



February 18, 2003

RO202

Vic Lum
Vic's Automotive
245 8th Street
Oakland, CA 94607

Subject: Quarterly Monitoring Report
245 8th Street
Oakland, CA
AEI Project No. 4332

Alameda County
FEB 21 2003
Environmental Health

Dear Mr. Lum:

Enclosed are two copies of the Quarterly Monitoring Report for the most recent episode of sampling, and an invoice.

Please call Peter McIntyre or me at (925) 283-6000 if you have any questions.

Sincerely,

Brandi Reese

Brandi K. Reese
Staff Geologist

Δ in gradient !

Cc: Mr. Barney Chan, Alameda County Health Care Services Agency, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94501.

February 18, 2003

Alameda County
FEB 21 2003
Environmental Health

**QUARTERLY GROUNDWATER MONITORING
REPORT**

245 8th Street
Oakland, California

AEI Project No. 4332

Prepared For

Mr. Victor Lum
Vic's Automotive
245 8th Street
Oakland, CA 94607

Prepared By

AEI Consultants
3210 Old Tunnel Road, Suite B
Lafayette, CA 94549
(925) 283-6000

AEI



February 18, 2003

Mr. Vic Lum
Vic's Automotive
245 8th Street
Oakland, CA 94607

**RE: Quarterly Groundwater Monitoring Report
Seventh Episode**
245 8th Street
Oakland, California
AEI Project No. 4332

Dear Mr. Lum:

AEI Consultants (AEI) has prepared this report on your behalf to document the continued groundwater investigation at the above referenced site (Figure 1: Site Location Map). This work is being performed in accordance with the requirements of the Alameda County Health Care Services Agency (ACHCSA) to document the groundwater quality and free product recovery associated with the release of fuel hydrocarbons from the former underground storage tank system. This report presents the findings of the seventh episode of groundwater monitoring and sampling for the four onsite wells conducted on February 4, 2003.

Site Description and Background

The subject property (hereafter referred to as the "site" or "property") is located in a commercial and residential area of Oakland. The site is a lot on the south corner of Alice Street and 8th Street, and is currently developed with a gasoline station and auto repair facility. Refer to Figure 2 for a visual description of the site.

Between June 1993 and August 1994, AEI removed a total of seven (7) underground storage tanks (USTs) from the property. The tanks consisted of four (4) 1,000 gallon and two (2) 6,000 gallon gasoline tanks and one (1) 250 gallon waste oil tank. The former locations of the tanks are shown on Figure 2. Impacted soil was removed from beneath the former tank area. Groundwater was encountered beneath the former 6,000 gallon tanks. Non-aqueous phase liquid (NAPL) was observed on the water table beneath the southern tank. The excavated soil was transported to an appropriate disposal facility and the excavation was backfilled with clean fill material. A new tank system was installed just west of the dispenser island.

Two groundwater monitoring wells (MW-1 and MW-2) were installed in July 1995. The first two episodes of monitoring revealed total petroleum hydrocarbons (TPH) as gasoline and benzene up to 210,000 $\mu\text{g/l}$ and 720 $\mu\text{g/l}$, respectively, in MW-2. Floating gasoline product, a NAPL, was

Corporate Headquarters

Los Angeles
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Phoenix
(602) 240-5990

San Francisco
(800) 801-3224

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(425) 401-8500

New York
(212) 279-7770

discovered in MW-1, which ranged from 1.20 to 4.39 feet thick between December 1995 and March 1996.

Three soil borings (SB-1 through SB-3) were advanced in August 1996. Groundwater samples collected from each of the borings contained total petroleum hydrocarbons (TPH) as gasoline and benzene ranging from 120,000 to 140,000 µg/l, and from 12,000 to 19,000 µg/l, respectively. Methyl tertiary butyl ether (MTBE) was also present in all three samples, up to 27,000 µg/l. Although NAPL was not observed in the field, qualitative laboratory observations indicated immiscible sheen. Manual bailing and pumping of NAPL from MW-1, and monitoring of MW-2 occurred intermittently through 1997.

Two additional groundwater monitoring wells (MW-3 and MW-4) were installed in May 2001. Refer to Tables 1 and 2 for data collected from these wells. A NAPL recovery pump was installed in MW-1 in June 2001.

This report documents the results of the seventh episode of groundwater monitoring and sample collection of the four wells performed at the site.

Summary of Monitoring Activities

Monitoring of water and product levels and sample collection occurred on February 4, 2003. The well locations are shown in Figure 2. The depth to static groundwater from the top of the well casings was measured prior to sampling with an electric water level indicator. A floating product interface meter was used in MW-1 and MW-2. The three wells with no measurable thickness of floating product (MW-2 through MW-4) were purged using a battery powered submersible pump, and groundwater samples were collected from the wells using clean, disposable plastic bailers.

Temperature, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductivity were measured during the purging of the wells. At least three well volumes of water were purged from each well prior to sample collection. Once the above parameters had stabilized, and the wells were allowed to recharge to a minimum of 90% of their original water volume, a water sample was collected.

Water was poured from the bailers into two 40 ml VOA vials and capped so no head space or air bubbles were visible within the sample containers. Samples were shipped on ice under proper chain of custody protocol to McCampbell Analytical, Inc. of Pacheco, California (DOHS Certification #1644).

The three groundwater samples collected were analyzed for TPH as gasoline and BTEX with MTBE by EPA method 8021B/8015C.

Field Results

No measurable thickness of NAPL was measured with an interface meter in any of the wells. Although no free product was measured, the interface meter was black and oily when retrieved from MW-1. When a bailer was used to collect a sample it also had a thick oily sheen on the outside, and approximately one quarter inch of free product floating on top. For this reason no samples were collected from MW-1, and the depth to water reading was not used in the calculation of groundwater flow direction and gradient.

Groundwater levels for the current monitoring episode ranged from 12.29 to 13.36 feet above mean sea level (msl) in the three wells (MW-2 through MW-4). These groundwater elevations were an average of 0.9 feet higher than the previous monitoring episode. The rise in water table elevation appears to be a seasonal occurrence. The groundwater flow direction at the time of measurement was north-northwest. This is a significant shift from previous episodes when groundwater flowed southward. The water table's hydraulic gradient was 0.01 foot per foot, which is comparable to the previous episode.

Groundwater elevation data are summarized in Table 1. The water table contours and the groundwater flow direction are depicted in Figure 2. Refer to Appendix A for the Groundwater Monitoring Well Field Sampling Forms.

Groundwater Quality

Hydrocarbon concentrations remained highest in MW-2, as they have been for the previous six episodes. TPH as gasoline, benzene, and MTBE were detected at 150,000 µg/l, 51,000 µg/l, and 27,000 µg/l in this well. Well MW-3 contained minor concentrations of TPH as gasoline and showed a considerable decrease in concentrations of BTEX. No hydrocarbons were detected in MW-4. A summary of groundwater quality data is presented in Tables 2 and 3. Laboratory results and chain of custody documents are included in Appendix B.

Conclusions

As requested by the ACHCSA, further investigation and active groundwater remediation will be necessary to assess whether the volatile organics present represent a human health risk for residents of the area, and to mitigate the hydrocarbon plume. AEI has recently been retained to perform the off-site investigation to determine the extent of the plume and recent access arrangements have been made. AEI will notify ACHCSA when the work is scheduled.

Quarterly groundwater monitoring will continue and the next episode is scheduled for May 2003.

Report Limitations and Signatures

This report presents a summary of work completed by AEI Consultants, including observations and descriptions of site conditions. 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

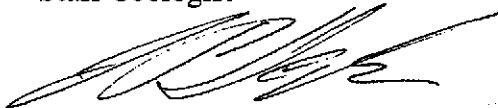
required information, but it cannot be assumed that they are entirely representative of all areas not sampled. All conclusions and recommendations are based on these analyses, observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document.

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

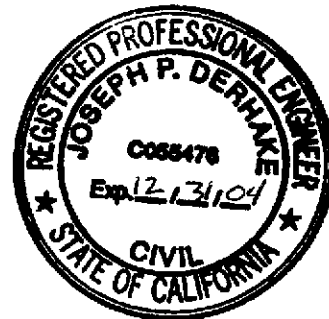
Sincerely,
AEI Consultants

Brandi K. Reese

Brandi Kiel Reese
Staff Geologist



Joseph Derhake, PE
Principal



- | | |
|------------|---------------------------------------|
| Figure 1 | Site Location Map |
| Figure 2 | Site Plan with Water Table Contours |
| Figure 3 | Site Plan with Dissolved Hydrocarbons |
| Table 1 | Groundwater Elevation Data |
| Table 2 | Groundwater Sample Analytical Data |
| Table 3 | Fuel Oxygenates and Lead Scavengers |
| Appendix A | Well Field Sampling Forms |
| Appendix B | Laboratory Reports |

cc: Mr. Barney Chan
ACHCSA, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94501

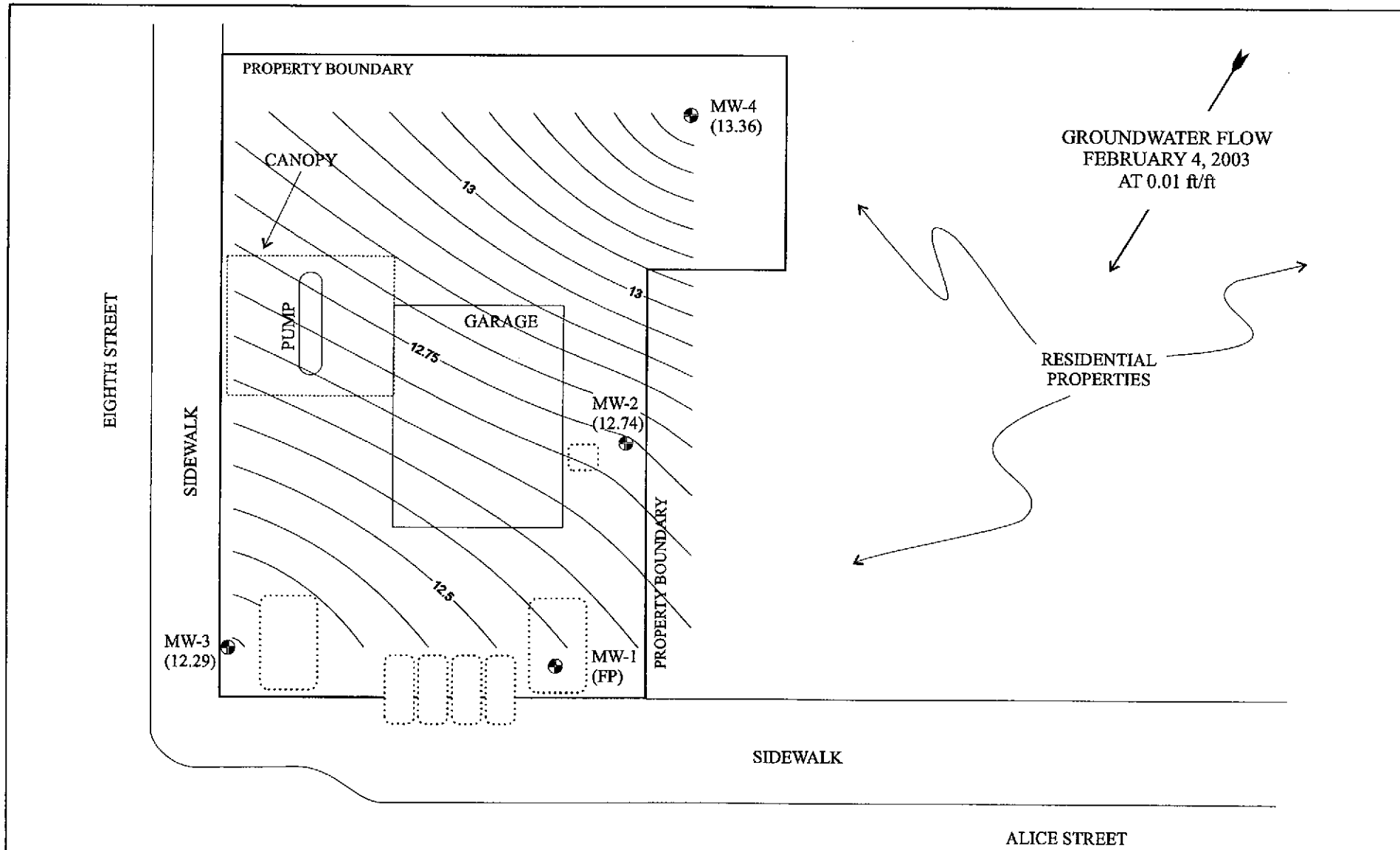


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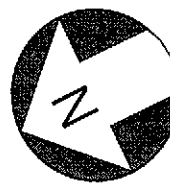
AEI CONSULTANTS 3210 OLD TUNNEL RD, STE B, LAFAYETTE, CA	
SITE LOCATION MAP	
245 8 th STREET OAKLAND, CALIFORNIA	FIGURE 1 PROJECT No. 4332



AEI CONSULTANTS
 3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

WATER TABLE CONTOURS

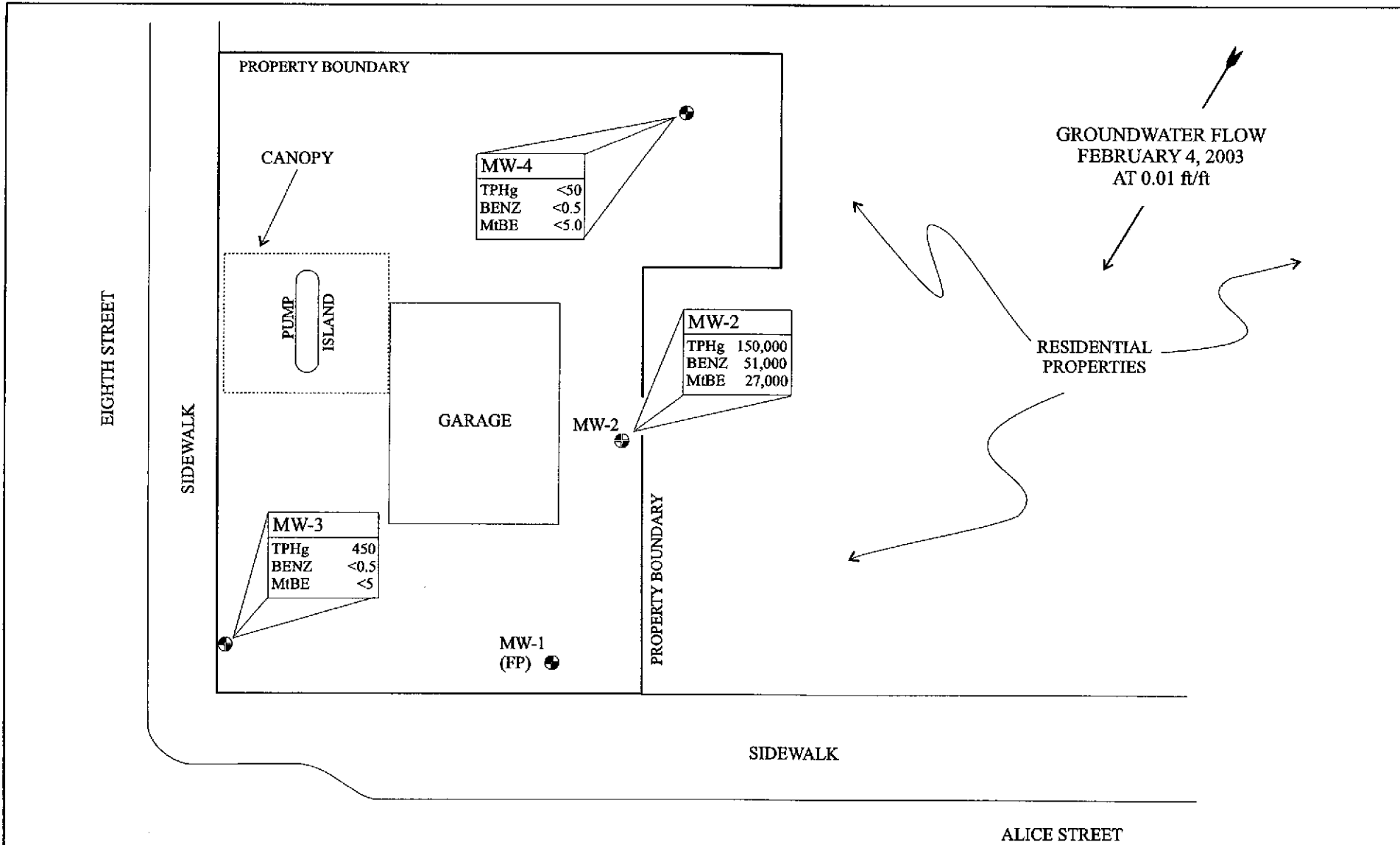
245 8th STREET OAKLAND, CALIFORNIA	FIGURE 2 PROJECT NO. 4332
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● MONITORING WELLS WITH WATER TABLE ELEVATIONS EXPRESSED IN FEET ABOVE MEAN SEA LEVEL (FP = Floating Product)

12.8 WATER TABLE CONTOURS WITH ELEVATIONS ABOVE SEA LEVEL. CONTOUR INTERVAL IS 0.05 FEET (drawn with Surfer V.7.0)

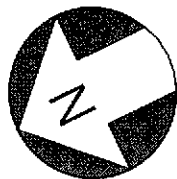
SCALE: 1 in = 25 ft



AEI CONSULTANTS
3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

DISSOLVED HYDROCARBONS

245 8th STREET OAKLAND, CALIFORNIA	FIGURE 3 PROJECT NO. 4332
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● MONITORING WELLS:
HYDROCARBON CONCENTRATION
EXPRESSED IN ug/l IN WATER

SCALE: 1 in = 25 ft

TPHg = Total Petroleum Hydrocarbons
as gasoline
BENZ = Benzene
MtBE = Methyl tert-Butyl Ether
FP = Floating Product (NAPL)

**Table 1
Groundwater Elevation Data**

Well ID	Date Collected	Well Elevation (ft amsl)	Depth to Water (ft)	Groundwater Elevation (ft aamsl)	Depth to LNAPL (ft)	LNAPL Thickness (ft)
MW-1	6/29/01	27.73	16.52	*	14.89	1.63
	10/10/01	27.73	15.45	*	15.37	0.08
	1/9/02	27.73	12.61	15.12*	-	<0.01
	4/24/02	27.73	13.35	14.38*	-	<0.01
	7/24/02	27.73	14.19	13.44*	-	<0.01
	11/5/02	27.73	14.85	12.88*	-	<0.01
	2/4/03	27.73	14.91	12.82*	-	<0.01
MW-2	6/29/01	28.16	16.14	12.02	-	-
	10/10/01	28.16	16.43	11.73	-	-
	1/9/02	28.16	13.50	14.66	-	-
	4/24/02	28.16	14.40	13.76	-	-
	7/24/02	28.16	14.91	13.25	-	-
	11/5/02	28.16	16.96	11.20	-	-
	2/4/03	28.16	15.42	12.74	-	-
MW-3	6/29/01	29.21	16.60	12.61	-	-
	10/10/01	29.21	16.92	12.29	-	-
	1/9/02	29.21	14.20	15.01	-	-
	4/24/02	29.21	15.07	14.14	-	-
	7/24/02	29.21	16.40	12.81	-	-
	11/5/02	29.21	16.47	12.74	-	-
	2/4/03	29.21	16.92	12.29	-	-
MW-4	6/29/01	29.38	17.71	11.67	-	-
	10/10/01	29.38	18.00	11.38	-	-
	1/9/02	29.38	15.02	14.36	-	-
	4/24/02	29.38	15.74	13.64	-	-
	7/24/02	29.38	16.69	12.69	-	-
	11/5/02	29.38	17.64	11.74	-	-
	2/4/03	29.38	16.02	13.36	-	-

Episode #	Date	Average Water Table Elevation**	Change from Previous Episode	Flow direction (gradient)
1	6/29/01	12.10	-	SSE (0.0074)
2	10/10/01	11.80	-0.30	SSE (0.0071)
3	1/9/02	14.68	2.88	SE (0.0054)
4	4/24/02	13.85	-0.83	SSW (0.005)
5	7/24/02	12.92	-0.93	NE (0.021)
6	11/5/02	11.89	-1.02	SW (0.019)
7	2/4/03	12.80	0.90	NNW (0.01)

LNAPL = light non-aqueous phase liquid (floating free product)

* = Measured groundwater level affected by LNAPL and/or pump presence, not used to calculate water table elevation

All well elevations are measured from the top of the casing

- = not applicable

ft amsl = feet above mean sea level

Note = Historical groundwater elevation and quality data for wells MW-1 and MW-2 was not available

Table 2
Groundwater Sample Analytical Data

Well/Sample ID	Date Collected	NAPL thickness (ft)	TPHg $\mu\text{g/L}$	MTBE $\mu\text{g/L}$	Benzene $\mu\text{g/L}$	Toluene $\mu\text{g/L}$	Ethylbenzene $\mu\text{g/L}$	Xylenes $\mu\text{g/L}$
MW-1	6/29/01	1.63	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	10/10/01	0.08	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	1/9/02	<0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	4/24/02	<0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	7/24/02	~0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/5/02	~0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	1/4/03	~0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
MW-2	6/29/01	0.0	69,000	4100/4400*	7,200	6,100	1,500	7,000
	10/10/01	0.0	87,000	14,000	22,000	12,000	2,700	9,100
	1/9/02	0.0	130,000	11,000	30,000	19,000	3,800	14,000
	4/24/02	Sheen	210,000	32,000	38,000	23,000	4,600	19,000
	7/24/02	Sheen	170,000	36,000	48,000	12,000	3,700	8,600
	11/5/02	Sheen	190,000	36,000	45,000	25,000	4,600	16,000
	1/4/03	Sheen	150,000	27,000	51,000	24,000	4,200	14,000
MW-3	6/29/01	0.0	550	<5.0	<0.5	3.1	3.2	1.2
	10/10/01	0.0	470	<5.0	0.77	5.3	3.3	5.9
	1/9/02	0.0	1,000	<5.0	0.90	7.6	7.8	25
	4/24/02	0.0	1,500	<5.0	0.64	7.2	12	14
	7/24/02	0.0	1,200	<5.0	10	17.0	11	25
	11/5/02	0.0	1,800	<25	33	43.0	18	31
	1/4/03	0.0	450	<5.0	<0.5	5.0	<0.5	0.77
MW-4	6/29/01	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	10/10/01	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	1/9/02	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	4/24/02	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	7/24/02	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	11/5/02	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	1/4/03	0.0	<50	<5.0	<0.5	<0.5	<0.5	<0.5
MDL			50	5.0	0.5	0.5	0.5	0.5

$\mu\text{g/L}$ micrograms per liter

TPHg total petroleum hydrocarbons as gasoline

MTBE methyl tertiary butyl ether

* samples re-analyzed by EPA Method 8260 (expressed as EPA 8020 / EPA 8260)

ns/fp = not sampled / free product

MDL = method detection limit

Please refer to Appendix B: Lab Results for further detailed lab information including dilution factors

Table 3
Fuel Oxygenates and Lead Scavengers

Well/Sample ID	Date Collected	DIPE µg/L	ETBE µg/L	MTBE µg/L	TAME µg/L	TBA µg/L	EDB µg/L	1,2-DCA µg/L
MW-1	7/24/02	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
MW-2	7/24/02	ND<1,000	ND<1,000	43,000	ND<1,000	ND<10,000	ND<1,000	ND<1,000
MW-3	7/24/02	<0.5	<0.5	1.3	<0.5	<5.0	<0.5	<0.5
MW-4	7/24/02	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
MDL		0.5	0.5	0.5	0.5	5.0	0.5	0.5

µg/L micrograms per liter

MDL = method detection limit

ns/fp = not sampled / free product

Note = Historical Groundwater elevation and quality data for wells MW-1 and MW-2 was not available

APPENDIX A

WELL FIELD SAMPLING FORMS

AEI CONSULTANTS
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1

Project Name:	Lum	Date of Sampling:	2/4/2003
Job Number:	4332	Name of Sampler:	SM
Project Address:	245 8th Street, Oakland		

MONITORING WELL DATA			
Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK	▼	
Elevation of Top of Casing (feet above msl)	27.63		
Depth of Well	25.00		
Depth to Water (from top of casing)	14.91		
Water Elevation (feet above msl)	10.09		
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)	19.7		
Actual Volume Purged (gallons)	20.0		
Appearance of Purge Water			
Free Product Present?	Yes	Thickness (ft):	~0.01

GROUNDWATER SAMPLES							
Number of Samples/Container Size				(2) 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments

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

well not sampled, free product present

AEI CONSULTANTS
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-2

Project Name:	Lum	Date of Sampling:	2/4/2003
Job Number:	4332	Name of Sampler:	SM
Project Address:	245 8th Street, Oakland		

MONITORING WELL DATA			
Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	28.16		
Depth of Well	25.00		
Depth to Water (from top of casing)	15.42		
Water Elevation (feet above msl)	9.58		
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)	4.6		
Actual Volume Purged (gallons)	5.0		
Appearance of Purge Water			
Free Product Present?	Yes	Thickness (ft):	Sheen

GROUNDWATER SAMPLES							
Number of Samples/Container Size				(2) 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments

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

No readings taken due to equipment calibration
Strong hydrocarbon odor, slight sheen

AEI CONSULTANTS
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: **MW-3**

Project Name:	Lum	Date of Sampling:	2/4/2003
Job Number:	4332	Name of Sampler:	SM
Project Address:	245 8th Street, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK <input type="button" value="v"/>		
Elevation of Top of Casing (feet above msl)	29.21		
Depth of Well	25.00		
Depth to Water (from top of casing)	16.02		
Water Elevation (feet above msl)	8.98		
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)	17.5		
Actual Volume Purged (gallons)	18.0		
Appearance of Purge Water	clear		
Free Product Present?	No	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size				(2) 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	3	19.52	6.37	401	0.18	17.4	
	6	19.54	6.4	384	0.21	3.4	
	9	19.55	6.39	367	0.23	-8.2	
	12	19.65	6.45	369	0.32	-32	
	15	19.68	6.46	369	0.15	-35.8	
	18	19.7	6.47	361	0.13	-36.8	

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

Slight hydrocarbon odor

AEI CONSULTANTS
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name:	Lum	Date of Sampling:	2/4/2003
Job Number:	4332	Name of Sampler:	SM
Project Address:	245 8th Street, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	▼		
Elevation of Top of Casing (feet above msl)	29.38		
Depth of Well	25.00		
Depth to Water (from top of casing)	16.92		
Water Elevation (feet above msl)	8.08		
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)	15.8		
Actual Volume Purged (gallons)	16.0		
Appearance of Purge Water	clear after 3 gallons		
Free Product Present?	No	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size				(2) 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	2.5	18.21	6.17	437	4.27	207.2	light brown
	5	18.17	6.09	439	4.49	227.1	clear
	7.5	18.21	6.11	440	3.15	219.6	
	10.5	18.3	6.17	467	3.05	201.3	
	13	18.32	6.16	470	3.2	194.2	
	16	18.37	6.24	498	4.81	160.6	

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

Recharged after 13 gallons for 10 minutes
Slight hydrocarbon odor



McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mcccampbell.com E-mail: main@mcccampbell.com

All Environmental, Inc.
3210 Old Tunnel Rd., Ste. B
Lafayette, CA 94549-4157

Client Project ID: #4332; Lum

Date Sampled: 02/04/03

Date Received: 02/04/03

Client Contact: Brandi Kiel Reese

Date Extracted: 02/05/03

Client P.O.: Brandi Kiel Reese

Date Analyzed: 02/05/03

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0302025

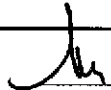
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-2	W	150,000,a	27,000	51,000	24,000	4200	14,000	200	101
002A	MW-3	W	450,a	ND	ND	5.0	ND	0.77	1	106
003A	MW-4	W	ND	ND	ND	ND	ND	ND	1	99.1

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	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	NA	1	mg/Kg

*water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

 Angela Rydelius, Lab Manager



McC Campbell Analytical Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
 http://www.mccampbell.com E-mail: main@mccampbell.com

QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0302025

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5802		Spiked Sample ID: 0302029-012A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	103	106	2.64	98.8	104	4.79	80	120
MTBE	ND	10	85.6	89.2	4.02	80.9	87.5	7.81	80	120
Benzene	ND	10	101	101	0.173	94.7	102	7.57	80	120
Toluene	ND	10	95.5	95.1	0.495	90.4	97.4	7.43	80	120
Ethylbenzene	ND	10	101	102	1.24	97.1	103	5.53	80	120
Xylenes	ND	30	96.7	96.7	0	93	96.7	3.87	80	120
%SS:	107	100	99	96.1	3.02	98.5	99.3	0.799	80	120

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

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

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.

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

* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

Report To: **BRANDI KIEL REESE** Bill To: _____

Company: **All Environmental**

3210 Old Tunnel Road, Suite B

Lafayette, CA 94549-4157

Tele: (925) 283-6000 Fax: (925) 283-6121

Project #: **4332** Project Name: **LUM**

Project Location: **OAKLAND**

Sampler Signature: _____

Analysis Request										Other	Comments					
BTEX & TPH as Gas (602/8020 + 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 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)	RCI		

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other					
MS-2 MW-2		2-4		2	VOA	X					X	X			X				
MW-3																			
MW-4																			

Relinquished By: _____ Date: 2/4/03 Time: 4:15 Received By: _____
 Relinquished By: _____ Date: _____ Time: _____ Received By: _____
 Relinquished By: _____ Date: _____ Time: _____ Received By: _____

Remarks: _____
 ICMA PRESERVATION
 GOOD CONDITION APPROPRIATE
 HEAD SPACE ABSENT CONTAINERS
 DECHLORINATED IN LAB PRESERVED IN LAB

VOA O&G METALS OTHER

Melvin Keller

McC Campbell Analytical Inc.

CHAIN-OF-CUSTODY RECORD



110 Second Avenue South, #D7
 Pacheco, CA 94553-5560
 (925) 798-1620

WorkOrder: 0302025

Client:

All Environmental, Inc.
 3210 Old Tunnel Rd., Ste. B
 Lafayette, CA 94549-4157

TEL: (925) 283-6000
 FAX: (925) 283-6121
 ProjectNo: #4332; Lum
 PO: Brandi Kiel Rees

Date Received: 2/4/03
 Date Printed: 2/4/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					8021B/8015						
0302025-001	MW-2	Water	2/4/03	<input type="checkbox"/>	A						
0302025-002	MW-3	Water	2/4/03	<input type="checkbox"/>	A						
0302025-003	MW-4	Water	2/4/03	<input type="checkbox"/>	A						

Prepared by: Melissa Valles

Comments:

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