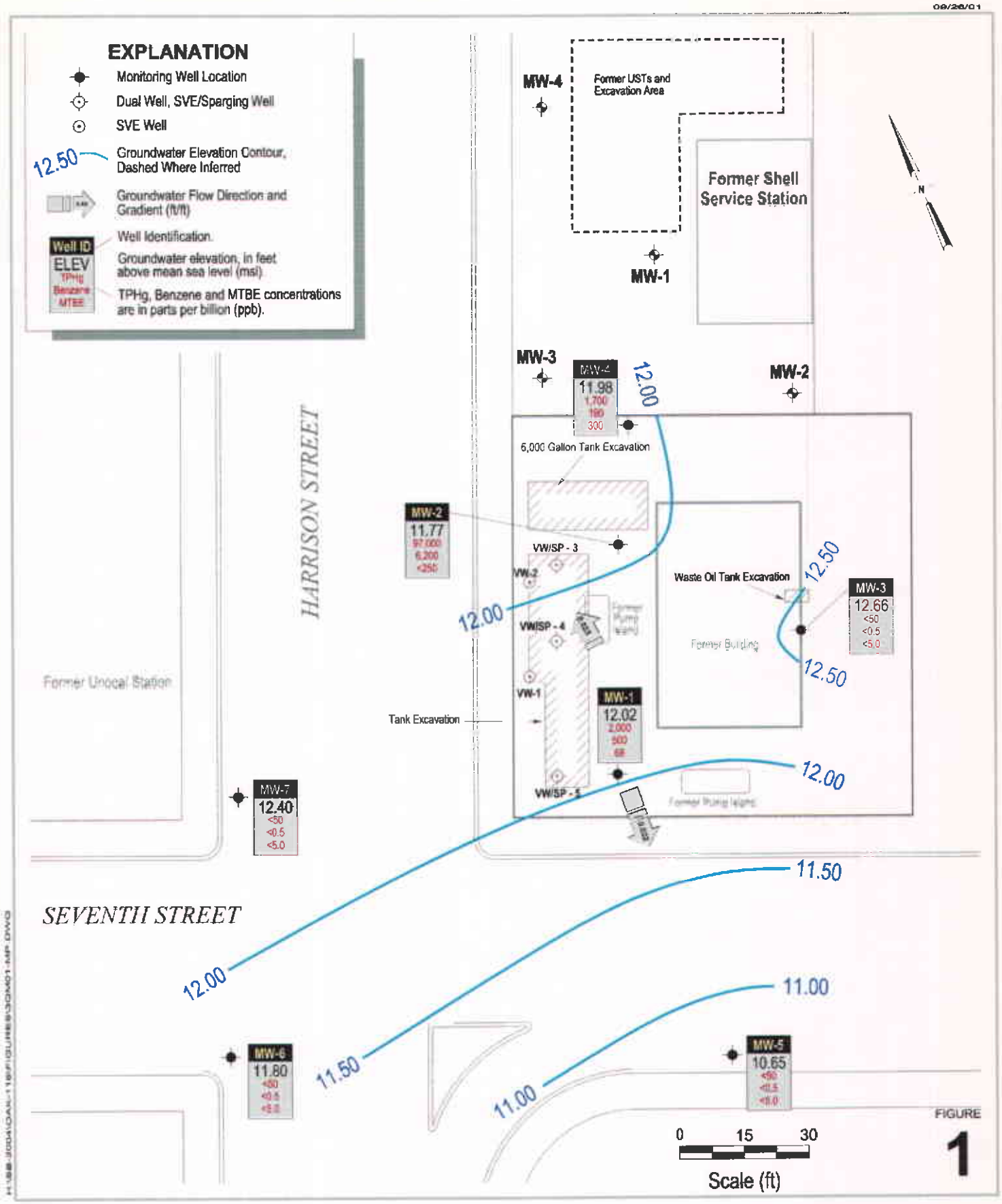
Corrective Action Activities

Cambria plans to continue operation of the air sparging system during the fourth quarter 2001 while remediation testing is performed at the adjacent former Shell service station site.

APPENDICES

Figure 1 – Groundwater Elevation Contour Map
Table 1 – Groundwater Elevations and Analytical Data
Appendix A – Groundwater Monitoring Field Data Sheets
Appendix B – Laboratory Analytical Report

H:\SB-2004 (UST FUND)\OAKL-116 - BO GIN\QM\QM 2000\QM-3-01.DOC



Former Arco Station

706 Harrison Street

Oakland, California

CAMBRIA

Groundwater Elevation Contour Map

August 14, 2001

CAMBRIA

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

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

CAMBRIA

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

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

CAMBRIA

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

Well ID TOC Elevation Monitoring Frequency	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	MTBE (8020) (ug/l)	MTBE (8260) (ug/l)	Notes
MW-3	8/13/93	17.05	12.72	<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	<1.5	-	-	
Bi-annually	4/15/94	17.40	12.37	<50	<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	-	-	
	1/27/97	13.83	15.94	<50	<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	<5.0	-	
	9/18/97	17.07	12.70	<50	<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	<5.0	-	
	2/18/98	11.80	17.97	<50	<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	<5.0	-	
	8/18/98	15.57	14.20	<50	<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	<5.0	-	
	2/4/99	17.80	11.97	<50	<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	<5.0	-	
	8/27/99	16.15	13.62	<50	<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	<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	<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	<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**	**<5.0**	-	

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

Well ID TOC Elevation Monitoring Frequency	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	MTBE (8020) (ug/l)	MTBE (8260) (ug/l)	Notes
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	a, 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**	**19.98**	**1,700**	**190**	**11**	**35**	**13**	**300**	**250**	**a**

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

Well ID TOC Elevation Monitoring Frequency	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	MTBE (8020) (ug/l)	MTBE (8260) (ug/l)	Notes
MW-5	12/16/94	16.07	11.97	<50	1.1	<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	-	-	
	1/27/97	13.60	14.44	<50	<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	<5.0	-	
	9/18/97	16.16	11.88	<50	<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	<5.0	-	
	2/18/98	10.93	17.11	<50	<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	<5.0	-	
	8/18/98	14.75	13.29	<50	<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	<5.0	-	
	2/4/99	14.61	13.43	<50	<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	<5.0	-	
	8/27/99	15.43	12.61	<50	<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	<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	<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	<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**	**<5.0**	**-**	

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

Well ID TOC Elevation Monitoring Frequency	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	MTBE (8020) (ug/l)	MTBE (8260) (ug/l)	Notes
MW-6	12/16/94	17.74	11.36	-	-	-	-	-	-	-	
29.1	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**	**-**	

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

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

Abbreviations and Analyses:

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

Benzene, ethylbenzene, toluene and xylenes by EPA Method 8020.

MTBE = Methyl tert-butyl ether by EPA Method 8020 and/or 8260.

•g/L = Micrograms per liter

TOC = Top of casing elevation with respect to mean sea level

• = not sampled

Notes

a = Result in parentheses indicates MTBE by EPA Method 8260.

b = Analytical laboratory notes that unmodified or weakly modified gasoline is significant.

c = Analytical laboratory notes that lighter gasoline range compounds are significant.

d = Analytical laboratory notes that isolated peaks are present.

e = Analytical laboratory notes that heavier gasoline range compounds are significant.

f = Analytical laboratory notes hydrocarbons with no recognizable patterns are present.

g = Analytical laboratory notes lighter than water immiscible sheen is present.

j = Sample diluted due to high organic content.

Data prior to 12/16/94 provided by previous consultant.

ATTACHMENT A

Groundwater Monitoring Field Data Sheets

CAME A

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-1	10:00		17.13		24.20	
MW-2	10:05		18.74		25.50	
MW-3	9:45		17.11		27.55	
MW-4	9:50		19.20		25.40	
MW-5	9:30		17.39		27.80	
MW-6	9:35		17.30		25.85	
MW-7	9:40		17.27		27.50	

Project Name: Bo Gin

Project Number: 230-011b

Measured By: Sanjiv Gill

Date: 8-14-01

F:\TEMPLATE\FORMS\FIELD\GW-DEPTH.WPD

CAMBRIA

WELL SAMPLING FORM

Project Name: Bolin	Cambria Mgr: RAS	Well ID: MW-7
Project Number: 230-0116	Date: 8-14-01	Well Yield: -----
Site Address: 2747 Pinole Valley Rd Pinole, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SG
Initial Depth to Water: 17.27	Total Well Depth: 27.50	Water Column Height: 10.23
Volume/ft: 0.16	1 Casing Volume: 1.63	3 Casing Volumes: 4.89
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 5
Start Purge Time: 10:40	Stop Purge Time: 10:54	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. C	pH	Cond. uS	Comments
10:45	1 1.5	19.3	7.51	1874	
10:50	2 3	19.3	7.22	1520	
10:55	3 5	19.7	7.39	1117	
					DO =

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-7	8-14-01	11:00	VOA	HCl	BTEX MTBE TPHs	8015/8020
MW-						

O:\TEMPLATE\FORMS\FIELD\WELL SAMP.WPD
NSM 5/31/94

CAMBRIA

WELL SAMPLING FORM

Project Name: BO-Gin	Cambria Mgr: RAS	Well ID: MW-6
Project Number: 230-0116	Date: 8-14-01	Well Yield: -----
Site Address: 706 Harrison St Oakland, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SG
Initial Depth to Water: 17.30	Total Well Depth: 25.85	Water Column Height: 8.55
Volume/ft: 0.16	1 Casing Volume: 1.36	3 Casing Volumes: 4.10
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 4
Start Purge Time: 10:10	Stop Purge Time: 10:24	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. C	pH	Cond. uS	Comments
10:15	1 1.5	19.1	7.58	639	
10:20	2 3	19.5	7.30	666	
10:25	3 4	19.9	7.41	659	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-6	8-14-01	10:30	4 VOA	HCl	TPHS BTEX MTBE	8015/8020
MW-						

O:\TEMPLATE\FORMS\FIELDWELL\SAMP.WPD
NSM 5/11/94

CAMBRIA

WELL SAMPLING FORM

Project Name: BO-Gin	Cambria Mgr: RAS	Well ID: MW- 5
Project Number: 230-0116	Date: 8-14-01	Well Yield: -----
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SA
Initial Depth to Water: 17.39	Total Well Depth: 27.80	Water Column Height: 10.41
Volume/ft: 0.16	1 Casing Volume: 1.66	3 Casing Volumes: 4.99
Purging Device: disposable bailer	Did Well Dewater?: NO	Total Gallons Purged: 5
Start Purge Time: 11:15	Stop Purge Time: 11:39	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. C	pH	Cond. uS	Comments
11:20	1 1.5	19.5	7.24	890	
11:25	2 3	19.9	7.38	725	
11:30	3 5	19.6	7.40	761	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- 5	8-14-01	11:35	4 VOA	HCl	TPHg BTEX MTBE	8015/8020
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW- 4
Project Number: 230-0116	Date: ~~8/28/01~~ 8-14-01	Well Yield: -----
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SG
Initial Depth to Water: 19.20	Total Well Depth: 25.40	Water Column Height: 6.20
Volume/ft: 0.16	1 Casing Volume: 0.99	3 Casing Volumes: 2.97
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 3
Start Purge Time: 11:55	Stop Purge Time: 12:09	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. C	pH	Cond. uS	Comments
12:00	1	19.8	7.35	625	
12:05	2	19.1	7.20	780	
12:10	3	19.7	7.19	752	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	~~8/28/01~~ 8-14-01	12:05	4 voa	HCl	TPHg BTEX MTBE	8015/ 8020
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW- 3
Project Number: 230-0116	Date: ~~4/29/04~~ 3-14-01	Well Yield: -----
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SG
Initial Depth to Water: 17.11	Total Well Depth: 27.55	Water Column Height: 10.44
Volume/ft: 0.16	1 Casing Volume: 1.67	3 Casing Volumes: 5.00
Purging Device: Disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 5
Start Purge Time: 13:05	Stop Purge Time: 13:19	Total Time: 14 minc

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. C	pH	Cond. uS	Comments
13:10	1 1.5	19.4	7.20	692	
13:15	2 3	19.7	7.11	720	
13:20	3 5	19.5	7.08	715	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- 2	~~4/29/04~~ 3-14-01	13:25	4 VOA	HCl	TPHg BTEX MTBE	8015/ 8020
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW- 2
Project Number: 230-0116	Date: ~~8/29/01~~ 8-14-01	Well Yield: -----
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SG
Initial Depth to Water: 18.74	Total Well Depth: 25.50	Water Column Height: 6.76
Volume/ft: 0.16	1 Casing Volume: 1.08	3 Casing Volumes: 3.24
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 3
Start Purge Time: 12:35	Stop Purge Time: 12:49	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. C	pH	Cond. uS	Comments
12:40	1	19.9	7.09	820	
12:45	2	19.8	7.21	874	
12:50	3	19.5	7.15	813	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	~~8/29/01~~ 8-14-01	12:55	4 VOA	HCl	TPHg BTEX MTBE	8015/ 8020
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: Bo Gin	Cambria Mgr: RAS	Well ID: MW- 1
Project Number: 230-0116	Date: ~~11/28/01~~ 3-14-01	Well Yield: -----
Site Address: 706 Harrison St. Oakland, Ca	Sampling Method: Disposable bailer	Well Diameter: 2" pvc
		Technician(s): SG
Initial Depth to Water: 17.13	Total Well Depth: 24.20	Water Column Height: 7.07
Volume/ft: 0.16	1 Casing Volume: 1.13	3 Casing Volumes: 3.39
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 3
Start Purge Time: 13:40	Stop Purge Time: 13:54	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. C	pH	Cond. uS	Comments
13:45	1 1	19.4	7.19	890	
13:50	2 2	19.3	7.22	751	
13:55	3 3	19.7	7.03	729	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- 1	~~3/14/01~~ 3/14/01	14:00	4 voa	HCl	TPHg BTEX MTBE	8015/ 8020
MW-						

ATTACHMENT B

Laboratory Analytical Report

McCAMPBELL 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 Environmental Technology 6262 Hollis Street Emeryville, CA 94608	Client Project ID: #230-0116; Bo Gin	Date Sampled: 08/14/01
		Date Received: 08/16/01
	Client Contact: Ron Scheele	Date Extracted: 08/16/01
	Client P.O:	Date Analyzed: 08/16/01

08/23/01

Dear Ron:

Enclosed are:

1). the results of 7 samples from your **#230-0116; Bo Gin** 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. McCampbell 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,

Edward Hamilton, Lab Director

McCAMPBELL 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 Environmental Technology	Client Project ID: #230-0116; Bo Gin	Date Sampled: 08/14/01
6262 Hollis Street		Date Received: 08/16/01
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 08/17-08/20/01
	Client P.O:	Date Analyzed: 08/17-08/20/01

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethyl-benzene	Xylenes	% Recovery Surrogate
74917	MW-1	W	2000,a	68	500	3.4	24	7.8	113
74918	MW-2	W	97,000,a	ND<250	6200	14,000	2400	13,000	111
74919	MW-3	W	ND	ND	ND	ND	ND	ND	108
74920	MW-4	W	1700,a	300	190	11	35	13	---#
74921	MW-5	W	ND	ND	ND	ND	ND	ND	104
74922	MW-6	W	ND	ND	ND	ND	ND	ND	106
74923	MW-7	W	ND	ND	ND	ND	ND	ND	104
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL 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 Environmental Technology	Client Project ID: #230-0116; Bo Gin	Date Sampled: 08/14/01
6262 Hollis Street		Date Received: 08/16/01
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 08/22/01
	Client P.O:	Date Analyzed: 08/22/01

Methyl tert-Butyl Ether *

EPA method 8260 modified

Lab ID	Client ID	Matrix	MTBE*	% Recovery Surrogate
74917	MW-1	W	53	104
74918	MW-2	W	ND<50,j	104
74920	MW-4	W	250	106
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	1.0 ug/L	
		S	5.0 ug/kg	

* water samples are reported in ug/L, soil and sludge samples in ug/kg, wipe samples in ug/wipe and all TCLP / STLC / SPLP extracts in ug/L

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) sample diluted due to high organic content.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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

QC REPORT

EPA 8015m + 8020

Date: 08/19/01-08/20/01 **Extraction:** EPA 5030 **Matrix:** Water

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 81701					Instrument:	GC-7	
Surrogate1	ND	97.0	96.0	100.00	97	96	1.0
Xylenes	ND	30.2	29.1	30.00	101	97	3.7
Ethylbenzene	ND	9.3	9.1	10.00	93	91	2.2
Toluene	ND	9.7	9.4	10.00	97	94	3.1
Benzene	ND	9.2	9.0	10.00	92	90	2.2
MTBE	ND	10.6	10.3	10.00	106	103	2.9
TPH (gas)	ND	106.8	101.8	100.00	107	102	4.8

$$\%\ \text{Recovery} = \frac{(MS - Sample)}{AmountSpiked} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation

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

QC REPORT

VOCs (EPA 8240/8260)

Date: 08/21/01-08/22/01 **Extraction:** EPA 5030 **Matrix:** Water

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 81401					Instrument:	GC-10	
Surrogate	ND	99.0	100.0	100.00	99	100	1.0
Methyl tert-Butyl Ether	ND	9.8	9.9	10.00	98	99	1.0

$$\%\ \text{Recovery} = \frac{(MS - Sample)}{Amount Spiked} \cdot 100$$

$$\text{RPD} = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation

27299 EC452

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553
Telephone: (925) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

Report To: Ron Scheele Bill To: Cambria Env. Tech
Company: Cambria Environmental Technology
6262 Hollis Street
Emeryville, CA 94608
Tele: (510) 450-1983 Fax: (510) 450-8295
Project #: 230-0116 Project Name: Bo Gin
Project Location: 706 Harrison St. Oakland, Ca
Sampler Signature: S. Hall

SAMPLE ID	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED Ice	METHOD PRESERVED HCl	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	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	Other	Comments
MW-1		8-14-01		4	VOA	X					X	X			X															MTBE Confirmed with 8260	74917
MW-2		8-14-01		4	VOA	X					X	X			X															X	74918
MW-3		8-14-01		4	VOA	X					X	X			X															X	74919
MW-4		8-14-01		4	VOA	X					X	X			X															X	74920
MW-5		8-14-01		4	VOA	X					X	X			X																74921
MW-6		8-14-01		4	VOA	X					X	X			X																74922
MW-7		8-14-01		4	VOA	X					X	X			X																74923

Relinquished By:	Date:	Time:	Received By:
S. Hall	8-15-01	7:00PM	Secure location
[illegible]	8-16-01	1120	[illegible] 285
[illegible] 285	8/16/01	1750	Nina Abutler

Remarks:

VOAS | O&G | METALS | OTHER

ICE/t° ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
PRESERVATION APPROPRIATE ✓
CONTAINERS ✓