

C A M B R I A

January 31, 2002

FEB 07 2002

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 2001 Monitoring Report**  
Former Arco Service Station  
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 2001 groundwater monitoring report for the above-referenced site. Presented in the report are the fourth quarter 2001 activities and results and the anticipated first quarter 2002 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*

Ron Scheele, RG  
Senior Geologist

Attachments: Fourth 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

C A M B R I A

FEB 07 2002

FOURTH QUARTER 2001 MONITORING REPORT

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

January 31, 2002

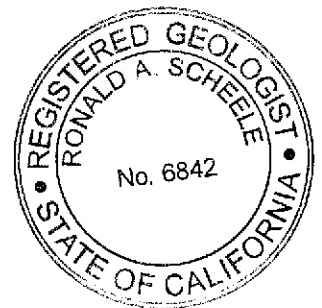



*Prepared for:*

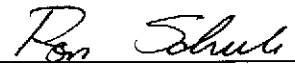
Mr. Bo K. Gin  
288 11th Street  
Oakland, CA 94706

*Prepared by:*

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



  
Matthew A. Meyers  
Staff Geologist

  
Ron Scheele, RG  
Senior Geologist

## FOURTH QUARTER 2001 MONITORING REPORT

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

January 31, 2002

### INTRODUCTION

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this fourth quarter 2001 groundwater monitoring report for the above-referenced site. Presented below are the fourth quarter 2001 activities and results and the anticipated first quarter 2002 activities.

### FOURTH QUARTER 2001 ACTIVITIES

#### Monitoring Activities

*Field Activities:* On October 22, 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 October 22, 2001 site visit, groundwater flow beneath the site is mounded. Groundwater in the southern area of the site flows toward the southeast at a rate of 0.013 ft/ft (Figure 1).

**Hydrocarbon Distribution in Groundwater:** Hydrocarbon concentrations detected this quarter are consistent with historic data with the exception of concentrations in MW-1. TPHg, benzene, and MTBE concentrations all 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 71,000 and 5,900 micrograms per liter ( $\mu\text{g/L}$ ), respectively. The maximum MTBE concentration was detected in well MW-2 at 150  $\mu\text{g/L}$  as confirmed by EPA Method 8260.

## **Corrective Action Activities**

Cambria operated the air sparging system during most the fourth quarter. Air was injected into air sparge wells SP-3, SP-4, and SP-5 at a rate of approximately 3 to 4 cfm and at pressures ranging from 5 to 10 psi.

## **ANTICIPATED FIRST QUARTER 2002 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 first quarter 2002 while remediation testing is performed at the adjacent former Shell service station site.

### **APPENDICES**

Figure 1 – Groundwater Elevation Contour Map

Table I – Groundwater Elevations and Analytical Data

Appendix A – Groundwater Monitoring Field Data Sheets

Appendix B – Laboratory Analytical Report

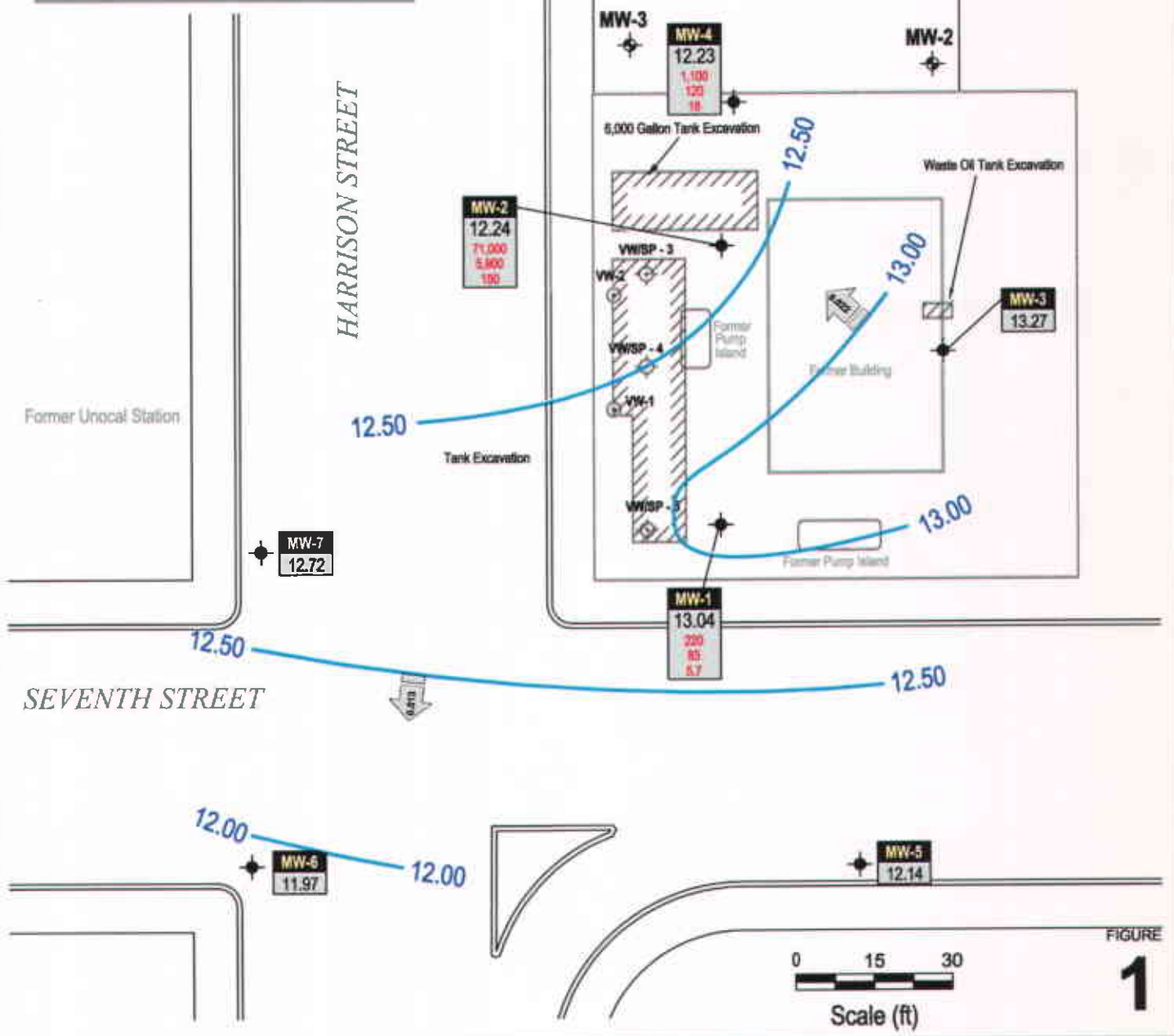
HASB-2004 (UST FUND)\OAKL-116 - BO GIN\QM\QM 2000\QM-4-01.DOC

**EXPLANATION**

- Monitoring Well Location
- Dual Well, SVE/Sparging Well
- SVE Well
- Groundwater Elevation Contour, Dashed Where Inferred
- Groundwater Flow Direction and Gradient (ft/ft)
- Well Identification.

Well ID	ELEV	TPHg	Benzene	MTBE
MW-2	12.24	71,000	5,800	100
MW-4	12.23	1,100	120	18
MW-3	13.27			
MW-1	13.04	200	85	5.7
MW-7	12.72			
MW-6	11.97			
MW-5	12.14			

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



H:\99-2004\0AK-11\PI\GURE\94\DM018-MP.DWG

FIGURE 1

**Former Arco Station**  
706 Harrison Street  
Oakland, California



C A M B R I A

**Groundwater Elevation Contour  
and Analytical Summary Map**

October 22, 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)	TPH <sub>g</sub> (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
			10/22/01	16.11	13.04	220	83	0.63	2.8	<0.5	<10	5.7	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
			10/22/01	18.27	12.24	71,000	5,900	15,000	2,400	12,000	<1,400	150	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-3	29.77	Bi-annually	8/13/93	17.05	12.72	<50	<0.50	<0.50	<0.50	<1.5	-	-	
			12/14/93	17.70	12.07	<50	<0.50	<0.50	<0.50	<1.5	-	-	
			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	-	
			10/22/01	16.50	13.27	-	-	-	-	-	-	-	

# 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-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

# 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-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	-	
			10/22/01	15.90	12.14	-	-	-	-	-	-	-	

# 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-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	-	
			10/22/01	17.13	11.97	-	-	-	-	-	-	-	

# 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-7	29.67	Bi-annually	12/16/94	17.07	12.60	<50	<0.5	<0.5	<0.5	<0.5	<5.0	-	
			12/29/94	17.65	12.02	-	-	-	-	-	-	-	
			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	-	-	-	-	-	-	-	
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	Date	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE (8020)	MTBE (8260)	Notes
Monitoring	Frequency	Sampled	Water	Elevation	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	
			(ft)	(ft-msl)								

<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 tert-butyl ether by EPA Method 8020 and/or 8260.	c = Analytical laboratory notes that lighter gasoline range compounds are significant.
ug/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.
	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.

C A M B R I A



**ATTACHMENT A**

Groundwater Monitoring Field Data Sheets

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-1	12:55		16.11		24.20	
MW-2	13:00		18.27		25.50	
MW-3	12:45		16.50		27.55	
MW-4	12:50		18.95		25.40	
MW-5	12:40		15.90		27.80	
MW-6	19:35		17.13		25.85	
MW-7	12:30		16.95		27.50	

Project Name: Bo Gin

Project Number: 230-0116

Measured By: S. Hill

Date: 10-22-01



# CAMBRIA

## WELL SAMPLING FORM

Project Name: <b>BoGin</b>	Cambria Mgr: <b>RAS</b>	Well ID: <b>MW-1</b>
Project Number: <b>230-0116</b>	Date: <b>10-22-01</b>	Well Yield: <b>---</b>
Site Address: <b>706 Harrison St Oakland, Ca</b>	Sampling Method: <b>Disposable bailer</b>	Well Diameter: <b>2" pvc</b>
Initial Depth to Water: <b>16.11</b>	Total Well Depth: <b>24.20</b>	Technician(s): <b>SG</b>
Volume/ft: <b>0.16</b>	1 Casing Volume: <b>1.29</b>	Water Column Height: <b>8.09</b>
Purging Device: <b>disposable bailer</b>	Did Well Dewater?: <b>no</b>	3 Casing Volumes: <b>3.88</b>
Start Purge Time: <b>14:25</b>	Stop Purge Time: <b>14:39</b>	Total Gallons Purged: <b>4</b>
		Total Time: <b>14 mins</b>

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

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.53
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
14:30	1.5	19.1	7.13	874	
14:35	3	19.4	7.15	890	
14:40	4	19.5	7.22	870	
					<b>DOZ</b>

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	10-22-01	14:45	VOA	HCl	TPH, BTEX, MTBE	8015 / 8020

# CAMBRIA

## WELL SAMPLING FORM

Project Name: <b>Bo Gin</b>	Cambria Mgr: <b>RAS</b>	Well ID: <b>MW-2</b>
Project Number: <b>230-0116</b>	Date: <b>10-22-01</b>	Well Yield: <b>---</b>
Site Address: <b>706 Harrison St Oakland, Ca</b>	Sampling Method: <b>Disposable bailer</b>	Well Diameter: <b>2" pvc</b>
Initial Depth to Water: <b>18.27</b>	Total Well Depth: <b>25.50</b>	Technician(s): <b>SG</b>
Volume/ft: <b>0.16</b>	1 Casing Volume: <b>1.15</b>	Water Column Height: <b>7.23</b>
Purging Device: <b>disposable bailer</b>	Did Well Dewater?: <b>no</b>	3 Casing Volumes: <b>3.47</b>
Start Purge Time: <b>13:55</b>	Stop Purge Time: <b>14:09</b>	Total Gallons Purged: <b>35</b>
		Total Time: <b>14 mins</b>

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
14:00	1.5	19.5	7.12	827	
14:05	2	19.1	7.22	895	
14:10	3.5	18.9	7.28	1024	
					<b>over</b>

Sample ID	Date	Time	Container Type	Preservative	Analysis	Analytic Method
MW-2	10-22-01	14:15	voc	HCl	TPH, BTEX, MTBE	8015 / 8020
MW-						

# CAMBRIA

## WELL SAMPLING FORM

Project Name: <b>Bo Gin</b>	Cambria Mgr: <b>RAS</b>	Well ID: <b>MW-4</b>
Project Number: <b>230-0116</b>	Date: <b>10-22-01</b>	Well Yield: <b>---</b>
Site Address: <b>706 Harrison St Oakland, Ca</b>	Sampling Method: <b>Disposable bailer</b>	Well Diameter: <b>2" pvc</b>
Initial Depth to Water: <b>18.95</b>	Total Well Depth: <b>25.40</b>	Technician(s): <b>SG</b>
Volume/ft: <b>0.16</b>	1 Casing Volume: <b>1.03</b>	Water Column Height: <b>6.45</b>
Purging Device: <b>disposable bailer</b>	Did Well Dewater?: <b>no</b>	3 Casing Volumes: <b>3.09</b>
Start Purge Time: <b>13:20</b>	Stop Purge Time: <b>13:34</b>	Total Gallons Purged: <b>3</b>
		Total Time: <b>14mins</b>

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

Well Diam.

Volume/ft (gallons)

2"	0.16
4"	0.63
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
13:25	1	19.1	7.27	951	
13:30	2	18.7	7.35	972	
13:35	3	18.5	7.30	984	
					DO =

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	10-22-01	13:40	voc	HCl	TPH, BTEX, MTBE	8015/8020

C A M B R I A



**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](mailto:main@mccampbell.com)

Cambria Environmental Technology 6262 Hollis Street Emeryville, CA 94608	Client Project ID: #230-0116	Date Sampled: 10/22/01
		Date Received: 10/25/01
	Client Contact: Ron Scheele	Date Extracted: 10/29-11/02/01
	Client P/O:	Date Analyzed: 10/29-11/02/01

11/09/01

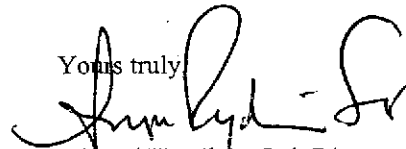
Dear Ron:

Enclosed are:

- 1). the results of 3 samples from your #230-0116 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](mailto:main@mccampbell.com)

Cambria Environmental Technology 6262 Hollis Street Emeryville, CA 94608	Client Project ID: #230-0116	Date Sampled: 10/22/01
		Date Received: 10/25/01
	Client Contact: Ron Scheele	Date Extracted: 10/29-10/30/01
	Client P.O:	Date Analyzed: 10/29-10/30/01

**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) <sup>+</sup>	MTBE	Benzene	Toluene	Ethyl-benzene	Xylenes	% Recovery Surrogate
81960	MW-1	W	220,a	ND<10	83	0.63	2.8	ND	106
81961	MW-2	W	71,000,a	ND<1400	5900	15,000	2400	12,000	104
81962	MW-4	W	1100,a	ND<25	120	3.7	29	7.9	---#
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](mailto:main@mccampbell.com)

Cambria Environmental Technology 6262 Hollis Street Emeryville, CA 94608	Client Project ID: #230-0116	Date Sampled: 10/22/01
		Date Received: 10/25/01
	Client Contact: Ron Scheele	Date Extracted: 11/02/01
	Client P.O:	Date Analyzed: 11/02/01

**Methyl tert-Butyl Ether \***

EPA method 8260 modified

Lab ID	Client ID	Matrix	MTBE*	% Recovery Surrogate
81960	MW-1	W	5.7	100
81961	MW-2	W	150	98
81962	MW-4	W	16	95
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.



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](mailto:main@mccampbell.com)

## QC REPORT

EPA 8015m + 8020

Date: 10/29/01

Extraction: EPA 5030

Matrix: Water

Compound	Concentration: ug/L			%Recovery		RPD
	Sample	MS	MSD	MS	MSD	

SampleID: 102901

Instrument: GC-7

Surrogate1	ND	111.0	110.0	100.00	111	110	0.9
Xylenes	ND	33.3	34.0	30.00	111	113	2.1
Ethylbenzene	ND	11.3	11.6	10.00	113	116	2.6
Toluene	ND	11.5	11.5	10.00	115	115	0.0
Benzene	ND	10.7	10.6	10.00	107	106	0.9
MTBE	ND	10.2	10.0	10.00	102	100	2.0
TPH (gas)	ND	103.3	106.1	100.00	103	106	2.6

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

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

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](mailto:main@mccampbell.com)

# QC REPORT

## VOCs (EPA 8240/8260)

Date: 11/02/01

Extraction: EPA 5030

Matrix: Water

Compound	Concentration: ug/L			%Recovery		RPD
	Sample	MS	MSD	MS	MSD	
SampleID: 102901				Instrument: GC-10		
Surrogate	ND	98.0	99.0	98	99	1.0
Methyl tert-Butyl Ether	ND	9.3	8.7	93	87	6.7

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

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

RPD means Relative Percent Deviation

28445

26502

McCAMPBELL ANALYTICAL INC.

110 2<sup>ND</sup> AVENUE SOUTH, #107  
PACIFICCO, CA 94333

Telephone: (925) 798-1520

Fax: (925) 798-1622

Report To: Ron Scheele

Bill To: Cambria Env.

Company: Cambria Environmental Technology

6262 Hollis Street

Emeryville, CA 94608

Tele: (510) 450-1983

Fax: (510) 450-8295

Project #: 230-011b

Project Name: Bohin

Project Location: 706 Harrison St. Oakland, Ca

Sampler Signature: *[Signature]*

CHAIN OF CUSTODY RECORD  
TURN AROUND TIME

RUSH  24 HOUR  48 HOUR  5 DAY

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED				Analysis Request	Other	Comments
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	FluO <sub>2</sub>	Other			
MW-1		10-22-01	14:45	4	VOA	Y						X	X				
MW-2		10-22-01	14:15	4	VOA	Y						X	X				81960
MW-4		10-22-01	13:40	4	VOA	Y						X	X				81961 81962

Analysis Request

TPH as Diesel (8015)

Total Petroleum Oil & Grease (5320 E&F/R&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-MTB conf.

~~EPA 607/8270~~ 5d # 11-2-01

PAH'S / PNA'S by EPA 625 / 8270 / 8310 per S

CAM-17 Metals

LUFT 5 Metals

Lead (7240/7421/239.2/6010)

RCI

ICE  ✓

GOOD CONDITION  ✓

HEAD SPACE ABSENT  ✓

PRESERVATION APPROPRIATE  ✓

CONTAINERS  ✓

VOAS  ✓

NON METALS  ✓

OTHER  ✓

Relinquished By: <i>[Signature]</i>	Date: 10-25-01	Time: 4:00	Received By: <i>[Signature]</i>
Relinquished By: <i>[Signature]</i>	Date: 10/25/01	Time: 11:00 AM	Received By: <i>[Signature]</i> #214
Relinquished By: <i>[Signature]</i>	Date: 10/25/01	Time: 3:50 PM	Received By: <i>[Signature]</i>

Remarks: Report results in EDF format

Sent By: McCampbell Analytical, Inc. 1 925.798.4612 Sep-5-01 8:42AM Page 2/2