

R0257

Alameda County  
JUL 19 2004  
Environmental Health

**SECOND QUARTER 2004  
GROUNDWATER MONITORING**

**ABE Petroleum LLC  
17715 Mission Boulevard  
Hayward, California 94539**

**Prepared for  
Mr. Paul Garg  
ABE Petroleum LLC**

**Prepared by  
Sierra Environmental, Inc.**

**July 12, 2004  
Project 03-103.07**



**Sierra Environmental, Inc.**  
*Environmental Consultants*

July 12, 2004  
Project 03-103.07

Mr. Paul Garg  
ABE Petroleum LLC  
33090 Mission Boulevard  
Union City, California 94587

Alameda County  
JUL 19 2004  
Environmental Health

**Subject: Report for Second Quarter 2004 Groundwater Monitoring, ABE Petroleum LLC, 17715 Mission Boulevard, Hayward, California**

**Dear Mr. Garg:**

Sierra Environmental, Inc. (Sierra) is pleased to present this report summarizing the results of the second quarter 2004 groundwater monitoring at the subject location, hereafter, referred to as Site. Figure 1 shows the Site location. The groundwater monitoring was concurred by Alameda County Health Care Services (ACHCS) in a letter dated February 16, 2000, as result of gasoline impact to groundwater beneath the Site.

On June 24, 2004, Sierra obtained and recorded groundwater data, and collected groundwater samples from three groundwater monitoring wells (MW1 through MW3) at the Site for chemical analysis. Sierra submitted the samples to Entech Analytical Labs, Inc. (Entech) of Santa Clara, California for chemical analysis. Entech is an independent State-certified analytical laboratory (# 2346).

## **BACKGROUND**

On September 16, 1997, Balch Petroleum Contractors & Builders, Inc. (Balch) of Milpitas, California, removed one 2,000-gallon, two 6,000-gallon, one 10,000-gallon single-wall steel gasoline, and one 500-gallon single-wall steel waste oil USTs from the Site. Former UST locations are shown in Figure 2. No hole or damage was observed in the tanks. No groundwater was encountered in the tank excavations. After UST removal, Sierra collected soil samples from the tank excavations for chemical analysis.

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980 W. Taylor Street  
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Phone (408) 971- 6758  
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Up to 2,300 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHG) was detected in the soil samples collected from beneath the tanks at approximately 14 feet below ground surface (bgs). The soil sample locations are shown in Figure 2.

On August 14, 2000, Sierra drilled three exploratory borings and converted them to groundwater monitoring well MW1 through MW3. The wells are approximately 35 feet deep. Sierra collected soil and groundwater samples from the borings/wells for chemical analysis. The analytical results showed up to 720 ppm TPHG, 2.2 ppm benzene, and 3.4 ppm MTBE in the soil samples. Up to 290000 ppb TPHG, 10000 ppb benzene, and 4300 ppb MTBE were detected in the groundwater samples. Gasoline constituents were detected in groundwater samples collected from all three monitoring wells. Groundwater monitoring well locations are shown on Figure 3.

On March 30, 2001, Sierra performed first quarter 2001 groundwater monitoring at the Site. The field and analytical results are presented in Table I and II. Groundwater was measured at approximately 20 to 21 feet from top of the well casing (TOC) at the Site with a northwesterly flow direction.

On June 22, 2001, Sierra performed second quarter 2001 groundwater monitoring at the Site. Groundwater levels were measured at approximately 22 to 23 feet below TOC with a northwesterly flow direction during this monitoring event.

On September 20, 2001, Sierra performed third quarter 2001 groundwater monitoring at the Site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 24 to 25 feet below TOC with a northwesterly flow direction during this monitoring event.

On December 27, 2001, Sierra performed fourth quarter 2001 groundwater monitoring at the Site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 22.59 to 23.82 feet below TOC with a northwesterly flow direction during this monitoring event.

On September 24, 2002, Sierra performed third quarter 2002 groundwater monitoring at the Site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 23.69 to 24.89 feet below TOC with a northwesterly flow direction during this monitoring event.

On December 17, 2002, Sierra performed fourth quarter 2002 groundwater monitoring at the Site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 22.75 to 23.99 feet below TOC with a northwesterly flow direction during this monitoring event.

On April 2, 2003, Sierra performed first quarter 2003 groundwater monitoring at the Site. Depth of groundwater was measured to the TOC. Groundwater levels were measured

at approximately 21.25 to 22.32 feet below TOC with a westerly flow direction during this monitoring event.

On June 12, 2003, Sierra performed second quarter 2003 groundwater monitoring at the site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 20.64 to 20.94 feet below TOC with a westerly flow direction during this monitoring event.

Sierra prepared soil and Groundwater investigation plan and addendum to the plan dated May 27 and September 10, 2003 respectively for the site. The Addendum to the plan dated September 10, 2003 is being reviewed by ACHCS.

On September 29, 2003, Sierra performed third quarter 2003 groundwater monitoring at the site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 22.95 to 24.15 feet below TOC with a westerly flow direction during this monitoring event.

On December 4, 2003, Sierra performed fourth quarter 2003 groundwater monitoring at the site. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 23.70 to 24.91 feet below TOC with a westerly flow direction during this monitoring event.

On March 9, 2004, Sierra performed first quarter 2004 groundwater monitoring at the Site. Sierra's field personnel measured the groundwater levels at MW1 through MW3 (Figure 3) using an electronic sounder. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 19.80 to 20.20 feet below TOC with a northwesterly flow direction during this monitoring event. Table I presents the groundwater measurement data.

## **GROUNDWATER MONITORING**

On June 24, 2004, Sierra performed the second quarter 2004 groundwater monitoring at the Site. Sierra's field personnel measured the groundwater levels at MW1 through MW3 (Figure 3) using an electronic sounder. Depth of groundwater was measured to the TOC. Groundwater levels were measured at approximately 21.44 to 22.95 feet below TOC with a northwesterly flow direction during this monitoring event. Table I presents the groundwater measurement data.

Sierra's field personnel purged the wells using bailers. pH, temperature, and electrical conductivity of groundwater was recorded during the purging activities to affirm that groundwater in the wells have stabilized. After completion of the purging, groundwater samples MW-1 through MW-3 were collected from the wells. After collection, the groundwater from each well was transferred into clean volatile organic analysis (VOA)

vials. The VOAs were sealed with Teflon-septum screw caps, labeled, placed in a cooler, and delivered to Entech with chain-of-custody documentation.

All sampling and measurement equipment were washed with Liqui-Nox® (a phosphate free laboratory detergent), and rinsed with tap water at each measurement and sampling interval. Purged and wash water was stored in 55-gallon drums at a designated location at the Site. Sierra's quality assurance/quality control (QA/QC) protocol is presented in Appendix A.

## **CHEMICAL ANALYSIS**

The samples were analyzed for TPHG using the United States Environmental Protection Agency (EPA) modified method 8015, and for benzene, toluene, ethyl benzene, and total xylenes (BTEX), and for the fuel oxygenates using EPA method 8260B. Copies of certified analytical results and chain-of-custody documentation are presented in Appendix B. Copies of the field notes are presented in Appendix C.

Sierra has submitted the analytical results to the State Water Board via Geotracker.

## **ANALYTICAL RESULTS**

Table II presents Summary of the analytical results.

## **CONCLUSION AND RECOMMENDATIONS**

The analytical results obtained during this monitoring event show a generally decreasing trend in concentrations of the gasoline constituents in the groundwater beneath the Site.

Sierra recommends proceeding with the soil and groundwater investigation, and corrective action at the site as soon as possible. Sierra is awaiting a response from ACHSA regarding its addendum to work plan for soil and groundwater investigation at the site. Sierra also recommends continuing with quarterly groundwater monitoring at the site for the remaining quarters of 2004.

## **LIMITATIONS**

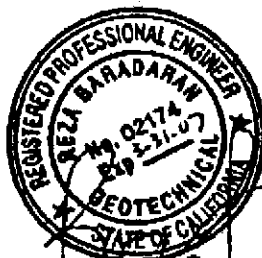
The content and conclusion provided by Sierra in this report are based on information collected during its assessment/monitoring, which include, but are not limited to field observations and analytical results for the groundwater samples collected at the Site.

Sierra assumes that the samples collected and laboratory results are reasonably representative of the whole Site, which may not be the case at unsampled areas.

This assessment/monitoring was performed in accordance with generally accepted principles and practices of environmental engineering and assessment in Northern California at the time of the work. This report presents our professional opinion based on our findings, technical knowledge, and experience working on similar projects. No warranty, either expressed or implied, is made. The conclusions presented are based on the analytical results and current regulatory requirements. We are not responsible for the impact of any changes in environmental standards or regulations in the future.

Please feel welcome to call us if you have questions.

**Very Truly Yours,**  
**Sierra Environmental, Inc.**



**Reza Baradaran, PE, GE**  
**Principal**

A handwritten signature in black ink, appearing to read "Reza Baradaran".

**Mitch Hajiaghai, REA II, CAC**  
**Principal**

- Attachments:
- Table I - Groundwater Elevation Data
  - Table II - Analytical Results for Groundwater Samples
  - Figure 1 - Site Location Map
  - Figure 2 - Former UST and Soil Sample Locations
  - Figure 3 - Groundwater Monitoring Well Locations
  - Appendix A - QA/QC Protocol
  - Appendix B - Certified Analytical Results and Chain-of-Custody Documentation
  - Appendix C - Field Notes

cc: Mr. Scott O. Seery, ACHCS (1 Copy)

**TABLE I  
GROUNDWATER ELEVATION DATA**

Well ID	Measurement Date	Well Casing Diameter (in)	Well Casing Elevation (ft)	Depth to Water <sup>1</sup> (ft)	Water Table <sup>2</sup> Elevation (ft)
MW1	8-18-00	2	99.46	20.32	79.14
	3-30-01			20.30	79.16
	6-22-01			21.91	77.55
	9-20-01			23.56	75.90
	12-27-01			22.59	76.87
	9-24-02			23.69	75.77
	12-17-02			22.75	76.71
	4-2-03			21.15	78.31
	6-12-03			20.64	78.82
	9-29-03			22.95	76.51
	12-04-03			23.70	75.76
	03-09-04			19.80	79.66
	6-24-04			21.44	78.02
MW2	8-18-00	2	100.58	21.55	79.03
	3-30-01			21.55	79.03
	6-22-01			23.15	77.43
	9-20-01			24.78	75.80
	12-27-01			23.82	76.76
	9-24-02			24.89	75.69
	12-17-02			23.99	76.59
	4-2-03			22.32	78.26
	6-12-03			21.84	78.74
	9-29-03			24.15	76.43
	12-04-03			24.91	75.67
	03-09-04			21.05	79.53
	6-24-04			22.95	77.63
MW3	8-18-00	2	99.69	20.68	79.01
	3-30-01			20.68	79.01
	6-22-01			22.31	77.38
	9-20-01			23.92	75.77
	12-27-01			22.95	76.74
	9-24-02			24.03	75.66
	12-17-02			23.09	76.60
	4-2-03			21.46	78.23
	6-12-03			20.99	78.70
	9-29-03			23.30	76.39
	12-04-03			24.05	75.64
	03-09-04			20.20	79.49
	6-24-04			22.11	77.58

1. Depths to groundwater were measured to the top of the well casings
2. Water table elevations were measured in relation to an assumed datum (100') relative elevation



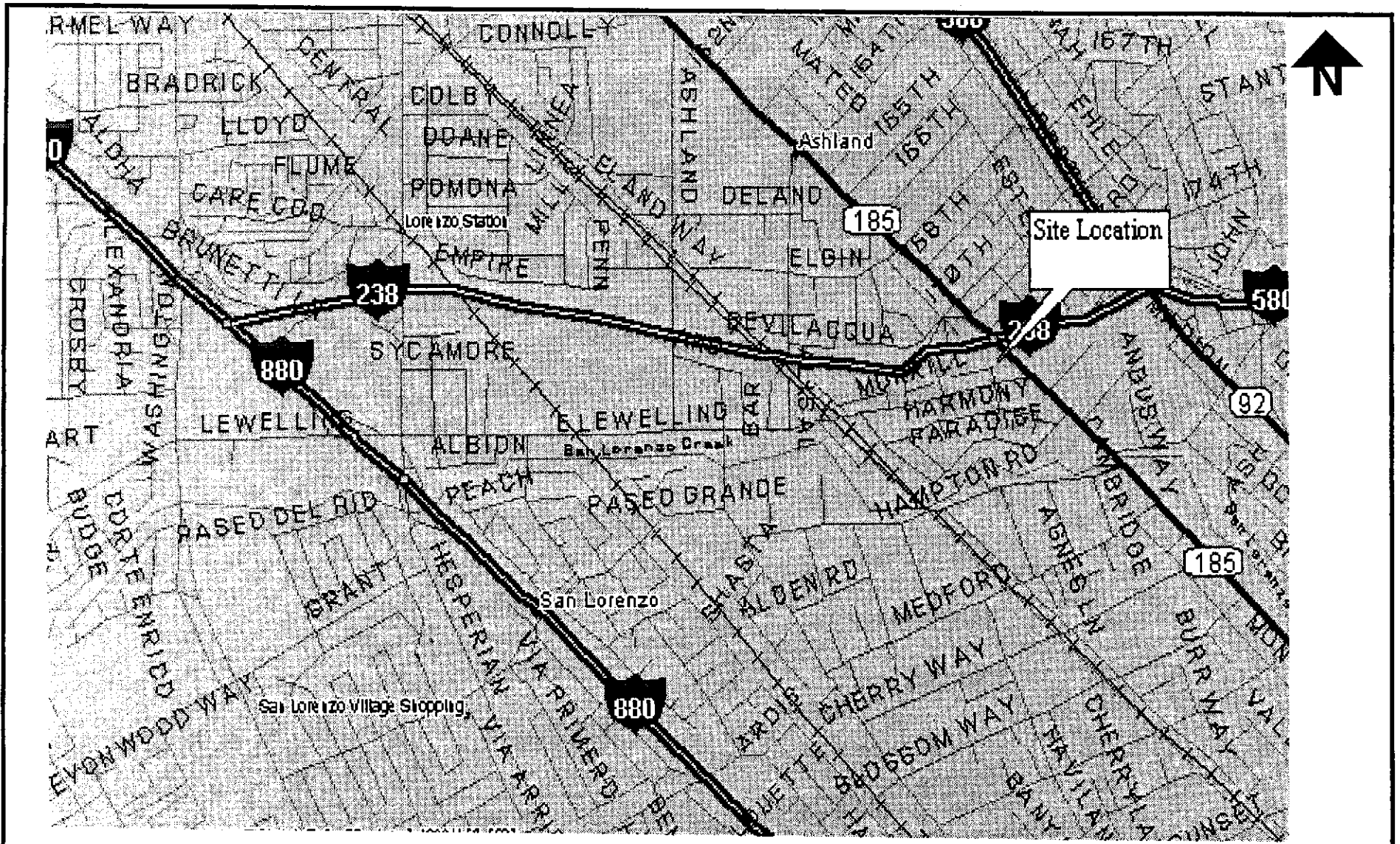
**TABLE II  
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES**

Sample ID	Sample Date	Sample Location	TPHG <sup>1</sup> ppb <sup>2</sup>	Benzene ppb	Toluene ppb	Ethylbenzene ppb	Xylenes ppb	MTBE <sup>2</sup> ppb
MW-1	8-18-00	MW1	280,000	10,000	16,000	11,000	49,000	4,000
*	3-30-01		98,000	8,600	14,000	6,300	26,000	7,600
*	6-22-01		110,000	7,500	12,000	5,700	24,000	3,800
*	9-20-01		93,000	8,700	11,000	6,300	27,000	4,600
*	12-27-01		140,000	7,700	11,000	6,500	28,000	7,700
*	9-24-02		110,000	4,600	4,000	4,000	18,000	3,400
*	12-17-02		110,000	6,600	6,700	5,400	23,000	2,900
*	4-2-03		89,000	4,800	6,000	4,600	20,000	5,900
*	6-12-03		69,000	4,100	4,300	3,900	17,000	4,700
*	9-29-03		96,000	7,000	7,700	5,100	22,000	6,200
*	12-04-03		110,000	5,800	5,900	4,300	18,000	4,500
*	03-09-04		130,000	5,900	9,700	4,900	22,000	6,000
*	6-24-04		48,000	5,800	7,500	4,000	18,000	4,000
MW-2	8-18-00		MW2	290,000	3700	990	7,300	26,000
*	3-30-01	47,000		3,200	470	4,500	13,000	3,100
*	6-22-01	57,000		2,500	350	4,200	12,000	1,800
*	9-20-01	42,000		2,300	230	4,300	12,000	2,200
*	12-27-01	70,000		2,900	390	4,800	14,000	2,400
*	9-24-02	110,000		1,600	200	3,400	9,100	2,500
*	12-17-02	66,000		2,400	340	4,600	13,000	1,900
*	4-2-03	29,000		1,000	130	2,300	5,100	2,000
*	6-12-03	8,700		380	52	790	2,000	2,200
*	9-29-03	52,000		1,700	200	4,500	9,800	2,300
*	12-04-03	66,000		1,500	210	4,500	9,200	1,900
*	03-09-04	61,000		1,500	2,000	4,200	8,500	2,200
*	6-24-04	29,000		1,200	72	3,100	6,000	2,100

**TABLE II  
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES  
CONTINUED**

Sample ID	Sample Date	Sample Location	TPHG <sup>1</sup> ppb <sup>2</sup>	Benzene ppb	Toluene ppb	Ethylbenzene ppb	Xylenes ppb	MTBE <sup>2</sup> ppb
MW-3	8-18-00	MW3	46,000	3,200	550	3,700	14,000	2,200
*	3-30-01		30,000	3,300	340	2,800	9,100	4,700
*	6-22-01		35,000	4,000	340	2,900	7,600	4,100
*	9-20-01		30,000	3,800	260	2,500	6,600	5,300
*	12-27-01		39,000	4,400	340	3,000	6,700	5,500
*	9-24-02		53,000	4,100	270	3,100	6,600	6,400
*	12-17-02		40,000	3,600	240	2,200	5,700	5,200
*	4-2-03		24,000	2,000	130	1,800	3,300	3,000
*	6-12-03		26,000	2,700	180	2,000	4,200	5,500
*	9-29-03		39,000	4,000	220	3,200	5,300	4,800
*	12-04-03		40,000	3,200	180	2,200	4,300	4,400
*	03-09-04		39,000	3,100	160	2,100	4,400	4,000
*	6-24-04		21,000	3,000	110	2,300	3,800	3,400

1. TPHG = Total Petroleum Hydrocarbons as Gasoline
  2. MTBE = Methyl Tertiary Butyl Ether
  3. ppb = Parts Per Billion ( $\mu\text{g}/\text{liter}$ )
  4. ND = Not Detected
- \* The Sample was analyzed for Fuel Oxygenates using EPA Method 8260B. Analytical result is for MTBE



Source: Hayward Quadrangle, California, 7.5-Minute Series (Topographic)



**SIERRA ENVIRONMENTAL, INC.**  
*Environmental Consultants*  
 980 W. Taylor St., San Jose, CA 95126  
 Phone [408]971-6758 • Fax [408] 971-6759

**Site Location Map**  
**Second Quarter 2004 Groundwater Monitoring**  
**ABE Petroleum LLC**  
 17715 Mission Boulevard • Hayward • California

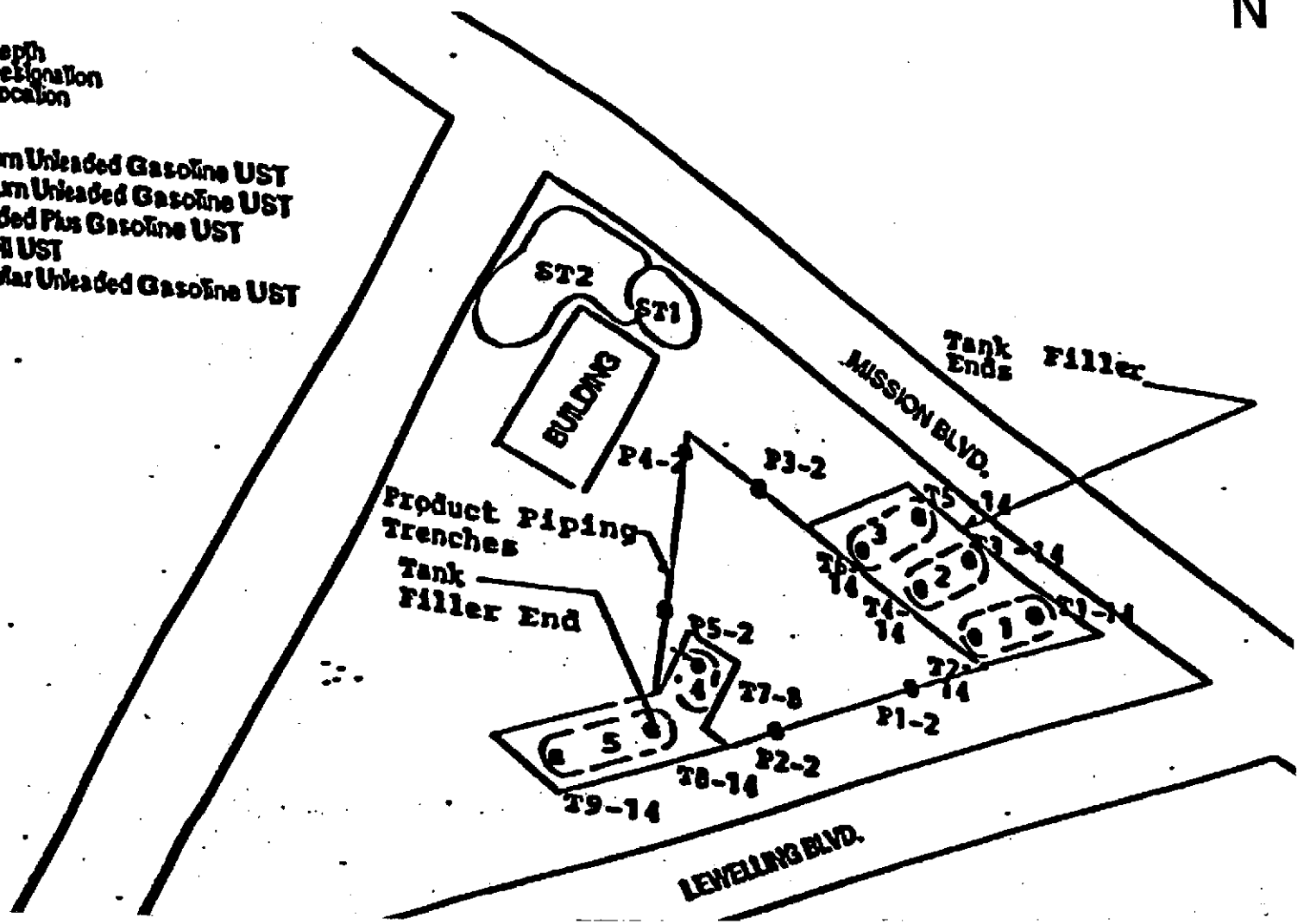
**FIGURE**  
**1**  
 July 12, 2004  
 Project 03-103.07

**LEGEND**

**P T1-14**



- 1** - 2,000-gallon Premium Unleaded Gasoline UST
- 2** - 6,000-Gallon Premium Unleaded Gasoline UST
- 3** - 6,000-Gallon Unleaded Plus Gasoline UST
- 4** - 500-gallon Waste Oil UST
- 5** - 10,000-gallon Regular Unleaded Gasoline UST



Approximate Scale: 1"=30'






**SIERRA ENVIRONMENTAL, INC.**  
Environmental Consultants

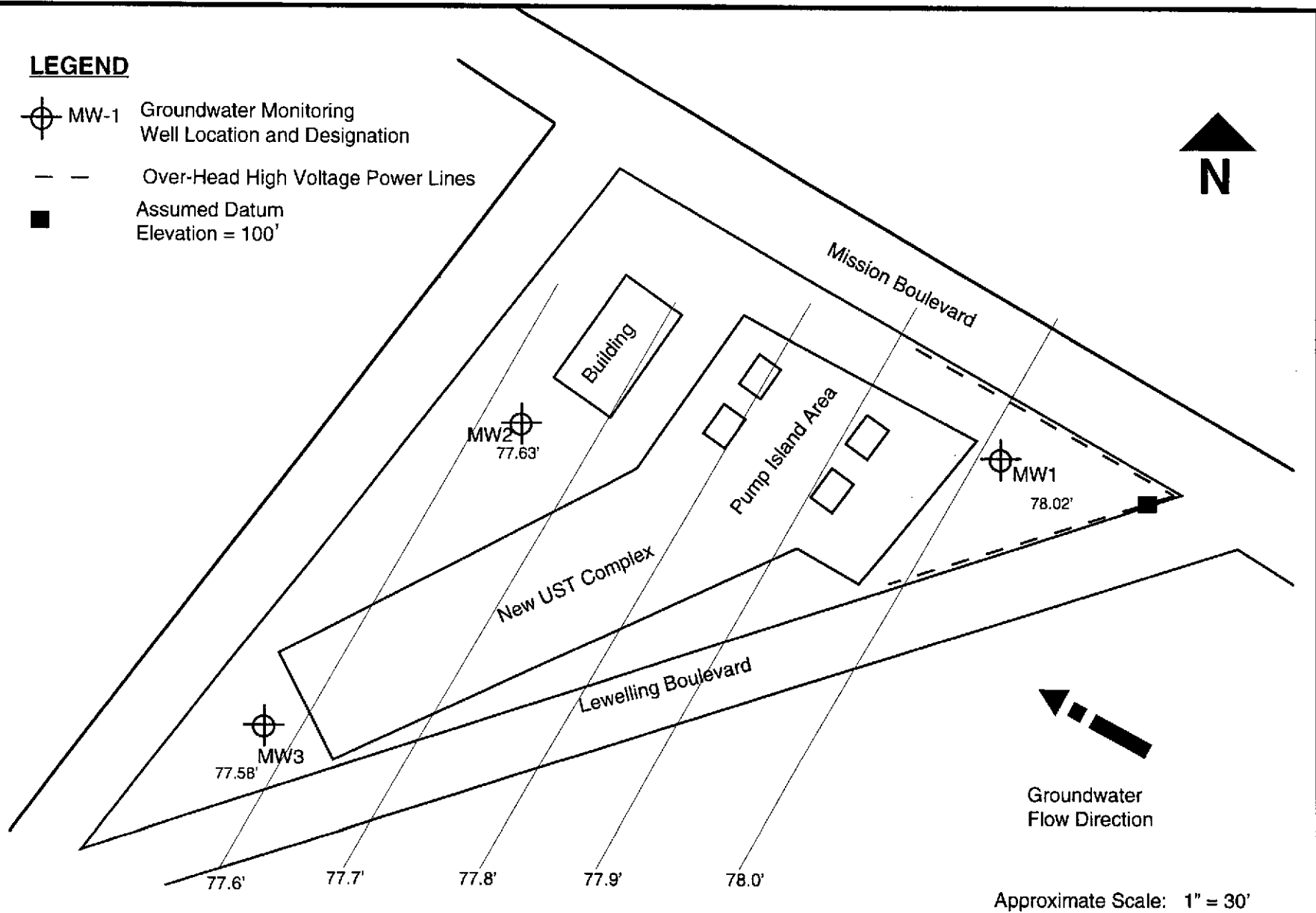
980 W. Taylor Street, San Jose, CA 95126  
Phone [408]248-3700 • Fax [408] 248-4700

**Former UST and Soil Sample Locations**  
**Second Quarter 2004 Groundwater Monitoring**  
**ABE Petroleum LLC**  
**17715 Mission Boulevard • Hayward • California**

**FIGURE**  
**2**  
July 12, 2004  
Project 03-103.07

**LEGEND**

-  MW-1 Groundwater Monitoring Well Location and Designation
-  Over-Head High Voltage Power Lines
-  Assumed Datum Elevation = 100'



Approximate Scale: 1" = 30'



**SIERRA ENVIRONMENTAL, INC.**  
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**Groundwater Monitoring Well Locations**

**Second Quarter 2004 Groundwater Monitoring  
ABE Petroleum LLC**

**17715 Mission Boulevard • Hayward • California**

**FIGURE**

**3**

July 12, 2004  
Project 03-103.07

**Appendix A**  
**QA/QC PROTOCOL**

## **QA/QC PROTOCOL**

### **Groundwater Level and Well Depth Measurements**

Groundwater level and well depths are measured using electrical sounder. An electrical sounder consists of a reel, two-conductor cable, a water sensor, and a control panel with a buzzer. To measure groundwater level, the sensor is lowered into a well. A low current circuit is completed when the sensor makes contact with water. The current in the circuit is then amplified and activates a buzzer which produce an audible signal. Cable markings are divided at 0.05-foot increments. Well depths are measured to the nearest 0.01 foot. Groundwater levels are measured before and after sample collection to ensure data accuracy.

### **Well Purging**

Low flow submersible electrical pumps or bailers are used to purge groundwater monitoring wells. Approximately 3 to 5 well casing volume of water is removed from the well as a measure to stabilize natural, and representative groundwater in each well. pH, electrical conductivity, and temperature of the purged water is measured and recorded at approximately each casing volume interval. Purge water is stabilized when pH is recorded within 0.5 unit, electrical conductivity is within 5 percent, and temperature is within 1.0 degree Celsius.

### **Groundwater Sampling**

Groundwater samples are transferred into appropriate containers provided by certified analytical laboratories. The containers include proper preservatives, and labels with appropriate project information. Groundwater is transferred into the containers with as little agitation as possible. After collection, containers are sealed and checked to ensure that no head space or air bubbles are present in the sample.

After collection, if required, samples are kept in a cooler to be delivered to analytical laboratory with chain-of-custody documentation.

### **Equipment Decontamination**

All sampling equipment are washed with Liqui-Nox® (a phosphate free laboratory detergent), and rinsed with tap water before each sampling event, and at each sampling interval. To reduce the risk of cross contamination, wells which have shown lower levels of contamination historically are purged and sampled first.

## **Analytical Procedures**

Samples are analyzed by an accredited State-certified analytical laboratory using procedures prescribed by United State Environmental Protection Agency (EPA) and other Federal, State, and Local agencies. At minimum a field blank is analyzed with each group of samples for quality assurance measures. At minimum two qualified personnel review analytical results and compare them with historical data for consistency and accuracy.

## **Field Reports**

All field observations are documented in field reports. A field report contain project information, climatic condition, contractor/subcontractor information, field observation, discussions and communications during each particular field activity. Field reports are stored in appropriate project files. Project managers review field reports to obtain necessary information regarding the status of each project on daily basis.



**Appendix B**  
**CERTIFIED ANALYTICAL REPORTS AND**  
**CHAIN-OF-CUSTODY DOCUMENTATION**

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Mitch Hajiaghai  
Sierra Environmental, Inc.  
980 West Taylor Street  
San Jose, CA 95126

Certificate ID: 39463 - 6/29/2004 3:38:11 PM

Order: 39463  
Project Name: ABE  
Project Number: 03-103.07

Date Collected: 6/24/2004  
Date Received: 6/24/2004  
P.O. Number: 03-103.07

## Certificate of Analysis - Final Report

On June 24, 2004, samples were received under chain of custody for analysis. Entech analyzes samples "as received" unless otherwise noted. The following results are included:

<u>Matrix</u>	<u>Test</u>	<u>Method</u>	<u>Comments</u>
Liquid	8260Petroleum TPH as Gasoline - GC/MS	EPA 8260B GC-MS	8260Petroleum=Btex+Oxy's ONLY.No Ethanol for all samples Gas by GCMS

Entech Analytical Labs, Inc. is certified for environmental analyses by the State of California (#2346).  
If you have any questions regarding this report, please call me at 408-588-0200.

Sincerely,



Laurie Glantz-Murphy  
Laboratory Director

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Sierra Environmental, Inc.  
980 West Taylor Street  
San Jose, CA 95126  
Attn: Mitch Hajiaghai

Date: 6/29/2004  
Date Received: 6/24/2004  
Project Name: ABE  
Project Number: 03-103.07  
P.O. Number: 03-103.07

Sampled By: Mike Hajiaghai

## Certified Analytical Report

Laboratory ID: 39463-001    Sample ID:                      MW-1                      Matrix: Liquid    Sample Date: 6/24/2004

Parameter	Result	Flag	DF	PQL	PQLR	Units	Analysis Date	QC Batch ID	Method
Benzene	5800		200	0.5	100.	µg/L	6/28/2004	WMS110760	EPA 8260B
Toluene	7500		200	0.5	100.	µg/L	6/28/2004	WMS110760	EPA 8260B
Ethyl Benzene	4000		200	0.5	100.	µg/L	6/28/2004	WMS110760	EPA 8260B
Xylenes, Total	18000		200	1.	200.	µg/L	6/28/2004	WMS110760	EPA 8260B
Methyl-t-butyl Ether	4000		200	1.	200.	µg/L	6/28/2004	WMS110760	EPA 8260B
Ethyl-t-butyl Ether	ND		200	5.	1000.	µg/L	6/28/2004	WMS110760	EPA 8260B
tert-Butanol (TBA)	ND		200	10.	2000.	µg/L	6/28/2004	WMS110760	EPA 8260B
Diisopropyl Ether	ND		200	5.	1000.	µg/L	6/28/2004	WMS110760	EPA 8260B
tert-Amyl Methyl Ether	ND		200	5.	1000.	µg/L	6/28/2004	WMS110760	EPA 8260B

Surrogate	Surrogate Recovery	Control Limits (%)	Analyzed by:
4-Bromofluorobenzene	99.5	64 - 125	Xbian - 6/28/2004
Dibromofluoromethane	83.5	23 - 172	Reviewed by: MTU - 06/29/04
Toluene-d8	105.0	70 - 134	Days from sampling to analysis: 4

Parameter	Result	Flag	DF	PQL	PQLR	Units	Analysis Date	QC Batch ID	Method
TPH as Gasoline	48000		200	25.	5000.	µg/L	6/28/2004	WMS110760	GC-MS

Surrogate	Surrogate Recovery	Control Limits (%)	Analyzed by:
4-Bromofluorobenzene	95.8	64 - 125	Xbian - 6/28/2004
Dibromofluoromethane	87.2	23 - 172	Reviewed by: MTU - 06/29/04
Toluene-d8	97.5	70 - 134	Days from sampling to analysis: 4

ND = Not Detected at or above the PQL  
PQL = Practical Quantitation Limit (No Dilution)

DF = Dilution Factor  
PQLR = Practical Quantitation Limit for Reporting (Includes Dilution)

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Sierra Environmental, Inc.  
980 West Taylor Street  
San Jose, CA 95126  
Attn: Mitch Hajiaghai

Date: 6/29/2004  
Date Received: 6/24/2004  
Project Name: ABE  
Project Number: 03-103.07  
P.O. Number: 03-103.07  
Sampled By: Mike Hajiaghai

## Certified Analytical Report

Laboratory ID: 39463-002    Sample ID:                    MW-2                    Matrix: Liquid    Sample Date: 6/24/2004

Parameter	Result	Flag	DF	PQL	PQLR	Units	Analysis Date	QC Batch ID	Method
Benzene	1200		50	0.5	25.	µg/L	6/28/2004	WMS110760	EPA 8260B
Toluene	72		50	0.5	25.	µg/L	6/28/2004	WMS110760	EPA 8260B
Ethyl Benzene	3100		50	0.5	25.	µg/L	6/28/2004	WMS110760	EPA 8260B
Xylenes, Total	6000		50	1.	50.	µg/L	6/28/2004	WMS110760	EPA 8260B
Methyl-t-butyl Ether	2100		50	1.	50.	µg/L	6/28/2004	WMS110760	EPA 8260B
Ethyl-t-butyl Ether	ND		50	5.	250.	µg/L	6/28/2004	WMS110760	EPA 8260B
tert-Butanol (TBA)	ND		50	10.	500.	µg/L	6/28/2004	WMS110760	EPA 8260B
Diisopropyl Ether	ND		50	5.	250.	µg/L	6/28/2004	WMS110760	EPA 8260B
tert-Amyl Methyl Ether	ND		50	5.	250.	µg/L	6/28/2004	WMS110760	EPA 8260B

Surrogate	Surrogate Recovery	Control Limits (%)	Analized by:
4-Bromofluorobenzene	90.7	64 - 125	Xbian - 6/28/2004
Dibromofluoromethane	84.7	23 - 172	Reviewed by: MTU - 06/29/04
Toluene-d8	94.6	70 - 134	Days from sampling to analysis: 4

Parameter	Result	Flag	DF	PQL	PQLR	Units	Analysis Date	QC Batch ID	Method
TPH as Gasoline	29000		50	25.	1250.	µg/L	6/28/2004	WMS110760	GC-MS

Surrogate	Surrogate Recovery	Control Limits (%)	Analized by:
4-Bromofluorobenzene	87.4	64 - 125	Xbian - 6/28/2004
Dibromofluoromethane	88.5	23 - 172	Reviewed by: MTU - 06/29/04
Toluene-d8	87.5	70 - 134	Days from sampling to analysis: 4

ND = Not Detected at or above the PQL

DF = Dilution Factor

PQL = Practical Quantitation Limit (No Dilution)

PQLR = Practical Quantitation Limit for Reporting (Includes Dilution)

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Sierra Environmental, Inc.  
980 West Taylor Street  
San Jose, CA 95126  
Attn: Mitch Hajiaghai

Date: 6/29/2004  
Date Received: 6/24/2004  
Project Name: ABE  
Project Number: 03-103.07  
P.O. Number: 03-103.07  
Sampled By: Mike Hajiaghai

## Certified Analytical Report

Laboratory ID: 39463-003    Sample ID:                    MW-3                    Matrix: Liquid    Sample Date: 6/24/2004

Parameter	Result	Flag	DF	PQL	PQLR	Units	Analysis Date	QC Batch ID	Method
Benzene	3000		50	0.5	25.	µg/L	6/28/2004	WMS110760	EPA 8260B
Toluene	110		50	0.5	25.	µg/L	6/28/2004	WMS110760	EPA 8260B
Ethyl Benzene	2300		50	0.5	25.	µg/L	6/28/2004	WMS110760	EPA 8260B
Xylenes, Total	3800		50	1.	50.	µg/L	6/28/2004	WMS110760	EPA 8260B
Methyl-t-butyl Ether	3400		50	1.	50.	µg/L	6/28/2004	WMS110760	EPA 8260B
Ethyl-t-butyl Ether	ND		50	5.	250.	µg/L	6/28/2004	WMS110760	EPA 8260B
tert-Butanol (TBA)	ND		50	10.	500.	µg/L	6/28/2004	WMS110760	EPA 8260B
Diisopropyl Ether	ND		50	5.	250.	µg/L	6/28/2004	WMS110760	EPA 8260B
tert-Amyl Methyl Ether	ND		50	5.	250.	µg/L	6/28/2004	WMS110760	EPA 8260B

Surrogate	Surrogate Recovery	Control Limits (%)	Analysis Date
4-Bromofluorobenzene	92.9	64 - 125	6/28/2004
Dibromofluoromethane	83.4	23 - 172	6/28/2004
Toluene-d8	99.0	70 - 134	6/28/2004

Analyzed by: Xbian - 6/28/2004  
Reviewed by: MTU - 06/29/04  
Days from sampling to analysis: 4

Parameter	Result	Flag	DF	PQL	PQLR	Units	Analysis Date	QC Batch ID	Method
TPH as Gasoline	21000		50	25.	1250.	µg/L	6/28/2004	WMS110760	GC-MS

Surrogate	Surrogate Recovery	Control Limits (%)	Analysis Date
4-Bromofluorobenzene	89.5	64 - 125	6/28/2004
Dibromofluoromethane	87.1	23 - 172	6/28/2004
Toluene-d8	91.6	70 - 134	6/28/2004

Analyzed by: Xbian - 6/28/2004  
Reviewed by: MTU - 06/29/04  
Days from sampling to analysis: 4

ND = Not Detected at or above the PQL

DF = Dilution Factor

PQL = Practical Quantitation Limit (No Dilution)

PQLR = Practical Quantitation Limit for Reporting (Includes Dilution)

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

## Quality Control - Method Blank

Analyzed by: XBIAN -6/28/2004

Entered by: XBIAN - 06/29/04

Validated by: MTU - 06/29/04

QC Batch ID: WMS110760

Matrix: Liquid

Date of Analysis: 6/28/2004

### Method: EPA 8260B

Parameter	Result	DF	PQL	PQLR	Units
1,2-Dibromoethane (EDB)	ND	1	0.5	0.5	µg/L
1,2-Dichloroethane	ND	1	0.5	0.5	µg/L
Benzene	ND	1	0.5	0.5	µg/L
Diisopropyl Ether	ND	1	5	5	µg/L
Ethanol	ND	1	100	100	µg/L
Ethyl Benzene	ND	1	0.5	0.5	µg/L
Ethyl-t-butyl Ether	ND	1	5	5	µg/L
Methyl-t-butyl Ether	ND	1	1	1	µg/L
tert-Amyl Methyl Ether	ND	1	5	5	µg/L
tert-Butanol (TBA)	ND	1	10	10	µg/L
Toluene	ND	1	0.5	0.5	µg/L
Xylenes, Total	ND	1	1	1	µg/L

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	104.0	64 - 125
Dibromofluoromethane	96.1	23 - 172
Toluene-d8	119.0	70 - 134

# Entech Analytical Labs, Inc.

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## Quality Control - Method Blank

Analyzed by: XBIAN -6/28/2004

Entered by: XBIAN - 06/29/04

Validated by: MTU - 06/29/04

QC Batch ID: WMS110760

Matrix: Liquid

Date of Analysis: 6/28/2004

### Method: GC-MS

Parameter	Result	DF	PQL	PQLR	Units
TPH as Gasoline	ND	1	25	25	µg/L

Surrogate	% Recovery	Control Limit
4-Bromofluorobenzene	100.0	64 - 125
Dibromofluoromethane	100.0	23 - 172
Toluene-d8	110.0	70 - 134

# Entech Analytical Labs, Inc.

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## Quality Control - Laboratory Control Spike / Duplicate Results

Analyzed by: XBLAN -6/28/2004

Reviewed by: MTU - 06/29/04

QC Batch ID: WMS110760

Date of Analysis: 6/28/2004

Method EPA 8260B	Liquid					Conc. Units: µg/L			
Parameter	Blank	Spike Amt	SpikeResult	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
1,1-Dichloroethene	ND	20.0	19.3	LCS	6/28/2004	96.5			60 - 132
Benzene	ND	20.0	22.1	LCS	6/28/2004	110.5			77 - 154
Chlorobenzene	ND	20.0	20.6	LCS	6/28/2004	103.0			66 - 141
Methyl-t-butyl Ether	ND	20.0	21.8	LCS	6/28/2004	109.0			58 - 127
Toluene	ND	20.0	20.8	LCS	6/28/2004	104.0			47 - 137
Trichloroethene	ND	20.0	20.2	LCS	6/28/2004	101.0			57 - 159

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	107.0	64 - 125
Dibromofluoromethane	93.2	23 - 172
Toluene-d8	104.0	70 - 134

1,1-Dichloroethene	ND	20.0	16.3	LCSD	6/28/2004	81.5	16.9	25	60 - 132
Benzene	ND	20.0	19.6	LCSD	6/28/2004	98.0	12.0	25	77 - 154
Chlorobenzene	ND	20.0	18.6	LCSD	6/28/2004	93.0	10.2	25	66 - 141
Methyl-t-butyl Ether	ND	20.0	19.2	LCSD	6/28/2004	96.0	12.7	25	58 - 127
Toluene	ND	20.0	19.1	LCSD	6/28/2004	95.5	8.5	25	47 - 137
Trichloroethene	ND	20.0	18.3	LCSD	6/28/2004	91.5	9.9	25	57 - 159

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	102.0	64 - 125
Dibromofluoromethane	91.1	23 - 172
Toluene-d8	104.0	70 - 134

Method GC-MS	Liquid					Conc. Units: µg/L			
Parameter	Blank	Spike Amt	SpikeResult	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Gasoline	ND	125.0	127.9	LCS	6/28/2004	102.3			65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	102.0	64 - 125
Dibromofluoromethane	88.4	23 - 172
Toluene-d8	107.0	70 - 134

TPH as Gasoline	ND	250.0	134.	LCSD	6/28/2004	107.2	4.7	25	65 - 135
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Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	101.0	64 - 125
Dibromofluoromethane	92.7	23 - 172
Toluene-d8	108.0	70 - 134



# Entech Analytical Labs, Inc.

3334 Victor Court, Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

## Quality Control - Matrix Spike / Duplicate Results

Analyzed by: XBIAN -6/28/2004

Reviewed by: MTU - 06/29/04

QC Batch ID: WMS110760

Date of Analysis: 6/28/2004

### Method EPA 8260B

Parameter	Sample Result	Spike Amount	Spike Result	Liquid		Analysis Date	% Recovery	RPD	Conc. Units: µg/L	
				QC Type					RPD Limits	Recovery Limits
MS	SampleNumber: 39446-004									
Benzene	ND	20.0	20.1438	MS		6/28/2004	100.7			73 - 134
Methyl-t-butyl Ether	ND	20.0	19.9533	MS		6/28/2004	99.8			42 - 157
Toluene	ND	20.0	19.9195	MS		6/28/2004	99.6			79 - 117

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	100.6	64 - 125
Dibromofluoromethane	87.2	23 - 172
Toluene-d8	105.9	70 - 134

### MSD SampleNumber: 39446-004

Benzene	ND	20.0	19.9991	MSD		6/28/2004	100.0	0.7	25	73 - 134
Methyl-t-butyl Ether	ND	20.0	18.8535	MSD		6/28/2004	94.3	5.7	25	42 - 157
Toluene	ND	20.0	20.1515	MSD		6/28/2004	100.8	1.2	25	79 - 117

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	100.4	64 - 125
Dibromofluoromethane	84.0	23 - 172
Toluene-d8	106.2	70 - 134



SIERRA ENVIRONMENTAL, INC.  
Environmental Consultants

### CHAIN OF CUSTODY

Project Name: ABE Project No: 03-103.07 Date: 6/24/04  
 Project Location: 17715 Mission BLVD. Client: ABE Sampler: Mike Haggi

Sample ID	Date Sampled	Sampling Time	Matrix	N° of Containers	Analysis Requested						Turnaround Time			
					8015/8020 TPHG BTEX	8015 TPHD	TPHG BTEX Fuel Oxygenate 8260						24-hour Other _____	
MW-1	6/24/04		Water	1			X					391463-001	24-hour Other _____	Normal
MW-2	6/24/04		X	X			X					802	24-hour Other _____	Normal
MW-3	6/24/04		X	X			X					003	24-hour Other _____	Normal
													24-hour Other _____	Normal
													24-hour Other _____	Normal
													24-hour Other _____	Normal
													24-hour Other _____	Normal
													24-hour Other _____	Normal

Remarks: Samples contain preservative

Relinquished by <u>Mike Haggi</u>	Date <u>6/24/04</u>	Time <u>1:00</u>	Received by <u>J. Sanchez</u>	Date <u>6/24/04</u>	Time <u>1:25</u>
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 Phone (408) 971-6758 • Fax (408) 971-6759

**Appendix C**  
**FIELD NOTES**



**GROUNDWATER MONITORING DATA FORM**

Project No: 03-103.03 Date: 6-24-04  
 Project Name: ABE Well N°: MW1  
 Field Personnel: Mika Weather: Clear  
 Project Location: \_\_\_\_\_

PURGE WATER VOLUME CALCULATION	Total Well Depth (ft)	Depth to Water (ft)	Water Column (ft)	Multiplier Casing Diameter			Casing Volume (gal)	Purged Volume (gal)
				2"	4"	6"		
	33.25'	21.44	11.8	0.16	0.64	1.44	1.89	5.67 26.0

Purge Method: Bailer Measuring Reference: TOC

Time						
Volume Purged (gal)		0	2	4	6	
Temperature (°F)		70.1	68.6	67.4	67.1	
pH		5-8	5.1	4.8	4.2	
Specific Conductivity (umhos/cm)		5700	4800	4800	4800	
Turbidity/Color		Light Gray	→	→	→	
Odor		Yes	→	→	→	

Comments: \_\_\_\_\_  
 \_\_\_\_\_



**GROUNDWATER MONITORING DATA FORM**

Project No: 03-103.03 Date: 6/24/04  
 Project Name: ABE Well N<sup>o</sup>: MW2  
 Field Personnel: Milee Weather: Clear  
 Project Location: \_\_\_\_\_

PURGE WATER VOLUME CALCULATION	Total Well Depth (ft)	Depth to Water (ft)	Water Column (ft)	Multiplier Casing Diameter			Casing Volume (gal)	Purged Volume (gal)
				2"	4"	6"		
	33.75'	22.95'	10.8	0.16	0.64	1.44	1.73	5.2

Purge Method: Bailer Measuring Reference: TSC

Time						
Volume Purged (gal)	0	2	4	5.2		
Temperature (° F)	70.5	68.9	68.2	67.9		
pH	5.2	5.8	5.6	<del>5.2</del> 5.2		
Specific Conductivity (umhos/cm)	4800	4800	4700	4900		
Turbidity/Color	1304 3000	→	5	5		
Odor	XO	→	→	→		

Comments: \_\_\_\_\_  
 \_\_\_\_\_



**GROUNDWATER MONITORING DATA FORM**

Project No: 03-103.03 Date: 6/24/04  
 Project Name: ABE Well N<sup>o</sup>: MW3  
 Field Personnel: M. Lee Weather: Clear  
 Project Location: \_\_\_\_\_

PURGE WATER VOLUME CALCULATION	Total Well Depth (ft)	Depth to Water (ft)	Water Column (ft)	Multiplier Casing Diameter			Casing Volume (gal)	Purged Volume (gal)
				2"	4"	6"		
	33.75'	22.11	11.64	0.16	0.64	1.44	1.86	5.6

Purge Method: Boiler Measuring Reference: TOC

Time						
Volume Purged (gal)	0	2	4	5.6		
Temperature (° F)	73	70	68.2	67.8		
pH	5.40	5.10	4.8	4.6		
Specific Conductivity (umhos/cm)	6800	5700	4800	4800		
Turbidity/Color	Light grey	→	→	→		
Odor	HC odor	→	→	→		

Comments: HC odor with sheen