

C A M B R I A

ENVIRONMENTAL
PROTECTION

August 13, 1999
93 AUG 16 PM 1: 24

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: **Second Quarter 1999 Monitoring
and Interim Remedial Action Report**
Former Exxon Service Station
3055 35th Avenue
Oakland, California
Cambria Project #130-0105-109

515



Dear Mr. Chan:

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc., (Cambria) has prepared this second quarter 1999 groundwater monitoring report for the site referenced above. Presented below are the second quarter 1999 activities and results, early third quarter activities, and anticipated future activities. The interim remedial action required by the Alameda County Health Care Services Agency (ACHCSA) is also presented below.

SECOND QUARTER 1999 ACTIVITIES

Groundwater Monitoring

On June 29, 1999, Cambria gauged, inspected for separate-phase hydrocarbons (SPH), and collected groundwater samples from wells MW-1, MW-2, and MW-3 (Figure 1). Well MW-4 was inaccessible during field activities. The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), benzene, toluene, ethylbenzene and xylenes (BTEX), and methyl tert-butyl ether (MTBE). Cambria also measured dissolved oxygen (DO) concentrations in the wells. The groundwater analytical data are summarized in Table 1. The analytical report is included in Attachment A.

Ground Water Analytic Results

No SPH were detected in any of the wells. TPHd concentrations in the sampled monitoring wells ranged from 3,300 parts per billion (ppb) in MW-3 to 6,900 ppb in MW-3. TPHg concentrations ranged from 28,000 ppb in both MW-1 and MW-2 to 71,000 ppb in MW-3. Benzene concentrations ranged from 3,500 ppb in MW-2 to a maximum concentration of 12,000 ppb in MW-3. MTBE was reported at below detection limits for all sampled wells. These analytical results are consistent with historic results.

Oakland, CA
Sonoma, CA
Portland, OR
Seattle, WA

**Cambria
Environmental
Technology, Inc.**

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Suite B
Oakland, CA 94608
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Groundwater Flow Direction

Depth-to-water measurements collected on June 29, 1999, indicated a groundwater gradient of 0.010 ft/ft toward the northwest (Figure 1). Since 1994, the primary groundwater flow direction has been toward the northwest with a change toward the southwest usually occurring during the fourth quarter. Groundwater elevation data are presented in Table 1.

EARLY THIRD QUARTER ACTIVITIES



Remedial System Installation Preparation

Cambria has completed the system design, and has solicited and received bids for system installation and remediation equipment. Mark Owens of the UST Cleanup Fund is currently reviewing the bid package. Mr. Owens informed Cambria that the package looks complete, and that written pre-approval of remedial costs may be granted next week. To expedite procurement of remediation equipment (which is the longest lead time component of the proposed system installation), Cambria requested and received verbal pre-approval of the proposed cost of the dual phase extraction equipment. Accordingly, Cambria has instructed Orion Enterprises to begin fabrication of the selected equipment.

Cambria has also initiated permitting of the remediation system with the Bay Air Quality Management District (air permit) and with the East Bay Municipal Utility District (water discharge permit). Cambria has begun coordinating installation of electrical service by PG&E for the remediation system.

Interim Remedial Action (H₂O₂ Injection)

As requested by the ACHSCA, Cambria performed interim remedial action while system installation is pending. The interim remedial action involved injecting hydrogen peroxide into all site wells to oxygenate site groundwater and to chemically oxidize residual hydrocarbons in the immediate vicinity of each well. This interim measure was conducted as described in Cambria's June 25, 1999 letter to Mr. Worthington, and detailed below.

On August 5, 1999, Cambria injected a 7.5% hydrogen peroxide (H₂O₂) solution into each of the fourteen site monitoring/remediation wells. Prior to injecting the H₂O₂ solution, DO concentrations and the depth to water in each well was measured. Table A below presents the volumes of H₂O₂ solution injected into each well, dissolved oxygen concentrations, and depth-to-water measurements.

Table A - H₂O₂ Solution Injection Data

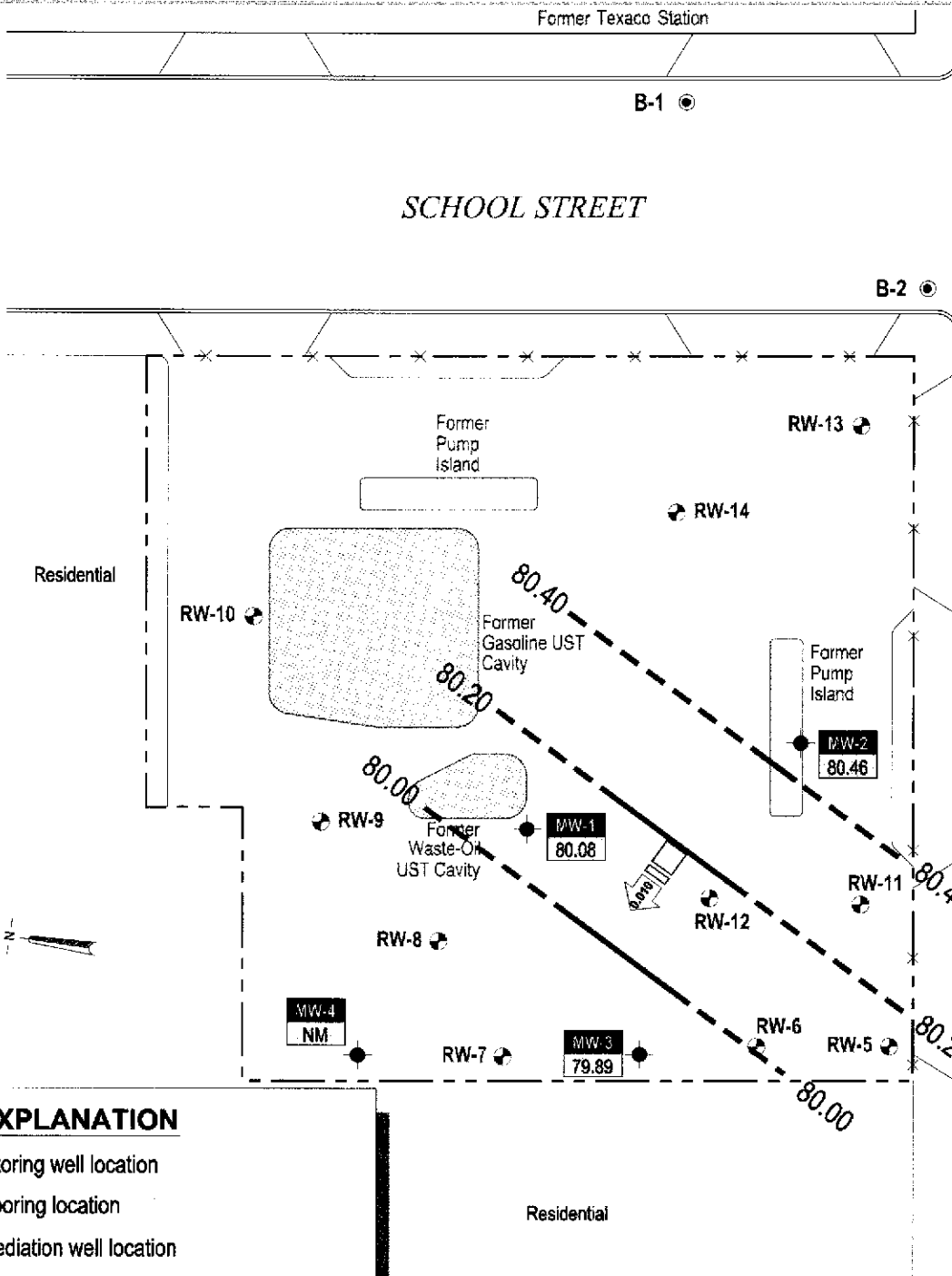
Well ID (Injection Point)	Time (PDT)	Depth-to- Water (ft)	Pre-Injection DO (mg/l)	Pre-Injection Temp. (C)	Volume 7.5% H ₂ O ₂ Injected (gals)
MW-1	13:00	19.45	1.2	18.0	10
MW-2	14:10	18.30	0.7	19.0	10
MW-3	13:45	15.71	0.6	18.5	7
MW-4	13:35	16.36	1.4	17.5	7
RW-5	13:55	15.10	0.7	19.0	12
RW-6	13:50	15.54	0.4	18.5	12
RW-7	13:40	15.81	1.4	18.0	12
RW-8	13:30	16.99	0.8	18.0	10
RW-9	13:25	16.25	0.9	18.0	10
RW-10	13:15	15.35	1.3	18.0	10
RW-11	14:00	15.04	0.4	19.0	10
RW-12	14:05	15.51	0.6	19.0	10
RW-13	12	15.72	0.6	19.5	10
RW-14	19	15.67	0.7	19.0	10

ANTICIPATED FUTURE ACTIVITIES

Groundwater Monitoring: Cambria will gauge the site wells, measure DO concentrations, check the wells for SPH, and collect groundwater samples from the wells on a quarterly basis. Cambria will tabulate the data and incorporate the results into a groundwater monitoring report.

Receptor Survey: As required by the ACHSCA, Cambria will perform a receptor survey to verify that no wells of any type are being used within a radius of 200' from the subject property. The survey will include an inspection of residences/buildings within the same radius for the presence of basements or other subsurface structures.

Remediation System Installation: Cambria plans to commence installation of the dual phase extraction system in September 1999. System startup is scheduled for late September, and is dependent upon quick pre-approval by the UST Cleanup Fund and prompt equipment delivery.



EXPLANATION

MW-1 ● Monitoring well location

B-1 ● Soil boring location

RW-6 ● Remediation well location

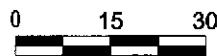
— XX.XX Groundwater elevation contour, in feet above mean sea level (msl), dashed where inferred

▭ → Groundwater flow direction and gradient

NM Not measured, well inaccessible

MW-1 Well designation

88.87 Groundwater elevation (msl)



Scale (ft)

FIGURE

1

H:\SE-2004\OAK\002\FIGURES\COMB-MP.DWG

Former Exxon Station
 3055 35th Avenue
 Oakland, California



C A M B R I A

**Groundwater Elevation
 Contour Map**
 June 29, 1999

CAMBRIA

Table 1. Groundwater Elevation and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID (TOC)	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
----- Concentrations in parts per billion (µg/L) ----->													
MW-1	05/25/94	16.79	Sheen	84.06	120,000	25,000	<50,000	22,000	17,000	2,800	16,000	---	---
100.85	07/19/94	20.77	---	80.08	---	---	---	---	---	---	---	---	---
	08/18/94	21.04	Sheen	79.81	925,000	---	---	16,500	6,200	1,000	9,400	---	---
	11/11/94	15.80	---	85.05	57,000	---	---	14,000	4,400	1,400	6,400	---	---
	02/27/95	15.53	---	85.32	45,000	---	---	2,900	2,500	760	4,100	---	---
	05/23/95	15.29	---	85.56	22,000	---	---	9,900	990	790	2,000	---	---
	08/22/95	20.90	---	79.95	23,000	---	---	6,900	340	1,200	1,900	---	---
	11/29/95	22.19	---	78.66	37,000	---	---	9,900	530	1,600	2,900	---	---
	02/21/96	11.69	---	89.16	33,000	4,300	---	10,000	480	1,000	1,800	3,300	---
	05/21/96	14.62	---	86.23	36,000	8,500	---	8,500	1,400	1,300	2,800	1,900	---
	08/22/96	22.30	---	78.55	41,000	6,200	---	8,600	1,300	1,500	2,900	<200	8.0
	11/27/96	17.24	Sheen	83.61	38,000	6,100	---	9,600	950	1,600	3,100	<400	5.6
	03/20/97	16.65	---	84.20	33,000	10,000	---	6,100	560	970	2,200	<400	8.5
	06/25/97	19.77	---	81.08	31,000	7,400 ^a	---	7,400	440	890	1,800	<400	3.7
	09/17/97	20.12	---	80.73	32,000 ^d	3,500 ^e	---	9,100	550	1,000	2,000	<1,000	2.1
	12/22/97	12.95	---	87.90	26,000 ^d	5,800 ^e	---	7,900	370	920	1,500	<790	0.7
	03/18/98	12.34	Sheen	88.51	30,000 ^d	4,200 ^{e,f}	---	7,800	820	840	2,000	<1,100	1.3
	07/14/98	17.34	---	83.51	41,000 ^d	8,900 ^{e,f}	---	8,200	1,100	1,200	3,000	<200	1.8
	09/30/98	19.90	---	80.95	37,000	3,300	---	11,000	950	1,200	2,800	<20	2.0
	12/08/98	15.62	---	85.23	22,000	3,700	---	3,000	1,200	730	3,100	<900	---
	03/29/99	11.98	---	88.87	36,000 ^d	6,800 ^e	---	12,000	750	1,300	2,400	950	0.50
	06/29/99	20.77	---	80.08	28,000^d	3,500^e	---	7,300	420	810	1,700	<1,300	0.10
MW-2	05/25/94	15.65	---	84.35	61,000	6,900	<5,000	9,900	7,400	960	4,600	---	---
100.00	07/19/94	19.81	---	80.19	---	---	---	---	---	---	---	---	---
	08/18/94	20.37	---	79.63	88,000	---	---	10,750	10,500	1,850	9,600	---	---
	11/11/94	15.52	---	84.48	54,000	---	---	5,900	6,700	1,300	7,500	---	---
	02/27/95	14.46	Sheen	85.54	44,000	---	---	5,100	5,300	930	6,400	---	---
	05/23/95	14.17	---	85.83	33,000	---	---	8,200	5,600	900	6,600	---	---
	08/22/95	19.80	---	80.20	38,000	---	---	6,400	5,000	1,100	5,600	---	---

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Table 1. Groundwater Elevation and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID (TOC)	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
----- Concentrations in parts per billion (µg/L) ----->													
	11/29/95	21.05	---	78.95	46,000	---	---	7,100	5,300	1,300	6,000	---	---
	02/21/96	10.53	---	89.47	59,000	---	---	8,000	6,000	1,800	8,900	4,500	---
	05/21/96	13.47	---	86.53	51,000	3,400	---	8,200	5,200	1,300	6,600	2,400	---
	08/22/96	19.12	---	80.88	37,000	5,700	---	5,100	3,500	960	4,500	<200	3.0
	11/27/96	16.61	Sheen	83.39	54,000	10,000	---	9,800	7,000	1,800	7,900	<2,000	3.1
	03/20/97	15.39	---	84.61	27,000	6,100	---	3,700	2,300	580	2,800	<400	8.1
	06/25/97	18.62	---	81.38	42,000	7,800 ^b	---	7,400	3,800	1,200	5,700	<200	0.9
	09/17/97	19.05	Sheen	80.95	41,000 ^d	8,900 ^e	---	5,200	3,400	1,300	5,900	<700	1.2
	12/22/97	14.09	---	85.91	47,000 ^d	6,100 ^e	---	8,500	4,600	1,800	8,400	<1,200	1.2
	03/18/98	10.83	Sheen	89.17	58,000 ^d	7,000 ^{e,f}	---	9,300	6,100	1,800	8,200	<1,100	1.1
	07/14/98	16.07	---	83.93	42,000 ^d	5,300 ^{e,f}	---	6,000	3,000	1,000	4,800	<200	1.5
	09/30/98	18.71	---	81.29	22,000	2,400	---	3,600	1,300	720	3,200	<30	1.8
	12/08/98	14.80	---	85.20	32,000	3,100	---	9,200	680	1,100	2,300	<2,000	---
	03/29/99	11.81	---	88.19	28,000 ^d	7,500 ^{e,f}	---	4,400	1,600	950	4,100	410	1.86
	06/29/99	19.54	---	80.46	28,000^d	3,300^e	---	3,500	1,100	690	3,100	<1,000	0.41
MW-3	05/25/94	13.93	Sheen	82.94	56,000	14,000	<50,000	14,000	14,000	1,300	11,000	---	---
96.87	07/19/94	17.04	---	79.83	---	---	---	---	---	---	---	---	---
	08/18/94	17.75	---	79.12	116,000	---	---	28,300	26,000	2,400	15,000	---	---
	11/11/94	17.80	---	79.07	89,000	---	---	1,600	1,900	1,900	14,000	---	---
	02/27/95	11.86	Sheen	85.01	250,000	---	---	22,000	26,000	7,800	21,000	---	---
	05/23/95	11.60	Sheen	85.27	310,000	---	---	18,000	17,000	4,500	2,800	---	---
	08/22/95	17.10	---	79.77	74,000	---	---	14,000	13,000	1,900	11,000	---	---
	11/29/95	16.34	---	80.53	220,000	---	---	25,000	25,000	3,500	19,000	---	---
	02/21/96	7.92	---	88.95	60,000	---	---	10,000	7,800	1,500	8,800	3,400	---
	05/21/96	10.86	Sheen	86.01	69,000	13,000	---	17,000	9,400	1,700	9,400	2,600	---
	08/22/96	16.50	---	80.37	94,000	16,000	---	17,000	15,000	2,100	12,000	330	2.0
	11/27/96	13.47	Sheen	83.40	82,000	24,000	---	14,000	13,000	2,400	13,000	<1,000	2.4
	03/20/97	12.86	---	84.01	56,000	11,000	---	9,900	6,900	1,300	8,000	3,500	9.0
	06/25/97	15.98	---	80.89	49,000	7,700 ^b	---	9,700	7,100	1,300	7,000	220	5.8

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Table 1. Groundwater Elevation and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID (TOC)	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
<----- Concentrations in parts per billion (µg/L) ----->													
	09/17/97	16.34	Sheen	80.53	78,000 ^d	15,000 ^e	---	11,000	9,900	1,800	10,000	<1,200	0.7
	12/22/97	10.71	Sheen	86.16	49,000 ^d	14,000 ^e	---	7,300	5,300	1,400	7,500	<1,100	3.1
	03/18/98	8.41	Sheen	88.46	120,000 ^d	20,000 ^{e,f}	---	21,000	19,000	2,600	15,000	<1,600	1.6
	07/14/98	13.51	---	83.36	94,000 ^{d,g}	65,000 ^{e,f,g}	---	18,000	14,000	1,900	11,000	<1,400	1.8
	09/30/98	16.14	---	80.73	91,000	9,800	---	17,000	13,000	2,100	12,000	<1300	2.0
	12/08/98	11.20	---	85.67	51,000	4,200	---	8,000	6,800	1,400	7,500	<1,100	---
	03/29/99	7.95	---	88.92	39,000 ^d	4,600 ^e	---	8,900	4,400	940	4,500	810	0.56
	06/29/99	16.98	---	79.89	71,000^d	6,900^e	---	12,000	7,300	1,400	8,400	<1,700	0.19
MW-4	03/20/97	13.75	---	83.59	47,000	3,100	---	11,000	4,500	1,100	5,200	3,400	8.4
97.34	06/25/97	16.15	---	81.19	61,000	5,800 ^b	---	16,000	6,100	1,500	5,900	780 ^e	1.4
	09/17/97	17.10	---	80.24	60,000 ^d	4,400 ^e	---	17,000	4,900	1,500	5,700	<1,500	1.5
	12/22/97	9.21	---	88.13	43,000 ^d	3,100 ^e	---	13,000	3,900	1,100	4,200	<960	3.7
	03/18/98	9.54	---	87.80	58,000 ^d	5,500 ^{e,f}	---	14,000	4,700	1,400	5,700	<1,200	0.8
	07/14/98	14.15	---	83.19	73,000 ^d	2,900 ^{e,f}	---	22,000	7,000	1,800	7,300	<200	1.0
	09/30/98	16.84	---	80.50	39,000	2,100	---	12,000	2,700	1,000	3,400	510	1.1
	12/08/98	13.45	---	83.89	27,000	1,600	---	8,900	1,600	730	2,300	<1,500	---
	03/29/99	9.10	---	88.24	48,000 ^d	2,400 ^{e,h}	---	15,000	3,000	1,300	5,000	1,300	1.32
	06/29/99*	---	---	---	---	---	---	---	---	---	---	---	---
Trip Blank	07/14/98	---	---	---	<50	<50	---	<0.5	<0.5	<0.5	<0.5	<5.0	---
	09/30/98	---	---	---	<50	<50	---	<0.5	<0.5	<0.5	<0.5	<5.0	---
	12/08/98	---	---	---	<50	---	---	<0.5	<0.5	<0.5	<0.5	<5.0	---
	03/29/99	---	---	---	<50	---	---	<0.5	<0.5	<0.5	<0.5	<5.0	---
	06/29/99	---	---	---	<50	---	---	<0.5	<0.5	<0.5	<0.5	<5.0	---

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Table 1. Groundwater Elevation and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID (TOC)	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
					<----- Concentrations in parts per billion (µg/L) ----->								

Abbreviations:

TOC = Top of casing elevation relative to an arbitrary datum
 GW = Groundwater
 SPH = Separate-phase hydrocarbons
 --- = not observed/not analyzed
 TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015
 TPHd = Total petroleum hydrocarbons as diesel by modified EPA Method 8015
 TPHmo = Total petroleum hydrocarbons as motor oil by modified EPA Method 8015
 Benzene, Ethylbenzene, Toluene, and Xylenes by EPA Method 8020
 MTBE = Methyl Tertiary-Butyl Ether by EPA Method 8020
 DO = Dissolved oxygen
 µg/L = Micrograms per liter, equivalent to parts per billion in water
 mg/L = Milligrams per liter, equivalent to parts per million in water
 * = Well inaccessible during site visit

Notes:

a = Result has an atypical pattern for diesel analysis
 b = Result appears to be a lighter hydrocarbon than diesel
 c = There is a >40% difference between primary and confirmation analysis
 d = Unmodified or weakly modified gasoline is significant
 e = Gasoline range compounds are significant
 f = Diesel range compounds are significant
 g = lighter than water immiscible sheen is present
 h = one to a few isolated peaks present
 TOC Elevation of Well MW-4 surveyed relative to an arbitrary site datum by David Hop,
 Licensed Surveyor on April 19, 1997

C A M B R I A



ATTACHMENT A

Analytical Report and Field Data Sheets



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 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #130-0105-108; Worthington	Date Sampled: 06/29/99
	Client Contact: Jacquelyn Jones	Date Received: 06/30/99
	Client P.O:	Date Extracted: 07/02-07/03/99
		Date Analyzed: 07/02-07/03/99

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	Ethylbenzene	Xylenes	% Recovery Surrogate
14747	MW1	W	28,000,a	ND<1300	7300	420	810	1700	109
14748	MW2	W	28,000,a	ND<1000	3500	1100	690	3100	105
14749	MW3	W	71,000,a	ND<1700	12,000	7300	1400	8400	103
14750	TB	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.



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 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #130-0105-108; Worthington	Date Sampled: 06/29/99
	Client Contact: Jacquelyn Jones	Date Received: 06/30/99
	Client P.O:	Date Extracted: 06/30/99
		Date Analyzed: 07/06/99

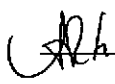
Methyl tert-Butyl Ether *

EPA method 8260 modified

Lab ID	Client ID	Matrix	MTBE*	% Recovery Surrogate
14747	MW1	W	110	113
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.

DHS Certification No. 1644

 Edward Hamilton, Lab Director

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/02/99-07/03/99

Matrix: WATER

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample (#14490)	MS	MSD		MS	MSD	
TPH (gas)	0.0	106.5	104.4	100.0	106.5	104.4	2.0
Benzene	0.0	9.3	9.5	10.0	93.0	95.0	2.1
Toluene	0.0	9.5	9.7	10.0	95.0	97.0	2.1
Ethyl Benzene	0.0	9.7	9.8	10.0	97.0	98.0	1.0
Xylenes	0.0	29.0	29.4	30.0	96.7	98.0	1.4
TPH(diesel)	0.0	7485	7226	7500	100	96	3.5
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

QC REPORT FOR VOCs (EPA 8240/8260)

Date: 07/06/99-07/07/99

Matrix: WATER

Analyte	Concentration (ug/kg, u Sample (#13574)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
1,1-Dichloroethe	0	102	109	100	102	109	6.6
Trichloroethene	0	99	113	100	99	113	13.2
EDB	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	0	93	109	100	93	109	15.8
Benzene	0	96	102	100	96	102	6.1
Toluene	0	103	105	100	103	105	1.9

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS / BCR	Well ID: MW1
Project Number: 130-0105	Date: 6/29/99	Well Yield: —
Site Address: 3055 Rose Street Oakland, California	Sampling Method: Disposable bailer	Well Diameter: 4 " pvc
		Technician(s): JJ
Initial Depth to Water: 20.77	Total Well Depth: 27.26	Water Column Height: 6.49
Volume/ft: 0.65	1 Casing Volume: 4.22 gal	3 Casing Volumes: 12.66 gal
Purging Device: sub. pump	Did Well Dewater?: NO	Total Gallons Purged: 13 gals
Start Purge Time: 11:14	Stop Purge Time: 11:25	Total Time: 11 min

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
11:14	1	18.9	6.6	1452	
11:18	2	18.7	6.5	1241	
11:22	3	18.7	6.5	1499	
		18.7	6.5	1520	

D.O. = 0.10 ppm

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW1	6/29	12:30	4 voa's	HCL	TPHg, BTEX, MTBE	8020 8015
u	"	"	1 amber	none	TPHd	

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS / BCR	Well ID: MW2
Project Number: 130-0105	Date: 6/29/99	Well Yield: ---
Site Address: 3055 Rose Street Oakland, California	Sampling Method: Disposable bailer	Well Diameter: 4 " pvc
		Technician(s): JS
Initial Depth to Water: 19.51	Total Well Depth: 27.40	Water Column Height: 7.86
Volume/ft: 0.65	1 Casing Volume: 5.11 gal	3 Casing Volumes: 15.33 gal
Purging Device: sub. pump	Did Well Dewater?: NO	Total Gallons Purged: 16.00 gal
Start Purge Time: 1047	Stop Purge Time: 1100	Total Time: 13 min

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. µS	Comments
1047	1	19.7	6.7	1570	
1050	1	19.2	6.6	1607	
1052	2	19.3	6.6	954	
1054	2	19.4	6.6	1210	
1057	3	19.2	6.6	1646	
1100	3	19.3	6.6	1632	

D.O. = 0.41 ppm

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW2	6/29/99	1210	4 voa's	HCL	TPHg, BTEX, MTBE	8020 8015
✓	✓	✓	1 amber	none	TPHd	

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS / BCR	Well ID: MW 3
Project Number: 130-0105	Date: 6/21/99	Well Yield: —
Site Address: 3055 Rose Street Oakland, California	Sampling Method:	Well Diameter: 2" "pvc"
	Disposable bailer	Technician(s): RF
Initial Depth to Water: 16.98	Total Well Depth: 24.96	Water Column Height: 7.98
Volume/ft: 0.16	1 Casing Volume: 1.28 gal	3 Casing Volumes: 3.83 gal
Purging Device: sub-pump	Did Well Dewater?: no	Total Gallons Purged: 4 gal
Start Purge Time: 1142	Stop Purge Time: 1146	Total Time: 4 min

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
1142	1	19.4	6.5	1442	
1144	2	19.4	6.5	1527	
1147	3	19.5	6.6	1498	

D.O. = 0.19 ppm

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW1	6/21/99	1240	4 voa's	HCL	TPHg, BTEX, MTBE	8020 8015
			1 amber	none	TPHd	