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10:43 am, Aug 19, 2011

Alameda County  
Environmental Health

**SUBJECT: Perjury Statement**

To Whom It May Concern:

I declare, under penalty of perjury, that the information and/or recommendations contained in the requested attached reports in your letter dated August 8, 2011 are true and correct to the best of my knowledge.

Signed:   
JANE A. ALLEN

January 30, 2009

**GROUNDWATER MONITORING REPORT  
Fourth Quarter, 2008**

325 Martin Luther King Jr. Way  
Oakland, California

Project No. 270308

Prepared For

Jane and Kimball Allen  
2 Lone Tree Avenue  
Mill Valley, CA 94941

Prepared By

**AEI Consultants**  
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ENVIRONMENTAL & ENGINEERING SERVICES

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January 30, 2009

Jane and Kimball Allen  
2 Lone Tree Avenue  
Mill Valley, California 94941

**Subject: Quarterly Groundwater Monitoring Report  
Fourth Quarter, 2009**  
325 Martin Luther King Jr. Way  
Oakland, California  
AEI Project No. 270308

Dear Mr. and Mrs. Allen:

AEI Consultants (AEI) has prepared this report on behalf of Jane and Kimball Allen to document the ongoing groundwater investigation at the above referenced site (Figure 1, Site Location Map). The groundwater investigation is being performed in accordance with the requirements of the Alameda County Health Care Services Agency (ACEH). The purpose of these activities is to monitor groundwater quality in the vicinity of the identified release of fuel products at the site. This report presents the findings of the Fourth Quarter 2008 episode of groundwater monitoring and sampling conducted on December 29, 2008 at the site.

## **I Background**

The subject property is located on the western corner of the intersection of Martin Luther King Jr. Way and 4<sup>th</sup> Street in a mixed commercial and industrial area of Oakland. The property measures approximately 100 feet along Martin Luther King and approximately 150 feet along 4<sup>th</sup> Street with the property building covering essentially 100% of the land area. The northwestern portion of the building along 4<sup>th</sup> Street has also had the address 671 4<sup>th</sup> Street. The building is currently vacant, but was previously occupied by Pucci Enterprises as warehouse space and cold storage freezers.

A Phase I Environmental Site Assessment (ESA) of the property dated November 1, 1993 identified a 10,000-gallon former fuel UST that currently exists below the north side of the building. The fuel UST was used to provide fuel for the Pucci Enterprises truck fleet.

On October 20, 1993, the tank decommissioned by steam cleaning the tank, pumping remaining sludge out of the tank, and filling the tank with concrete slurry. At the time of the UST closure, the eastern section of the building had not yet been built. The tank could not be removed because of its proximity to the footing of the 671 4<sup>th</sup> Street

building. After tank closure, the eastern portion of the building (325 Martin Luther King) was constructed. Although records show that the UST was abandoned following proper procedures applicable at that time, no documentation was available of sampling around the tank prior to abandonment.

A number of site investigations were performed by several environmental consultants during 2005 and 2006.

In May 2005, AEI performed a Phase II Subsurface Investigation. Soil borings SB-1 and SB-3 encountered refusal at 4 feet bgs, possibly the top of the concrete filled UST. Soil borings SB-2 and SB-4 were advanced into the groundwater. Total petroleum hydrocarbon (TPH) as gasoline (TPH-g), TPH as diesel (TPH-d), and benzene were reported in groundwater from boring SB-2 at concentrations up to 780 micrograms per liter ( $\mu\text{g/L}$ ), 420  $\mu\text{g/L}$ , and 53  $\mu\text{g/L}$ , respectively.

In September 2005, an additional investigation was performed by Terra Firma. Groundwater samples were collected from four (4) soil borings (labeled 50901-1 to 50901-4). Analysis of groundwater reported the highest concentrations of from the two borings to the south of the UST, where TPH-g, TPH-d, and benzene were reported in boring 50901-3 at concentrations of 20,000  $\mu\text{g/l}$ , 3600  $\mu\text{g/l}$ , and 990  $\mu\text{g/l}$ , respectively.

In June 2006, Ceres Associated performed another subsurface investigation. The project included the analyses of soil and groundwater from five soil borings (SB-5 thru SB-9). The highest concentrations of hydrocarbons were reported in boring SB-7, located southeast of the UST. Maximum concentrations of TPH-g, TPH-d, and benzene were reported in sample SB-7-10 at concentrations of 20,000 mg/kg, 3,300 mg/kg, 200 mg/kg, respectively. Analysis of groundwater samples from SB-7 reported TPH-g, TPH-d, and benzene at concentrations of 110,000  $\mu\text{g/l}$ , 110,000  $\mu\text{g/l}$ , and 3,300  $\mu\text{g/l}$ , respectively.

LRM Consulting prepared release notification documentation and a workplan for the ACEH in August 2006. The workplan included additional file and data base research into possible additional source locations (dispenser, piping, offsite releases, etc) and installing three (3) 2-inch diameter monitoring wells a screened interval of 5 to 20 feet bgs.

Following ACEH comments relating to the work plan and previous investigations, AEI was retained to prepare a comprehensive workplan. The *Site Characterization Workplan*, dated March 31, 2007, outlined the scope of work for installation of 12 additional soil borings and three groundwater monitoring wells to further characterize the release.

In May of 2007, AEI performed a soil and groundwater investigation which included of drilling additional twelve (12) soil borings at the property. Low to moderate concentrations of petroleum hydrocarbons were detected in the soil adjacent to the abandoned UST and in groundwater. Contaminant distributions in groundwater indicate that the release of hydrocarbons is limited to the 325 Martin Luther King Jr. Way unit.

On August 10, 2007, AEI installed three (3) groundwater monitoring wells (MW-1 thru MW-3) down gradient of the abandoned in place UST. Significant concentrations of petroleum hydrocarbons were reported in well MW-3, which is located immediately down gradient of abandoned UST. A site map and well construction details are contained in AEI's *Monitoring Well Installation Report*, dated September 21, 2008.

A *Corrective Action Pilot Test Workplan*, dated April 7, 2008, for a pilot-scale evaluation of in-situ chemical oxidation as a potential method of remediating the site was prepared from the ACEH. The workplan proposed five injection points in the immediate area of source well MW-3, targeting the saturated zone as well as the lower vadose zone using the product RegenOx™ manufactured by Regenesys, Inc. The workplan was approved by the ACEH in a letter dated May 13, 2008. On July 17 and 18, 2008, 720 lbs of RegenOx™ (Part A and Part B) was injected in five locations (IP-1 through IP-5) at spacing approximately five feet away from well MW-3.

Following the pilot test, groundwater samples collected on August 4, 2008 from well MW-3 reported an increase in TPH-g from pre-pilot concentration of 20,000 µg/L to 110,000 µg/L. Follow up sampling on August 20, 2008 reported TPH-g at a concentration of 120,000 µg/L. At the time of the last quarterly monitoring event TPG-g in well MW-3 was reported at a concentration of 64,000 µg/L. This increase is believed to be due to the release of hydrocarbons bound to the soil in the smear zone and below the top the groundwater.

## **II Summary of Monitoring Activities**

AEI measured the depth to groundwater in the three (3) monitoring wells (labeled MW-1 through MW-3) on December 29, 2008. The depth to static groundwater from the top of the well casings was measured with an electric water level indicator prior to sampling.

The wells were purged with a battery-powered submersible pump. Temperature, pH, specific conductivity, dissolved oxygen (DO), and the oxidation-reduction potential (ORP) were measured and the turbidity was visually noted during purging of the wells. At least three (3) well volumes of water were purged from each well. The wells were allowed to recharge to at least 90% of their original level prior to sample collection.

Groundwater samples were collected with new disposable plastic bailers into 40 ml volatile organic analysis (VOA) vials and 1-liter amber bottles. VOAs were capped so that no head space or air bubbles were visible within the sample containers. Samples were transported on ice under appropriate chain of custody protocol to McCampbell Analytical, Inc. of Pittsburgh, California (Department of Health Services Certification #1644).

Three (3) samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-g); methyl tertiary-butyl ether (MTBE), benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA methods 8021B/8015Cm; total petroleum hydrocarbons as diesel (TPH-d) by EPA method 8015C; and MTBE, 1,2-Dibromoethane (EDB), and 1,2-dichloroethane (1,2-DCA) by EPA Method 8260B.

### **III Field Results**

Groundwater levels for the 4<sup>th</sup> quarter 2008 monitoring episode ranged from 6.26 (MW-1) to 6.59 (MW-3) feet above mean sea level (amsl). Based on these measurements, groundwater flows in a south-southeasterly direction at a gradient of approximately 0.005 ft/ft. The flow direction and hydraulic gradient are consistent with previous episodes.

Groundwater elevation data, flow direction, and hydraulic gradient are summarized in Table 2: Groundwater Elevation Data. The water table elevations and the estimated groundwater flow direction are presented on Figures 3: Water Table Elevations. Please refer to Appendix A for the Groundwater Monitoring Well Field Sampling Forms, which include water quality data and other parameters collected during well purging.

### **IV Groundwater Quality**

No petroleum hydrocarbons were reported in the groundwater samples collected from monitoring wells MW-1 and MW-2. MTBE and 1,2-DCA were reported in MW-1 at concentrations of 0.62 µg/L and 6.8 µg/L, respectively.

In MW-3, TPH-g and TPH-d were reported at concentrations of at 130,000 µg/L and 7,900 µg/L, respectively. BTEX were reported at concentrations of 11,000 µg/L, 19,000 µg/L, 1,800 µg/L, and 11,000 µg/L, respectively. EDB and 1,2-DCA were reported in well MW-3 at concentrations of 200 µg/L and 440 µg/L, respectively.

### **V Summary**

This report documents the findings of the 4<sup>th</sup> Quarter 2008 groundwater monitoring event at the site. Overall, hydrocarbon concentrations in well MW-3 increased from the previous monitoring event.

Given the pilot test response and the cost of the multiple direct-push injections of RegenOx that appear to be needed to remediate the groundwater and hydrocarbons adsorbed, AEI recommends evaluation of the use of permanent injection points.

AEI will prepare a work plan for installation of three wells and a hydrogen peroxide infusion pilot. Initially the wells will be used to determine groundwater conditions immediately adjacent to the abandoned tank and down gradient of the tank. During installation of the wells, soil samples will be collected from the capillary fringe and saturated smear portion of the zone to allow evaluation of the amount of hydrocarbons remaining adsorbed to the soil. Following the initial evaluation of the soil and groundwater one or more of the wells will be used to evaluate the potential for long term infusion of hydrogen peroxide.

The next groundwater monitoring event is tentatively scheduled for the 1<sup>st</sup> Quarter 2009, in mid-March of 200.


## VI Report Limitations


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.

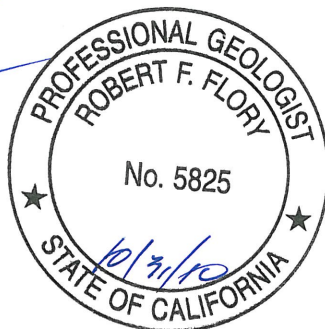
These services were performed in accordance with generally accepted practices, in the environmental engineering field, which existed at the time and location of the work.

If you have any questions regarding our investigation, please do not hesitate to contact either of the undersigned at (925) 283-6000.

Sincerely,  
**AEI Consultants**

  
Adrian M. Angel  
Project Geologist

  
Robert F. Flory, PG  
Senior Geologist



## **Previous Documentation**

- AEI Consultants, *Phase II Subsurface Investigation Report*, May 18, 2005
- AEI Consultants, *Site Characterization Workplan*, March 8, 2007
- AEI Consultants, *Soil and Groundwater Investigation Report*, September 21, 2007
- AEI Consultants, *Corrective Action Pilot Test Workplan*, April 7, 2008
- Alameda County Health Care Services Agency, *Fuel Leak Case No. RO0002930, 325 Martin Luther King Jr. Way, Oakland, CA 94607*, December 22, 2006
- Alameda County Health Care Services Agency, *Fuel Leak Case No. RO0002930, 325 Martin Luther King Jr. Way, Oakland, CA 94607*, May 13, 2008
- Ceres Associates, *Soil and Groundwater Investigation Report*, June 8, 2006
- Helley, E.J., et al, *Quaternary Geology of Alameda County and Surrounding Areas, California*, 1997
- LRM Consulting, Inc., *Notice of Unauthorized Release and Supplemental Investigation Workplan*, August 29, 2006
- Norfleet Consultants, *Groundwater Study and Water Supply History of the East Bay Plain, Alameda and Contra Costa Counties, CA*, June 19, 1998
- Terra Firma, *Findings of Environmental Subsurface Investigation*, September 16, 2005
- Touchstone Developments, *Phase I Investigation*, November 1, 1993

### Distribution:

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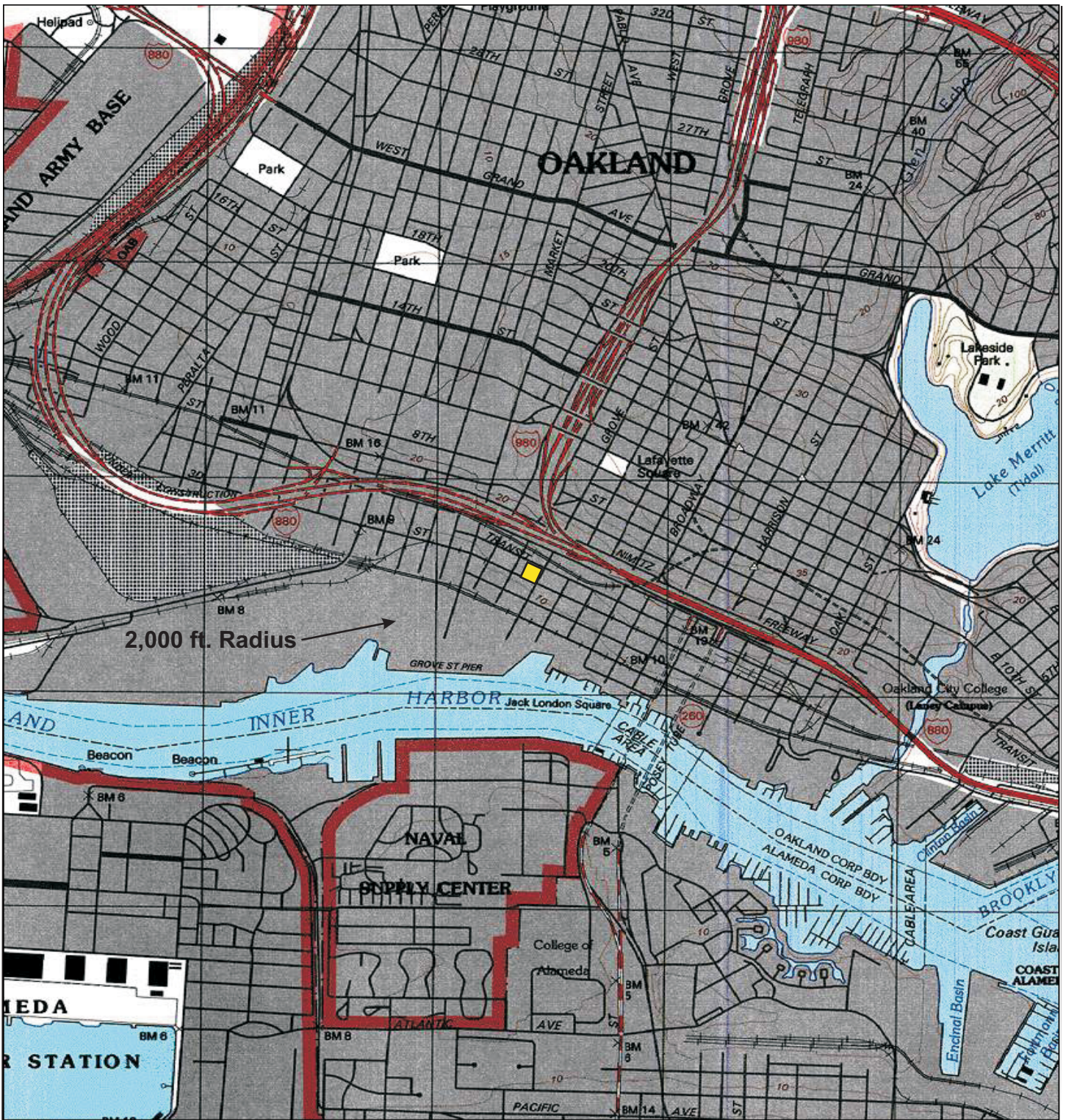
Alameda County Environmental Health Services (ACEHS) (electronic)  
Attn: Mr. Jerry Wickham  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

GeoTracker (electronic)



# FIGURES







TN 15° MN

Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

**LEGEND**

 N

 SITE LOCATION

**AEI CONSULTANTS**  
 2500 Camino Diablo, Suite 200, Walnut Creek, CA 94597

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**Site Map**

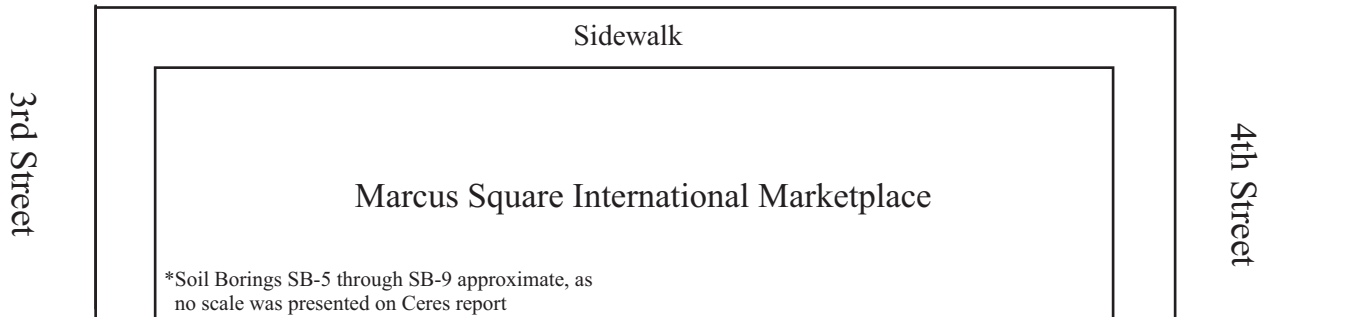
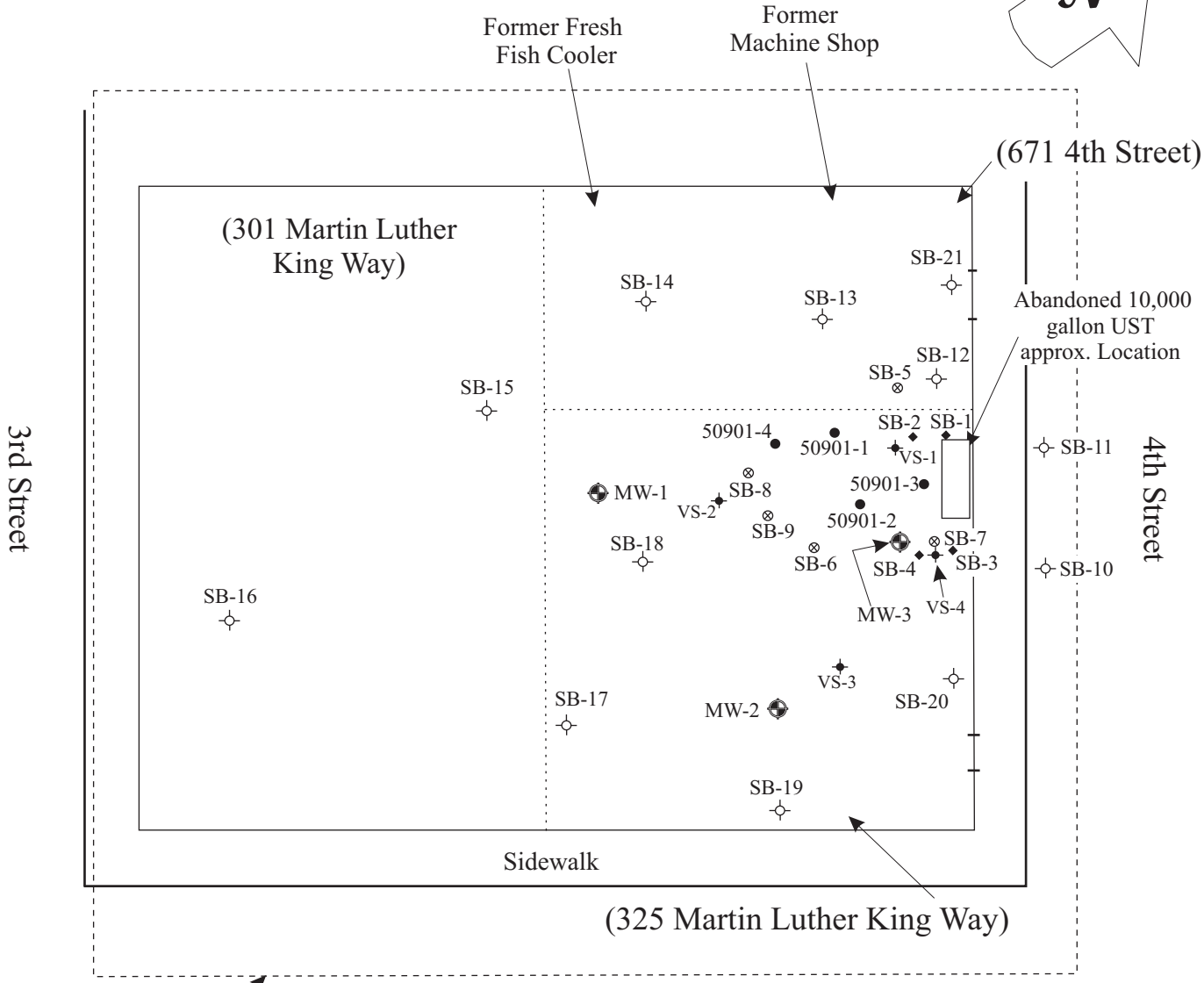
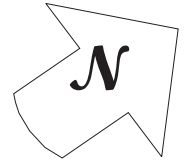
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325 Martin Luther King Jr. Way  
 Oakland, CA 94607

**FIGURE 1**  
 Job No: 270308

0' 20' 40'

Scale: 1" = 40'



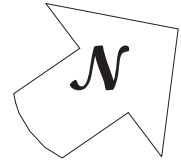
- Designates Unit Boundary
- ◆ Soil Boring Location (AEI - 5/11/05)
- Soil Boring Location (TFC - 9/8/05)
- ⊗ Soil Boring Location (Ceres - 6/6/06)
- ⊕ Soil Boring Location (AEI - 5/29-30/07)
- ⊕ Monitoring Well Location (8/21/07)
- ◆ Dual-nested Soil Vapor Probe (8/21/07)

\*Soil Borings SB-1 and SB-3 aborted due to refusal

<p><b>AEI CONSULTANTS</b> 2500 CAMINO DIABLO, SUITE 200 WALNUT CREEK, CA</p>	
<p><b>Site Plan</b></p>	
<p>325 Martin Luther King Jr. Way Oakland, California</p>	<p><b>FIGURE 2</b> PROJECT No. 270308</p>

0' 15' 30'

Scale: 1" = 30'



Adjacent Commercial Unit

(671 4th Street)

(301 Martin Luther King Way)

Abandoned 10,000 Gallon UST  
Approx. Location

Sidewalk

Sidewalk

Groundwater Flow Direction  
(Gradient = 0.005)  
12/29/2008

6.20

MW-1  
(6.26)

6.40

MW-2  
(6.40)

6.60

MW-3  
(6.59)

Roll-up Door

Sidewalk

(325 Martin Luther King Way)



Monitoring Well Locations

MW-2 (6.49) Water table elevations shown in parentheses  
in feet ams (above mean sea level)

Contour Interval = 0.20 feet

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

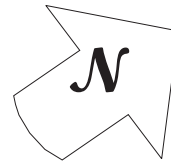
**Water Table Elevations (12/29/08)**

325 Martin Luther King Jr. Way  
Oakland, California

**FIGURE 3**  
PROJECT No. 270308

0' 15' 30'

Scale: 1" = 30'



Adjacent Commercial Unit

(671 4th Street)

(301 Martin Luther King Way)

Abandoned 10,000 Gallon UST  
Approx. Location

Sidewalk

Sidewalk

MW-1

G - <50  
D - <50  
B - <0.5  
M - 0.62

MW-3

G - 130,000  
D - 7,900  
B - 11,000  
M - <50

MW-2

G - <50  
D - <50  
B - <0.5  
M - <5.0

Roll-up Door

Sidewalk

(325 Martin Luther King Way)



Monitoring Well Locations

Hydrocarbon concentrations expressed in ug/L  
(Refer to Tables 3 & 4 for details)

G = total petroleum hydrocarbons as gasoline  
D = total petroleum hydrocarbons as diesel  
B = benzene  
M = methyl tertiary butyl ether (MTBE)

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

**Dissolved Phase Hydrocarbon  
Concentrations (12/29/08)**

325 Martin Luther King Jr. Way  
Oakland, California

**FIGURE 4**  
PROJECT No. 270308

# TABLES



**Table 1 - AEI Project # 270308**  
**Monitoring Well Construction Details**

Well ID	Date Installed	Top of Casing Elevation (ft amsl)	Well Depth (ft)	Slotted Casing (ft)	Slot Size (in)	Sand Interval (ft)	Sand Size	Bentonite Interval (ft)	Grout Interval (ft)
MW-1	08/10/07	14.92	18.0	8 - 18	0.010	7 - 18	# 2/12	7 - 8	0.75 - 7
MW-2	08/10/07	15.27	17.0	7 - 17	0.010	6 - 17	# 2/12	6 - 7	0.75 - 6
MW-3	08/10/07	15.26	18.0	8 - 18	0.010	7 - 18	# 2/12	7 - 8	0.75 - 7

Notes:  
ft amsl = feet above mean sea level

**Table 2 - AEI Project # 270308**  
**Groundwater Elevation Data**

Well ID (Screen Interval)	Date Collected	Well Elevation (ft amsl)	Depth to Water (ft)	Groundwater Elevation (ft amsl)
MW-1 (8 - 18)	8/21/2007	14.92	8.38	6.54
	11/21/2007	14.92	8.37	6.55
	2/26/2008	14.92	7.98	6.94
	6/18/2008	14.92	8.41	6.51
	9/19/2008	14.92	8.56	6.36
	<b>12/29/2008</b>	<b>14.92</b>	<b>8.66</b>	<b>6.26</b>
MW-2 (7 - 17)	8/21/2007	15.27	8.78	6.49
	11/21/2007	15.27	8.72	6.55
	2/26/2008	15.27	8.37	6.90
	6/18/2008	15.27	8.82	6.45
	9/19/2008	15.27	8.92	6.35
	<b>12/29/2008</b>	<b>15.27</b>	<b>8.87</b>	<b>6.40</b>
MW-3 (8 - 18)	8/21/2007	15.26	8.59	6.67
	11/21/2007	15.26	8.55	6.71
	2/26/2008	15.26	8.11	7.15
	6/18/2008	15.26	8.62	6.64
	8/4/2008	15.26	8.65	6.61
	8/20/2008	15.26	8.68	6.58
	9/19/2008	15.26	8.74	6.52
	<b>12/29/2008</b>	<b>15.26</b>	<b>8.67</b>	<b>6.59</b>

Event #	Date	Average Water Table Elevation (ft amsl)	Change from Previous Episode (ft)	Flow Direction (gradient) (ft/ft)
1	8/21/2007	6.57	NA	S (0.003)
2	11/21/2007	6.60	0.04	S (0.005)
3	2/26/2008	7.00	0.39	S (0.005)
4	6/18/2008	6.53	-0.46	SSE (0.004)
5	9/19/2008	6.41	-0.12	S (0.003)
<b>6</b>	<b>12/29/2008</b>	<b>6.42</b>	<b>0.01</b>	<b>SSW (0.005)</b>

ft amsl = feet above mean sea level

All water level depths are measured from the top of casing



**Table 3 - AEI Project # 270308**  
**Groundwater Monitoring Sample Analytical Data**

Sample ID	Date	TPHg µg/L	TPHd µg/L	MTBE µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L
<b>MW-1</b>	8/21/2007	<50	<50	15	<0.5	<0.5	<0.5	<0.5
	11/21/2007	<50	<50	12	<0.5	<0.5	<0.5	<0.5
	2/26/2008	<50	<50	-	<0.5	<0.5	<0.5	<0.5
	6/18/2008	<50	<50	-	<0.5	<0.5	<0.5	<0.5
	9/19/2008	<50	<50	-	<0.5	<0.5	<0.5	<0.5
	<b>12/29/2008</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>-</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>
<b>MW-2</b>	8/21/2007	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	11/21/2007	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	2/26/2008	<50	<50	-	<0.5	<0.5	<0.5	<0.5
	6/18/2008	<50	<50	-	<0.5	<0.5	<0.5	<0.5
	9/19/2008	<50	<50	-	<0.5	<0.5	<0.5	<0.5
	<b>12/29/2008</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>-</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>
<b>MW-3</b>	8/21/2007	24,000	2,100	<180	2,600	3,500	450	2,400
	11/21/2007	36,000	3,800	<500	4,900	1,200	230	2,700
	2/26/2008	31,000	5,400	-	4,200	1,900	590	2,200
	6/18/2008	20,000	3,000	-	2,900	1,100	390	990
	8/4/2008	110,000	27,000	-	5,900	9,000	76	8,100
	8/20/2008	120,000	6,500	-	8,900	18,000	930	12,000
	9/19/2008	64,000	4,500	-	6,200	9,200	660	6,600
	<b>12/29/2008</b>	<b>130,000</b>	<b>7,900</b>	<b>-</b>	<b>11,000</b>	<b>19,000</b>	<b>1,800</b>	<b>11,000</b>

Notes:

TPHd = total petroleum hydrocarbons as diesel (C10-C23) using EPA Method 8015

TPHg = total petroleum hydrocarbons as gasoline (C6-C12) using EPA Method 8015

Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021B

MTBE = methyl-tertiary butyl ether using EPA Method 8021B

µg/L= micrograms per liter

ND<50 = non detect at respective reporting limit

**Table 4 - AEI Project # 270308**  
**Groundwater Monitoring Sample Analytical Data**  
**Fuel Additives**

Sample ID	Date	MTBE µg/L	TAME µg/L	TBA µg/L	DIPE µg/L	ETBE µg/L	Ethanol µg/L	Methanol µg/L	EDB µg/L	1,2-DCA µg/L
<b>MW-1</b>	8/21/2007	18	<0.5	<5.0	<0.5	<0.5	<50	<500	<0.5	5.2
	11/21/2007	-	-	-	-	-	-	-	-	-
	2/26/2008	16	-	-	-	-	-	-	<0.5	6.9
	6/18/2008	15	-	-	-	-	-	-	<0.5	5.4
	9/19/2008	4.2	-	-	-	-	-	-	<0.5	6.8
	<b>12/29/2008</b>	<b>0.62</b>	-	-	-	-	-	-	<b>&lt;0.5</b>	<b>6.8</b>
<b>MW-2</b>	8/21/2007	<0.5	<0.5	<5.0	<0.5	<0.5	<50	<500	<0.5	<0.5
	11/21/2007	-	-	-	-	-	-	-	-	-
	2/26/2008	<0.5	-	-	-	-	-	-	<0.5	<0.5
	6/18/2008	<0.5	-	-	-	-	-	-	<0.5	<0.5
	9/19/2008	<0.5	-	-	-	-	-	-	<0.5	<0.5
	<b>12/29/2008</b>	<b>&lt;0.5</b>	-	-	-	-	-	-	<b>&lt;0.5</b>	<b>&lt;0.5</b>
<b>MW-3</b>	8/21/2007	<5.0	<5.0	<50	<5.0	<5.0	<500	<5000	34	140
	11/21/2007	-	-	-	-	-	-	-	-	-
	2/26/2008	<12	-	-	-	-	-	-	31	220
	6/18/2008	<5.0	-	-	-	-	-	-	21	190
	8/4/2008	<50	-	-	-	-	-	-	220	410
	8/20/2008	<50	-	-	-	-	-	-	330	410
	9/19/2008	<17	-	-	-	-	-	-	160	320
	<b>12/29/2008</b>	<b>&lt;50</b>	-	-	-	-	-	-	<b>200</b>	<b>440</b>

Notes:

µg/L= micrograms per liter

ND<50 = non detect at respective reporting limit

MTBE - methyl tertiary butyl ether

TAME - tert-amyl methyl ether

TBA - tert-butyl alcohol

DIPE - diisopropyl ether

ETBE - ethyl tert-butyl ether

1,2-DCA - 1,2 - dichloroethane

EDB - 1,2 - dibromoethane

Fuel additives analysed by EPA Method 8260

## **APPENDIX A**

# **MONITORING WELL FIELD SAMPLING FORMS**



**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-1**

Project Name:	ALLEN	Date of Sampling:	12/29/2008
Job Number:	270308	Name of Sampler:	J. Sigg
Project Address:	325 Martin Luther King Jr Way, Oakland Ca		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	14.92		
Depth of Well	18.00		
Depth to Water (from top of casing)	8.66		
Water Elevation (feet above msl)	6.26		
Well Volumes Purged	Micropurged		
Actual Volume Purged (liters)	5.0		
Appearance of Purge Water	Clear		
Free Product Present?	No	Thickness (ft):	

**GROUNDWATER SAMPLES**

Number of Samples/Container Size							
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity ( $\mu$ sec/cm)	DO (mg/L)	ORP (meV)	Comments
11:50	0.5	17.48	6.74	974	3.36	18.6	Clear
11:53	1.0	17.54	6.75	977	2.84	24.1	Clear
11:56	1.5	17.52	6.78	977	2.42	28.9	Clear
11:59	2.0	17.48	6.79	976	2.39	30.3	Clear
12:05	2.5	17.47	6.79	979	2.31	35.1	Clear
12:08	3.0	17.48	6.80	980	2.31	35.3	Clear
12:10	3.5	17.50	6.80	984	2.25	36.5	Clear
12:15	4.0	17.51	6.81	988	2.21	37.9	Clear
12:18	4.5	17.53	6.80	992	2.14	38.7	Clear
12:20	5.0	17.55	6.80	995	2.09	39.2	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-2**

Project Name:	ALLEN	Date of Sampling:	12/29/2008
Job Number:	270308	Name of Sampler:	J. Sigg
Project Address:	325 Martin Luther King Jr Way, Oakland Ca		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK <span style="float:right">▼</span>		
Elevation of Top of Casing (feet above msl)	15.27		
Depth of Well	17.00		
Depth to Water (from top of casing)	8.87		
Water Elevation (feet above msl)	6.40		
Well Volumes Purged	Micropurged		
Actual Volume Purged (liters)	5.0		
Appearance of Purge Water	Clear		
Free Product Present?	No	Thickness (ft):	

**GROUNDWATER SAMPLES**

Number of Samples/Container Size							
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity ( $\mu$ sec/cm)	DO (mg/L)	ORP (meV)	Comments
12:31	0.5	17.81	6.83	795	3.87	60.7	Clear
12:33	1.0	17.81	6.83	794	4.07	53.8	Clear
12:36	1.5	17.76	6.82	796	4.05	53.1	Clear
12:41	2.0	17.77	6.82	805	4.04	53.3	Clear
12:44	2.5	17.81	6.81	815	3.94	53.8	Clear
12:47	3.0	17.83	6.82	817	3.87	54.3	Clear
12:51	3.5	17.87	6.82	822	3.78	55.3	Clear
12:53	4.0	17.89	6.82	823	3.68	55.1	Clear
12:56	4.5	17.92	6.82	822	3.66	54.6	Clear
13:01	5.0	17.91	6.82	821	3.62	55.1	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:	ALLEN	Date of Sampling:	12/29/2008
Job Number:	270308	Name of Sampler:	J. Sigg
Project Address:	325 Martin Luther King Jr Way, Oakland Ca		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	15.26		
Depth of Well	18.00		
Depth to Water (from top of casing)	8.67		
Water Elevation (feet above msl)	6.59		
Well Volumes Purged	Micropurged		
Actual Volume Purged (liters)	5.0		
Appearance of Purge Water	Initially light brown, clears after 1 gallon		
Free Product Present?	No	Thickness (ft):	

**GROUNDWATER SAMPLES**

Number of Samples/Container Size							
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity ( $\mu$ sec/cm)	DO (mg/L)	ORP (meV)	Comments
13:01	0.5	17.91	7.44	3,887	0.51	-164.6	Light brown
13:04	1.0	17.75	7.31	3,746	0.26	-168.1	Light brown
13:08	1.5	17.73	7.34	3,758	0.22	-168.4	Clear
13:12	2.0	17.76	7.38	3,786	0.16	-168.9	Clear
13:17	2.5	17.78	7.41	3,801	0.12	-169.1	Clear
13:21	3.0	17.81	7.45	3,820	0.12	-169.4	Clear
13:23	3.5	17.85	7.45	3,855	0.09	-170.4	Clear
13:27	4.0	17.88	7.53	3,881	0.09	-170.4	Clear
13:30	4.5	17.92	7.52	3,884	0.06	-170.8	Clear
13:34	5.0	17.91	7.54	3,886	0.06	-170.9	Clear

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

Light brown with no hydrocarbon odors notes.

## **APPENDIX B**

# **LABORATORY ANALYTICAL AND CHAIN OF CUSTODY DOCUMENTATION**





**McC Campbell Analytical, Inc.**

"When Quality Counts"

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

AEI Consultants  2500 Camino Diablo, Ste. #200  Walnut Creek, CA 94597	Client Project ID: # 270308	Date Sampled: 12/29/08
		Date Received: 12/29/08
	Client Contact: Adrian Angel	Date Reported: 01/05/09
	Client P.O.: # WC081193	Date Completed: 01/02/09

**WorkOrder: 0812774**

January 05, 2009

Dear Adrian:

Enclosed within are:

- 1) The results of the **3** analyzed samples from your project: **# 270308**,
- 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

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius  
Laboratory Manager  
McC Campbell Analytical, Inc.



0812774

**McCAMPBELL ANALYTICAL INC.**  
 110 2<sup>nd</sup> AVENUE SOUTH, #D7  
 PACHECO, CA 94553-5560  
 Telephone: (925) 798-1620 Fax: (925) 798-1622

**CHAIN OF CUSTODY RECORD**  
**TURN AROUND TIME**       
 RUSH 24 HR 48 HR 72 HR 5 DAY  
 EDF Required?  Yes  No Email PDF Report: YES

Report To: Adrian Angel Bill To: Same  
 Company: AEI Consultants  
 2500 Camino Diablo  
 Walnut Creek, CA 94597 E-Mail: aangel@aeiconsultants.com  
 Tel: (409) 559-7600 Fax: (925) 944-2895  
 Project #: 270308 PO# WC081193 Project Name:  
 Project Location: 325 Martin Luther King Jr. Way, Oakland, CA  
 Sampler Signature: *John Soggy*

Analysis Request		Other	Comments
BTEX & TPH as Gas (602/8020 + 8015)			
TPH as Diesel (8015) w/ silica gel cleanup			
Total Petroleum Oil & Grease (5520 E&F/B&F)			
Total Petroleum Hydrocarbons (418.1)			
HVOCs EPA 8260 (8010 list)			
BTEX ONLY (EPA 602 / 8020)			
Pesticides EPA 608 / 8080			
PCBs EPA 608 / 8080			
VOCs EPA 624 / 8260			
EPA 625 / 8270			
PAH's / PNA's by EPA 625 / 8270 / 8310			
CAM-17 Metals			
LUFT 5 Metals			
Lead (7240/7421/239.2/6010)			
Diss Hexachrome (E218.6)			
Arsenic, Barium, Cadmium, Total Chromium, Copper, total Iron, Lead, Selenium (E200.8)			
MTBE, EDB, and 1,2-DCA (8260)			
TPH-g (TO-3) + MBTEX (TO-15)			
2-propanol (TO-15)			

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED							
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other				
MW-1		12/29	1200	3	VOA L	X						X	X					
MW-2		12/29	1300	3	VOA L	X						X	Y					
MW-3		12/29	1330	3	VOA L	X						X	Y					

Relinquished By: *John Soggy* Date: 12/29/08 Time: 1428 Received By: *ENVIRO-TECH SERVICES AA*  
 Relinquished By: *ENVIRO-TECH SERVICES AA* Date: 12/29/08 Time: 15:16 Received By: *[Signature]*  
 Relinquished By: *[Signature]* Date: 01/29/09 Time: 315 Received By: *H. BURKO*

ICE/t° 8.2 PRESERVATION GOOD CONDITION   
 HEAD SPACE ABSENT  APPROPRIATE CONTAINERS   
 DECHLORINATED IN LAB \_\_\_\_\_ PRESERVED IN LAB \_\_\_\_\_  
 VOAS \_\_\_\_\_ O&G \_\_\_\_\_ METALS \_\_\_\_\_ OTHER \_\_\_\_\_

# McC Campbell Analytical, Inc.



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

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 0812774

ClientCode: AEL

WriteOn   
  EDF   
  Excel   
  Fax   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

Report to:	Adrian Angel	Email: aangel@aeiconsultants.com	Bill to:	Denise Mockel	Requested TAT: 5 days
	AEI Consultants	cc:		AEI Consultants	Date Received: 12/29/2008
	2500 Camino Diablo, Ste. #200	PO: # WC081193		2500 Camino Diablo, Ste. #200	Date Printed: 12/31/2008
	Walnut Creek, CA 94597	ProjectNo: # 270308		Walnut Creek, CA 94597	
	(925) 283-6000 FAX (925) 944-2895			dmockel@aeiconsultants.com	

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
0812774-001	MW-1	Water	12/29/2008 12:00	<input type="checkbox"/>	C	A	A	B								
0812774-002	MW-2	Water	12/29/2008 13:00	<input type="checkbox"/>	C	A		B								
0812774-003	MW-3	Water	12/29/2008 13:30	<input type="checkbox"/>	C	A		B								

**Test Legend:**

1	5-OXYS+PBSCV_W	2	G-MBTEX_W	3	PREFD REPORT	4	TPH(D)WSG_W	5	
6		7		8		9		10	
11		12							

Prepared by: Kimberly Burks

**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.



**Sample Receipt Checklist**

Client Name: **AEI Consultants**

Date and Time Received: **12/29/2008 3:45:26 PM**

Project Name: **# 270308**

Checklist completed and reviewed by: **Kimberly Burks**

WorkOrder N°: **0812774** Matrix Water

Carrier: Rob Pringle (MAI Courier)

**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:



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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants  2500 Camino Diablo, Ste. #200  Walnut Creek, CA 94597	Client Project ID: # 270308	Date Sampled: 12/29/08
		Date Received: 12/29/08
	Client Contact: Adrian Angel	Date Extracted: 12/31/08
	Client P.O.: # WC081193	Date Analyzed 12/31/08

### MTBE + EDB and 1,2-DCA by P&T and GC/MS\*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0812774

Lab ID	0812774-001C	0812774-002C	0812774-003C		Reporting Limit for DF =1	
Client ID	MW-1	MW-2	MW-3			
Matrix	W	W	W			
DF	1	1	100			

Compound	Concentration			ug/kg	µg/L
	1,2-Dibromoethane (EDB)	ND	ND	200	NA
1,2-Dichloroethane (1,2-DCA)	6.8	ND	440	NA	0.5
Methyl-t-butyl ether (MTBE)	0.62	ND	ND<50	NA	0.5

### Surrogate Recoveries (%)

%SS1:	106	103	93		
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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AEI Consultants  2500 Camino Diablo, Ste. #200  Walnut Creek, CA 94597	Client Project ID: # 270308	Date Sampled: 12/29/08
		Date Received: 12/29/08
	Client Contact: Adrian Angel	Date Extracted: 12/30/08-12/31/08
	Client P.O.: # WC081193	Date Analyzed 12/30/08-12/31/08

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

Extraction method SW5030B

Analytical methods SW8021B/8015Cm

Work Order: 0812774

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1	W	ND	ND	ND	ND	ND	ND	1	103
002A	MW-2	W	ND	ND	ND	ND	ND	ND	1	100
003A	MW-3	W	130,000,d1	ND<1000	11,000	19,000	1800	11,000	200	103

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5	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 and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

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

d1) weakly modified or unmodified gasoline is significant



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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants  2500 Camino Diablo, Ste. #200  Walnut Creek, CA 94597	Client Project ID: # 270308	Date Sampled: 12/29/08
		Date Received: 12/29/08
	Client Contact: Adrian Angel	Date Extracted: 12/29/08
	Client P.O.: # WC081193	Date Analyzed 12/30/08-01/01/09

### Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up\*

Extraction method SW3510C/3630C

Analytical methods: SW8015B

Work Order: 0812774

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS
0812774-001B	MW-1	W	ND	1	97
0812774-002B	MW-2	W	ND	1	94
0812774-003B	MW-3	W	7900,e4	5	105

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

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

# cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract/matrix interference.

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

e4) gasoline range compounds are significant.



**QC SUMMARY REPORT FOR SW8260B**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 40565

WorkOrder 0812774

EPA Method SW8260B	Extraction SW5030B								Spiked Sample ID: 0812782-004B			
	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	99.6	102	2.62	94.6	92.8	1.96	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	83.7	91.6	8.99	93.4	89.3	4.48	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	109	118	7.86	107	106	1.27	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	101	107	5.55	105	105	0	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	108	110	1.68	100	99.4	0.665	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	116	120	3.51	113	110	2.24	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	1.7	10	89.7	95.3	5.14	103	101	1.90	70 - 130	30	70 - 130	30
%SS1:	97	25	97	102	5.18	97	97	0	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 40565 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0812774-001C	12/29/08 12:00 PM	12/31/08	12/31/08 8:05 PM	0812774-002C	12/29/08 1:00 PM	12/31/08	12/31/08 8:44 PM
0812774-003C	12/29/08 1:30 PM	12/31/08	12/31/08 9:23 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.

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.



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

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 40535

WorkOrder 0812774

Analyte	EPA Method SW8021B/8015Cm		Extraction SW5030B						Spiked Sample ID: 0812764-005A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) <sup>£</sup>	ND	60	104	95.7	8.50	94.4	80.7	15.7	70 - 130	20	70 - 130	20
MTBE	ND	10	111	108	2.46	97.9	105	7.20	70 - 130	20	70 - 130	20
Benzene	ND	10	91.7	82.7	10.3	91.2	89.9	1.51	70 - 130	20	70 - 130	20
Toluene	ND	10	94.6	87.2	8.17	101	99	1.75	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	94.1	87.5	7.26	98.8	96.6	2.24	70 - 130	20	70 - 130	20
Xylenes	ND	30	107	100	6.06	110	107	2.26	70 - 130	20	70 - 130	20
%SS:	100	10	102	99	2.92	97	96	1.74	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 40535 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0812774-001A	12/29/08 12:00 PM	12/30/08	12/30/08 9:16 PM	0812774-002A	12/29/08 1:00 PM	12/30/08	12/30/08 9:46 PM
0812774-003A	12/29/08 1:30 PM	12/31/08	12/31/08 2:45 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.





### QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 40536

WorkOrder: 0812774

EPA Method SW8015B		Extraction SW3510C/3630C							Spiked Sample ID: N/A			
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-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	95.9	102	5.88	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	98	105	7.75	N/A	N/A	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 40536 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0812774-001B	12/29/08 12:00 PM	12/29/08	12/30/08 4:18 PM	0812774-002B	12/29/08 1:00 PM	12/29/08	12/30/08 5:26 PM
0812774-003B	12/29/08 1:30 PM	12/29/08	01/01/09 1:31 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.