September 22, 2009

# GROUNDWATER MONITORING REPORT
## Second Semester, 2009

6211 San Pablo Avenue
Oakland, California

AEI Project No. 280346
ACHCS Case No. RO0000127

Prepared For

Mr. Pritpaul Sappal
2718 Washburn Court
Vallejo, California 94591

Prepared By

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September 22, 2009

Mr. Pritpaul Sappal
2718 Washburn Court
Vallejo, California 94591

**Subject:** **Quarterly Groundwater Monitoring Report**
**Second Semester, 2009**
6211 San Pablo Avenue
Oakland, California
AEI Project No. 280346
ACHCS Case No. RO0000127

Dear Mr. Sappal:

AEI Consultants (AEI) has prepared this report on behalf of Mr. Pritpaul Sappal (client), owner of the subject site, located at 6211 San Pablo Avenue, Oakland, California (Figure 1: Site Location Plan). This report has been prepared at the request of the client, as required by the Alameda County Health Care Services Agency (ACHCSA), and presents the findings of the 2nd Semester 2009 groundwater monitoring and sampling event conducted on August 13, 2009. In a letter dated July 24, 2009, the ACHCSA requested that groundwater monitoring be reduced from quarterly to semi-annually. This report details the first semi-annual event.

## Background

The subject property is located at 6211 San Pablo Avenue, northwest of the intersection of San Pablo Avenue and 62nd Street in a mixed residential and light commercial area of Oakland, California (Figure 1 and 2). The site currently consists of a retail gasoline station with three underground storage tanks (USTs) dispensing gasoline fuel through six dual-sided fuel dispensing islands. Site features are included in Figure 3.

In April 1999, three borings B-1 through B-3 were advanced at the site by Herschy Environmental, Inc. (Herschy). Significant concentrations of hydrocarbons were present in the soil and groundwater samples collected during the investigation. Subsequently, in June 1999, five additional soil borings were advanced (B-4 through B-8) at the site. Based on the data collected during the investigation, it was determined that additional assessment was necessary as the lateral extent of the contamination had not been determined. Therefore, in October 1999 monitoring wells MW-1 through MW-3 were installed and a groundwater monitoring program was initiated.

In November 2001, monitoring wells MW-4 through MW-6 were installed and borings B-9 through B-14 were advanced on the property. Based on the data obtained it was determined that additional wells were necessary offsite and interim remedial action was required, therefore a workplan was prepared for the implementation of both. By 2008, the monitoring wells had not been installed due to Herschy's difficulty obtaining an encroachment permit with the City of Oakland.

In an effort to remediate hydrocarbons at the site, five air sparge wells (AS-1 through AS-5), thirteen vapor extraction wells (VE-1 through VE-13), and one groundwater extraction well (EX-1) were installed in January 2004. In addition, well MW-1R was installed to replace well MW-1. In February 2004, three 10,000 gallon USTs and associated product piping were removed and replaced (with the current UST system) at the site. During construction activities, approximately 1,100 tons of soil and 40,000 to 60,000 gallons of groundwater was removed from the site and properly disposed of.

A soil vapor extraction system was installed and was operational from August 31, 2006 through November 19, 2007. The system is no longer present at the site; the equipment was removed by the prior consultant in August and September 2008. In August 2007 borings DP-1 and DP-3 were installed at and in the vicinity of the site. Several offsite borings were expected to be completed, however, they were not performed for a variety of reasons. In September 2008, consulting responsibilities were transferred to AEI Consultants. Subsequently, AEI submitted the requested revised Site Conceptual Model (SCM) dated October 8, 2008 which updates a proposed scope of work to complete additional offsite characterization for the site. Approval for the completion of the work was issued in a letter from the ACHCSA dated October 16, 2008.

On November 24 through November 26, 2008, AEI advanced ten shallow soil borings (DP-4, SB-5, SB-7 to SB-14) in the vicinity of the subject property and four deep soil borings (DDP-1 to DDP-4) at the subject property. In addition, three nested soil vapor probes (SG-1 through SG-3) were installed at the site. Elevated hydrocarbon concentrations were reported in several of the soil borings advanced during the investigation. Based on the results, it was determined that the groundwater plume was delineated towards the south/southeast, however delineation and monitoring is necessary to determine the extent of the dissolved hydrocarbon plume to the west/southwest and to evaluate the need for remediation of the offsite plume.

The remainder of this report describes the findings of the recent monitoring and sampling event for the subject property.

**Summary of Groundwater Sampling Activities**

AEI measured the depth to groundwater in the well network (MW-1R, MW-2 through MW-6, and EX-1) on August 13, 2009. The wells caps were first removed from each well, allowing the groundwater to equilibrate with the atmosphere. The depth to water from the top of each well casing was measured with an electric water level indicator prior to sampling. The wells were then purged

by using a submersible pump and groundwater samples were collected using clean, unused disposable plastic bailers. The following parameters were measured during purging: temperature, pH, specific conductivity, dissolved oxygen and oxidation-reduction potential. At least three well volumes of water were removed from the wells that were sampled. Once the wells had recharged to at least 90% of the original water level, a water sample was collected.

Groundwater was collected into 40 ml volatile organic analysis (VOA) vials and capped so that neither headspace nor air bubbles were visible within the sample containers. Samples were transported on ice under proper chain of custody protocol to McCampbell Analytical, Inc. of Pittsburg, California (Department of Health Services Certification #1644).

The groundwater samples were collected and analyzed for total petroleum hydrocarbons as gasoline (TPHg) (EPA Method 8015Cm), and benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX) and methyl tert-butyl ether (MTBE), by EPA Method 8021B. The groundwater samples were also analyzed for tert-Amyl Methyl Ether (TAME), tert-Butanol (TBA), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), 1,2-Dichloroethane (1,2-DCA), ethylene dibromide (EDB), and MTBE by EPA method 8260.

**Field Results**

No free product was encountered during monitoring activities during the recent sampling events. Groundwater elevations during the current quarterly monitoring episode ranged from 24.92 to 28.36 feet above mean sea level (amsl). The groundwater was on average 1.74 feet lower then during the previous quarter. The direction of the groundwater flow during the August 13, 2009 sampling event was towards the west with an estimated overall hydraulic gradient of 0.01 feet/foot, relatively consistent with historical groundwater flow data. Groundwater flow is typically in a more southwest direction. Groundwater elevation data is summarized in Table 1 and 1b, and a groundwater elevation map is included as Figure 4.

**Groundwater Quality**

Select dissolved hydrocarbons were detected in the groundwater samples as follows:

- Monitoring well MW-1R was reported to contain TPHg, benzene, and MTBE at concentrations of 2,000 micrograms per liter (µg/L), 17 µg/L, and 2.1 µg/L, respectively. These concentrations are generally higher then last quarter, however relatively similar to historical concentrations.
- Monitoring well MW-2 was reported to contain TPHg, benzene, MTBE, and TBA at a concentration of 110 µg/L, 7.0 µg/L, 7.7 µg/L, and 26 µg/L, respectively. These concentrations represent a slight decrease since last quarter, however are relatively consistent with recent data.
- Monitoring well MW-3 was reported to contain TPHg, benzene, MTBE, and TBA at concentrations of 1,300 µg/L, 10 µg/L, 7,900 µg/L, and 250,000 µg/L, respectively.

These concentrations are lower than recently observed and remain significantly lower than historical concentrations, with the exception of TBA.

- Monitoring well MW-4 was reported to contain TPHg, benzene, MTBE, and TBA at concentrations of 29,000 µg/L, 320 µg/L, 350 µg/L, and 10,000 µg/L, respectively. TBA increased significantly since the last quarter, however these concentrations are fairly similar to recent data and remain at, or near, historical lows.
- Monitoring well MW-5 was reported to contain TPHg, benzene, and MTBE at a concentration of 380 µg/L 19 µg/L, and 11 µg/L. MTBE was reported at an all time high and is typically the only constituent detected in well MW-5. However, recent data has reported low concentrations of TPHg and benzene.
- Monitoring well MW-6 was reported to contain TPHg, benzene, MTBE, and TBA at a concentration of 74 µg/L, 5.9 µg/L, 27 µg/L, and 140 µg/L, respectively. These concentrations represent an general increase since the last quarter, with the exception of MTBE, however are relatively consistent with recent data.
- Well EX-1 was reported to contain TPHg, benzene, MTBE, and TBA at concentrations of 10,000 µg/L, 1,100 µg/L, 520 µg/L, and 5,200 µg/L, respectively. These concentrations, are lower then last quarter, however relatively similar to those seen during the historical sampling events.

Complete groundwater sample analytical data from the sampling event is included in Table 2 and select data is displayed on Figure 5. Laboratory results and chain of custody documents are included in Appendix B.

**Summary**

Groundwater during the August 2009 episode was calculated to flow towards the west with an estimated overall hydraulic gradient of 0.01 feet/foot, relatively consistent with historical data. Groundwater levels decreased during the recent quarter by 1.74 feet on average. Although hydrocarbon concentrations onsite were relatively consistent with concentrations observed during the 2$^{nd}$ quarter 2009, offsite wells are necessary to further characterize the extent of the offsite plume. A Feasibility Study / Corrective Action Plan was submitted to the ACHCSA on June 29, 2009. Following ACHCSA review of the report, the ACHCSA generally agreed with the proposed work, however in a letter dated August 13, 2009, a Feasibility Study / Corrective Action Plan Addendum was requested to address specific questions by the ACHCSA. AEI is currently working on preparing the addendum. During the recent quarter, AEI has continued to work with PG&E and the City of Oakland to restore electrical service in anticipation of proceeding with onsite pilot study activities. It is anticipated that the electrical service will be restored during the 4$^{th}$ quarter 2009. The ACHCSA has also requested that the groundwater monitoring frequency be reduced to semi-annually. The next semi-annual sampling event is currently scheduled for February 2010 (1$^{st}$ Semester 2010 Event). Once the offsite wells are installed, a revised quarterly or semi-annual sampling program will be proposed.

**Report Limitations and Signatures**

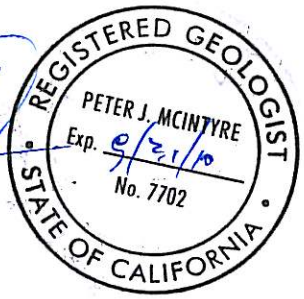
This report presents a summary of work completed by AEI Consultants. The completed work includes observations and descriptions of site conditions encountered. Where appropriate, it includes analytical results for samples taken during the course of the work. The number and location of samples are chosen to provide the requested information, but it cannot be assumed that they are representative of areas not sampled. All conclusions and/or recommendations are based on these analyses and observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document.

These services were performed in accordance with generally accepted practices, in the environmental engineering and consulting field, which existed at the time and location of the work. If you have any questions regarding our investigation, please do not hesitate to contact one of us at (925) 746-6000.

Sincerely,
**AEI Consultants**

Jeremy Smith
Senior Project Manager

Peter J. McIntyre, P.G.
Senior Project Geologist



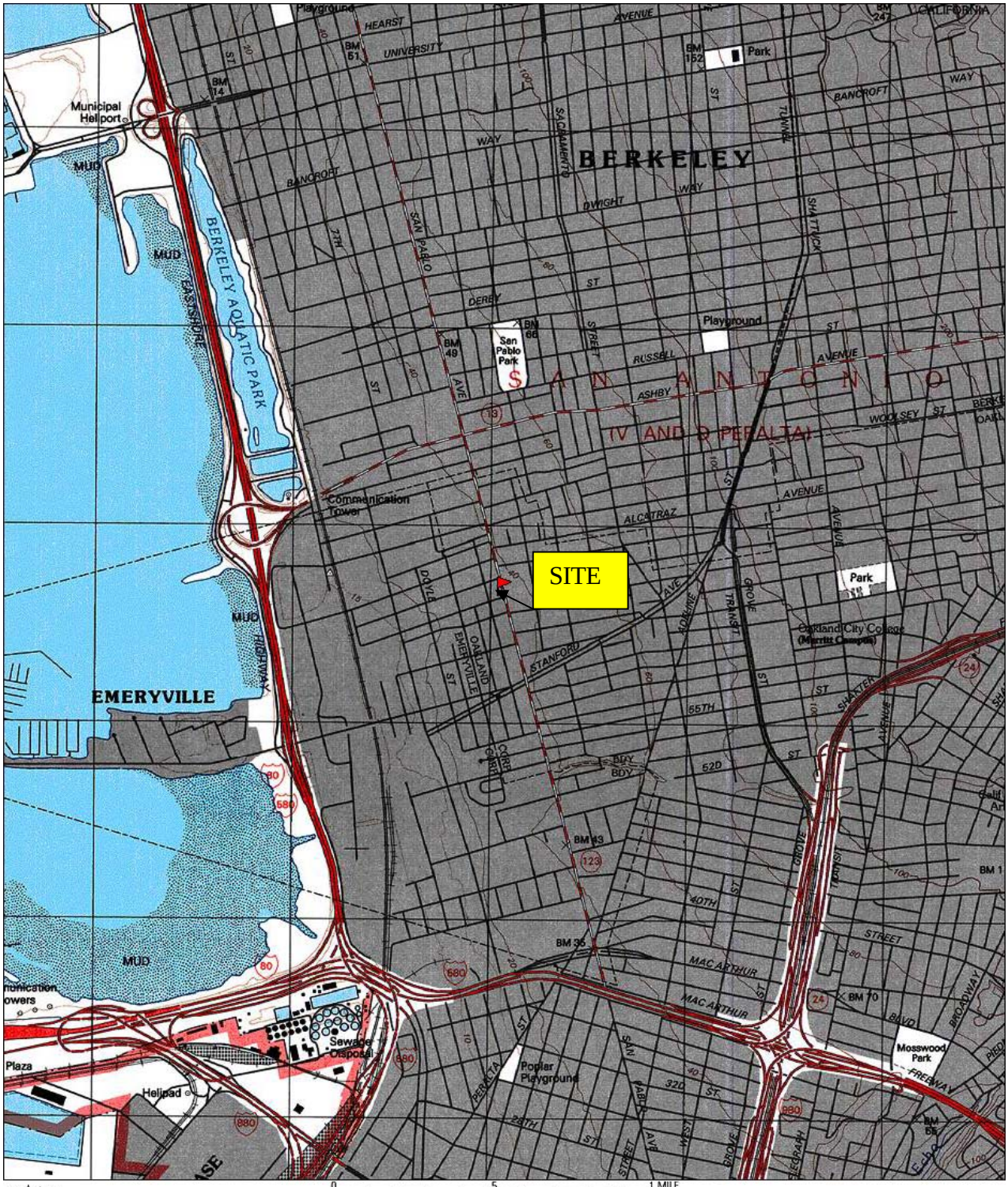

**Figures**
- Figure 1: Site Location Plan
- Figure 2: Extended Site Plan
- Figure 3: Site Plan
- Figure 4: Groundwater Elevation Map
- Figure 5: Groundwater Analytical Map

**Tables**
- Table 1: Groundwater Elevation Data
- Table 1b: Groundwater Flow Data
- Table 2: Groundwater Analytical Data

**Appendix A:** Groundwater Monitoring Well Field Sampling Forms
**Appendix B:** Laboratory Analyses with Chain of Custody Documentation

Distribution:
Mr. Pritpaul Sappal, 2718 Washburn Court, Vallejo, CA 94591
Mr. Paresh Khatri, ACHCSA, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502 (electronic upload)
Mr. Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612

# FIGURES

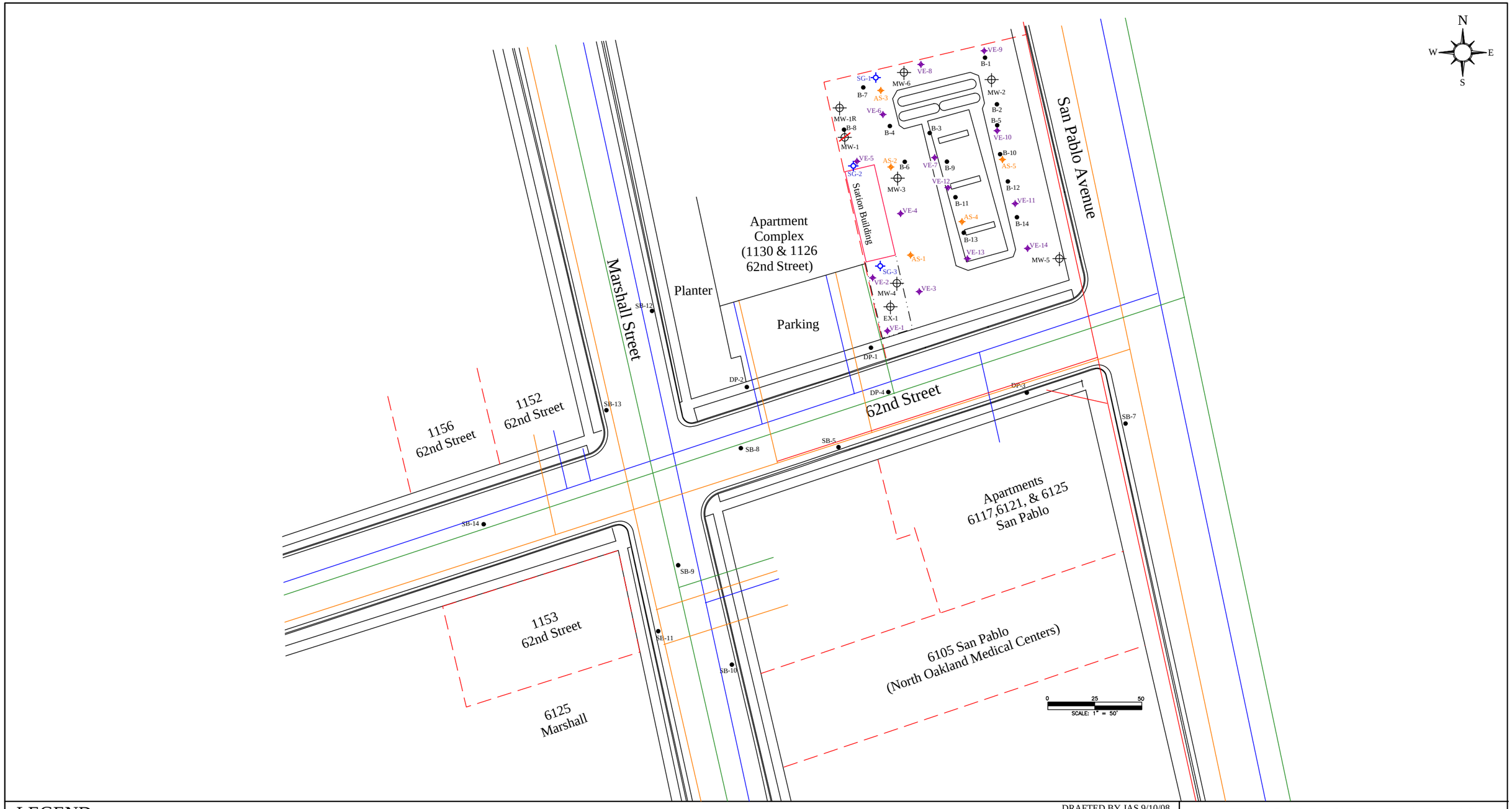



# AEI CONSULTANTS

## SITE LOCATION PLAN

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

**FIGURE 1**
PROJECT NO. 280346




## LEGEND

- MONITORING WELL
- SOIL BORING
- ABANDONED WELL
- NESTED VAPOR PROBE
- VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- APPROXIMATE PROPERTY BOUNDARY
- WATER LINE
- NATURAL GAS LINE
- ELECTRIC LINE
- SEWER LINE

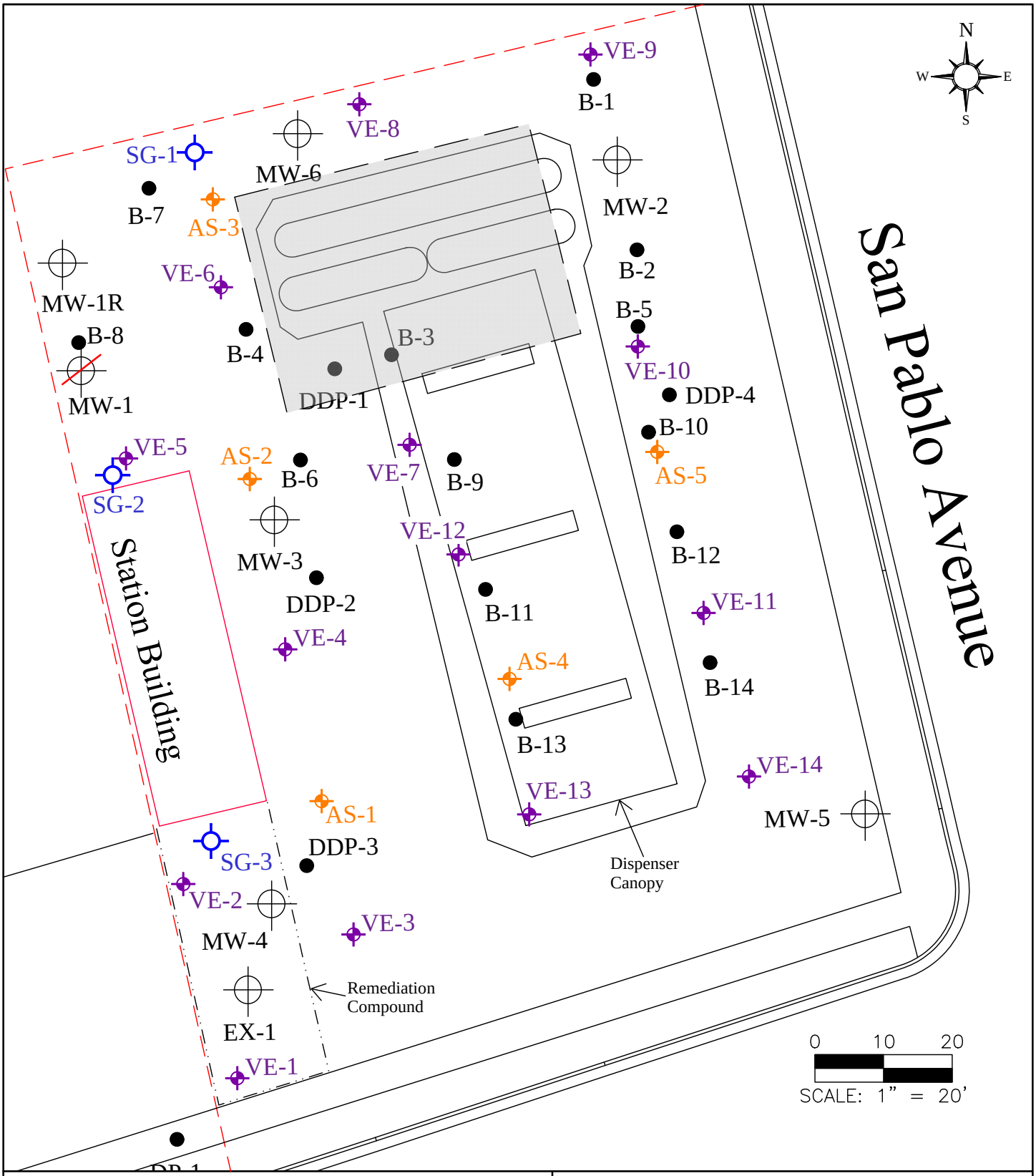
DRAFTED BY JAS 9/10/08
REVISED BY JAS 9/26/08

**AEI CONSULTANTS**
2500 CAMINO DIABLO, SUITE 200, WALNUT CREEK

# EXTENDED SITE PLAN

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

**FIGURE 2**
PROJECT NO. 280346




## LEGEND

- MONITORING WELL
- SOIL BORING
- ABANDONED WELL
- NESTED VAPOR PROBE
- VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- UNDERGROUND STORAGE TANK
- DISPENSER ISLAND
- FORMER UST EXCAVATION

DRAFTED BY JAS 09-10-08
REVISED BY JAS 09-26-08

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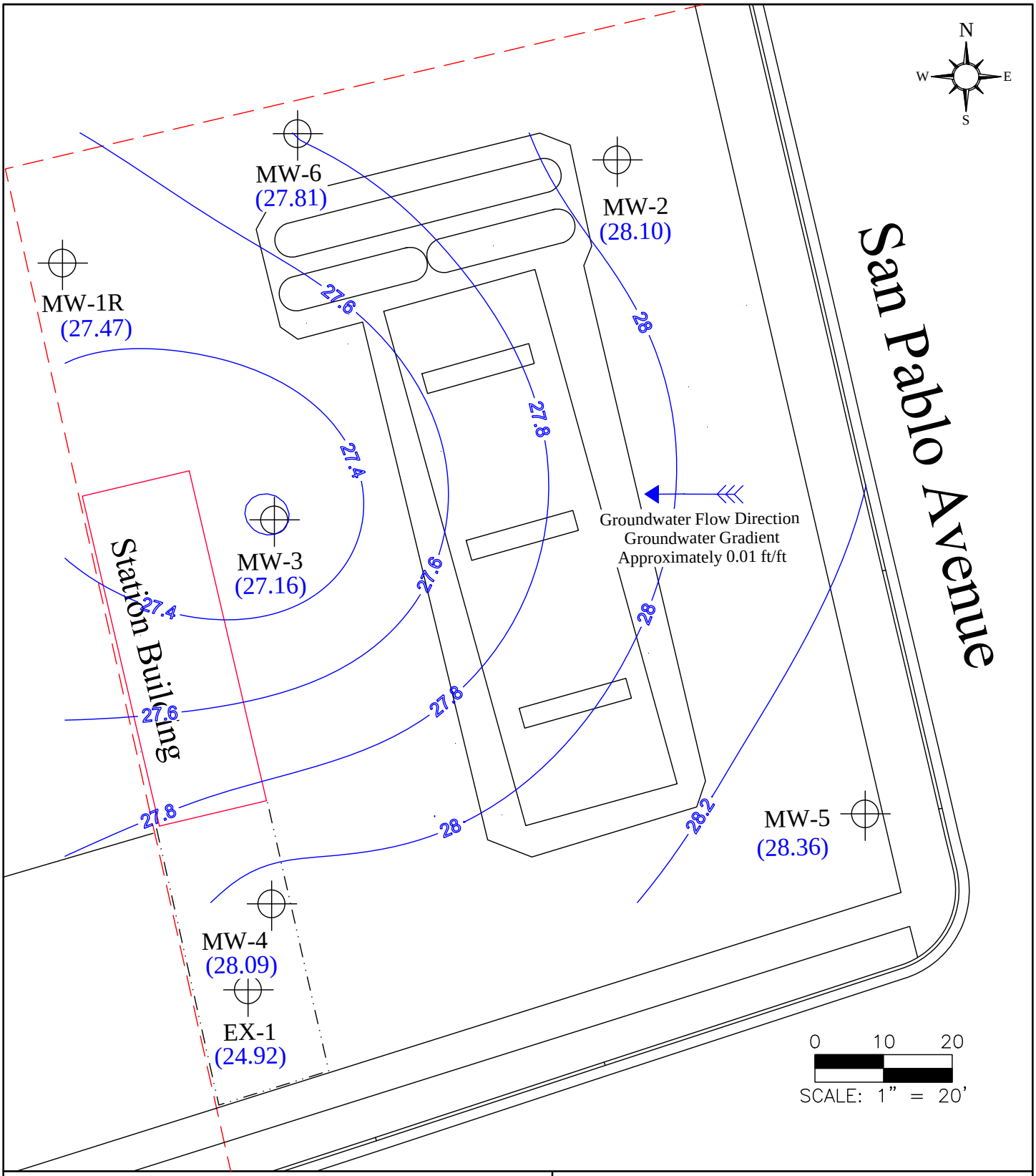
2500 CAMINO DIABLO, WALNUT CREEK

## SITE PLAN

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

**FIGURE 3**
PROJECT NO. 280346




LEGEND

MONITORING WELL

(28.68) = Groundwater Elevation Mean Sea Level

Depth to Groundwater Collected on August 13, 2009
Well EX-1 not used for groundwater flow calculations
Contour Line Interval = 0.20 Feet
Contour Lines by Surfer® Version 7

DRAFTED BY JAS 09-10-08
REVISED BY JAS 09-04-09

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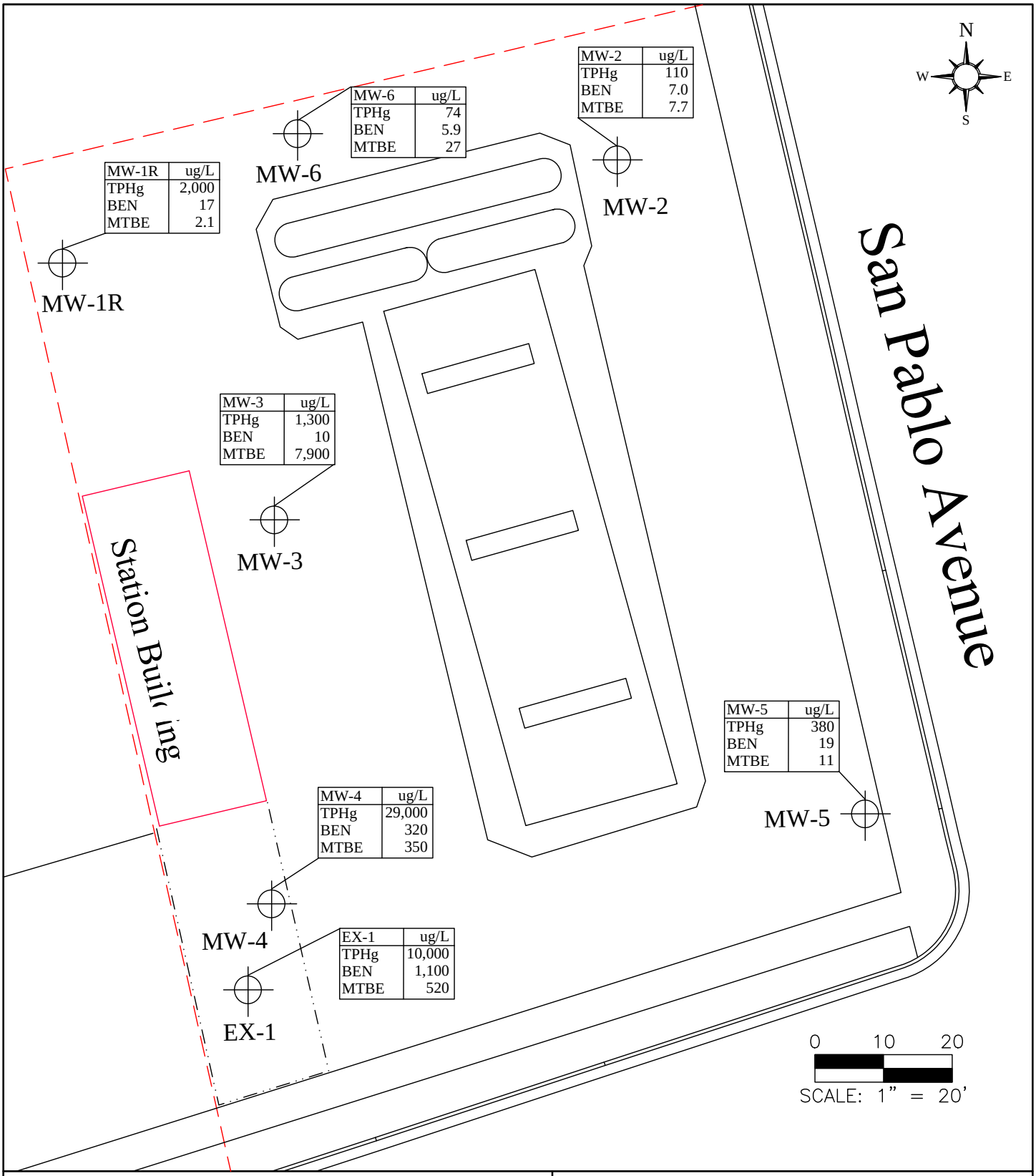
## GROUNDWATER ELEVATION MAP

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

**FIGURE 4**

PROJECT NO. 280346




## LEGEND

DRAFTED BY JAS 09-10-08
REVISED BY JAS 09-04-09

MONITORING WELL

TPHg = Total Petroleum Hydrocarbons as Gasoline
BEN = Benzene
MTBE = Methyl Tert-butyl Ether
ug/L = Micrograms per Liter (ppb)

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## GROUNDWATER ANALYTICAL MAP - August 13, 2009

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

**FIGURE 5**
PROJECT NO. 280346

# TABLES

**Table 1, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346**

**Groundwater Elevation Data**

| Well ID (Screen Interval) | Date Collected | Well Elevation *(ft amsl)* | Depth to Water *(ft)* | Groundwater Elevation *(ft amsl)* |
|---|---|---|---|---|
| MW-1R | 5/15/2008 | 36.67 | 8.53 | 28.14 |
| (3-23) | 9/10/2008 | 36.67 | 9.36 | 27.31 |
| | 11/18/2008 | 36.67 | 8.82 | 27.85 |
| | 2/17/2009 | 36.67 | 5.67 | 31.00 |
| | 5/15/2009 | 36.67 | 7.79 | 28.88 |
| | **8/13/2009** | **36.67** | **9.20** | **27.47** |
| MW-2 | 5/15/2008 | 36.33 | 7.63 | 28.70 |
| (6-21) | 9/10/2008 | 36.33 | 8.43 | 27.90 |
| | 11/18/2008 | 36.33 | 7.83 | 28.50 |
| | 2/17/2009 | 36.33 | 4.92 | 31.41 |
| | 5/15/2009 | 36.33 | 6.81 | 29.52 |
| | **8/13/2009** | **36.33** | **8.23** | **28.10** |
| MW-3 | 5/15/2008 | 35.12 | 7.23 | 27.89 |
| (6-21) | 9/10/2008 | 35.12 | 8.08 | 27.04 |
| | 11/18/2008 | 35.12 | 7.52 | 27.60 |
| | 2/17/2009 | 35.12 | 4.36 | 30.76 |
| | 5/15/2009 | 35.12 | 6.50 | 28.62 |
| | **8/13/2009** | **35.12** | **7.96** | **27.16** |
| MW-4 | 5/15/2008 | 34.11 | 5.43 | 28.68 |
| (5-20) | 9/10/2008 | 34.11 | 7.26 | 26.85 |
| | 11/18/2008 | 34.11 | 5.84 | 28.27 |
| | 2/17/2009 | 34.11 | 2.67 | 31.44 |
| | 5/15/2009 | 34.11 | 4.90 | 29.21 |
| | **8/13/2009** | **34.11** | **6.02** | **28.09** |
| MW-5 | 5/15/2008 | 35.17 | 6.29 | 28.88 |
| (5-25) | 9/10/2008 | 35.17 | 6.99 | 28.18 |
| | 11/18/2008 | 35.17 | 6.41 | 28.76 |
| | 2/17/2009 | 35.17 | 4.07 | 31.10 |
| | 5/15/2009 | 35.17 | 5.59 | 29.58 |
| | **8/13/2009** | **35.17** | **6.81** | **28.36** |
| MW-6 | 5/15/2008 | 36.07 | 7.51 | 28.56 |
| (5-25) | 9/10/2008 | 36.07 | 8.32 | 27.75 |
| | 11/18/2008 | 36.07 | 7.73 | 28.34 |
| | 2/17/2009 | 36.07 | 4.64 | 31.43 |
| | 5/15/2009 | 36.07 | 6.89 | 29.18 |
| | **8/13/2009** | **36.07** | **8.26** | **27.81** |
| EX-1 | 5/15/2008 | 33.28 | 4.69 | 28.59 |
| (5-30) | 9/10/2008 | 33.28 | 5.46 | 27.82 |
| | 11/18/2008 | 33.28 | 4.79 | 28.49 |
| | 2/17/2009 | 33.28 | 1.86 | 31.42 |
| | 5/15/2009 | 33.28 | 4.16 | 29.12 |
| | **8/13/2009** | **33.28** | **8.36** | **24.92** |

## Table 1b, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346
## Groundwater Flow Data

| Event # | Date | Average Water Table Elevation (ft amsl) | Change from Previous Episode (ft) | Gradient (Flow Direction) (ft/ft) |
|---|---|---|---|---|
| 1 | 11/7/1999 | NA | NA | 0.0068 (SW) |
| 2 | 3/8/2001 | NA | NA | 0.0092 (SW) |
| 3 | 11/17/2001 | NA | NA | 0.0091 (SW) |
| 4 | 3/31/2002 | NA | NA | 0.0108 (SSW) |
| 5 | 9/9/2003 | NA | NA | 0.0031 (SW) |
| 6 | 12/9/2003 | NA | NA | 0.0031 (SW) |
| 7 | 2/19/2004 | NA | NA | 0.0154 (SW) |
| 8 | 5/24/2004 | NA | NA | 0.0081 (WSW) |
| 9 | 9/3/2004 | NA | NA | 0.0075 (SW) |
| 10 | 11/2/2004 | NA | NA | 0.0083 (WSW) |
| 11 | 2/17/2005 | NA | NA | 0.0036 (SW) |
| 12 | 5/24/2005 | NA | NA | 0.0097 (SSW) |
| 13 | 8/15/2005 | NA | NA | 0.013 (SW) |
| 14 | 11/17/2005 | NA | NA | 0.010 (SW) |
| 15 | 2/8/2006 | NA | NA | 0.010 (SW) |
| 16 | 5/5/2006 | NA | NA | 0.013 (SSW) |
| 17 | 8/18/2006 | NA | NA | 0.0125 (SSW) |
| 18 | 12/1/2006 | NA | NA | 0.03 (S) |
| 19 | 2/23/2007 | NA | NA | 0.012 (SW) |
| 20 | 5/10/2007 | NA | NA | 0.013 (SW) |
| 21 | 8/16/2007 | NA | NA | 0.022 (SW) |
| 22 | 11/8/2007 | NA | NA | 0.012 (WSW) |
| 23 | 2/14/2008 | NA | NA | 0.013 (SW) |
| 24 | 5/15/2008 | 28.49 | NA | 0.01 (W) |
| 25 | 9/10/2008 | 27.55 | -0.94 | 0.015 (SW) |
| 26 | 11/18/2008 | 28.26 | 0.71 | 0.012 (W) |
| 27 | 2/17/2009 | 31.22 | 2.96 | 0.01 (SW) |
| 28 | 5/15/2009 | 29.16 | -2.06 | 0.01 (WSW) |
| **29** | **8/13/2009** | **27.42** | **-1.74** | **0.01 (W)** |

ft amsl = feet above mean sea level
All water level depths are measured from the top of casing
NA = not available

**Table 2, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346**

**Groundwater Analytical Data**

| Sample ID | Date | TPHg µg/L | Benzene µg/L | Toluene µg/L | Ethylbenzene µg/L | Xylenes µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | 1,2-DCA µg/L | EDB µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 11/7/1999 | 5,700 | 170 | 59 | 22 | 85 | 20,000 | NA | NA | NA | NA | NA | NA |
| | 3/8/2001 | 17,000 | 480 | 150 | 52 | 170 | 38,000 | NA | NA | NA | NA | NA | NA |
| | 11/17/2001 | 10,000 | 230 | 210 | 60 | 250 | 22,000 | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | 12,000 | 61 | ND | ND | 29 | 35,000 | NA | NA | NA | NA | NA | NA |
| | 11/9/2003 | 19,000 | ND | ND | ND | ND | 50,000 | NA | NA | NA | NA | NA | NA |
| | 12/9/2003 | 22,000 | 150 | ND | ND | ND | 66,000 | NA | NA | NA | NA | NA | NA |
| MW-1R | 11/17/2001 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 9/9/2003 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 12/9/2003 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 2/19/2004 | 1,800 | 95 | 130 | 44 | 200 | 220 | NA | NA | NA | NA | NA | NA |
| | 5/24/2004 | 210 | 12 | 10 | 5.4 | 23 | 79 | ND | ND | 2.1 | 37 | ND | ND |
| | 9/3/2004 | 300 | 1.5 | 7.1 | 9.4 | 42 | 81 | ND | ND | 1.6 | ND | ND | ND |
| | 11/2/2004 | 290 | 14 | 30 | 9.5 | 45 | 45 | ND | ND | 1.1 | ND | NA | NA |
| | 2/17/2005 | 530 | 3.4 | ND | ND | 2.6 | 1,000 | ND | ND | 100 | ND | NA | NA |
| | 5/24/2005 | NA | NA | NA | NA | NA | NA | ND | ND | 610 | ND | ND | ND |
| | 8/15/2005 | 2,500 | 64 | 240 | 61 | 210 | 2,300 | ND | ND | 210 | ND | ND | ND |
| | 11/17/2005 | 2,500 | 66 | 290 | 75 | 290 | 1,300 | ND | ND | 110 | 1,600 | ND | ND |
| | 2/8/2006 | 3,300 | 100 | 310 | 86 | 470 | 1,400 | ND | ND | 130 | 1,400 | ND | ND |
| | 5/5/2006 | 3,400 | 170 | 350 | 97 | 550 | 1,100 | ND | ND | 100 | 2,400 | ND | ND |
| | 8/18/2006 | 5,800 | 190 | 1,000 | 230 | 1,000 | 490 | ND | ND | 36 | 2,900 | ND | ND |
| | 12/1/2006 | 410 | 1.7 | 6.3 | 1.2 | 47 | 100 | ND | ND | 4.7 | 100 | ND | ND |
| | 2/23/2007 | ND | ND | 0.51 | ND | 1.4 | 3 | ND | ND | ND | ND | ND | ND |
| | 5/10/2007 | ND | ND | ND | ND | 2.0 | 5.9 | ND | ND | ND | ND | ND | ND |
| | 8/16/2007 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | 11/8/2007 | 1,300 | 11 | 82 | 54 | 270 | 1.4 | ND | ND | ND | ND | ND | ND |
| | 2/14/2008 | 800 | 7.6 | 31 | 23 | 150 | 1.7 | ND | ND | ND | ND | ND | ND |
| | 5/15/2008 | 3,200 | 20 | 200 | 110 | 550 | 4.2 | ND<0.50 | ND<0.50 | 1.0 | ND<20 | ND<0.50 | ND<0.50 |
| | 9/10/2008 | 1,000 | 6.5 | 22 | 19 | 120 | 2.3 | ND<0.50 | ND<0.50 | ND<0.50 | 4.0 | ND<0.50 | ND<0.50 |
| | 11/18/2008 | 430 | 4.1 | 18 | 12 | 100 | 1.8 | ND<0.50 | ND<0.50 | ND<0.50 | ND<2.0 | ND<0.50 | ND<0.50 |
| | 2/17/2009 | 220 | 3.6 | 6.1 | 2.0 | 41 | 1.3 | ND<0.50 | ND<0.50 | ND<0.50 | ND<2.0 | ND<0.50 | ND<0.50 |
| | 5/15/2009 | 890 | 6.0 | 17 | 27 | 110 | 1.8 | ND<0.50 | ND<0.50 | ND<0.50 | 3.9 | ND<0.50 | ND<0.50 |
| | **8/13/2009** | **2,000** | **17** | **23** | **73** | **350** | **2.1** | **ND<0.50** | **ND<0.50** | **ND<0.50** | **ND<2.0** | **ND<0.50** | **ND<0.50** |
| MW-2 | 11/7/1999 | 6,000 | 1,300 | 92 | 50 | 400 | 6,800 | NA | NA | NA | NA | NA | NA |
| | 3/8/2001 | 41,000 | 8,100 | 870 | 2,000 | 4,100 | 26,000 | NA | NA | NA | NA | NA | NA |
| | 11/17/2001 | 18,000 | 3,700 | 180 | 610 | 640 | 16,000 | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | 32,000 | 6,500 | 270 | 1,700 | 2,700 | 19,000 | NA | NA | NA | NA | NA | NA |
| | 9/9/2003 | 24,000 | 4,600 | ND | 1,200 | 440 | 19,000 | NA | NA | NA | NA | NA | NA |
| | 12/9/2003 | 31,000 | 6,200 | 170 | 1,600 | 2,700 | 19,000 | NA | NA | NA | NA | NA | NA |
| | 2/19/2004 | 21,000 | 4,600 | 120 | 970 | 2,000 | 15,000 | NA | NA | NA | NA | NA | NA |
| | 5/24/2004 | 1,200 | 120 | 3 | 63 | 67 | 1,900 | ND | ND | ND | ND | ND | ND |
| | 9/3/2004 | 2,300 | 120 | ND | 51 | 70 | 1,700 | ND | ND | 26 | ND | ND | ND |
| | 11/2/2004 | 530 | 35 | ND | 17 | 30 | 520 | ND | ND | 28 | 100 | NA | NA |

**Table 2, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346**

**Groundwater Analytical Data**

| Sample ID | Date | TPHg µg/L | Benzene µg/L | Toluene µg/L | Ethylbenzene µg/L | Xylenes µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | 1,2-DCA µg/L | EDB µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-2 | 2/17/2005 | 18,000 | 2,100 | 31 | 800 | 680 | 20,000 | ND | ND | 1,000 | ND | NA | NA |
| (cont.) | 5/24/2005 | 22,000 | 3,200 | 52 | 1,400 | 1,700 | 16,000 | ND | ND | NS | NS | ND | ND |
| | 8/15/2005 | 2,000 | 66 | ND | 46 | 47 | 2,400 | ND | ND | 95 | 880 | ND | ND |
| | 11/17/2005 | 760 | 19 | 0.64 | 15 | 13 | 1,000 | ND | ND | 26 | 810 | ND | ND |
| | 2/8/2006 | 10,000 | 1,500 | 8 | 660 | 380 | 4,300 | ND | ND | 120 | 2,800 | ND | ND |
| | 5/5/2006 | 15,000 | 1,800 | ND | 1,200 | 1,200 | 5,800 | ND | ND | 150 | 4,300 | ND | ND |
| | 8/18/2006 | 360 | 11 | ND | 13 | 9.7 | 160 | ND | ND | 4.6 | 600 | ND | ND |
| | 12/1/2006 | 11,000 | 1,000 | ND | 990 | 910 | 2,100 | ND | ND | 87 | 2,000 | ND | ND |
| | 2/23/2007 | 3,200 | 210 | ND | 270 | 85 | 900 | ND | ND | 33 | 1,400 | ND | ND |
| | 5/10/2007 | 590 | 31 | ND | 39 | 22 | 200 | ND | ND | 5.9 | 250 | ND | ND |
| | 8/16/2007 | 650 | 49 | ND | 71 | 49 | 100 | ND | ND | 3.5 | 82 | ND | ND |
| | 11/8/2007 | 110 | 1.6 | ND | 1.9 | 1.6 | 23 | ND | ND | 0.64 | 48 | ND | ND |
| | 2/14/2008 | 350 | 24 | ND | 12 | 5.9 | 190 | ND | ND | 7.7 | 320 | ND | ND |
| | 5/15/2008 | 81 | 0.59 | ND<0.50 | 0.71 | 0.66 | 38 | ND<0.50 | ND<0.50 | 1.4 | 54 | ND<0.50 | ND<0.50 |
| | 9/10/2008 | 150 | 6.4 | ND<0.50 | 8.4 | 5.1 | 14 | ND<0.50 | ND<0.50 | 0.55 | 38 | ND<0.50 | ND<0.50 |
| | 11/18/2008 | 420 | 25 | 0.70 | 46 | 47 | 29 | ND<0.50 | ND<0.50 | 1.3 | 60 | ND<0.50 | ND<0.50 |
| | 2/17/2009 | 460 | 23 | 0.96 | 51 | 37 | 26 | ND<0.50 | ND<0.50 | 1.4 | 61 | ND<0.50 | ND<0.50 |
| | 5/15/2009 | 220 | 13 | 0.93 | 26 | 13 | 21 | ND<0.50 | ND<0.50 | 0.87 | 60 | ND<0.50 | ND<0.50 |
| | **8/13/2009** | **110** | **7.0** | **ND<0.50** | **13** | **5.0** | **7.7** | **ND<0.50** | **ND<0.50** | **ND<0.50** | **26** | **ND<0.50** | **ND<0.50** |
| MW-3 | 11/7/1999 | 43,000 | 860 | 70 | ND | 65 | 120,000 | NA | NA | NA | NA | NA | NA |
| | 3/8/2001 | 90,000 | 1,800 | ND | ND | ND | 210,000 | NA | NA | NA | NA | NA | NA |
| | 11/17/2001 | 110,000 | 1,600 | ND | ND | ND | 300,000 | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | 130,000 | 2,400 | 670 | 300 | 390 | 300,000 | NA | NA | NA | NA | NA | NA |
| | 9/9/2003 | 190,000 | 1,600 | ND | ND | ND | 420,000 | NA | NA | NA | NA | NA | NA |
| | 12/9/2003 | 170,000 | 2,000 | ND | ND | ND | 4,500,000 | NA | NA | NA | NA | NA | NA |
| | 2/19/2004 | 86,000 | 1,800 | 630 | ND | ND | 160,000 | NA | NA | NA | NA | NA | NA |
| | 5/24/2004 | 120,000 | 2,200 | ND | 180 | 220 | 400,000 | ND | ND | 15,000 | ND | ND | ND |
| | 9/3/2004 | 180,000 | 2,000 | ND | ND | ND | 510,000 | ND | ND | 14,000 | ND | ND | ND |
| | 11/2/2004 | 150,000 | 1,700 | ND | ND | ND | 350,000 | ND | ND | 31,000 | 140,000 | NA | NA |
| | 2/17/2005 | 130,000 | 2,100 | 420 | 210 | 730 | 290,000 | ND | ND | 11,000 | ND | NA | NA |
| | 5/24/2005 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| | 8/15/2005 | 110,000 | 1,500 | ND | ND | ND | 260,000 | ND | ND | 21,000 | 25,000 | ND | ND |
| | 11/17/2005 | 200,000 | 2,400 | ND | ND | ND | 580,000 | ND | ND | 24,000 | 49,000 | ND | ND |
| | 2/8/2006 | 470,000 | 3,800 | 660 | ND | 790 | 490,000 | ND | ND | 26,000 | 49,000 | ND | ND |
| | 5/5/2006 | 400,000 | 3,300 | ND | ND | ND | 590,000 | ND | ND | 21,000 | 86,000 | ND | ND |
| | 8/18/2006 | 310,000 | 1,800 | ND | ND | ND | 440,000 | ND | ND | 23,000 | 79,000 | ND | ND |
| | 12/1/2006 | 270,000 | ND | ND | ND | ND | 290,000 | ND | ND | 11,000 | 90,000 | ND | ND |
| | 2/23/2007 | 220,000 | ND | ND | ND | ND | 260,000 | ND | ND | 15,000 | 33,000 | ND | ND |
| | 5/10/2007 | 140,000 | ND | ND | ND | ND | 180,000 | ND | ND | 7,100 | 80,000 | ND | ND |
| | 8/16/2007 | 69,000 | ND | ND | ND | ND | 85,000 | ND | ND | 3,400 | 180,000 | ND | ND |
| | 11/8/2007 | 34,000 | ND | ND | ND | ND | 38,000 | ND | ND | 1,400 | 140,000 | ND | ND |
| | 2/14/2008 | 41,000 | ND | ND | ND | ND | 44,000 | ND | ND | 1,900 | 110,000 | ND | ND |
| | 5/15/2008 | 43,000 | ND<100 | ND<100 | ND<100 | ND<100 | 62,000 | ND<100 | ND<100 | 1,100 | 200,000 | ND<100 | ND<100 |
| | 9/10/2008 | 1,600 | 14 | 8.6 | 7.7 | 23 | 21,000 | ND<1,000 | ND<1,000 | ND<1,000 | 290,000 | ND<1,000 | ND<1,000 |
| | 11/18/2008 | 4,500 | 86 | 150 | 100 | 590 | 29,000 | ND<1,000 | ND<1,000 | ND<1,000 | 290,000 | ND<1,000 | ND<1,000 |
| | 2/17/2009 | 2,500 | 45 | 53 | 35 | 160 | 16,000 | ND<1,000 | ND<1,000 | ND<1,000 | 190,000 | ND<1,000 | ND<1,000 |
| | 5/15/2009 | 2,000 | 15 | 21 | 13 | 35 | 13,000 | ND<1,000 | ND<1,000 | ND<1,000 | 260,000 | ND<1,000 | ND<1,000 |
| | **8/13/2009** | **1,300** | **10** | **11** | **4.1** | **14** | **7,900** | **ND<1,200** | **ND<1,200** | **ND<1,200** | **250,000** | **ND<1,200** | **ND<1,200** |

**Table 2, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346**

**Groundwater Analytical Data**

| Sample ID | Date | TPHg µg/L | Benzene µg/L | Toluene µg/L | Ethylbenzene µg/L | Xylenes µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | 1,2-DCA µg/L | EDB µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 11/17/2001 | 64,000 | 960 | 1,400 | 360 | 1,600 | 140,000 | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | 78,000 | 4,400 | 4,700 | 690 | 2,700 | 150,000 | NA | NA | NA | NA | NA | NA |
| | 9/6/2007 | 49,000 | 710 | 840 | ND | 10,000 | 3,600 | ND | ND | 510 | 32,000 | ND | ND |
| | 11/8/2007 | 64,000 | 1,300 | 2,600 | 1,000 | 8,500 | 1,500 | ND | ND | 360 | 14,000 | ND | ND |
| | 2/14/2008 | 60,000 | 390 | 460 | 230 | 2,000 | 52,000 | ND | ND | 2,000 | 58,000 | ND | ND |
| | 5/15/2008 | 22,000 | 670 | 130 | 740 | 2,700 | 3,300 | ND<5.0 | ND<5.0 | 340 | 35,000 | ND<5.0 | ND<5.0 |
| | 9/10/2008 | 16,000 | 500 | 150 | 730 | 2,500 | 2,000 | ND<250 | ND<250 | ND<250 | 65,000 | ND<250 | ND<250 |
| | 11/18/2008 | 24,000 | 820 | 190 | 1,200 | 5,000 | 1,400 | ND<50 | ND<50 | 260 | 9,300 | ND<50 | ND<50 |
| | 2/17/2009 | 17,000 | 350 | 170 | 620 | 2,600 | 360 | ND<10 | ND<10 | 82 | 2,100 | ND<10 | ND<10 |
| | 5/15/2009 | 32,000 | 300 | 190 | 880 | 3,200 | 470 | ND<10 | ND<10 | 95 | 380 | ND<10 | ND<10 |
| | **8/13/2009** | **29,000** | **320** | **250** | **980** | **3,400** | **350** | **ND<50** | **ND<50** | **61** | **10,000** | **ND<50** | **ND<50** |
| MW-5 | 11/17/2001 | 210 | 15 | 12 | 11 | 23 | 4.8 | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | 120 | 11 | 7.4 | 6.1 | 16 | 4.2 | NA | NA | NA | NA | NA | NA |
| | 9/9/2003 | ND | 1.5 | ND | ND | ND | 1.7 | NA | NA | NA | NA | NA | NA |
| | 12/9/2003 | 130 | 32 | ND | 2.6 | 0.57 | 5 | NA | NA | NA | NA | NA | NA |
| | 2/19/2004 | ND | ND | ND | ND | ND | 1.5 | NA | NA | NA | NA | NA | NA |
| | 5/24/2004 | ND | ND | ND | ND | ND | 0.55 | ND | ND | ND | ND | ND | ND |
| | 9/3/2004 | 100 | 6.4 | ND | ND | 0.79 | 4.2 | ND | ND | ND | ND | ND | ND |
| | 11/2/2004 | ND | 2.6 | ND | 1.7 | 0.87 | 1 | ND | ND | ND | ND | ND | ND |
| | 2/17/2005 | 51 | 0.74 | ND | 0.94 | ND | 1.5 | ND | ND | ND | ND | ND | ND |
| | 5/24/2005 | ND | ND | ND | ND | ND | 1 | ND | ND | ND | ND | ND | ND |
| | 8/15/2005 | ND | ND | ND | ND | ND | 0.88 | ND | ND | ND | ND | ND | ND |
| | 11/17/2005 | 71 | 0.81 | ND | 1.1 | ND | 1.4 | ND | ND | ND | ND | ND | ND |
| | 2/8/2006 | 50 | ND | ND | ND | ND | 1 | ND | ND | ND | ND | ND | ND |
| | 5/5/2006 | ND | ND | ND | ND | ND | 0.93 | ND | ND | ND | ND | ND | ND |
| | 8/18/2006 | ND | ND | ND | ND | ND | 1 | ND | ND | ND | ND | ND | ND |
| | 12/1/2006 | ND | 0.69 | ND | ND | 0.52 | 0.97 | ND | ND | ND | ND | ND | ND |
| | 2/23/2007 | 73 | ND | ND | ND | ND | 1.7 | ND | ND | ND | ND | ND | ND |
| | 5/10/2007 | ND | ND | ND | ND | ND | 1.5 | ND | ND | ND | ND | ND | ND |
| | 8/16/2007 | ND | ND | ND | ND | ND | 1.3 | ND | ND | ND | ND | ND | ND |
| | 11/8/2007 | ND | ND | ND | ND | ND | 1.5 | ND | ND | ND | ND | ND | ND |
| | 2/14/2008 | ND | ND | ND | ND | ND | 1.3 | ND | ND | ND | ND | ND | ND |
| | 5/15/2008 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | 1.7 | ND<0.50 | ND<0.50 | ND<0.50 | ND<20 | ND<0.50 | ND<0.50 |
| | 9/10/2008 | 480 | 17 | 1.8 | 2.7 | 0.59 | 12 | ND<0.50 | ND<0.50 | ND<0.50 | 4.4 | ND<0.50 | ND<0.50 |
| | 11/18/2008 | 130 | 2.3 | 1.6 | ND<0.50 | ND<0.50 | 7.3 | ND<0.50 | ND<0.50 | ND<0.50 | ND<2.0 | ND<0.50 | ND<0.50 |
| | 2/17/2009 | 170 | ND<0.50 | 2.7 | ND<0.50 | ND<0.50 | 4.2 | ND<0.50 | ND<0.50 | ND<0.50 | ND<2.0 | ND<0.50 | ND<0.50 |
| | 5/15/2009 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | 7.6 | ND<0.50 | ND<0.50 | ND<0.50 | ND<2.0 | ND<0.50 | ND<0.50 |
| | **8/13/2009** | **380** | **19** | **2.1** | **3.8** | **0.88** | **11** | **ND<0.50** | **ND<0.50** | **ND<0.50** | **ND<2.0** | **ND<0.50** | **ND<0.50** |
| MW-6 | 11/17/2001 | 3,500 | 160 | 260 | 95 | 420 | 1,500 | NA | NA | NA | NA | NA | NA |
| | 3/31/2002 | 3,200 | 410 | 170 | 82 | 280 | 3,000 | NA | NA | NA | NA | NA | NA |
| | 9/9/2003 | 800 | 49 | ND | 7.4 | ND | 1,700 | NA | NA | NA | NA | NA | NA |
| | 12/9/2003 | 970 | 150 | 9.9 | 31 | 83 | 1,200 | NA | NA | NA | NA | NA | NA |
| | 2/19/2004 | 1,900 | 280 | 58 | 17 | 160 | 2,700 | NA | NA | NA | NA | NA | NA |
| | 9/3/2004 | 1,100 | 27 | ND | 14 | 27 | 2,200 | ND | ND | 85 | ND | ND | ND |
| | 11/2/2004 | 1,800 | 32 | ND | 5 | 11 | 4,100 | ND | ND | 170 | 270 | ND | ND |
| | 2/17/2005 | 5,600 | 190 | 34 | 41 | 110 | 10,000 | ND | ND | 780 | 2,000 | ND | ND |
| | 8/15/2005 | 1,800 | 27 | ND | 6 | 23 | 3,800 | ND | ND | 300 | 3,500 | ND | ND |
| | 11/17/2005 | 1,100 | 30 | ND | 4 | 9 | 2,400 | ND | ND | 190 | 9,500 | ND | ND |
| | 2/8/2006 | 3,600 | 220 | 43 | 66 | 160 | 2,700 | ND | ND | 180 | 7,800 | ND | ND |

**Table 2, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346**

**Groundwater Analytical Data**

| Sample ID | Date | TPHg µg/L | Benzene µg/L | Toluene µg/L | Ethylbenzene µg/L | Xylenes µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | 1,2-DCA µg/L | EDB µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-6 | 5/5/2006 | 1,600 | 130 | 21 | 37 | 65 | 1,400 | ND | ND | 53 | 3,100 | ND | ND |
| (cont.) | 8/18/2006 | 270 | 27 | ND | 3 | 4 | 240 | ND | ND | 11 | 2,400 | ND | ND |
| | 12/1/2006 | 1,700 | ND | ND | ND | ND | 1,700 | ND | ND | 92 | 800 | ND | ND |
| | 2/23/2007 | ND | ND | ND | ND | ND | 15 | ND | ND | ND | ND | ND | ND |
| | 5/10/2007 | ND | 3.0 | ND | ND | 1.9 | 26 | ND | ND | 2 | 48 | ND | ND |
| | 8/16/2007 | ND | ND | ND | ND | ND | 1.4 | ND | ND | ND | ND | ND | ND |
| | 11/8/2007 | ND | ND | ND | ND | ND | 5.3 | ND | ND | ND | ND | ND | ND |
| | 2/14/2008 | ND | ND | ND | ND | ND | 11 | ND | ND | 0.94 | 220 | ND | ND |
| | 5/15/2008 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | 13 | ND<0.50 | ND<0.50 | 1.0 | 130 | ND<0.50 | ND<0.50 |
| | 9/10/2008 | 78 | 1.4 | 0.60 | 0.94 | 1.3 | 71 | ND<1.0 | ND<1.0 | 6.2 | 160 | ND<1.0 | ND<1.0 |
| | 11/18/2008 | ND<50 | 2.4 | ND<0.50 | ND<0.50 | 0.70 | 72 | ND<1.2 | ND<1.2 | 7.2 | 180 | ND<1.2 | ND<1.2 |
| | 2/17/2009 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<2.0 | ND<0.50 | ND<0.50 |
| | 5/15/2009 | 53 | 3.2 | ND<0.50 | ND<0.50 | 1.7 | 44 | ND<1.0 | ND<1.0 | 4.3 | 89 | ND<1.0 | ND<1.0 |
| | **8/13/2009** | **74** | **5.9** | **0.57** | **0.97** | **5.0** | **27** | **ND<0.50** | **ND<0.50** | **2.2** | **140** | **ND<0.50** | **ND<0.50** |
| EX-1 | 2/19/2004 | 120,000 | 9,500 | 4,300 | 840 | 3,900 | 150,000 | NA | NA | NA | NA | NA | NA |
| | 2/14/2008 | 84,000 | 2,300 | 4,900 | 1,800 | 14,000 | 3,900 | ND | ND | 610 | 10,000 | ND | ND |
| | 5/15/2008 | 24,000 | 2,100 | 750 | 640 | 2,100 | 1,800 | ND<0.50 | ND<0.50 | 380 | 11,000 | ND<0.50 | ND<0.50 |
| | 9/10/2008 | 9,200 | 1,000 | 160 | 300 | 1,000 | 780 | ND<100 | ND<100 | 180 | 22,000 | ND<100 | ND<100 |
| | 11/18/2008 | 8,900 | 1,400 | 290 | 360 | 1,300 | 840 | ND<100 | ND<100 | 230 | 20,000 | ND<100 | ND<100 |
| | 2/17/2009 | 70,000 | 2,700 | 3,600 | 1,900 | 13,000 | 1,400 | ND<25 | ND<25 | 480 | 1,500 | ND<25 | ND<25 |
| | 5/15/2009 | 18,000 | 1,400 | 250 | 530 | 1,700 | 640 | ND<25 | ND<25 | 200 | 5,500 | ND<25 | ND<25 |
| | **8/13/2009** | **10,000** | **1,100** | **150** | **410** | **940** | **520** | **ND<25** | **ND<25** | **120** | **5,200** | **ND<25** | **ND<25** |

Notes:
TPHg = total petroleum hydrocarbons as gasoline using EPA Method 8015
Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021B
MTBE = methyl-tertiary butyl ether using EPA Method 8021B; EPA Method 8260B Beginning in May 2008
TBA = tert-butyl alcohol using EPA Method 8260B
TAME = tert-amyl methyl ether using EPA Method 8260B
DIPE = diisopropyl ether using EPA Method 8260B
ETBE = ethyl tert-butyl ether using EPA Method 8260B
1,2-DCA = 1,2-dichloroethane using EPA Method 8260B
EDB = Ethylene dibromide using EPA Method 8260B
µg/L= micrograms per liter
ND = non detect at respective reporting limit
NA - not analyzed

# APPENDIX A

# GROUNDWATER MONITORING WELL FIELD SAMPLING FORMS

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-1R**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 2" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 36.67 | | |
| Depth of Well | 22.75 | | |
| Depth to Water (from top of casing) | 9.20 | | |
| Water Elevation (feet above msl) | 27.47 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **6.5** | | |
| Actual Volume Purged (gallons) | 7.0 | | |
| Appearance of Purge Water | Clear at 2 gallons | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 13:20 | 1 | 19.32 | 6.61 | 539 | 0.94 | -187.4 | Light grey |
| | 2 | 19.27 | 6.48 | 535 | 0.79 | -180.3 | Clear |
| | 3 | 19.25 | 6.34 | 534 | 0.76 | -170.6 | Clear |
| | 4 | 19.24 | 6.19 | 532 | 0.74 | -161.1 | Clear |
| | 5 | 19.20 | 6.11 | 532 | 0.76 | -155.2 | Clear |
| | 6 | 19.16 | 6.07 | 532 | 0.75 | -151.2 | Clear |
| 13:26 | 7 | 19.10 | 6.04 | 533 | 0.70 | -150.6 | Clear |
| | | | | | | | |

## COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong hydrocarbon odors noted during purging

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-2**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 2" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 36.33 | | |
| Depth of Well | 20.70 | | |
| Depth to Water (from top of casing) | 8.23 | | |
| Water Elevation (feet above msl) | 28.10 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **6.0** | | |
| Actual Volume Purged (gallons) | 6.0 | | |
| Appearance of Purge Water | Initially light brown, clears quickly | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 13:48 | 1 | 21.21 | 6.31 | 625 | 0.56 | -49.2 | Clear |
| | 2 | 22.15 | 6.21 | 648 | 0.55 | -52.2 | Clear |
| | 3 | 21.96 | 6.22 | 659 | 0.47 | -63.3 | Clear |
| | 4 | 21.45 | 6.25 | 638 | 0.40 | -72.9 | Clear |
| | 5 | 20.98 | 6.26 | 612 | 0.36 | -80.1 | Clear |
| 13:53 | 6 | 20.28 | 6.25 | 604 | 0.38 | -84.9 | Clear |
| | | | | | | | |
| | | | | | | | |

## COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-3**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 2" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 35.12 | | |
| Depth of Well | 20.82 | | |
| Depth to Water (from top of casing) | 7.96 | | |
| Water Elevation (feet above msl) | 27.16 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **6.2** | | |
| Actual Volume Purged (gallons) | 7.0 | | |
| Appearance of Purge Water | Initially light grey, clears by 2 gallons | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 14:22 | 1 | 20.37 | 6.34 | 779 | 0.88 | -112.8 | Light grey |
| | 2 | 20.59 | 6.28 | 785 | 0.90 | -118.7 | Clear |
| | 3 | 20.81 | 6.23 | 810 | 0.74 | -120.6 | Clear |
| | 4 | 20.60 | 6.21 | 812 | 0.63 | -120.8 | Clear |
| | 5 | 20.25 | 6.15 | 811 | 0.50 | -120.2 | Clear |
| | 6 | 20.12 | 6.11 | 800 | 0.47 | -119.7 | Clear |
| | 7 | 20.02 | 6.07 | 791 | 0.43 | -119.5 | Clear |
| | | | | | | | |

## COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong hydrocarbon odor noted during purging

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-4**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 2" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 34.11 | | |
| Depth of Well | 19.75 | | |
| Depth to Water (from top of casing) | 6.02 | | |
| Water Elevation (feet above msl) | 28.09 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **6.6** | | |
| Actual Volume Purged (gallons) | 7.0 | | |
| Appearance of Purge Water | Initally dark grey, clearing at 1.5 gallons | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 14:39 | 1 | 21.29 | 6.59 | 825 | 0.87 | -168.0 | dark/grey |
| | 2 | 21.62 | 6.53 | 828 | 0.37 | -163.2 | Clear |
| | 3 | 21.56 | 6.49 | 841 | 0.33 | -163.1 | Clear |
| | 4 | 21.46 | 6.45 | 847 | 0.35 | -161.0 | Clear |
| | 5 | 21.39 | 6.41 | 849 | 0.38 | -159.4 | Clear |
| | 6 | 21.30 | 6.37 | 848 | 0.39 | -157.7 | Clear |
| 14:45 | 7 | 21.22 | 6.34 | 851 | 0.32 | -156.7 | Clear |
| | | | | | | | |

## COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong hydrocarbon odors noted during purging

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-5**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 2" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 35.17 | | |
| Depth of Well | 24.31 | | |
| Depth to Water (from top of casing) | 6.81 | | |
| Water Elevation (feet above msl) | 28.36 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **8.4** | | |
| Actual Volume Purged (gallons) | 9.0 | | |
| Appearance of Purge Water | Initially brown, clearing at 2.5 gallons | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 14:08 | 1 | 20.26 | 6.40 | 689 | 1.56 | -52.4 | Light brown |
| | 2 | 20.27 | 6.34 | 681 | 0.44 | -59.3 | Light brown |
| | 3 | 20.25 | 6.27 | 677 | 0.30 | -63.1 | Clear |
| | 4 | 20.23 | 6.20 | 675 | 0.28 | -64.6 | Clear |
| | 5 | 20.21 | 6.14 | 672 | 0.26 | -66.8 | Clear |
| | 6 | 20.20 | 6.12 | 672 | 0.26 | -70.9 | Clear |
| | 7 | 20.21 | 6.10 | 672 | 0.29 | -76.6 | Clear |
| | 8 | 20.20 | 6.10 | 671 | 0.30 | -78.5 | Clear |
| | 9 | 20.18 | 6.09 | 671 | 0.31 | -81.4 | Clear |

## COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Slight hydrocarbon odor noted during purging.

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-6**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 2" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 36.07 | | |
| Depth of Well | 23.45 | | |
| Depth to Water (from top of casing) | 8.26 | | |
| Water Elevation (feet above msl) | 27.81 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **7.3** | | |
| Actual Volume Purged (gallons) | 8.0 | | |
| Appearance of Purge Water | Initially brown, clearing around 1 gallon | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 13:36 | 1 | 19.31 | 6.49 | 563 | 1.38 | -110.7 | Slight brown |
| | 2 | 19.20 | 6.40 | 557 | 0.44 | -112.9 | Clear |
| | 3 | 19.17 | 6.28 | 553 | 0.33 | -110.0 | Clear |
| | 4 | 19.16 | 6.21 | 552 | 0.32 | -106.5 | Clear |
| | 5 | 19.17 | 6.10 | 551 | 0.32 | -102.8 | Clear |
| | 6 | 19.17 | 6.03 | 551 | 0.32 | -102.8 | Clear |
| | 7 | 19.17 | 6.02 | 550 | 0.31 | -102.6 | Clear |
| | 8 | 19.16 | 6.00 | 551 | 0.30 | -101.9 | Clear |
| | | | | | | | |

## COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: EX-1**

| | | | |
|---|---|---|---|
| Project Name: | Alaska Gas | Date of Sampling: | 8/13/2009 |
| Job Number: | 280346 | Name of Sampler: | A. Nieto |
| Project Address: | 6211 San Pablo Avenue, Oakland | | |

## MONITORING WELL DATA

| | | | |
|---|---|---|---|
| Well Casing Diameter (2"/4"/6") | 4" | | |
| Wellhead Condition | OK | | |
| Elevation of Top of Casing (feet above msl) | 33.28 | | |
| Depth of Well | 27.50 | | |
| Depth to Water (from top of casing) | 8.36 | | |
| Water Elevation (feet above msl) | 24.92 | | |
| Well Volumes Purged | 3 | | |
| Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft) | **37.3** | | |
| Actual Volume Purged (gallons) | 38.0 | | |
| Appearance of Purge Water | Initially dark, clearing quickly | | |
| Free Product Present? | No | Thickness (ft): | |

## GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

| Time | Vol Removed (gal) | Temperature (deg C) | pH | Conductivity (µ sec/cm) | DO (mg/L) | ORP (meV) | Comments |
|---|---|---|---|---|---|---|---|
| 15:00 | 1 | 19.93 | 6.55 | 783 | 2.88 | -174.5 | Clear |
| | 2 | 19.87 | 6.58 | 782 | 0.91 | -179.1 | Clear |
| | 3 | 19.86 | 6.54 | 783 | 0.60 | -181.6 | Clear |
| | 4 | 19.88 | 6.49 | 784 | 0.52 | -186.4 | Clear |
| | 5 | 19.97 | 6.37 | 786 | 0.49 | -182.0 | Clear |
| | 6 | 20.11 | 6.33 | 790 | 0.48 | -184.8 | Clear |
| | 10 | 20.48 | 6.30 | 798 | 0.37 | -186.8 | Clear |
| | 14 | 21.40 | 6.31 | 810 | 0.26 | -184.1 | Clear |
| | 18 | 21.57 | 6.36 | 814 | 0.27 | -173.9 | Clear |
| | 22 | 21.29 | 6.39 | 793 | 0.31 | -161.6 | Clear |
| | 26 | 21.04 | 6.41 | 765 | 0.32 | -158.7 | Clear |
| | 30 | 20.88 | 6.40 | 750 | 0.29 | -153.0 | Clear |
| | 34 | 20.80 | 6.38 | 747 | 0.27 | -150.3 | Clear |
| 15:26 | 38 | 20.76 | 6.36 | 747 | 0.25 | -146.2 | Clear |

**COMMENTS (i.e., sample odor, well recharge time & percent, etc.)**

# APPENDIX B

# LABORATORY ANALYTICAL REPORT WITH CHAIN OF CUSTODY DOCUMENTATION

**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

| | | |
|---|---|---|
| AEI Consultants | Client Project ID: #280346; Alaska Gas | Date Sampled: 08/13/09 |
| 2500 Camino Diablo, Ste. #200 | | Date Received: 08/13/09 |
| Walnut Creek, CA 94597 | Client Contact: Jeremy Smith | Date Reported: 08/20/09 |
| | Client P.O.: #WC081871 | Date Completed: 08/18/09 |

**WorkOrder: 0908330**

August 20, 2009

Dear Jeremy:

Enclosed within are:

1) The results of the **7** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice 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 or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

# McCAMPBELL ANALYTICAL INC.

1534 Willow Pass Road
Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

0908330

# CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith | Bill To: same | P.O. # WC081871

Company: AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94597 E-Mail: jasmith@aeiconsultants.com
Tele: (925) 746-6000 Fax: (925) 746-6099
Project #: 280346 Project Name: Alaska Gas
Project Location: 6211 San Pablo Avenue, Oakland, California
Sampler Signature:

| SAMPLE ID (Field Point Name) | LOCATION | SAMPLING Date | SAMPLING Time | # Containers | Type Containers | MATRIX Water | Soil | Air | Sludge | Other | METHOD PRESERVED Ice | HCl | $HNO_3$ | Other | BTEX / MTBE 8021B | TPH - gasoline (8015) | Total Petroleum Oil & Grease (413.1) w/ Silica | Total Petroleum Hydrocarbons (418.1) | Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB | Nitrate/Nitrite | EPA 608 / 8080 PCB's ONLY | VOCs 8260 | SVOCs (with PAHs) 8270 | PAH's / PNA's by EPA 625 / 8270 / 8310 | CAM-17 Metals | LUFT 5 Metals (Cd, Cr, pb,,Ni,zinc (6010C). | Lead (field filtered 200.8) | RCI | Other | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1R | | 8/14/09 | 1535 | 4 | Vo45 | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |
| MW-2 | | | 1550 | | | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |
| MW-3 | | | 1605 | | | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |
| MW-4 | | | 1615 | | | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |
| MW-5 | | | 1600 | | | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |
| MW-6 | | | 1545 | | | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |
| EX-1 | | | 1625 | | | X | | | | | X | X | | | X | X | | | X | | | | | | | | | | | |

| Relinquished By: | Date: | Time: | Received By: |
|---|---|---|---|
| | 8/14/09 | 1800 | 8/13/09 6:00PM |
| Relinquished By: | Date: | Time: | Received By: |
| Relinquished By: | Date: | Time: | Received By: |

ICE/t° yes & 2ee
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB NO

| PRESERVATION APPROPRIATE CONTAINERS ✓ | VOAS | O&G | METALS | OTHER |
|---|---|---|---|---|
| PERSERVED IN LAB WA | | | | |

**McCampbell Analytical, Inc.**
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD



**WorkOrder: 0908330** **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

**Report to:**
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC081871
ProjectNo: #280346; Alaska Gas

**Bill to:**
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

**Requested TAT: 5 days**

***Date Received:*** **08/13/2009**
***Date Printed:*** **08/13/2009**

| Lab ID | Client ID | Matrix | Collection Date | Hold | Requested Tests (See legend below) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 0908330-001 | MW-1R | Water | 8/13/2009 15:35 | ☐ | B | A | A | | | | | | | | | |
| 0908330-002 | MW-2 | Water | 8/13/2009 15:50 | ☐ | B | A | | | | | | | | | | |
| 0908330-003 | MW-3 | Water | 8/13/2009 16:05 | ☐ | B | A | | | | | | | | | | |
| 0908330-004 | MW-4 | Water | 8/13/2009 16:15 | ☐ | B | A | | | | | | | | | | |
| 0908330-005 | MW-5 | Water | 8/13/2009 16:00 | ☐ | B | A | | | | | | | | | | |
| 0908330-006 | MW-6 | Water | 8/13/2009 15:45 | ☐ | B | A | | | | | | | | | | |
| 0908330-007 | EX-1 | Water | 8/13/2009 16:25 | ☐ | B | A | | | | | | | | | | |

**Test Legend:**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5-OXYS+PBSCV_W | 2 | G-MBTEX_W | 3 | PREDF REPORT | 4 | | 5 | |
| 6 | | 7 | | 8 | | 9 | | 10 | |
| 11 | | 12 | | | | | | | |

**Prepared by: Samantha Arbuckle**

**Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

**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

# Sample Receipt Checklist

Client Name: **AEI Consultants**

Date and Time Received: **8/13/2009 7:06:52 PM**

Project Name: **#280346; Alaska Gas**

Checklist completed and reviewed by: Samantha Arbuckle

WorkOrder N°: **0908330** Matrix Water

Carrier: Client Drop-In

## Chain of Custody (COC) Information

| | | |
|---|---|---|
| Chain of custody present? | Yes ☑ | No ☐ |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ |
| Sample IDs noted by Client on COC? | Yes ☑ | No ☐ |
| Date and Time of collection noted by Client on COC? | Yes ☑ | No ☐ |
| Sampler's name noted on COC? | Yes ☑ | No ☐ |

## Sample Receipt Information

| | | | |
|---|---|---|---|
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | NA ☑ |
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | |
| Samples in proper containers/bottles? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |

## Sample Preservation and Hold Time (HT) Information

| | | | |
|---|---|---|---|
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature | Cooler Temp: 8.2°C | | NA ☐ |
| Water - VOA vials have zero headspace / no bubbles? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Sample labels checked for correct preservation? | Yes ☑ | No ☐ | |
| TTLC Metal - pH acceptable upon receipt (pH<2)? | Yes ☐ | No ☐ | NA ☑ |
| Samples Received on Ice? | Yes ☑ | No ☐ | |

(Ice Type: WET ICE )

** NOTE: If the "No" box is checked, see comments below.*

---

Client contacted: Date contacted: Contacted by:

Comments:

**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

| | | |
|---|---|---|
| AEI Consultants | Client Project ID: #280346; Alaska Gas | Date Sampled: 08/13/09 |
| | | Date Received: 08/13/09 |
| 2500 Camino Diablo, Ste. #200 | Client Contact: Jeremy Smith | Date Extracted: 08/15/09-08/18/09 |
| Walnut Creek, CA 94597 | Client P.O.: #WC081871 | Date Analyzed 08/15/09-08/18/09 |

**Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS***

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 0908330

| Lab ID | 0908330-001B | 0908330-002B | 0908330-003B | 0908330-004B | Reporting Limit for DF =1 | |
|---|---|---|---|---|---|---|
| Client ID | MW-1R | MW-2 | MW-3 | MW-4 | | |
| Matrix | W | W | W | W | | |
| DF | 1 | 1 | 2500 | 100 | S | W |
| **Compound** | **Concentration** | | | | ug/kg | µg/L |
| tert-Amyl methyl ether (TAME) | ND | ND | ND<1200 | 61 | NA | 0.5 |
| t-Butyl alcohol (TBA) | ND | 26 | 250,000 | 10,000 | NA | 2.0 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND<1200 | ND<50 | NA | 0.5 |
| 1,2-Dichloroethane (1,2-DCA) | ND | ND | ND<1200 | ND<50 | NA | 0.5 |
| Diisopropyl ether (DIPE) | ND | ND | ND<1200 | ND<50 | NA | 0.5 |
| Ethyl tert-butyl ether (ETBE) | ND | ND | ND<1200 | ND<50 | NA | 0.5 |
| Methyl-t-butyl ether (MTBE) | 2.1 | 7.7 | 7900 | 350 | NA | 0.5 |
| **Surrogate Recoveries (%)** | | | | | | |
| %SS1: | 106 | 107 | 106 | 91 | | |
| **Comments** | | | | | | |

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

# surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

**McCampbell Analytical, Inc.**
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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

| | | |
|---|---|---|
| AEI Consultants | Client Project ID: #280346; Alaska Gas | Date Sampled: 08/13/09 |
| | | Date Received: 08/13/09 |
| 2500 Camino Diablo, Ste. #200 | Client Contact: Jeremy Smith | Date Extracted: 08/15/09-08/18/09 |
| Walnut Creek, CA 94597 | Client P.O.: #WC081871 | Date Analyzed 08/15/09-08/18/09 |

**Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS***

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 0908330

| Lab ID | 0908330-005B | 0908330-006B | 0908330-007B | | Reporting Limit for DF =1 | |
|---|---|---|---|---|---|---|
| Client ID | MW-5 | MW-6 | EX-1 | | | |
| Matrix | W | W | W | | | |
| DF | 1 | 1 | 50 | | S | W |
| **Compound** | **Concentration** | | | | ug/kg | µg/L |
| tert-Amyl methyl ether (TAME) | ND | 2.2 | 120 | | NA | 0.5 |
| t-Butyl alcohol (TBA) | ND | 140 | 5200 | | NA | 2.0 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND<25 | | NA | 0.5 |
| 1,2-Dichloroethane (1,2-DCA) | ND | ND | ND<25 | | NA | 0.5 |
| Diisopropyl ether (DIPE) | ND | ND | ND<25 | | NA | 0.5 |
| Ethyl tert-butyl ether (ETBE) | ND | ND | ND<25 | | NA | 0.5 |
| Methyl-t-butyl ether (MTBE) | 11 | 27 | 520 | | NA | 0.5 |
| **Surrogate Recoveries (%)** | | | | | | |
| %SS1: | 91 | 104 | 92 | | | |
| **Comments** | | | | | | |

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

# surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

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Angela Rydelius, Lab Manager

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| | | |
|---|---|---|
| AEI Consultants | Client Project ID: #280346; Alaska Gas | Date Sampled: 08/13/09 |
| | | Date Received: 08/13/09 |
| 2500 Camino Diablo, Ste. #200 | Client Contact: Jeremy Smith | Date Extracted: 08/17/09-08/19/09 |
| Walnut Creek, CA 94597 | Client P.O.: #WC081871 | Date Analyzed: 08/17/09-08/19/09 |

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE***

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 0908330

| Lab ID | Client ID | Matrix | TPH(g) | MTBE | Benzene | Toluene | Ethylbenzene | Xylenes | DF | % SS | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001A | MW-1R | W | 2000 | ND<15 | 17 | 23 | 73 | 350 | 1 | 121 | d1 |
| 002A | MW-2 | W | 110 | 8.7 | 7.0 | ND | 13 | 5.0 | 1 | 112 | d1 |
| 003A | MW-3 | W | 1300 | 8300 | 10 | 11 | 4.1 | 14 | 5 | 123 | d1 |
| 004A | MW-4 | W | 29,000 | ND<600 | 320 | 250 | 980 | 3400 | 10 | 90 | d1 |
| 005A | MW-5 | W | 380 | ND<20 | 19 | 2.1 | 3.8 | 0.88 | 1 | 111 | d1 |
| 006A | MW-6 | W | 74 | 28 | 5.9 | 0.57 | 0.97 | 5.0 | 1 | 112 | d1 |
| 007A | EX-1 | W | 10,000 | 620 | 1100 | 150 | 410 | 940 | 20 | 114 | d1 |
| | | | | | | | | | | | |
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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Reporting Limit for DF =1; ND means not detected at or above the reporting limit | W | 50 | 5.0 | 0.5 | 0.5 | 0.5 | 0.5 | µg/L |
| | S | 1.0 | 0.05 | 0.005 | 0.005 | 0.005 | 0.005 | mg/Kg |

* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

# cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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# QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 45112 WorkOrder 0908330

**EPA Method SW8021B/8015Bm** **Extraction SW5030B** **Spiked Sample ID: 0908288-002A**

| 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)£ | ND | 60 | 121 | 125 | 2.63 | 112 | 108 | 3.64 | 70 - 130 | 20 | 70 - 130 | 20 |
| MTBE | ND | 10 | 102 | 111 | 8.44 | 83.9 | 86.4 | 2.85 | 70 - 130 | 20 | 70 - 130 | 20 |
| Benzene | ND | 10 | 97.8 | 101 | 2.68 | 98.4 | 107 | 8.72 | 70 - 130 | 20 | 70 - 130 | 20 |
| Toluene | ND | 10 | 95.4 | 98.2 | 2.92 | 95.7 | 104 | 8.42 | 70 - 130 | 20 | 70 - 130 | 20 |
| Ethylbenzene | ND | 10 | 96.3 | 99 | 2.74 | 95.4 | 103 | 7.36 | 70 - 130 | 20 | 70 - 130 | 20 |
| Xylenes | ND | 30 | 98.5 | 102 | 2.98 | 96.6 | 101 | 4.86 | 70 - 130 | 20 | 70 - 130 | 20 |
| %SS: | 100 | 10 | 99 | 96 | 2.56 | 93 | 99 | 6.06 | 70 - 130 | 20 | 70 - 130 | 20 |

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

BATCH 45112 SUMMARY

| Lab ID | Date Sampled | Date Extracted | Date Analyzed | Lab ID | Date Sampled | Date Extracted | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 0908330-001A | 08/13/09 3:35 PM | 08/17/09 | 08/17/09 9:34 PM | 0908330-002A | 08/13/09 3:50 PM | 08/17/09 | 08/17/09 10:41 PM |
| 0908330-003A | 08/13/09 4:05 PM | 08/17/09 | 08/17/09 4:18 PM | 0908330-003A | 08/13/09 4:05 PM | 08/19/09 | 08/19/09 2:17 AM |

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.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or 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, or inconsistency in sample containers.

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# QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 45152 WorkOrder 0908330

**EPA Method SW8260B** **Extraction SW5030B** **Spiked Sample ID: 0908367-001b**

| 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 |
| tert-Amyl methyl ether (TAME) | ND | 10 | 80.9 | 80 | 1.12 | 84.2 | 86.6 | 2.74 | 70 - 130 | 30 | 70 - 130 | 30 |
| t-Butyl alcohol (TBA) | ND | 50 | 75.1 | 73.8 | 1.78 | 90.4 | 87.7 | 3.03 | 70 - 130 | 30 | 70 - 130 | 30 |
| 1,2-Dibromoethane (EDB) | ND | 10 | 106 | 106 | 0 | 91.3 | 94.7 | 3.64 | 70 - 130 | 30 | 70 - 130 | 30 |
| 1,2-Dichloroethane (1,2-DCA) | ND | 10 | 86.8 | 86.3 | 0.555 | 94.9 | 99 | 4.31 | 70 - 130 | 30 | 70 - 130 | 30 |
| Diisopropyl ether (DIPE) | ND | 10 | 82.2 | 82.7 | 0.506 | 95.6 | 99.7 | 4.15 | 70 - 130 | 30 | 70 - 130 | 30 |
| Ethyl tert-butyl ether (ETBE) | ND | 10 | 82.5 | 83.2 | 0.879 | 93 | 96.7 | 3.85 | 70 - 130 | 30 | 70 - 130 | 30 |
| Methyl-t-butyl ether (MTBE) | ND | 10 | 89.9 | 89.6 | 0.343 | 99.5 | 101 | 1.67 | 70 - 130 | 30 | 70 - 130 | 30 |
| %SS1: | 93 | 25 | 93 | 93 | 0 | 77 | 75 | 1.42 | 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 45152 SUMMARY

| Lab ID | Date Sampled | Date Extracted | Date Analyzed | Lab ID | Date Sampled | Date Extracted | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 0908330-001B | 08/13/09 3:35 PM | 08/17/09 | 08/17/09 8:35 PM | 0908330-002B | 08/13/09 3:50 PM | 08/15/09 | 08/15/09 2:12 AM |
| 0908330-003B | 08/13/09 4:05 PM | 08/17/09 | 08/17/09 9:18 PM | 0908330-004B | 08/13/09 4:15 PM | 08/18/09 | 08/18/09 3:47 AM |
| 0908330-005B | 08/13/09 4:00 PM | 08/18/09 | 08/18/09 4:29 AM | 0908330-006B | 08/13/09 3:45 PM | 08/15/09 | 08/15/09 5:06 AM |
| 0908330-007B | 08/13/09 4:25 PM | 08/18/09 | 08/18/09 5:12 AM | | | | |

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.

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.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644


QA/QC Officer

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# QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 45164 WorkOrder 0908330

**EPA Method SW8021B/8015Bm** **Extraction SW5030B** **Spiked Sample ID: 0908336-001A**

| 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)£ | ND | 60 | 119 | 123 | 3.51 | 124 | 118 | 4.32 | 70 - 130 | 20 | 70 - 130 | 20 |
| MTBE | ND | 10 | 104 | 117 | 11.8 | 112 | 117 | 3.86 | 70 - 130 | 20 | 70 - 130 | 20 |
| Benzene | ND | 10 | 108 | 106 | 1.97 | 107 | 105 | 1.65 | 70 - 130 | 20 | 70 - 130 | 20 |
| Toluene | ND | 10 | 94.1 | 94.2 | 0.0206 | 94 | 91.1 | 3.16 | 70 - 130 | 20 | 70 - 130 | 20 |
| Ethylbenzene | ND | 10 | 95 | 94.1 | 0.965 | 95.1 | 91.3 | 4.12 | 70 - 130 | 20 | 70 - 130 | 20 |
| Xylenes | ND | 30 | 107 | 106 | 0.456 | 108 | 103 | 4.32 | 70 - 130 | 20 | 70 - 130 | 20 |
| %SS: | 114 | 10 | 104 | 101 | 2.97 | 102 | 100 | 1.24 | 70 - 130 | 20 | 70 - 130 | 20 |

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

BATCH 45164 SUMMARY

| Lab ID | Date Sampled | Date Extracted | Date Analyzed | Lab ID | Date Sampled | Date Extracted | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 0908330-004A | 08/13/09 4:15 PM | 08/17/09 | 08/17/09 4:54 PM | 0908330-005A | 08/13/09 4:00 PM | 08/17/09 | 08/17/09 11:15 PM |
| 0908330-006A | 08/13/09 3:45 PM | 08/17/09 | 08/17/09 11:48 PM | 0908330-007A | 08/13/09 4:25 PM | 08/17/09 | 08/17/09 5:30 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.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or 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, or inconsistency in sample containers.

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QA/QC Officer