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*By dehloptoxic at 8:09 am, Dec 29, 2006*

# C A M B R I A

December 21, 2006

Mr. Don Hwang  
Alameda County Environmental Health Services  
UST Local Oversight Program  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

**Re: Fourth Quarter 2006 Monitoring Report**

Former ARCO Service Station  
706 Harrison Street  
Oakland, California  
STID 3749  
Fuel Leak Case RO0000484  
Cambria Project #230-0116



Dear Mr. Hwang:

On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. is submitting this *Fourth Quarter 2006 Monitoring Report* for the subject site. This report describes fourth quarter 2006 activities and results as well as anticipated first quarter 2007 activities.

If you have any questions or comments regarding this report, please contact Mark Jonas at (510) 420-3307.

Sincerely,  
**Cambria Environmental Technology, Inc.**

Mark Jonas, P.G.  
Senior Project Manager

Attachments: *Fourth Quarter 2006 Monitoring Report*

cc:      Mr. Bo K. Gin, 342 Lester Avenue, Oakland, California 94606  
          Mr. Mike Rauser, Aqua Science Engineering, 208 W. Pintado Road, Danville, California 94526

**Cambria  
Environmental  
Technology, Inc.**

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

# C A M B R I A

## FOURTH QUARTER 2006 MONITORING REPORT

**Former ARCO Service Station  
706 Harrison Street  
Oakland, California  
STID 3749  
Fuel Leak Case RO0000484  
Cambria Project #230-0116**

**December 21, 2006**

*Prepared for:*

Mr. Bo K. Gin  
342 Lester Avenue  
Oakland, California 94606

*Prepared by:*

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

*Written by:*

*G. McClelland*

Christina McClelland  
Staff Geologist

Cambria Environmental Technology, Inc. (Cambria) prepared this document for use by our client and appropriate regulatory agencies. It is based partially on information available to Cambria from outside sources and/or in the public domain, and partially on information supplied by Cambria and its subcontractors. Cambria makes no warranty or guarantee, expressed or implied, included or intended in this document, with respect to the accuracy of information obtained from these outside sources or the public domain, or any conclusions or recommendations based on information that was not independently verified by Cambria. This document represents the best professional judgment of Cambria. None of the work performed hereunder constitutes or shall be represented as a legal opinion of any kind or nature.

*Mark Jonas*  
Mark Jonas, P.G.  
Senior Project Manager



# C A M B R I A

## FOURTH QUARTER 2006 MONITORING REPORT

**Former ARCO Service Station**

**706 Harrison Street**

**Oakland, California**

**STID 3749**

**Fuel Leak Case RO0000484**

**Cambria Project #230-0116**

**December 21, 2006**

### INTRODUCTION



On behalf of Mr. Bo K. Gin, Cambria Environmental Technology, Inc. (Cambria) is submitting this *Fourth Quarter 2006 Monitoring Report* for the subject site. Presented below are the fourth quarter 2006 groundwater monitoring activities and results and the anticipated first quarter 2007 activities.

Figure 1 presents recent monitoring groundwater elevations and selected hydrochemical data. Table 1 provides recent and historic groundwater level measurements and elevations, and hydrochemical data. Appendix A contains field data sheets for this monitoring event. Appendix B presents the recent laboratory analytical report. Appendix C includes time-series plots with benzene and methyl tertiary butyl ether (MTBE) concentrations, and groundwater elevations. Appendix D provides monitoring groundwater elevations and analytical data for the neighboring former Shell Station located at 726 Harrison Street, in Oakland, California.

### FOURTH QUARTER 2006 ACTIVITIES

#### Monitoring Activities

**Field Activities:** On October 16, 2006, Muskan Environmental Sampling (MES) conducted quarterly monitoring and sampling activities. MES measured well water levels in monitoring wells MW-1 through MW-7 (Figure 1). MES collected groundwater samples from monitoring wells MW-1 through MW-7. The groundwater depth measurements have been submitted to the GeoTracker database.

Prior to groundwater sampling, groundwater levels were measured in all monitoring wells. Each monitoring well was then purged before sampling. MES purged at least three well-casing volumes of groundwater from each monitoring well. Field measurements of pH, conductivity, and temperature of purged groundwater were measured after the extraction of each successive casing volume. Well purging continued until consecutive pH, specific conductance, and temperature measurements appeared to stabilize. Field measurements, purge volumes, and sample collection data were recorded on field sampling data forms, presented in Appendix A.

Groundwater samples were collected using new disposable bailers, decanted into appropriate sampling containers supplied by the analytical laboratory. Samples were labeled, placed in protective foam sleeves, stored on crushed, water-based ice at or below 4 degrees Celsius and transported under a chain-of-custody (COC) to the laboratory. The COC used for this monitoring event is provided in Appendix B.

**Sample Analyses:** Groundwater samples were analyzed by McCampbell Analytical, Inc. of Pacheco, California, a California-certified laboratory. All groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified United States Environmental Protection Agency (EPA) Method SW8015C; benzene, toluene, ethylbenzene, and total xylenes (BTEX) and MTBE by EPA Method SW8021B; and all samples were analyzed for MTBE by EPA Method SW8260B. The analytical laboratory report is included in Appendix B. Groundwater analytical results are provided on Table 1 and summarized on Figure 1. Groundwater analytical results have been submitted to the GeoTracker database.

### Monitoring Results

**Groundwater Flow Direction and Gradient:** Based on depth-to-water measurements collected during the monitoring event on October 16, 2006, groundwater appears to flow towards the south with an apparent gradient of 0.02 feet per foot (Figure 1). The gradient and flow direction are consistent with historical data. Depth-to-water and groundwater elevation data for the site are presented in Table 1.

**Hydrocarbon Distribution in Groundwater:** Hydrocarbons were detected in down-gradient well MW-1, source area well MW-2, and up-gradient well MW-4 during this sampling event (Figure 1, Table 1). The highest TPHg, benzene, toluene, ethylbenzene, and xylenes concentrations were detected in monitoring well MW-2 at 110,000 micrograms per liter ( $\mu\text{g/L}$ ), 3,600  $\mu\text{g/L}$ , 16,000  $\mu\text{g/L}$ , 2,400  $\mu\text{g/L}$ , and 12,000  $\mu\text{g/L}$ , respectively. TPHg and BTEX concentrations were detected in well MW-1 at 2,000  $\mu\text{g/L}$ , 470  $\mu\text{g/L}$ , 6.4  $\mu\text{g/L}$ , 38  $\mu\text{g/L}$ , and 13  $\mu\text{g/L}$ , respectively.

TPHg and BTEX concentrations remain elevated in upgradient well MW-4 at 3,200  $\mu\text{g/L}$ , 440  $\mu\text{g/L}$ , 26  $\mu\text{g/L}$ , 34  $\mu\text{g/L}$ , and 63  $\mu\text{g/L}$ , respectively. Analytical results are presented in Figure 1, Table 1, and Appendix B.

Significantly higher elevated concentrations of BTEX are present up-gradient of the site, on the adjacent property (see Figure 1 and Appendix D).

**MTBE Distribution in Groundwater:** MTBE was detected in down-gradient well MW-1, source area well MW-2 and up-gradient well MW-4 during this sampling event.

The highest on-site MTBE concentration was detected in up-gradient well MW-4 at 7,500  $\mu\text{g/L}$ . MTBE concentrations in wells MW-1 and MW-2 were 6,400  $\mu\text{g/L}$ , and 2,700  $\mu\text{g/L}$ , respectively.

Significantly higher concentrations of MTBE were identified in wells located up-gradient, on the adjacent property. The highest MTBE concentration was detected in monitoring well MW-5, on the adjacent property, at 35,000 µg/L (Figure 1).

## **ANTICIPATED FIRST QUARTER 2007 ACTIVITIES**

### **Monitoring Activities**

During first quarter of 2007, Cambria will measure water levels and collect groundwater samples from monitoring wells MW-1 through MW-7. Pursuant to ACHCSA's letter dated February 25, 2003, the well sampling schedule was revised so that wells MW-1, MW-2, and MW-4 are sampled on a quarterly basis and wells MW-3, MW-5, MW-6, and MW-7 are sampled on a semi-annual basis, during the first and third quarters. Groundwater samples will be analyzed for TPHg by EPA Method SW8015C, BTEX, and MTBE by EPA Method SW8021B and by EPA Method SW8260B. Cambria will prepare a groundwater monitoring report summarizing the monitoring activities and results.

### **ATTACHMENTS:**

Figure 1 – Groundwater Elevation Contour and Hydrocarbon Concentration Map

Table 1 – Groundwater Elevation and Analytical Data

Appendix A – Groundwater Monitoring Field Data Sheets

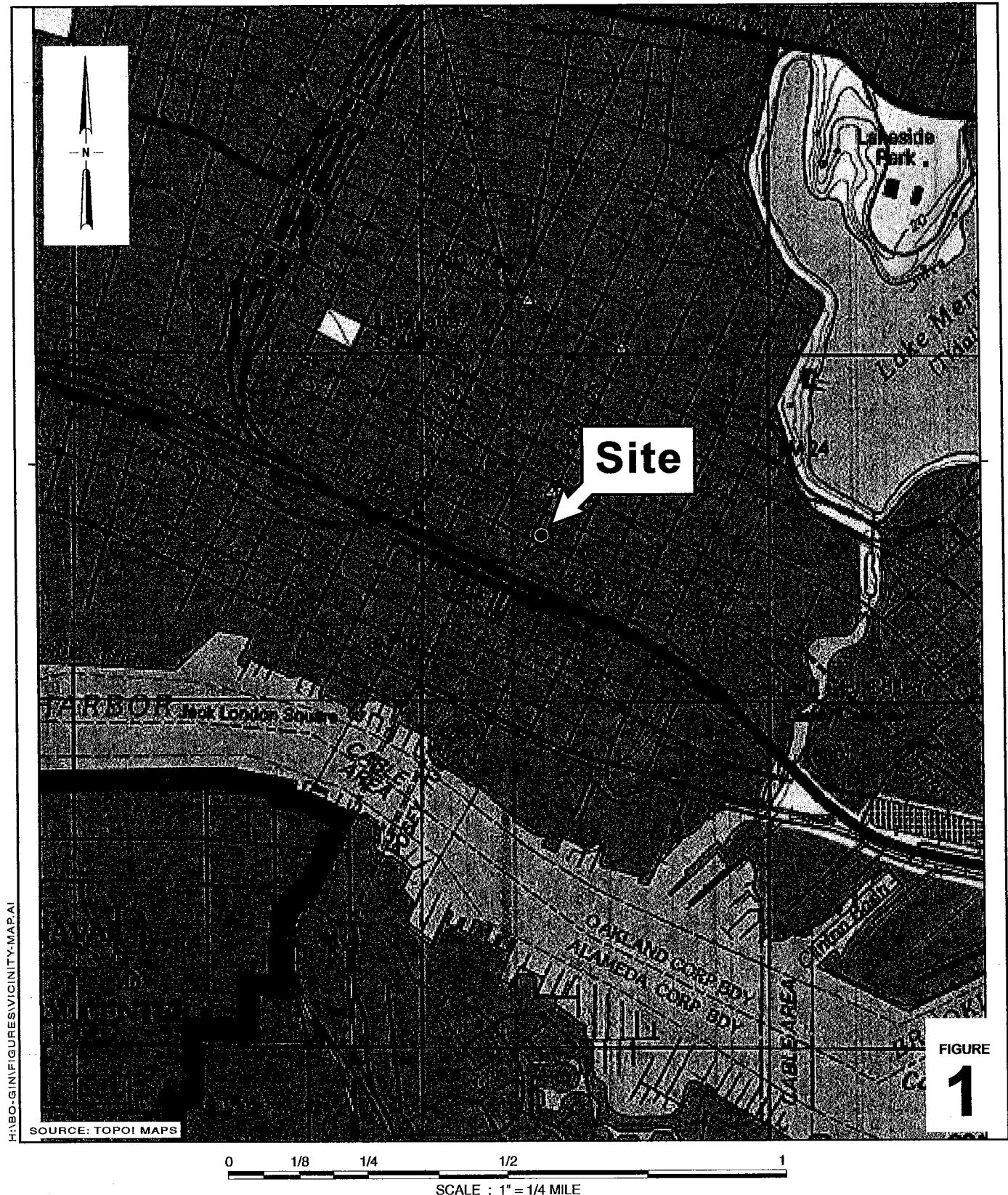
Appendix B – Laboratory Analytical Report

Appendix C – Benzene and MTBE Concentration Graphs

Appendix D – Former Shell Station Groundwater Monitoring and Analytical Results

**FIGURE**

11/24/04



## Former ARCO Station

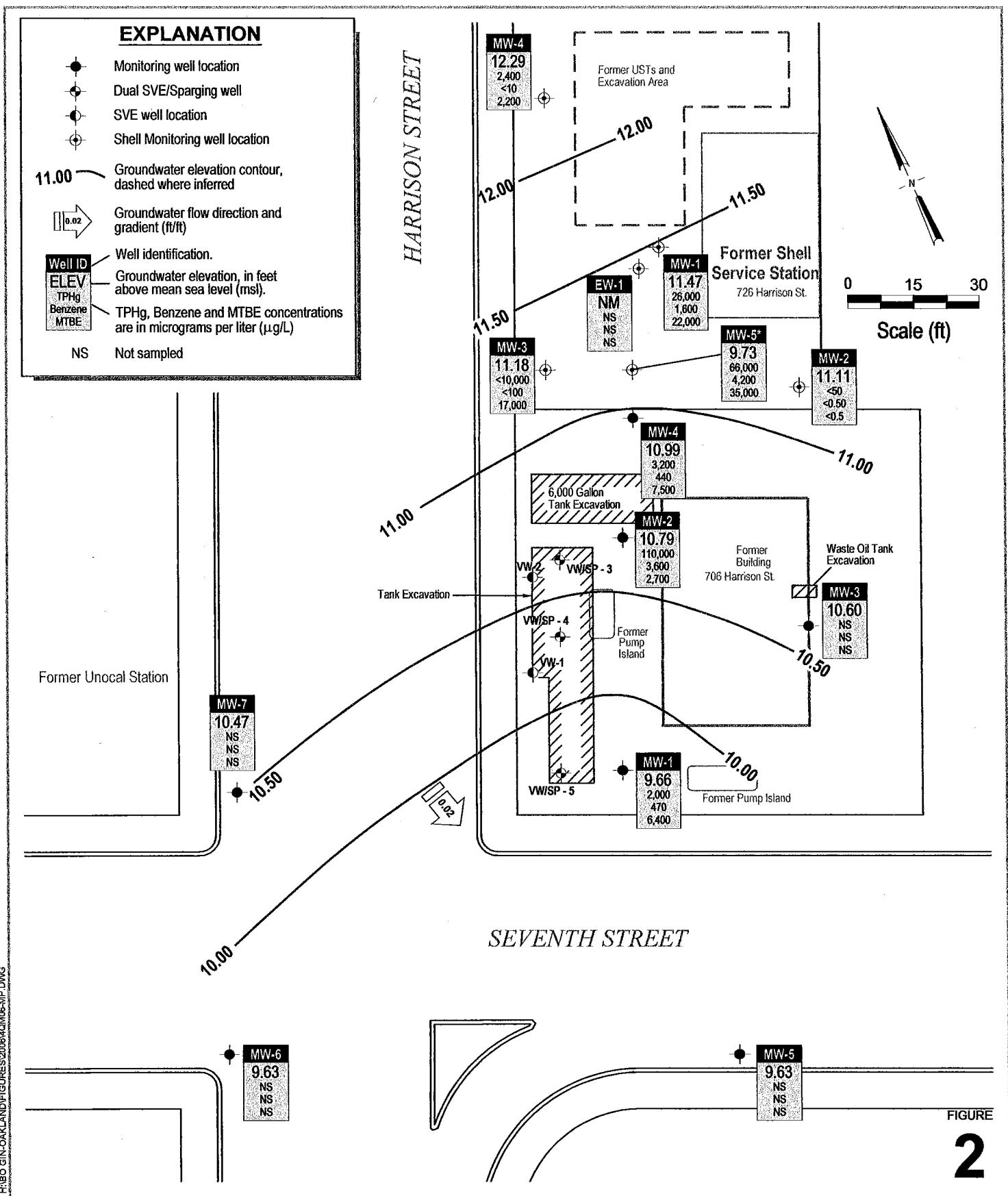
706 Harrison Street

Oakland, California



C A M B R I A

## Vicinity Map



## **TABLE**













# CAMBRIA

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

Well ID/ Sample ID <i>TOC</i>	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft-msl)	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE by 8021B (mg/L)	MTBE by 8260B (mg/L)	Notes
MW-7 <sup>cont</sup> 26.70	7/8/2002	15.73	13.94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	-
	10/2/2002	16.24	13.43	-	-	-	-	-	-	-	-
	1/23/2003	15.70	13.97	ND<50	23	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	-
	4/29/2003	12.68	16.99	-	-	-	-	-	-	-	-
	7/18/2003	15.19	11.51	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	-
	10/9/2003	14.45	12.25	-	-	-	-	-	-	-	-
	1/28/2004	13.88	12.82	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	-
	4/7/2004	15.71	10.99	-	-	-	-	-	-	-	-
	7/23/2004	14.85	11.85	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	130	120	-
	10/12/2004	16.90	9.80	-	-	-	-	-	-	-	-
	2/14/2005	14.42	12.28	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	190	200	-
	4/27/2005	13.75	12.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	1.3	-
	7/19/2005	14.91	11.79	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	65	66	-
	10/18/2005	15.40	11.30	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	12	15	-
VW-3	1/23/2006	13.99	12.71	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	2.2	-
	4/12/2006	12.32	14.38	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	2.0	-
VW-4	7/10/2006	14.31	12.39	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	1.5	-
	10/16/2006	16.23	10.47	--	--	--	--	--	--	--	-
Trip Blank	3/6/2003	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i
	3/25/2003	-	-	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5.0	-	i

**Abbreviations and Analyses:**

mg/L = Milligrams per liter

ND<0.5 = Not Detected (ND) above laboratory detection limit.

- = Not sampled, not analyzed, or not applicable

TOC = Top of casing elevation, measured in feet, relative to mean sea level

ft = Measured in feet

ft-msl = Elevation in feet relative to mean sea level

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method SW8015C

Benzene, ethylbenzene, toluene and xylenes by EPA Method SW8021B.

MTBE = Methyl tertiary butyl ether by EPA Method SW8021B and/or SW8260B.

SVOCs = Semi-Volatile Organic Compounds (EPA Method 8270)

Wells were re-surveyed on October 27, 2003 to City of Oakland Benchmark 25A.

**Analytical Laboratory Notes:**

a = "unmodified or weakly modified gasoline is significant"

b = "heavier gasoline range compounds are significant"

c = "lighter gasoline range compounds are significant"

d = "isolated peaks are present"

f = "hydrocarbons with no recognizable patterns are present"

g = "lighter than water immiscible sheen is present"

h = "lighter than water immiscible sheen/product is present"

i = "sample contains greater than ~1 vol. % sediment"

j = "sample was diluted due to high organic content"

m = "no recognizable pattern"

**APPENDIX A**

**Groundwater Monitoring Field Data Sheets**

## WELL GAUGING SHEET

Client: Cambria Environmental Technology Inc.						
Site Address: 706 Harrison Street Oakland, CA						
Date: 10/16/2006			Signature: 			
Well ID	Time	Depth to SPH	Depth to Water	SPH Thickness	Depth to Bottom	Comments
MW-1	4:40		16.51		24.93	
MW-2	4:50		16.74		25.80	
MW-3	4:10		16.19		27.75	
MW-4	4:45		17.21		25.61	
MW-5	4:00		15.44		27.86	
MW-6	4:20		16.50		25.90	
MW-7	4:30		16.23		27.73	



MUSKAN  
ENVIRONMENTAL  
SAMPLING

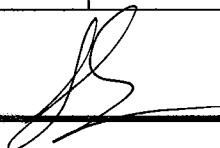
## WELL SAMPLING FORM

Date:	10/16/2006					
Client:	Cambria Environmental Technology Inc.					
Site Address:	706 Harrison Street, Oakland, CA					
Well ID:	MW-1					
Well Diameter:	2"					
Purging Device:	Disposable Bailer					
Sampling Method:	Disposable Bailer					
Total Well Depth:	24.93		Fe=	mg/L		
Depth to Water:	16.51		ORP=	mV		
Water Column Height:	8.42		DO=	mg/L		
Gallons/ft:	0.16					
1 Casing Volume (gal):	1.35		<b>COMMENTS:</b> turbid			
3 Casing Volumes (gal):	4.04					
TIME:	CASING VOLUME (gal)	TEMP (Celsius)			pH	COND. (µS)
5:20	1.3	17.4			7.01	658
5:23	2.7	17.9			7.04	643
5:25	4.0	17.7			7.04	641
Sample ID:	Sample Date:	Sample Time:	Container Type	Preservative	Analytes	Method
MW-1	10/16/2006	5:30	40 ml VOA	HCl, ICE	TPHg, BTEX, MTBE	8015, 8021, 8260
Signature:						



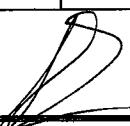
## WELL SAMPLING FORM

Date:	10/16/2006					
Client:	Cambria Environmental Technology Inc.					
Site Address:	706 Harrison Street, Oakland, CA					
Well ID:	MW-2					
Well Diameter:	2"					
Purging Device:	Disposable Bailer					
Sampling Method:	Disposable Bailer					
Total Well Depth:	25.80		Fe=	mg/L		
Depth to Water:	16.74		ORP=	mV		
Water Column Height:	9.06		DO=	mg/L		
Gallons/ft:	0.16					
1 Casing Volume (gal):	1.45		COMMENTS: turbid, odor			
3 Casing Volumes (gal):	4.35					
TIME:	CASING VOLUME (gal)	TEMP (Celsius)	pH	COND. (μS)		
6:15	1.4	18.6	7.14	703		
6:20	2.9	18.1	7.16	728		
6:25	4.3	18.4	7.16	716		
Sample ID:	Sample Date:	Sample Time:	Container Type	Preservative	Analytes	Method
MW-2	10/16/2006	6:30	40 ml VOA	HCl, ICE	TPHg, BTEX, MTBE	8015, 8021, 8260

Signature: 



## WELL SAMPLING FORM

Date:	10/16/2006					
Client:	Cambria Environmental Technology Inc.					
Site Address:	706 Harrison Street, Oakland, CA					
Well ID:	MW-4					
Well Diameter:	2"					
Purging Device:	Disposable Bailer					
Sampling Method:	Disposable Bailer					
Total Well Depth:	25.61		Fe=	mg/L		
Depth to Water:	17.21		ORP=	mV		
Water Column Height:	8.40		DO=	mg/L		
Gallons/ft:	0.16					
1 Casing Volume (gal):	1.34		COMMENTS: turbid			
3 Casing Volumes (gal):	4.03					
TIME:	CASING VOLUME (gal)	TEMP (Celsius)	pH	COND. (µS)		
5:45	1.3	18.0	7.06	629		
5:50	2.7	17.9	7.11	615		
5:55	4.0	17.7	7.13	621		
Sample ID:	Sample Date:	Sample Time:	Container Type	Preservative	Analytes	Method
MW-4	10/16/2006	6:00	40 ml VOA	HCl, ICE	TPHg, BTEX, MTBE	8015, 8021, 8260
						Signature: 

**APPENDIX B**

**Laboratory Analytical Report**



**McCampbell Analytical, Inc.**

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
Web: [www.mccampbell.com](http://www.mccampbell.com) E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)  
Telephone: 877-252-9262 Fax: 925-252-9269

Cambria Env. Technology  5900 Hollis St, Suite A  Emeryville, CA 94608	Client Project ID: #230-0116; BoGin	Date Sampled: 10/16/06
		Date Received: 10/16/06
	Client Contact: Mark Jonas	Date Reported: 10/20/06
	Client P.O.:	Date Completed: 10/20/06

**WorkOrder: 0610323**

October 20, 2006

Dear Mark:

Enclosed are:

- 1). the results of 3 analyzed samples from your #230-0116; 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. 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.

Best regards,

Angela Rydelius, Lab Manager





**McCAMPBELL ANALYTICAL, INC.**

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
Web: www.mccampbell.com E-mail: main@mccampbell.com  
Telephone: 877-252-9262 Fax: 925-252-9269

**QC SUMMARY REPORT FOR SW8021B/8015Cm**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0610323

EPA Method: SW8021B/8015Cm		Extraction: SW5030B				BatchID: 24308			Spiked Sample ID: 0610316-037A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) <sup>E</sup>	ND	60	105	100	4.75	102	97.9	4.44	70 - 130	30	70 - 130	30
MTBE	ND	10	95.2	98.1	2.97	100	106	5.79	70 - 130	30	70 - 130	30
Benzene	ND	10	99.2	96.6	2.70	98.8	108	9.24	70 - 130	30	70 - 130	30
Toluene	0.91	10	82.1	75.8	7.21	91.2	107	16.0	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	97.6	98.6	0.996	96.1	103	7.18	70 - 130	30	70 - 130	30
Xylenes	ND	30	90.3	90.3	0	86.3	94.7	9.21	70 - 130	30	70 - 130	30
%SS:	101	10	102	106	4.03	107	112	5.19	70 - 130	30	70 - 130	30

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

**BATCH 24308 SUMMARY**

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0610323-001A	10/16/06 5:30 AM	10/17/06	10/17/06 11:26 AM	0610323-001A	10/16/06 5:30 AM	10/18/06	10/18/06 11:05 PM
0610323-002A	10/16/06 6:30 AM	10/17/06	10/17/06 8:49 PM	0610323-003A	10/16/06 6:00 AM	10/19/06	10/19/06 5:04 AM
0610323-003A	10/16/06 6:00 AM	10/19/06	10/19/06 7:02 PM				

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

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

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

<sup>E</sup> TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.



**McCAMPBELL ANALYTICAL, INC.**

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
 Web: [www.mccampbell.com](http://www.mccampbell.com) E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)  
 Telephone: 877-252-9262 Fax: 925-252-9269

## QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0610323

EPA Method: SW8260B		Extraction: SW5030B				BatchID: 24304			Spiked Sample ID: 0610310-001B			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Methyl-t-butyl ether (MTBE)	ND	10	78	84.8	8.43	94	81.7	14.0	70 - 130	30	70 - 130	30
%SS1:	105	10	93	95	1.59	105	94	11.5	70 - 130	30	70 - 130	30

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

### BATCH 24304 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0610323-001B	10/16/06 5:30 AM	10/19/06	10/19/06 5:42 PM	0610323-002B	10/16/06 6:30 AM	10/17/06	10/17/06 1:52 PM
0610323-003B	10/16/06 6:00 AM	10/19/06	10/19/06 6:25 PM				

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

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

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

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.

06/03/23

**McCAMPBELL ANALYTICAL, INC.**110 2<sup>nd</sup> AVENUE SOUTH, #D7  
PACHECO, CA 94553-5560Website: [www.mccampbell.com](http://www.mccampbell.com)  
Telephone: (925) 798-1620Email: main@mccampbell.com  
Fax: (925) 798-1622Report To: Mark Jonas/Glen Less Bill To: Cambria Environmental Technology

Company: Cambria Environmental Technology

5900 Hollis St. Ste A

Emeryville, CA 94608

E-Mail: [mjonas@cambria-env.com](mailto:mjonas@cambria-env.com)  
[gless@cambria-env.com](mailto:gless@cambria-env.com)

Tele: 510-420-3307

Fax: (510) 420-9170

Project #: 230-0116

Project Name: BO Giin

Project Location: 706 Harrison St. Oakland, CA

Sampler Signature: Muskan Environmental Sampling

**CHAIN OF CUSTODY RECORD****TURN AROUND TIME** RUSH     24 HR     48 HR     72 HR     5 DAYEDF Required?  Yes  No**Analysis Request****Other****Comments**  
Filter  
Samples  
for Metals  
analysis:  
Yes / No

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	MATRIX		METHOD PRESERVED						
		Date	Time		Type	Containers							
MW-1		10-16-06	5:30	4	VSS	X							
MN-2			6:30										
MW-4			6:00	X									
TB		X		1	X	X							
							X						
								X					
									X				
										X			
											X		
												X	
													Hole

Relinquished By:

Date:

Time: Received By:

Relinquished By:

Date:

Time: Received By:

ICE# <u>Q-3</u>	GOOD CONDITION	APPROPRIATE CONTAINERS
	HEAD SPACE ABSENT	
	DECHLORINATED IN LAB	
PRESERVATION	VOAS	O&G

**McCAMPBELL ANALYTICAL, INC.**

 1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WorkOrder: 0610323

ClientID: CETE

EDF

Fax

Email

HardCopy

ThirdParty

**Report to:**

Mark Jonas  
Cambria Env. Technology  
5900 Hollis St, Suite A  
Emeryville, CA 94608

Email: mjonas@cambria-env.com  
TEL: (510) 420-0700 FAX: (510) 420-9170  
ProjectNo: #230-0116; BoGin  
PO:

**Bill to:**

Accounts Payable  
Cambria Env. Technology  
5900 Hollis St, Ste. A  
Emeryville, CA 94608

Requested TAT: 5 days

Date Received: 10/16/2006

Date Printed: 10/16/2006

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0610323-001	MW-1	Water	10/16/06 5:30:00		<input type="checkbox"/>	A	B	A								
0610323-002	MW-2	Water	10/16/06 6:30:00		<input type="checkbox"/>	A	B									
0610323-003	MW-4	Water	10/16/06 6:00:00		<input type="checkbox"/>	A	B									

**Test Legend:**

1	G-MBTEX_W
6	
11	

2	MTBE_W
7	
12	

3	PREDF REPORT
8	

4	
9	

5	
10	

Prepared by: Maria Venegas

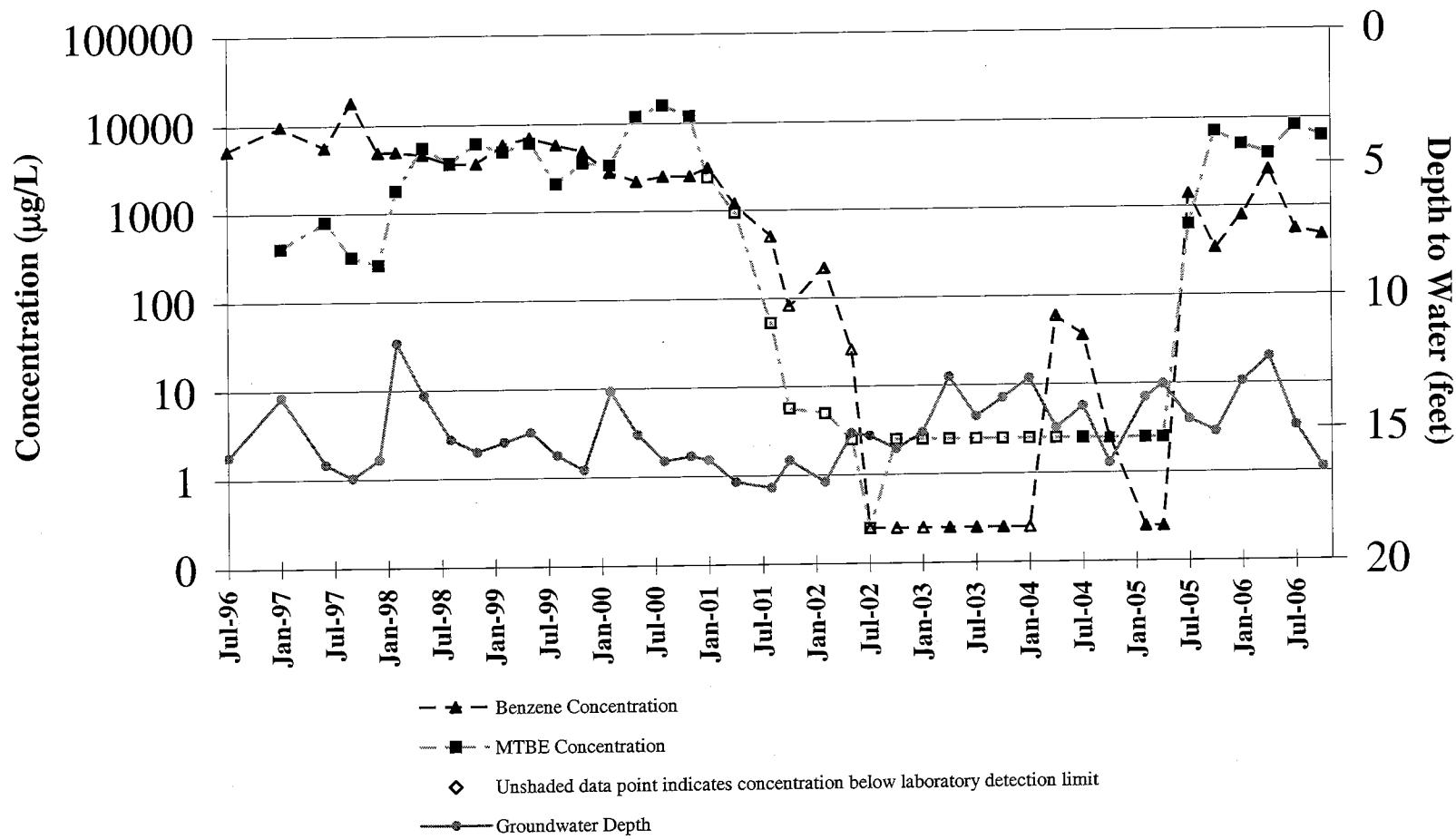
**Comments:**

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.

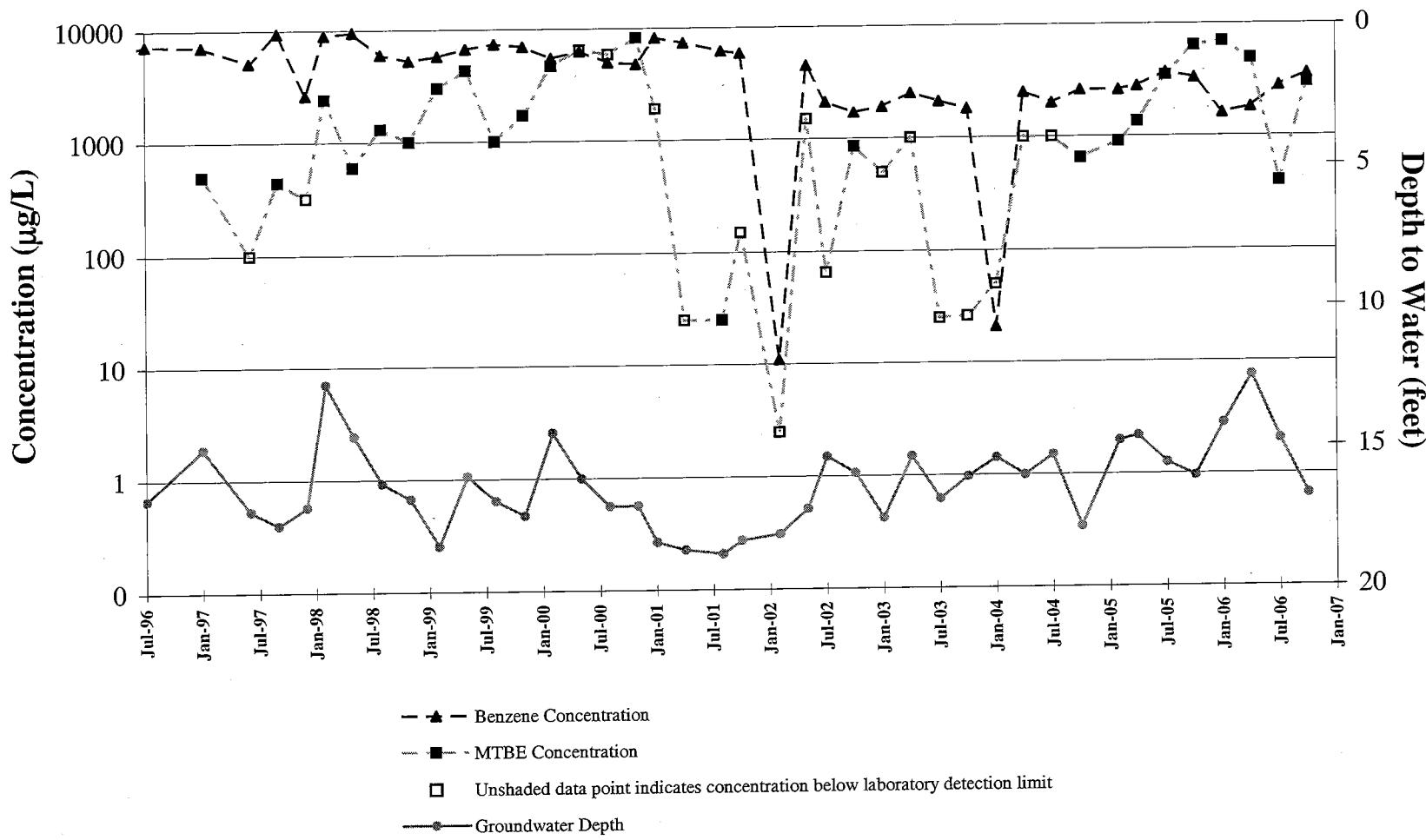
**APPENDIX C**

**Benzene and MTBE Concentration Graphs**

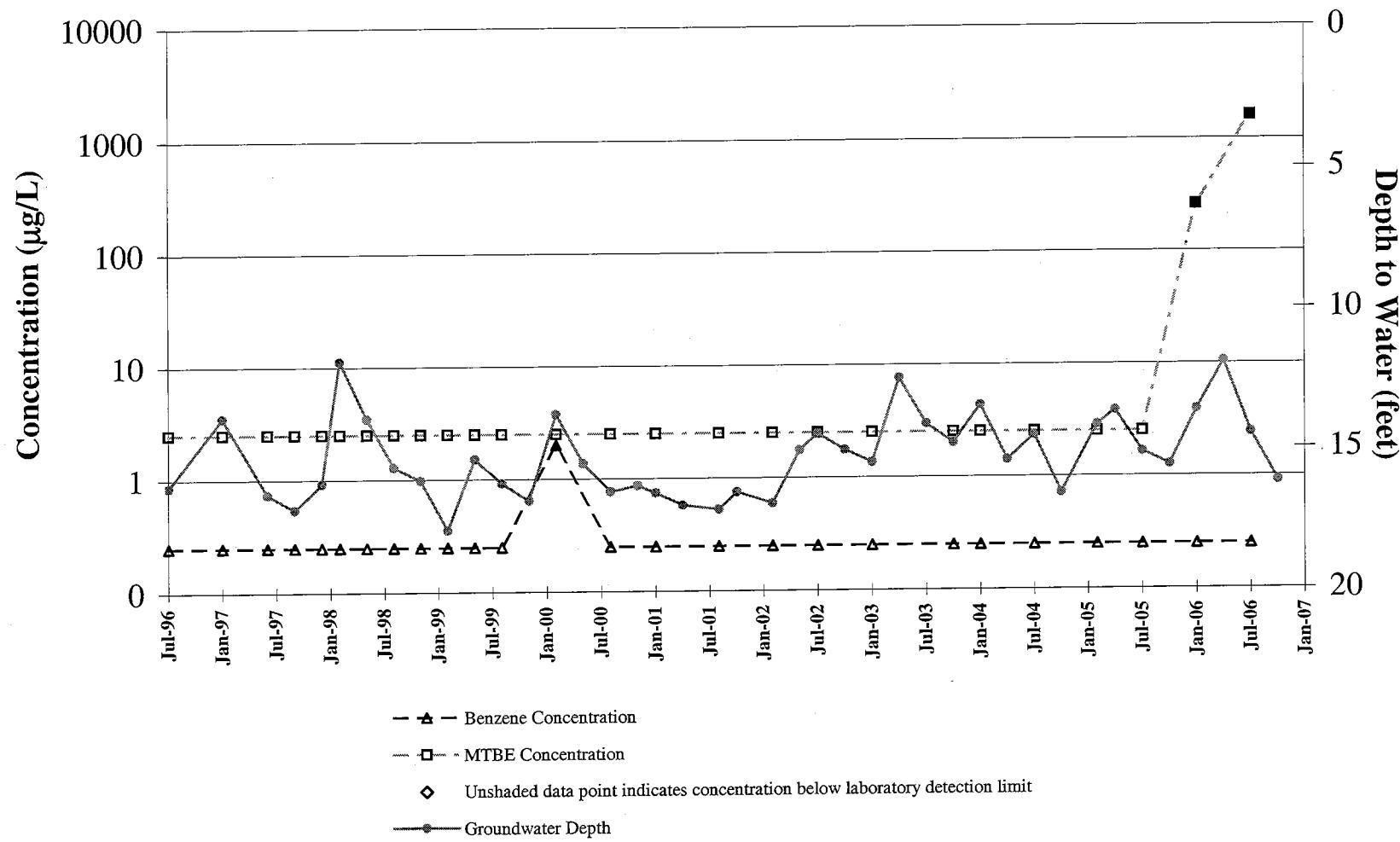
**Monitoring Well MW-1**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



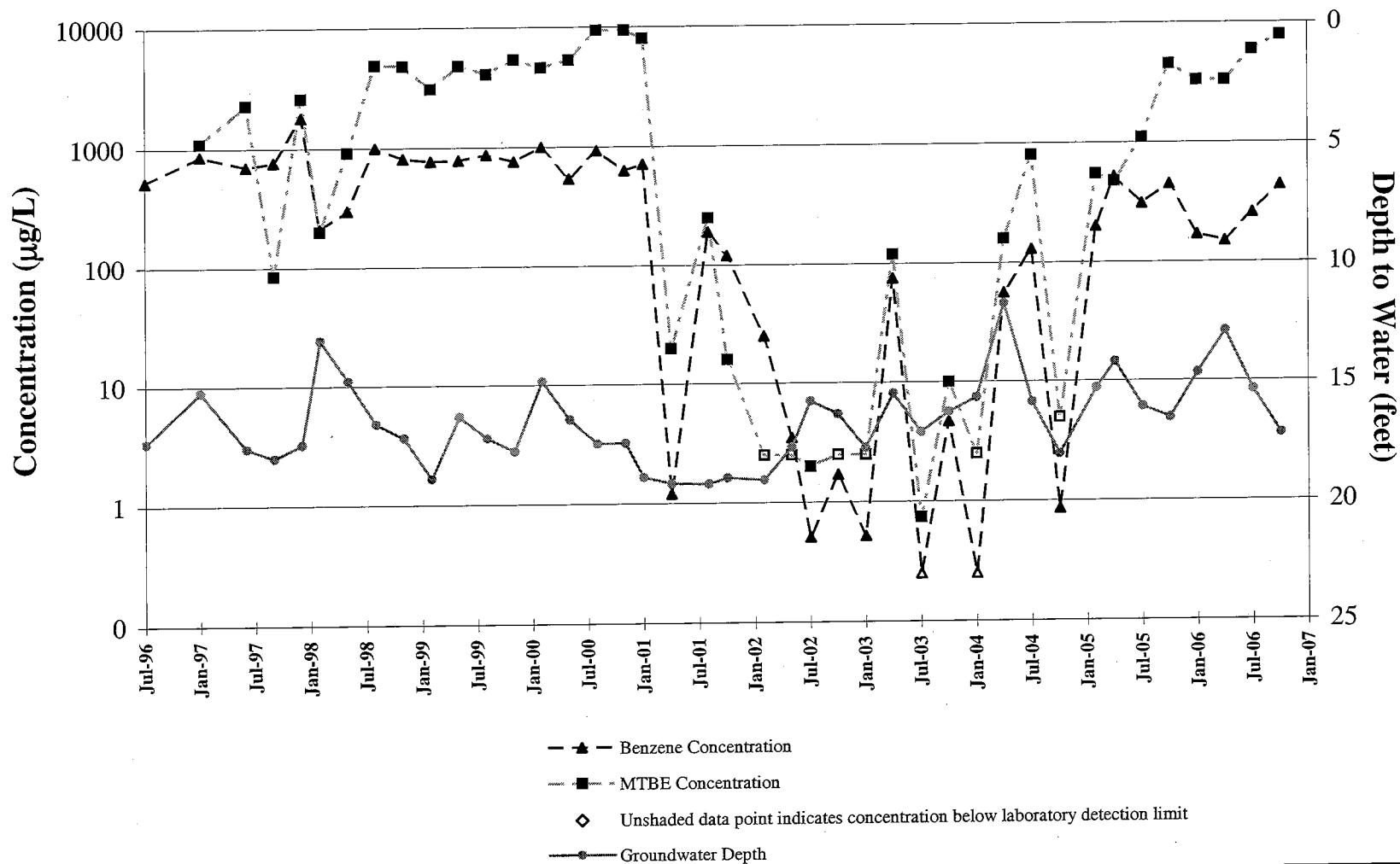
**Monitoring Well MW-2**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



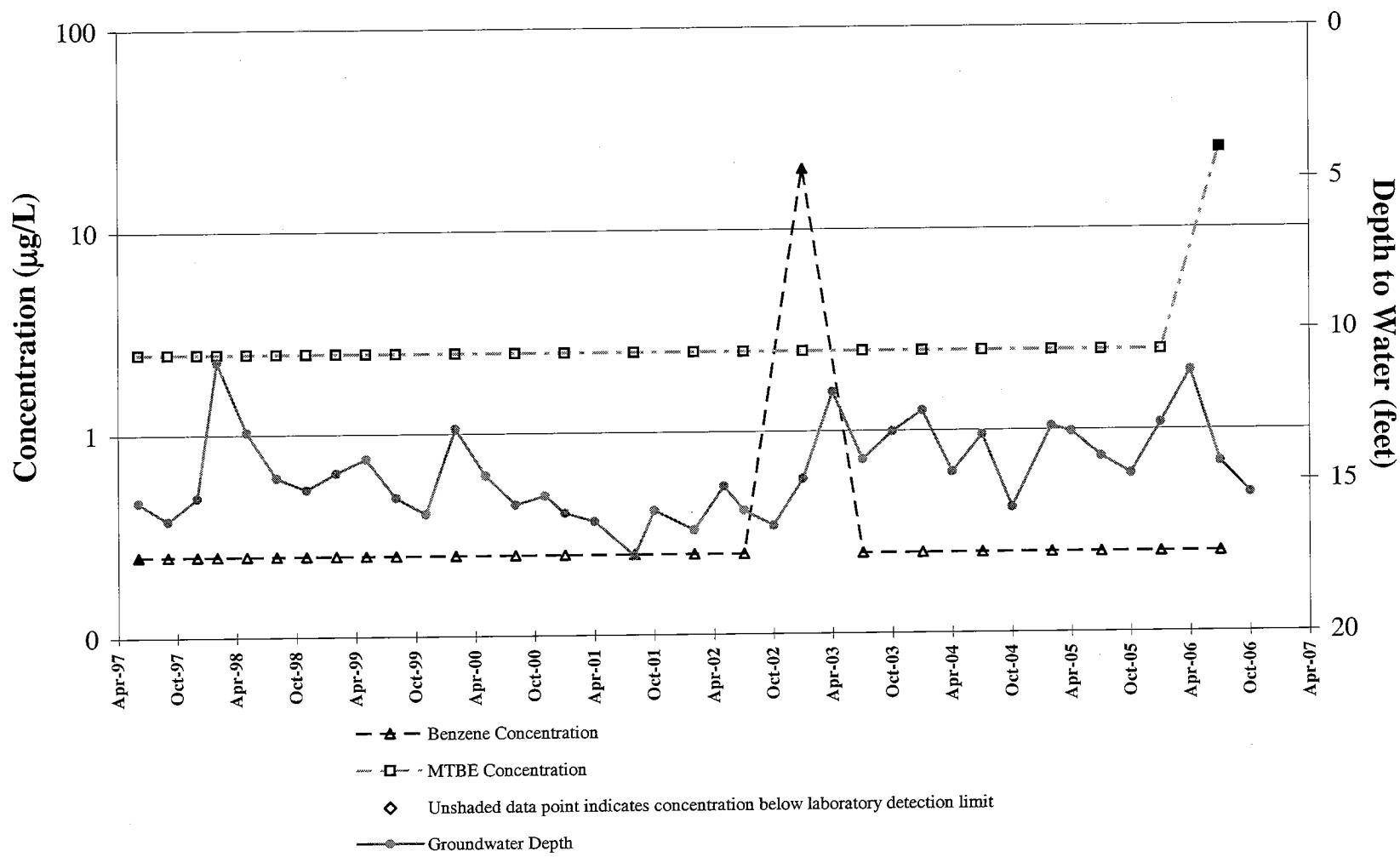
**Monitoring Well MW-3**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



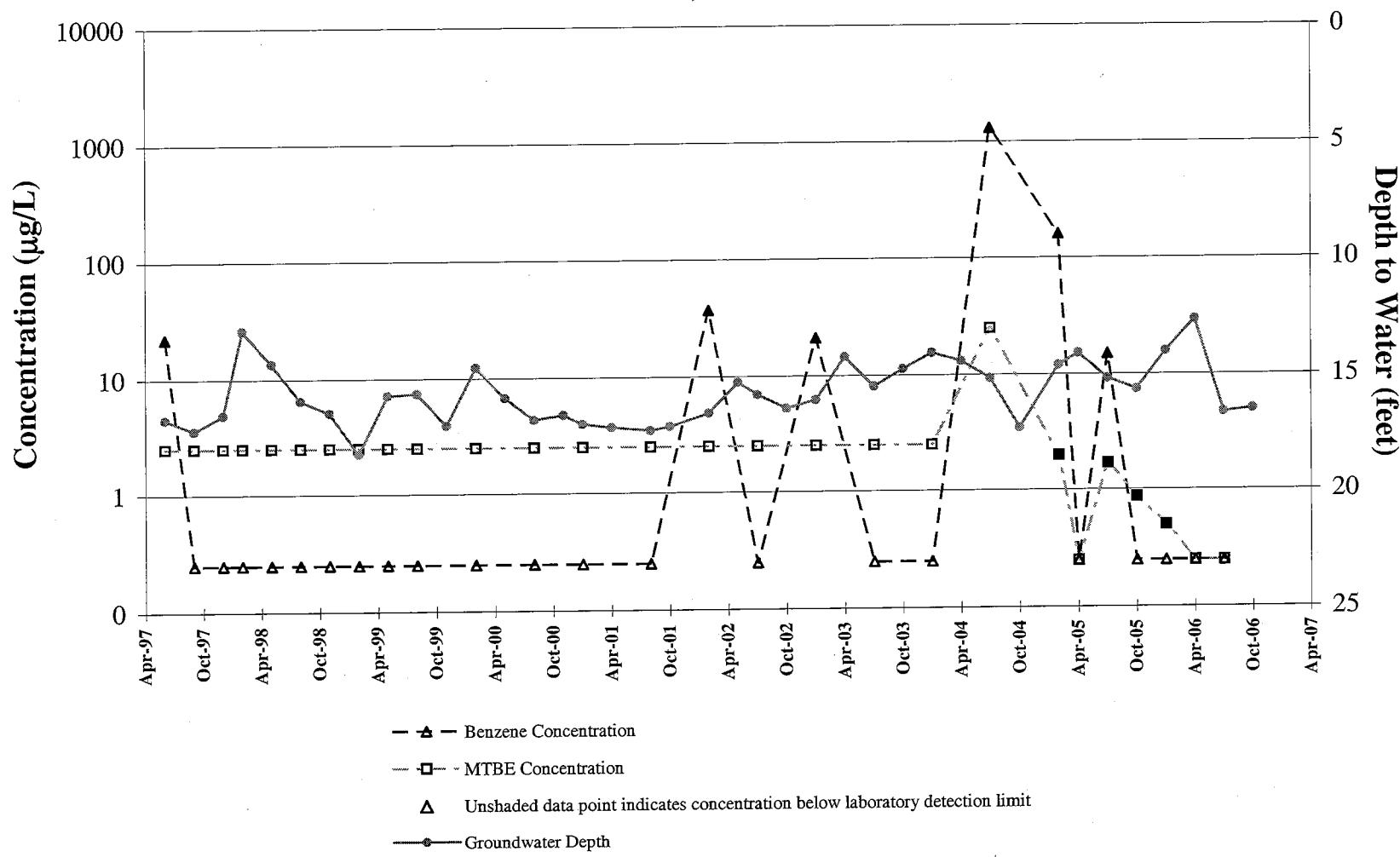
**Monitoring Well MW-4**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



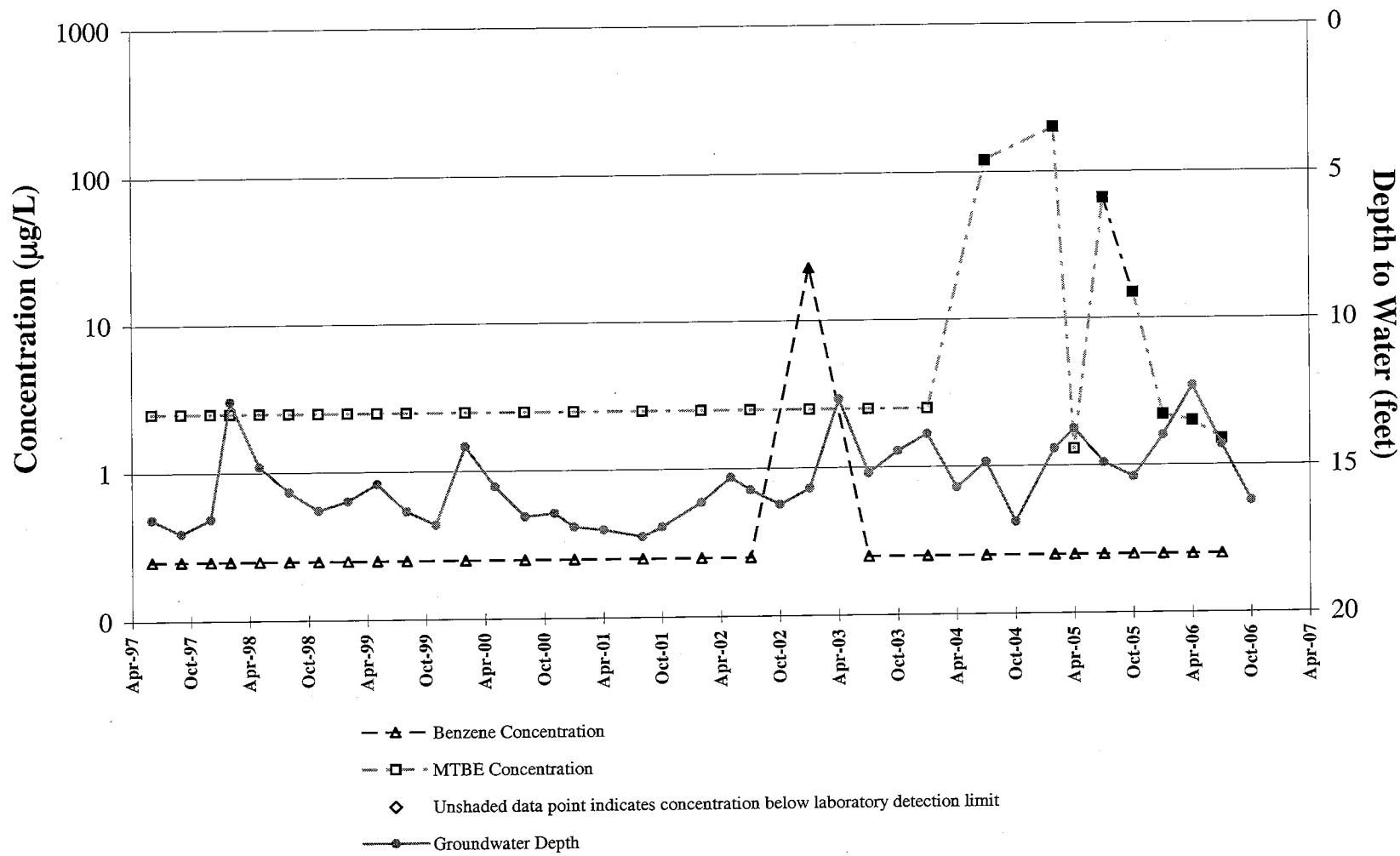
**Monitoring Well MW-5**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



**Monitoring Well MW-6**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



**Monitoring Well MW-7**  
**Benzene and MTBE Concentration Trends**  
**Former ARCO Service Station, 706 Harrison Street, Oakland, CA**



## **APPENDIX D**

### **Former Shell Station Groundwater Monitoring and Analytical Results**

**TABLE ONE**  
**Groundwater Elevation Data**  
**Yee Property**  
**726 Harrison St., Oakland, CA**

Well ID	Date of Measurement	Top of Casing (Relative to Mean Sea Level)	Depth to Water (feet)	Groundwater Elevation (project data)
MW-1	12/15/98	31.95*	17.32	14.63
	3/4/99		15.52	16.43
	6/17/99		16.9	15.05
	8/27/99		17.39	14.56
	12/9/99		18.03	13.92
	3/7/00		15.11	16.84
	6/7/00		16.66	15.29
	10/11/00		18.08	13.87
	1/18/01		17.96	13.99
	4/5/01		16.35	15.60
	7/17/01		16.94	15.01
	10/5/01	28.98	17.35	11.63
	1/18/02		15.40	13.58
	4/11/02		15.76	13.22
	7/8/02		16.17	12.81
	10/9/02		16.72	12.26
	1/29/03		16.26	12.72
	4/11/03		16.56	12.42
	7/18/03		16.42	12.56
	10/9/03		16.88	12.10
	1/28/04		16.10	12.88
	4/7/04		15.43	13.55
	7/23/04		16.41	12.57
	10/12/04		17.73	11.25
	1/29/05		15.02	13.96
	4/28/05		14.99	13.99
	7/19/05		16.36	12.62
	10/18/05		17.82	11.16
	1/23/06		15.80	13.18
	4/12/06		13.24	15.74
	7/10/06		15.64	13.34
	10/16/06		17.51	11.47
MW-2	12/15/98	32.40*	18.03	14.37
	3/4/99		16.11	16.29
	6/17/99		17.72	14.68
	8/27/99		Inaccessible	
	12/9/99		Inaccessible	
	3/7/00		Inaccessible	
	6/7/00		17.67	14.73
	10/11/00		18.91	13.49
	1/18/01		18.66	13.74
	4/5/01		16.97	15.43
	7/17/01		17.54	14.86
	10/5/01	29.44	17.98	11.46
	1/18/02		15.87	13.57
	4/11/02		16.36	13.08
	7/8/02		16.72	12.72
	10/9/02		17.33	12.11
	1/29/03		16.82	12.62
	4/11/03		17.15	12.29
	7/18/03		17.05	12.39
	10/9/03		17.52	11.92
	1/28/04		16.70	12.74
	4/7/04		16.02	13.42
	7/23/04		Inaccessible	
	10/12/04		17.31	12.13
	1/29/05		15.46	13.98
	4/28/05		15.79	13.65
	7/19/05		17.25	12.19
	10/18/05		17.72	11.72
	1/23/05		15.65	13.79
	4/12/06		12.33	17.11
	7/10/06		16.58	12.86
	10/16/06		18.33	11.11

**TABLE ONE**  
**Groundwater Elevation Data**  
**Yee Property**  
**726 Harrison St., Oakland, CA**

Well ID	Date of Measurement	Top of Casing Elevation (Relative to Mean Sea Level)	Depth to Water (feet)	Groundwater Elevation (project data)
MW-3	12/15/98	31.61*	17.26	14.35
	3/4/99		15.47	16.14
	6/17/99		16.92	14.69
	8/27/99		17.40	14.21
	12/9/99		18.01	13.60
	3/7/00		16.15	15.46
	6/7/00		16.85	14.76
	10/11/00		18.07	13.54
	1/18/01		17.89	13.72
	4/5/01		16.21	15.40
	7/17/01		16.90	14.71
	10/5/01		17.32	11.32
	1/18/02		15.35	13.29
	4/11/02		15.82	12.82
	7/8/02		16.15	12.49
	10/9/02		16.67	11.97
	1/29/03		16.19	12.45
	4/11/03		16.49	12.15
	7/18/03		16.42	12.22
	10/9/03		16.80	11.84
	1/28/03		15.94	12.70
	4/7/04		15.28	13.36
	7/23/04		16.15	12.49
	10/12/04		16.63	12.01
	1/29/05		16.15	12.49
	4/28/05		14.94	13.70
	7/19/05		16.25	12.39
	10/18/05		16.76	11.88
MW-4	1/23/06	29.58	15.81	12.83
	4/12/06		13.22	15.42
	7/10/06		15.49	13.15
	10/16/06		17.46	11.18
	12/15/98		32.53*	14.94
	3/4/99		15.88	16.65
	6/17/99		17.14	15.39
	8/27/99		17.65	14.88
	12/9/99		18.28	14.25
	3/7/00		15.41	17.12
	6/7/00		17.09	15.44
	10/11/00		18.33	14.20
	1/18/01		18.23	14.30
	4/5/01		16.69	15.84
	7/17/01		17.32	15.21
	10/5/01		17.71	11.87
	1/18/02		15.85	13.73
	4/11/02		16.14	13.44
	7/8/02		16.56	13.02
	10/9/02		17.09	12.49
	1/29/03		16.65	12.93
	4/11/03		16.93	12.65
	7/18/03		16.78	12.80
	10/9/03		17.26	12.32
	1/28/04		16.38	13.20
	4/7/04		15.64	13.94
	7/23/04		16.58	13.00
	10/12/04		Inaccessible	
	1/29/05		14.90	14.68
	4/28/05		15.18	14.40
	7/19/05		16.48	13.10
	10/18/05		16.99	12.59
	1/23/06		15.09	14.49
	4/12/06		13.49	16.09
	7/10/06		14.99	14.59
	10/16/06		17.29	12.29

**TABLE ONE**  
**Groundwater Elevation Data**  
**Yee Property**  
**726 Harrison St., Oakland, CA**

Well ID	Date of Measurement	Top of Casing Elevation (Relative to Mean Sea Level)	Depth to Water (feet)	Groundwater Elevation (project data)
MW-5	8/29/01	29.06	17.42	11.64
	1/18/02		15.68	13.38
	4/11/02		16.17	12.89
	7/8/02		16.51	12.55
	10/9/02		17.10	11.96
	1/29/03		16.58	12.48
	4/11/03		16.87	12.19
	7/18/03		16.77	12.29
	10/9/03		17.21	11.85
	1/28/04		16.34	12.72
	4/7/04		15.38	13.68
	7/23/04		16.55	12.51
	10/12/04		17.02	12.04
	1/29/05		15.23	13.83
	4/28/05		15.41	13.65
	7/19/05		16.79	12.27
	10/18/05		17.28	11.78
	1/23/06		15.28	13.78
	4/12/06		13.66	15.40
	7/10/06		16.14	12.92
	10/16/06		19.33	9.73

\* Top of casing elevation relative to arbitrary project datum

**TABLE THREE**  
**Summary of Analytical Results for GROUNDWATER Samples**  
**Yee Property**  
**726 Harrison St., Oakland, CA**  
**All results are in parts per billion (ppb)**

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE
<b>MW-1</b>						
7/3/1997	18,000	2,700	350	450	900	7,400
12/5/1998	18,000	1,500	270	260	560	14,000
3/4/1999	44,000	2,800	400	440	960	43,000
6/17/1999	33,000	2,200	250	460	660	25,000
8/27/1999	6,000	1,000	97	190	230	14,000/ 16,000*
12/9/1999	15,000	1,500	160	220	420	17,000
3/7/2000	9,300	1,500	210	66	530	12,000
6/7/2000	26,000**	1,700	< 250	360	580	30,000
10/11/2000	13,000**	1,600	< 100	140	160	19,000
1/18/2001	14,000**	450	< 100	110	230	9,600
4/5/2001	38,000	2,200	180	290	590	35,000
7/17/2001	35,000**	1,800	< 100	300	170	35,000
10/5/2001	17,000	1,500	210	420	790	27,000
1/18/2002	18,000	1,500	120	160	220	22,000
4/11/2002	41,000	2,700	210	340	380	30,000
7/8/2002	36,000	2,800	140	360	300	31,000
10/9/2002	30,000	1,700	310	< 100	< 100	19,000
1/29/2003	26,000	2,400	< 100	310	520	20,000
4/11/2003	22,000	1,700	< 100	270	580	16,000
7/18/2003	40,000	3,200	290	480	830	39,000
10/9/2003	54,000**	3,300	< 130	350	310	49,000
1/28/2004	26,000***	3,000	310	420	800	31,000
4/7/2004	33,000***	2,800	130	310	310	39,000
7/23/2004	56,000***	4,500	< 250	390	< 500	53,000
10/12/2004	25,000***	1,400	< 250	< 250	< 500	25,000
1/29/2005	24,000	1,600	< 100	160	< 200	19,000
4/28/2005	< 10,000	2,000	< 100	160	100	34,000
7/19/2005	37,000	2,100	83	210	230	28,000
10/18/2005	37,000	1,300	< 250	< 250	< 250	23,000
1/24/2006	23,000	780	< 100	160	260	11,000
4/12/2006	11,000	1,500	87	360	670	17,000
7/10/2006	72,000	4,700	< 250	350	< 500	66,000
<b>10/16/2006</b>	<b>26,000</b>	<b>1,600</b>	<b>&lt; 250</b>	<b>330</b>	<b>&lt; 500</b>	<b>22,000</b>

**TABLE THREE**  
**Summary of Analytical Results for GROUNDWATER Samples**  
**Yee Property**  
**726 Harrison St., Oakland, CA**  
**All results are in parts per billion (ppb)**

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE
<b>MW-2</b>						
12/5/1998	< 50	< 0.5	< 0.52	< 0.53	< 0.54	< 5
3/4/1999	Inaccessible due to car parked over well					
6/17/1999	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5
8/27/1999	Inaccessible due to car parked over well					
12/9/1999	Inaccessible due to car parked over well					
3/7/2000	Inaccessible due to car parked over well					
6/7/2000	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
10/11/2000	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
1/18/2001	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
4/5/2001	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
7/17/2001	No longer sampled					
7/10/2006	< 50	< 0.50	< 0.50	< 0.50	< 1.0	4.5
<b>10/16/2006</b>	<b>&lt; 50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>&lt; 0.50</b>	<b>&lt; 1.0</b>	<b>&lt; 0.50</b>

**TABLE THREE**  
**Summary of Analytical Results for GROUNDWATER Samples**  
**Yee Property**  
**726 Harrison St., Oakland, CA**  
**All results are in parts per billion (ppb)**

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE
<b>MW-3</b>						
12/5/1998	6,500***	< 50	50	60	502	3,900
3/4/1999	2,800	< 25	< 25	< 25	< 25	1,600
6/17/1999	1,000	< 10	< 10	< 10	< 10	1,400
8/27/1999	230	< 0.5	0.51	0.5	1	1,500/ 1,600*
12/9/1999	870**	< 0.5	< 0.5	< 0.5	< 0.5	2,100
3/7/2000	150**	4	< 0.5	< 0.5	< 0.5	830
6/7/2000	140**	< 0.5	< 0.5	< 0.5	< 0.5	1,100
10/11/2000	620**	< 5.0	< 5.0	< 5.0	< 5.0	1,500
1/18/2001	1,200**	< 5.0	< 5.0	< 5.0	< 5.0	1,000
4/5/2001	1,700**	< 5.0	< 5.0	< 5.0	< 5.0	1,900
7/17/2001	1,400**	< 10	< 10	< 10	< 10	1,700
10/5/2001	< 1,000	< 10	< 10	< 10	< 10	1,700
1/18/2002	1,600	26	20	16	54	2,100
4/11/2002	2,600	21	16	< 10	21	2,300
7/8/2002	2,800	< 10	< 10	< 10	< 10	3,800
10/9/2002	6,000	< 50	< 50	< 50	< 50	4,900
1/29/2003	1,800	< 10	< 10	< 10	< 10	2,300
4/11/2003	2,900	< 25	< 25	< 25	< 25	3,100
7/18/2003	3,400	< 10	< 10	< 10	< 10	3,200
10/9/2003	2,300	< 10	< 10	< 10	< 10	2,700
1/28/2003	1,700**	< 10	< 10	< 10	< 10	2,900
4/7/2004	2,700**	< 10	< 10	< 10	< 20	3,600
7/23/2004	4,200**	< 25	< 25	< 25	< 50	4,900
10/12/2004	5,000**	< 50	< 50	< 50	< 100	5,900
1/29/2005	< 1,000	< 10	< 10	< 10	< 20	3,100
4/28/2005	< 200	< 2.0	< 2.0	< 2.0	< 2.0	1,300
7/19/2005	4,400	< 20	< 20	< 20	< 40	3,000
10/18/2005	18,000	< 50	< 50	< 50	< 50	6,800
1/24/2006	17,000	< 100	< 100	< 100	< 200	7,000
4/12/2006	< 200	< 2.0	< 2.0	< 2.0	< 2.0	7,800
7/10/2006	11,000	< 100	< 100	< 100	< 200	12,000
10/16/2006	< 10,000	< 100	< 100	< 100	< 100	17,000

**TABLE THREE**  
**Summary of Analytical Results for GROUNDWATER Samples**  
**Yee Property**  
**726 Harrison St., Oakland, CA**  
**All results are in parts per billion (ppb)**

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE
<b>MW-4</b>						
12/5/1998	880	3	< 0.5	< 0.52	< 0.53	950
3/4/1999	3,800	< 25	< 25	< 25	< 25	3,700
6/17/1999	2,700	< 25	< 25	< 25	< 25	2,700
8/27/1999	440	4.7	1.1	0.58	1.3	1,600/ 1,700*
12/9/1999	1,100**	< 2.5	< 2.5	< 2.5	< 2.5	1,700
3/7/2000	< 250	< 2.5	< 2.5	< 2.5	< 2.5	1,700
6/7/2000	530**	8.8	< 2.5	< 2.5	< 2.5	440
10/11/2000	700**	3.9	< 2.5	< 2.5	< 2.5	680
1/18/2001	2,000**	< 2.5	< 2.5	< 2.5	< 2.5	780
4/5/2001	810**	< 2.5	< 2.5	< 2.5	< 2.5	620
7/17/2001	880**	< 2.5	< 2.5	< 2.5	< 2.5	570
10/5/2001	550**	< 2.5	< 2.5	< 2.5	< 2.5	710
1/18/2002	960**	< 5.0	< 5.0	< 5.0	< 5.0	1,300
4/11/2002	1,100**	< 5.0	< 5.0	< 5.0	< 5.0	550
7/8/2002	1,200**	< 5.0	< 5.0	< 5.0	< 5.0	890
10/9/2002	1,300**	< 5.0	< 5.0	< 5.0	< 5.0	880
1/29/2003	530**	< 1.0	< 1.0	< 1.0	< 1.0	190
4/11/2003	690**	< 2.5	< 2.5	< 2.5	< 2.5	310
7/18/2003	1,600**	< 10	< 10	< 10	< 10	1,300
10/9/2003	1,500***	< 10	< 10	< 10	< 10	1,400
1/28/2004	1,200**	< 10	< 10	< 10	< 10	1,900
4/7/2004	1,900**	< 10	< 10	< 10	< 20	2,200
7/23/2004	1,800**	< 10	< 10	< 10	< 20	1,600
10/12/2004	Inaccessible due to car parked over well					
1/29/2005	< 1,300	< 13	< 13	< 13	< 25	3,900
4/28/2005	510	< 1.5	< 1.5	< 1.5	< 1.5	510
7/19/2005	5,400	< 50	< 50	< 50	< 100	2,700
10/18/2005	10,000	< 50	< 50	< 50	< 50	9,000
1/24/2006	10,000	< 100	< 100	< 100	< 200	8,300
4/12/2006	1,900	< 10	< 10	< 10	< 20	2,200
7/10/2006	750	5.4	< 5.0	< 5.0	< 10	790
10/16/2006	2,400	< 10	< 10	< 10	< 10	2,200

**TABLE THREE**  
**Summary of Analytical Results for GROUNDWATER Samples**  
**Yee Property**  
**726 Harrison St., Oakland, CA**  
**All results are in parts per billion (ppb)**

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE
<b>MW-5</b>						
8/29/2001	14,000	1,300	470	230	800	14,000
1/18/2002	24,000	3,200	1,300	390	1,500	5,700
4/11/2002	23,000	2,700	980	38	950	4,300
7/8/2002	19,000	3,300	25	360	1,100	2,100
10/9/2002	24,000	2,800	990	360	820	2,400
1/29/2003	17,000	2,100	1,400	380	1,400	< 250
4/11/2003	26,000	2,900	2,200	590	2,200	630
7/18/2003	26,000	3,500	1,700	480	1,300	1,300
10/9/2003	27,000	3,800	1,900	510	1,700	1,200
1/28/2004	29,000	4,800	2,900	770	2,300	3,300
4/7/2004	23,000	4,400	2,700	720	2,200	1,700
7/23/2004	29,000	5,200	2,200	810	1,400	2,200
10/12/2004	26,000	4,300	2,000	670	1,300	2,200
1/29/2005	29,000	4,600	2,500	750	1,400	2,200
10/9/2003	5,700**	500	28	53	35	3,600
1/28/2004	17,000***	1,600	90	250	280	9,700
4/7/2004			No longer sampled			
1/24/2006	21,000	1,800	1,200	270	820	13,000
7/10/2006	45,000	3,700	2,600	650	1,800	23,000
<b>10/16/2006</b>	<b>66,000</b>	<b>4,200</b>	<b>3,300</b>	<b>800</b>	<b>2,100</b>	<b>35,000</b>
ESL	100	1	40	30	20	1,800

Notes:

Most current data is in **Bold**

\* Indicates EPA Method 8260

Concentrations separated by a "/" indicate results by both EPA Methods 8020/8260

ESL = Environmental screening levels presented in the "Screening For Environmental Sites With Contaminated Soil and Groundwater (February 2005)" document prepared

Non-detectable concentrations noted by the less than sign (<) followed by the lab method reporting limit.