# SECOND QUARTER 2003
# 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 1, 2003**
**Project 03-103.07**

Sierra Environmental, Inc.
*Environmental Consultants*



**July 1, 2003**
**Project 03-103.07**

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

**Subject: Report for Second Quarter 2003 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 2003 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 12, 2003, 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. 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.

980 W. Taylor Street
San Jose, CA 95126
Phone (408) 971- 6758
Fax (408) 971 - 6759

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.

## GROUNDWATER MONITORING

On June 12, 2003, Sierra performed second quarter 2003 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 20.64 to 20.94 feet below TOC with a westerly 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 methyl tertiary butyl ether (MTBE) using EPA method 8020. Additionally, the samples were analyzed for fuel oxygenates using EPA method 8260B. Copies of certified analytical results and chain-of-custody documentation are presented in Appendix B.

## ANALYTICAL RESULTS

Analytical results obtained during this monitoring event show a slight decrease of the gasoline constituents in the groundwater samples collected from MW1 and MW2. Analytical results obtained during this monitoring event also show a slight increase of the gasoline constituents in the groundwater sample collected from MW3.

Table II presents Summary of the analytical results.

Additionally, Sierra has been transferring the analytical results to the State Water Resources Control Board using Geotracker™.

## CONCLUSION

The groundwater data obtained during this monitoring event show a slight decrease of the gasoline constituents in the groundwater samples collected from MW1 and MW2. However, the concentrations of TPHG, benzene, and MTBE remain to be high in the groundwater beneath the Site.

Sierra prepared a work plan proposing plume delineation and subsurface investigation for the Site dated May 27, 2003 and submitted to ACHCS for review and approval.

## LIMITATIONS

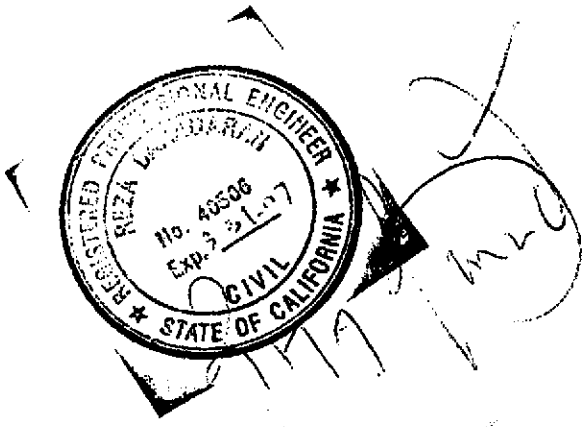
The content and conclusion provided by Sierra in this report are based on information collected during its assessment/monitoring, which include, but are not limited to field observations and analytical results for the groundwater samples collected at the Site.

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**

**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 |

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

R02-103.06\2nd'Q2003GWMAFH06122003

# TABLE I
# GROUNDWATER ELEVATION DATA

| Well ID | Measurement Date | Well Casing Diameter (in) | Well Casing Elevation (ft) | Depth to Water[1] (ft) | Water Table[2] 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 |
| 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 |
| 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 |

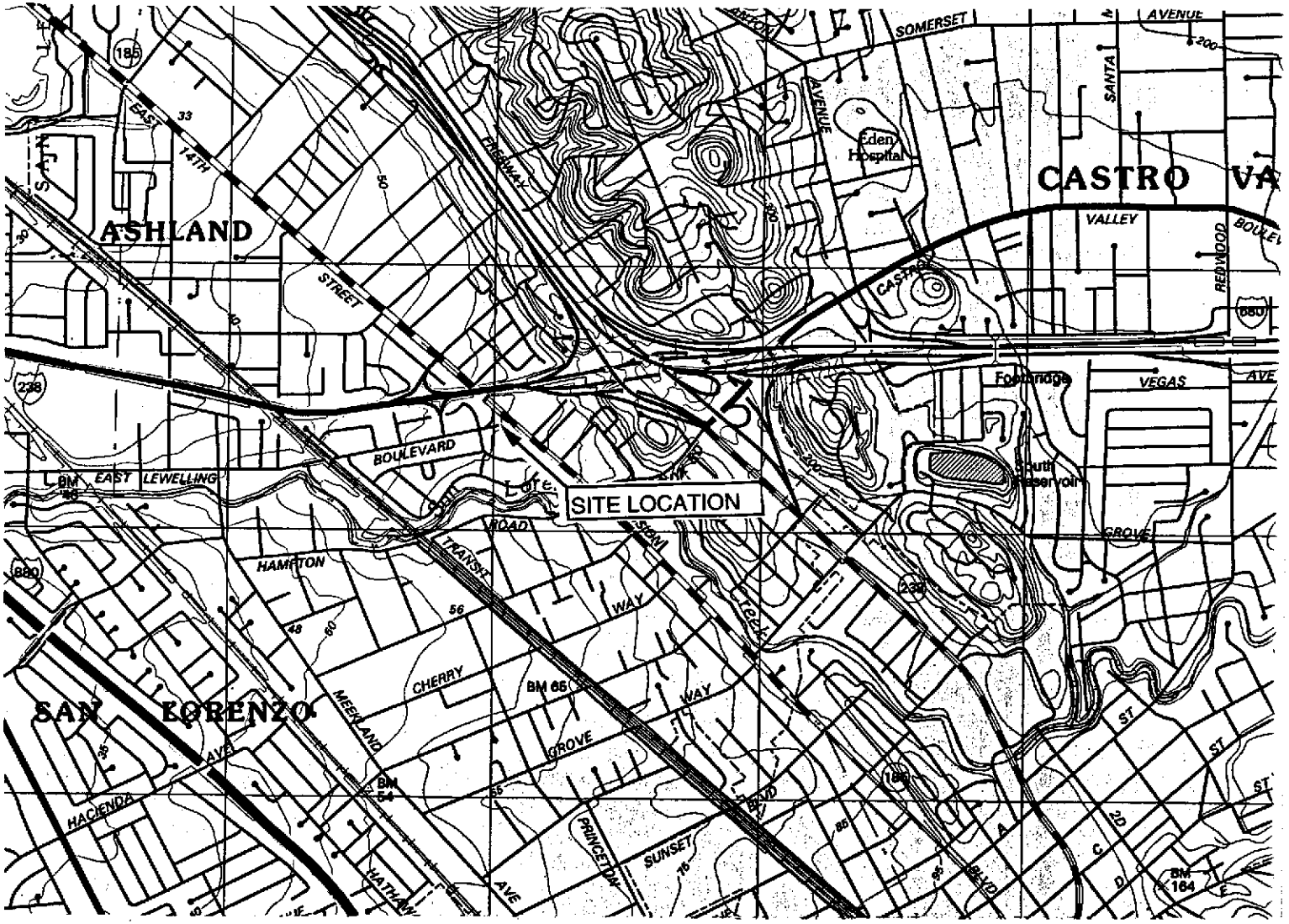
1. Depths to groundwater were measured to the top of the well casings
2. Water table elevations were measured in relation to an assumed datum (100') relative elevation

# TABLE II
# ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

| Sample ID | Sample Date | Sample Location | TPHG[1] ppb[3] | Benzene ppb | Toluene ppb | Ethylbenzene ppb | Xylenes ppb | MTBE[2] 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 |
| MW-2 | 8-18-00 | MW2 | 290,000 | 3700 | 990 | 7,300 | 26,000 | ND[4] |
| * | 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 |
| 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 |

1. TPHG = Total Petroleum Hydrocarbons as Gasoline
2. MTBE = Methyl Tertiary Butyl Ether
3. ppb = Parts Per Billion (milligram/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

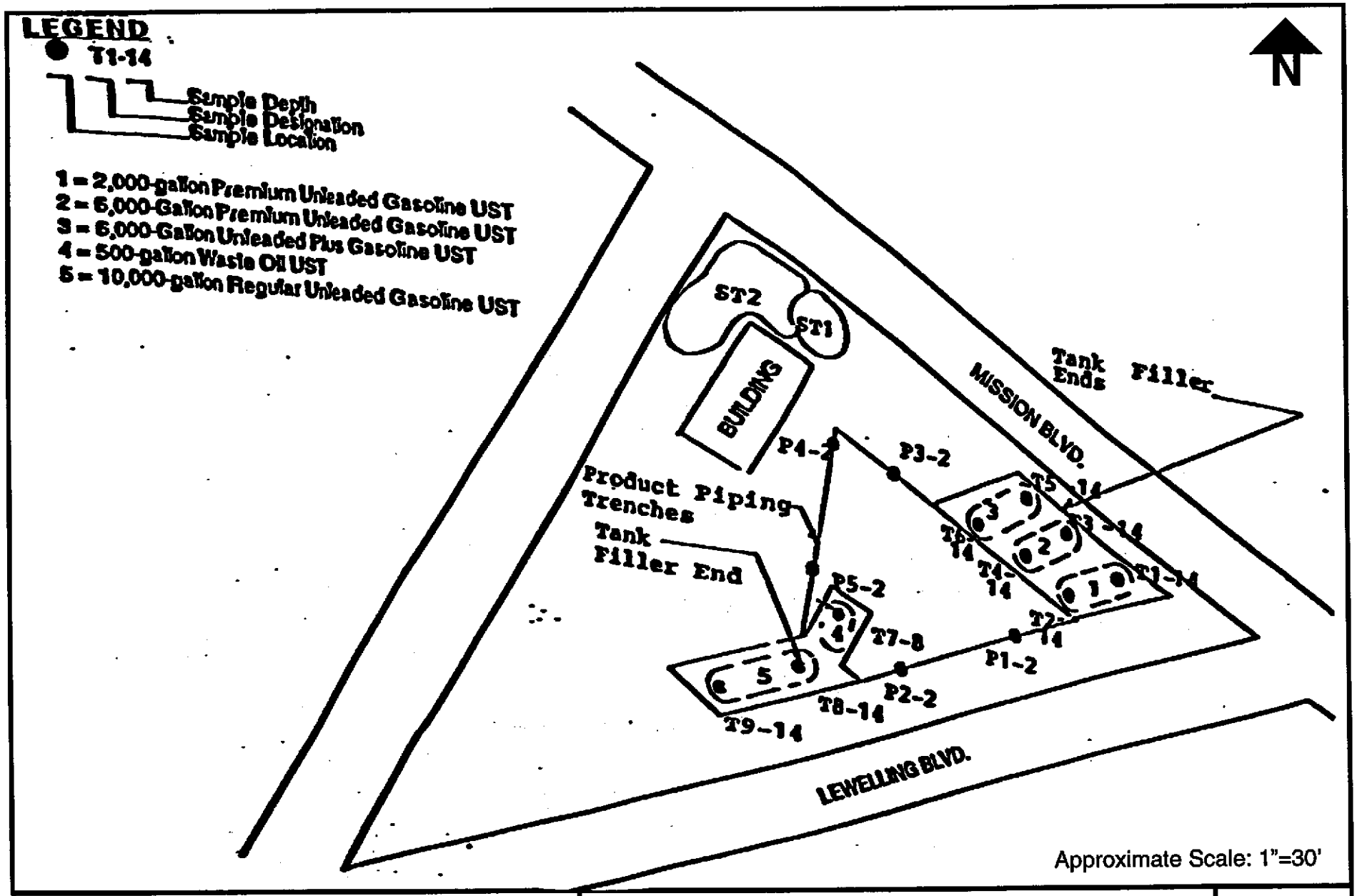

**Site Location Map**

**Second Quarter 2003 Groundwater Monitoring**
**ABE Petroleum LLC**

**17715 Mission Boulevard • Hayward • California**

**FIGURE**
**1**

July 1, 2003
Project 03-103.07



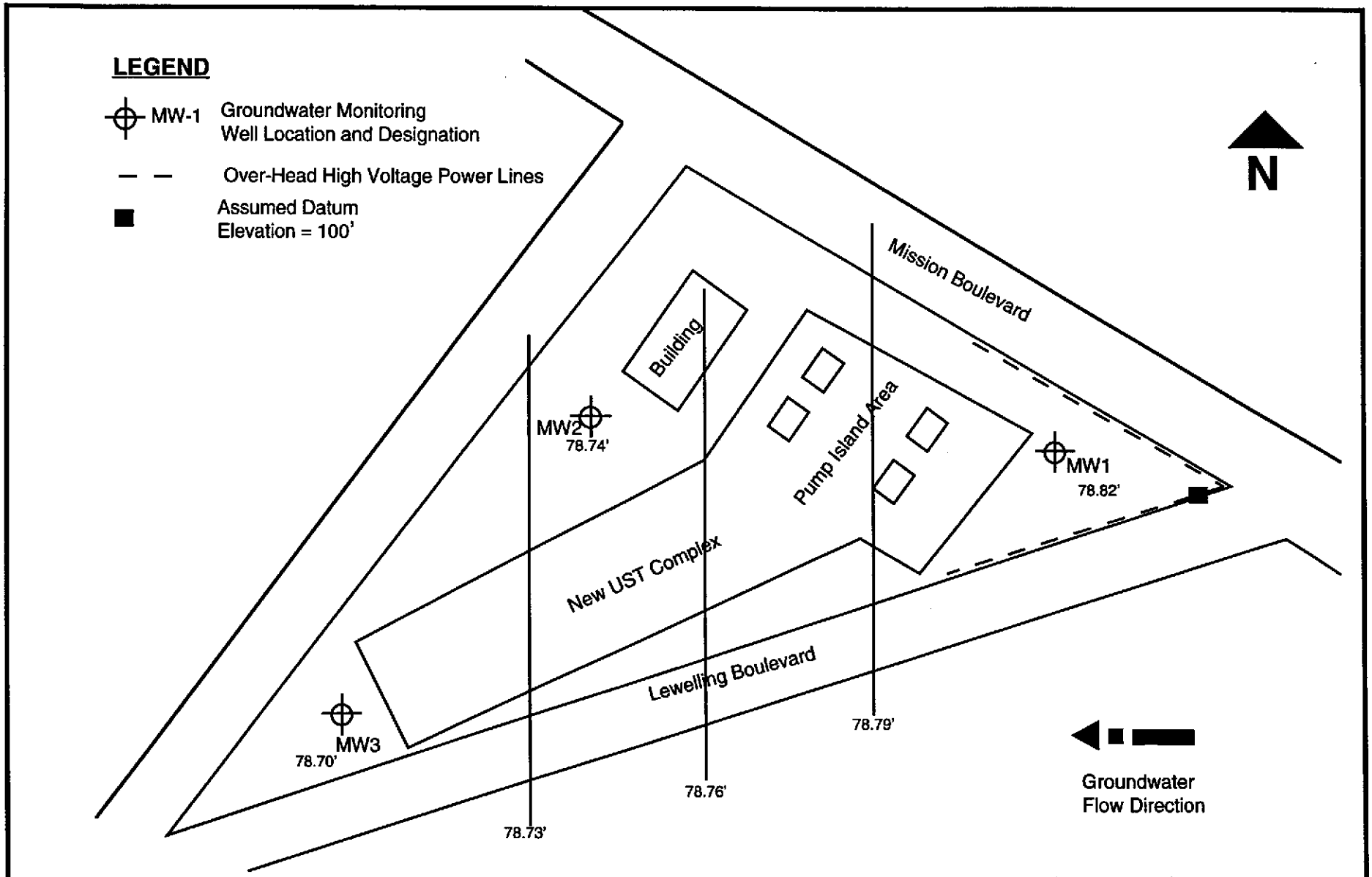

SIERRA ENVIRONMENTAL, INC.
*Environmental Consultants*
980 W. Taylor Street, San Jose, CA 95126
Phone [408]248-3700 • Fax [408] 248-4700

**Former UST and Soil Sample Locations**

**Second Quarter 2003 Groundwater Monitoring**
**ABE Petroleum LLC**

**17715 Mission Boulevard • Hayward • California**

**FIGURE**
**2**
July 1, 2003
Project 03-103.07




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

**Groundwater Monitoring Well Locations**

**Second Quarter 2003 Groundwater Monitoring**
**ABE Petroleum LLC**

**17715 Mission Boulevard • Hayward • California**

**FIGURE 3**

July 1, 2003
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 & ELECTRONIC DATA TRANSFER RECEIPT

# Entech Analytical Labs, Inc.

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

June 24, 2003

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

| | | | |
|---|---|---|---|
| **Order:** | 34755 | **Date Collected:** | 6/12/2003 |
| **Project Name:** | ABE | **Date Received:** | 6/12/2003 |
| **Project Number:** | 03-103.07 | **P.O. Number:** | 03-103.07 |
| **Project Notes:** | | | |

On June 12, 2003, samples were received under documentented chain of custody. Results for the following analyses are attached:

| Matrix | Test | Method |
|---|---|---|
| Liquid | EDF Deliverables | EDF |
| | Gas/BTEX/MTBE | EPA 8015 MOD. (Purgeable) |
| | | EPA 8020 |
| | Oxygenates by EPA 8260B | EPA 8260B |

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-588-0200.

Sincerely,

Patti Sandrock
QA/QC Manager

# Entech Analytical Labs, Inc.

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

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

Date: 06/24/03
Date Received: 6/12/2003
Project Name: ABE
Project Number: 03-103.07
P.O. Number: 03-103.07
Sampled By: Client

## Certified Analytical Report

**Order ID:** 34755 **Lab Sample ID:** 34755-001 **Client Sample ID:** MW-1

**Sample Time:** **Sample Date:** 6/12/2003 **Matrix:** Liquid

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 4100 | | 500 | 0.5 | 250 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Toluene | 4300 | | 500 | 0.5 | 250 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Ethyl Benzene | 3900 | | 500 | 0.5 | 250 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Xylenes, Total | 17000 | | 500 | 1 | 500 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 77.7 | 65 - 135 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl Ether | 3400 | | 500 | 1 | 500 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 77.7 | 65 - 135 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| tert-Butanol (TBA) | ND | | 100 | 10 | 1000 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| Methyl-t-butyl Ether | 4700 | | 100 | 1 | 100 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| Ditsopropyl Ether | ND | | 100 | 5 | 500 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| Ethyl-t-butyl Ether | ND | | 100 | 5 | 500 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| tert-Amyl Methyl Ether | ND | | 100 | 5 | 500 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 96.3 | 73 - 151 |
| Dibromofluoromethane | 101.8 | 57 - 156 |
| Toluene-d8 | 112.7 | 77 - 150 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH as Gasoline | 69000 | | 500 | 50 | 25000 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8015 MOD. (Purgeable) |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 70.1 | 65 - 135 |

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

*Environmental Analysis Since 1983*

# Entech Analytical Labs, Inc.

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

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

Date: 06/24/03
Date Received: 6/12/2003
Project Name: ABE
Project Number: 03-103.07
P.O. Number: 03-103.07
Sampled By: Client

## Certified Analytical Report

**Order ID:** 34755 **Lab Sample ID:** 34755-002 **Client Sample ID:** MW-2

**Sample Time:** **Sample Date:** 6/12/2003 **Matrix:** Liquid

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 380 | | 50 | 0.5 | 25 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Toluene | 52 | | 50 | 0.5 | 25 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Ethyl Benzene | 790 | | 50 | 0.5 | 25 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Xylenes, Total | 2000 | | 50 | 1 | 50 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 77.8 | 65 - 135 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl Ether | 540 | | 50 | 1 | 50 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 77.8 | 65 - 135 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| tert-Butanol (TBA) | 370 | | 20 | 10 | 200 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| Methyl-t-butyl Ether | 2200 | | 20 | 1 | 20 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| Diisopropyl Ether | ND | | 20 | 5 | 100 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| Ethyl-t-butyl Ether | ND | | 20 | 5 | 100 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |
| tert-Amyl Methyl Ether | ND | | 20 | 5 | 100 | µg/L | N/A | 6/12/2003 | WMS310110B | EPA 8260B |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 97.6 | 73 - 151 |
| Dibromofluoromethane | 106.3 | 57 - 156 |
| Toluene-d8 | 105.2 | 77 - 150 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH as Gasoline | 8700 | | 50 | 50 | 2500 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8015 MOD. (Purgeable) |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 77.4 | 65 - 135 |

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

*Environmental Analysis Since 1983*

# Entech Analytical Labs, Inc.

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

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

Date: 06/24/03
Date Received: 6/12/2003
Project Name: ABE
Project Number: 03-103.07
P.O. Number: 03-103.07
Sampled By: Client

## Certified Analytical Report

**Order ID:** 34755 **Lab Sample ID:** 34755-003 **Client Sample ID:** MW-3

**Sample Time:** **Sample Date:** 6/12/2003 **Matrix:** Liquid

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 2700 | | 100 | 0.5 | 50 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Toluene | 180 | | 100 | 0.5 | 50 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Ethyl Benzene | 2000 | | 100 | 0.5 | 50 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |
| Xylenes, Total | 4200 | | 100 | 1 | 100 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 68.8 | 65 - 135 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl Ether | 3400 | | 100 | 0.5 | 50 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8020 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 68.8 | 65 - 135 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| tert-Butanol (TBA) | 590 | | 50 | 10 | 500 | µg/L | N/A | 6/16/2003 | WMS510113 | EPA 8260B |
| Methyl-t-butyl Ether | 5500 | | 50 | 1 | 50 | µg/L | N/A | 6/16/2003 | WMS510113 | EPA 8260B |
| Diisopropyl Ether | ND | | 50 | 5 | 250 | µg/L | N/A | 6/16/2003 | WMS510113 | EPA 8260B |
| Ethyl-t-butyl Ether | ND | | 50 | 5 | 250 | µg/L | N/A | 6/16/2003 | WMS510113 | EPA 8260B |
| tert-Amyl Methyl Ether | ND | | 50 | 5 | 250 | µg/L | N/A | 6/16/2003 | WMS510113 | EPA 8260B |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 1,2-Dichloroethane-d4 (SS) | 89.2 | 70 - 130 |
| 4-Bromofluorobenzene | 88.6 | 73 - 151 |
| Dibromofluoromethane | 96.1 | 57 - 156 |
| Toluene-d8 | 93.4 | 77 - 150 |

| Parameter | Result | Flag | DF | PQL | DLR | Units | Extraction Date | Analysis Date | QC Batch ID | Method |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH as Gasoline | 26000 | | 100 | 50 | 5000 | µg/L | N/A | 6/13/2003 | WGC62861A | EPA 8015 MOD. (Purgeable) |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 4-Bromofluorobenzene | 69.5 | 65 - 135 |

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

*Environmental Analysis Since 1983*

# Entech Analytical Labs, Inc.

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

## Quality Control Results Summary

**QC Batch #:** WGC62861A **Units:** µg/L
**Matrix:** Liquid **Date Analyzed:** 6/13/2003

| Parameter | Method | Blank Result | Spike Sample ID | Spike Amount | Sample Result | Spike Result | QC Type | % Recovery | RPD | RPD Limits | Recovery Limits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Test: TPH as Gasoline** | | | | | | | | | | | |
| TPH as Gasoline | EPA 8015 M | ND | | 250 | | 215. | LCS | 86.0 | | | 65.0 - 135.0 |
| | **Surrogate** | | **Surrogate Recovery** | | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | 88.0 | | | 65 - 135 | | | | | |
| **Test: BTEX** | | | | | | | | | | | |
| Benzene | EPA 8020 | ND | | 8 | | 8.3 | LCS | 103.8 | | | 65.0 - 135.0 |
| Ethyl Benzene | EPA 8020 | ND | | 8 | | 8.1 | LCS | 101.3 | | | 65.0 - 135.0 |
| Toluene | EPA 8020 | ND | | 8 | | 7.9 | LCS | 98.8 | | | 65.0 - 135.0 |
| Xylenes, total | EPA 8020 | ND | | 24 | | 25.5 | LCS | 106.3 | | | 65.0 - 135.0 |
| | **Surrogate** | | **Surrogate Recovery** | | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | 85.9 | | | 65 - 135 | | | | | |
| **Test: MTBE by EPA 8020** | | | | | | | | | | | |
| Methyl-t-butyl Ether | EPA 8020 | ND | | 8 | | 8.1 | LCS | 101.3 | | | 65.0 - 135.0 |
| | **Surrogate** | | **Surrogate Recovery** | | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | 85.9 | | | 65 - 135 | | | | | |
| **Test: TPH as Gasoline** | | | | | | | | | | | |
| TPH as Gasoline | EPA 8015 M | ND | | 250 | | 217. | LCSD | 86.8 | 0.93 | 25.00 | 65.0 - 135.0 |
| | **Surrogate** | | **Surrogate Recovery** | | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | 84.7 | | | 65 - 135 | | | | | |
| **Test: BTEX** | | | | | | | | | | | |
| Benzene | EPA 8020 | ND | | 8 | | 8.9 | LCSD | 111.3 | 6.98 | 25.00 | 65.0 - 135.0 |
| Ethyl Benzene | EPA 8020 | ND | | 8 | | 9.09 | LCSD | 113.6 | 11.52 | 25.00 | 65.0 - 135.0 |
| Toluene | EPA 8020 | ND | | 8 | | 8.6 | LCSD | 107.5 | 8.48 | 25.00 | 65.0 - 135.0 |
| Xylenes, total | EPA 8020 | ND | | 24 | | 27.13 | LCSD | 113.0 | 6.19 | 25.00 | 65.0 - 135.0 |
| | **Surrogate** | | **Surrogate Recovery** | | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | 94.9 | | | 65 - 135 | | | | | |
| **Test: MTBE by EPA 8020** | | | | | | | | | | | |
| Methyl-t-butyl Ether | EPA 8020 | ND | | 8 | | 8.7 | LCSD | 108.7 | 7.14 | 25.00 | 65.0 - 135.0 |
| | **Surrogate** | | **Surrogate Recovery** | | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | 94.9 | | | 65 - 135 | | | | | |

# Entech Analytical Labs, Inc.

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

## Quality Control Results Summary

**QC Batch #:** WMS310110B **Units:** µg/L
**Matrix:** Liquid **Date Analyzed:** 6/12/2003

| Parameter | Method | Blank Result | Spike Sample ID | Spike Amount | Sample Result | Spike Result | QC Type | % Recovery | RPD | RPD Limits | Recovery Limits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Test:** Oxygenates by EPA 8260B | | | | | | | | | | | |
| Methyl-t-butyl Ether | EPA 8260B | ND | | 20 | | 16.9 | LCS | 84.5 | | | 54.0 - 130.5 |
| | **Surrogate** | | | **Surrogate Recovery** | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | | 106.0 | | 73 - 151 | | | | | |
| | Dibromofluoromethane | | | 103.1 | | 57 - 156 | | | | | |
| | Toluene-d8 | | | 115.8 | | 77 - 150 | | | | | |
| **Test:** Oxygenates by EPA 8260B | | | | | | | | | | | |
| Methyl-t-butyl Ether | EPA 8260B | ND | | 20 | | 18.6 | LCSD | 93.0 | 9.58 | 25.00 | 54.0 - 130.5 |
| | **Surrogate** | | | **Surrogate Recovery** | | **Control Limits (%)** | | | | | |
| | 4-Bromofluorobenzene | | | 104.0 | | 73 - 151 | | | | | |
| | Dibromofluoromethane | | | 104.9 | | 57 - 156 | | | | | |
| | Toluene-d8 | | | 112.6 | | 77 - 150 | | | | | |

# Entech Analytical Labs, Inc.

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

## Quality Control Results Summary

**QC Batch #:** WMS510113 **Units:** µg/L
**Matrix:** Liquid **Date Analyzed:** 6/16/2003

| Parameter | Method | Blank Result | Spike Sample ID | Spike Amount | Sample Result | Spike Result | QC Type | % Recovery | RPD | RPD Limits | Recovery Limits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Test:** Oxygenates by EPA 8260B | | | | | | | | | | | |
| Methyl-t-butyl Ether | EPA 8260B | ND | | 20 | | 18.3 | LCS | 91.5 | | | 54.0 - 130.5 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 1,2-Dichloroethane-d4 (SS) | 72.7 | 70 - 130 |
| Dibromofluoromethane | 86.5 | 57 - 156 |
| Toluene-d8 | 93.4 | 77 - 150 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Test:** Oxygenates by EPA 8260B | | | | | | | | | | | |
| Methyl-t-butyl Ether | EPA 8260B | ND | | 20 | | 19.4 | LCSD | 97.0 | 5.84 | 25.00 | 54.0 - 130.5 |

| Surrogate | Surrogate Recovery | Control Limits (%) |
|---|---|---|
| 1,2-Dichloroethane-d4 (SS) | 78.8 | 70 - 130 |
| Dibromofluoromethane | 92.1 | 57 - 156 |
| Toluene-d8 | 91.2 | 77 - 150 |

**SIERRA ENVIRONMENTAL, INC.**
*Environmental Consultants*

# CHAIN OF CUSTODY

Project Name: ABE  Project No: 03-103.07  Date: 6-12-03

Project Location: 17715 Mission Blvd., Hayward  Client: ABE  Sampler: Mike H

| Sample ID | Date Sampled | Sampling Time | Matrix | Nº of Containers | Analysis Requested: 8015/8020 TPHG BTEX, MTBE | 8015 TPHD | 418.1 TRPH | 8010 VOCs | 8270 - SVOCs | BTEX 8020 | Fuel dwy 8260B | Turnaround Time |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 6-12-03 | | Water | | X | | 34755-001 | | | | X | 24-hour / Other / Normal |
| MW-2 | ↓ | | ↓ | | ↓ | | | -002 | | | ↓ | 24-hour / Other / Normal |
| MW-3 | ↓ | | ↓ | | ↓ | | | -003 | | | ↓ | 24-hour / Other / Normal |
| | | | | | | | | | | | | 24-hour / Other / Normal |
| | | | | | | | | | | | | 24-hour / Other / Normal |
| | | | | | | | | | | | | 24-hour / Other / Normal |
| | | | | | | | | | | | | 24-hour / Other / Normal |

Remarks:

| Relinquished by | Date | Time | Received by | Date | Time |
|---|---|---|---|---|---|
| [signature] | 6/12/03 | 3:07 | [signature] | 6/12/03 | 1507 |

1670 Newhall St. • Suite 212 • Santa Clara • California • 95050
Phone (408) 248-3700 • Fax (408) 248-4700

SIERRA Form 104-02

# AB2886 Electronic Delivery

Your EDF file has been succcessfully uploaded!

**Confirmation Number:** 3505242228
**Date/Time of Submittal:** 6/24/2003 3:15:11 PM
**Facility Global ID:** T0600102154
**Facility Name:** ABE PETROLEUM
**Submittal Title:** Second Quarter 2003 Groundwater Monitoring
**Submittal Type:** GW Monitoring Report

Logged in as MITCHHAJIAGHAI (AUTH_RP) CONTACT SITE ADMINISTRATOR.