August 30, 2002

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

AEI CONSULTANTS
Environmental & Civil Engineering

3210 Old Tunnel Road, Suite B, Lafayette, CA 94549
Phone: (925) 283-6000 Fax: (925) 283-6121

August 30, 2002

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

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

Dear Mr. Lum:

Enclosed is the Quarterly Monitoring Report for the most recent episode of sampling. I have also included the invoice for the sampling and for the three samples analyzed by method 8260 for fuel oxygenates. Since these compounds were not detected, it seems likely this additional testing will not be required in future episodes.

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

Sincerely,

Nathan Garfield
Staff Geologist

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

AEI CONSULTANTS
Environmental & Civil Engineering Services

INVOICE

DATE	INVOICE #
8/30/02	2002-6977

BILL TO:	PROJECT ADDRESS:
MR. VIC LUM VIC'S AUTOMOTIVE 245 8TH STREET OAKLAND, CA 94607	245 8TH STREET OAKLAND, CA 94607

TERMS	PROJECT MANAGER	PROJECT #
DUE UPON RECEIPT	P. MCINTYRE	4332

PROJECT TYPE	DESCRIPTION	AMOUNT
GWM / FP O&M	QUARTERLY GROUNDWATER MONITORING EPISODE: $2,050.00 PER EPISODE	$ 2,050.00
	MTBE CONFIRMATION ANALYSIS: 3 SAMPLES AT $130.00 EACH	$ 130.00
A FINANCE CHARGE OF 1.5% PER MONTH (ANNUAL RATE 18.0%) WILL BE CHARGED TO ALL PAST DUE ACCOUNTS	**TOTAL**	**$2,180.00**

PLEASE INDICATE INVOICE NUMBER ON PAYMENT.

REMIT TO:

AEI CONSULTANTS
CORPORATE HEADQUARTERS
3210 OLD TUNNEL ROAD, SUITE B
LAFAYETTE, CA 94549-4157
(800) 801-3224

FEDERAL TAX ID# 68-0288965

FOR OFFICE USE ONLY

☐ SYSTEM

AEI CONSULTANTS
Environmental & Civil Engineering Services

3210 Old Tunnel Road, Suite B, Lafayette, CA 94549-4157
Phone: (925) 283-6000 Fax: (925) 283-6121

August 30, 2002

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

RE: **Quarterly Groundwater Monitoring Report**
Fifth 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 fifth episode of groundwater monitoring and sampling for the four onsite wells conducted on July 24, 2002.

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 (UST) 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 µg/l and 720 µg/l, respectively, in MW-2. Floating gasoline product, a NAPL, was 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 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 fifth 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 July 24, 2002. 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, 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 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 were analyzed for TPH as gasoline and BTEX with MTBE by EPA methods 5030/8015 & 8020, and for fuel oxygenates and lead scavengers by EPA 8260.

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 an oily sheen on the outside, and approximately a 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 12.69 to 13.25 feet above mean sea level (msl) in the three wells (MW-2 through MW-4). These groundwater elevations were an average of 0.93 feet lower than the previous monitoring episode. The groundwater flow direction at the time of measurement was to the northeast, representing a reversal in flow direction since previous episode. The water table's hydraulic gradient was 0.021 foot per foot, which is much greater than previous episodes.

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 were still highest in MW-2, as they have been for the previous five episodes. TPH as gasoline, benzene, and MTBE were detected at 170,000 µg/l, 48,000 µg/l, and 36,000 µg/l in this well. No hydrocarbons were detected in MW-4 and only minor concentrations of TPH as gasoline and BTEX were detected in MW-3. None of the seven fuel oxygenates and lead scavengers analyzed for by EPA 8260 were found in any of the samples, with the exception of MTBE in MW-2 (43,000 µg/L). 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.

Product Recovery

On July 24, 2002 no measurable thickness of product was found with a product interface meter. However, a bailer was used to verify the absence of recoverable free product. Approximately 0.01 feet of hydrocarbon product was observed floating in the bailer. Pump level was adjusted and the pump remains operational.

Conclusions and Recommendations

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 been retained to perform the off-site investigation to determine the extent of the plume and is currently preparing a remedial investigation/ feasibility study workplan.

Quarterly groundwater monitoring will continue and the next episode is scheduled for October 2002. Due to the lack of detection of fuel oxygenates and lead scavengers by EPA 8260, this analytical method will not be employed in subsequent sampling events.

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

Nathan Garfield
Staff Geologist

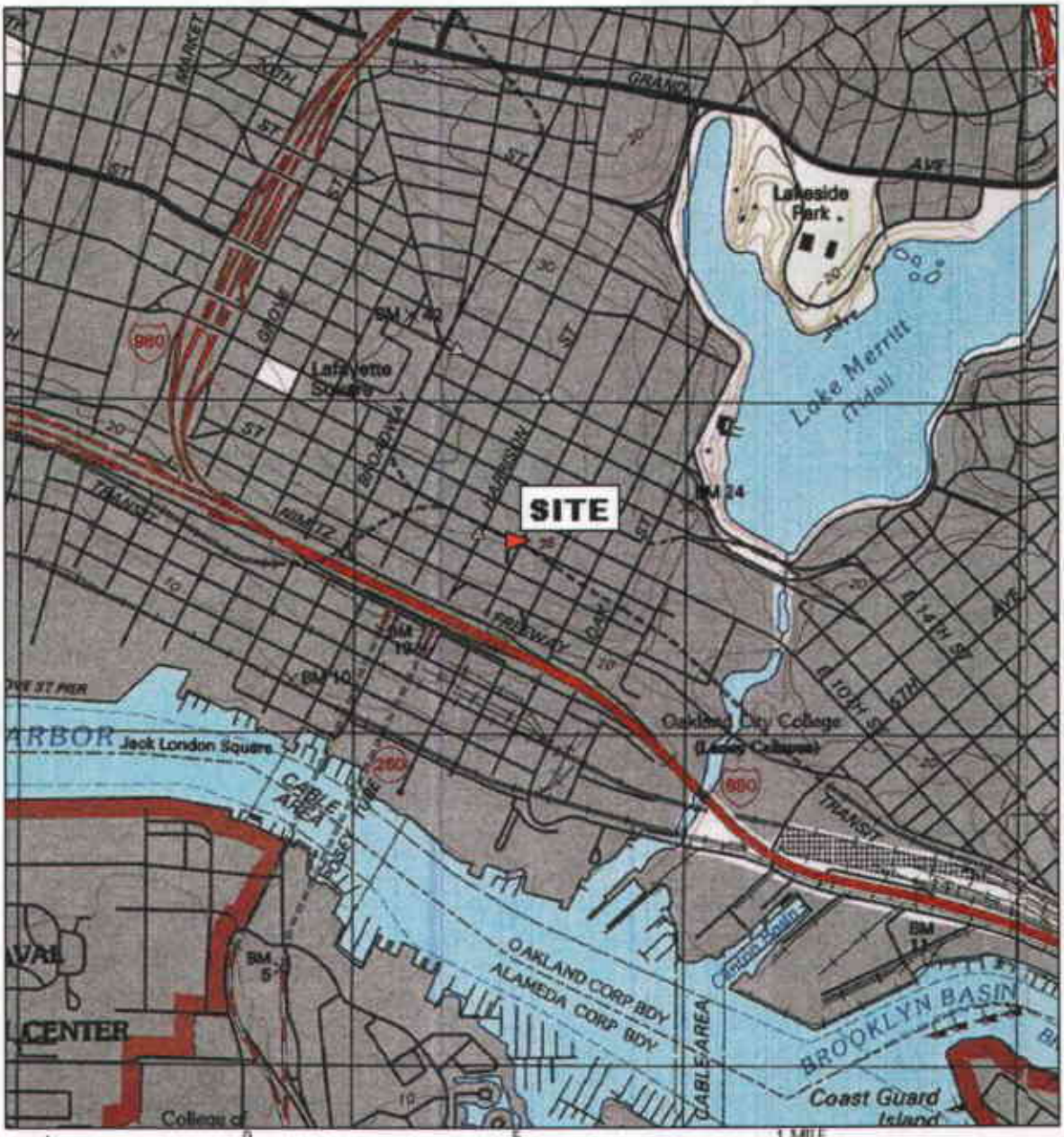
Joseph Derhake, PE
Principal

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

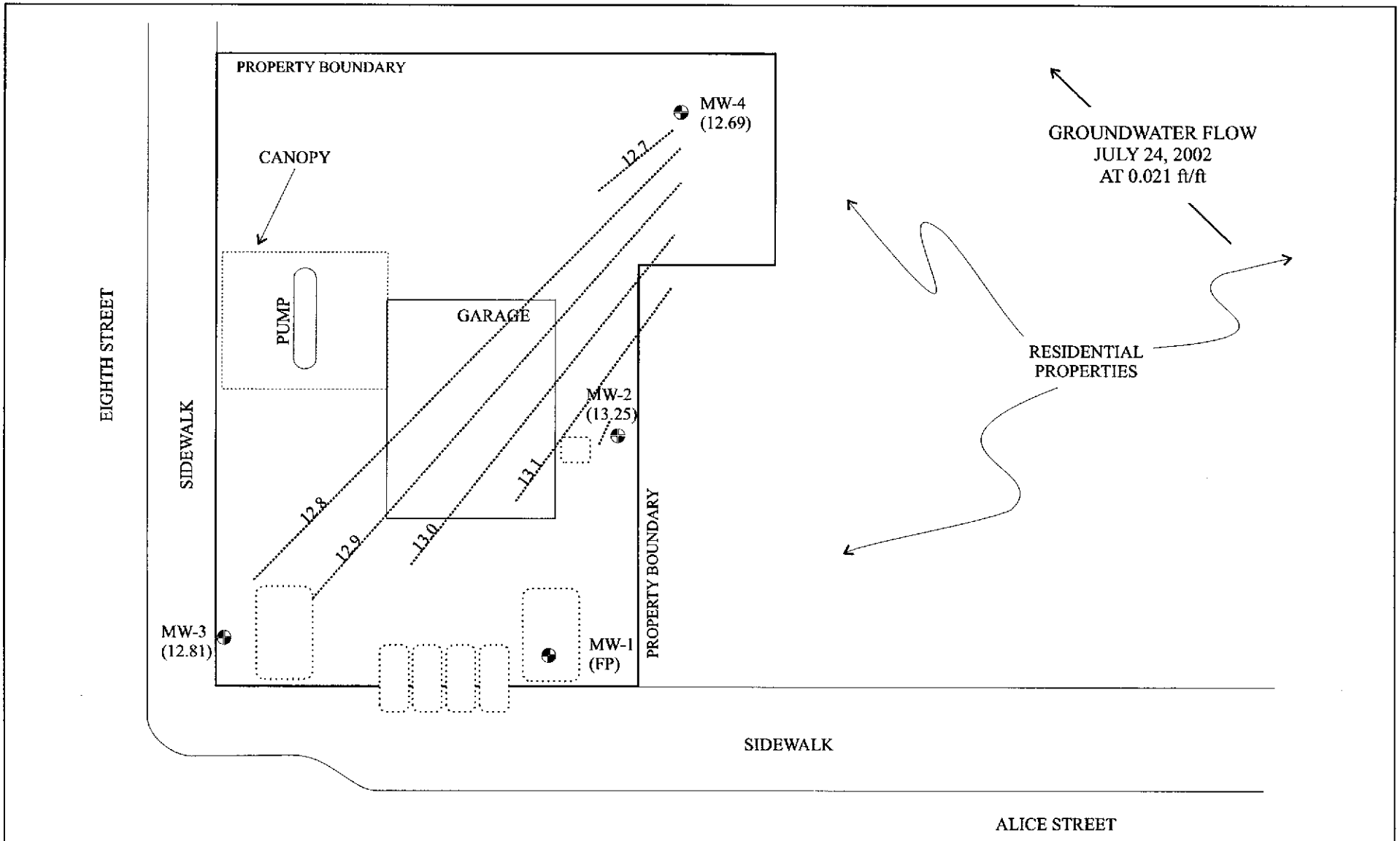
Appendix A	Well Field Sampling Forms
Appendix B	Laboratory Reports

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



Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

AEI CONSULTANTS 3210 OLD TUNNEL RD, STE B, LAFAYETTE, CA	
SITE LOCATION MAP	
245 8th 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

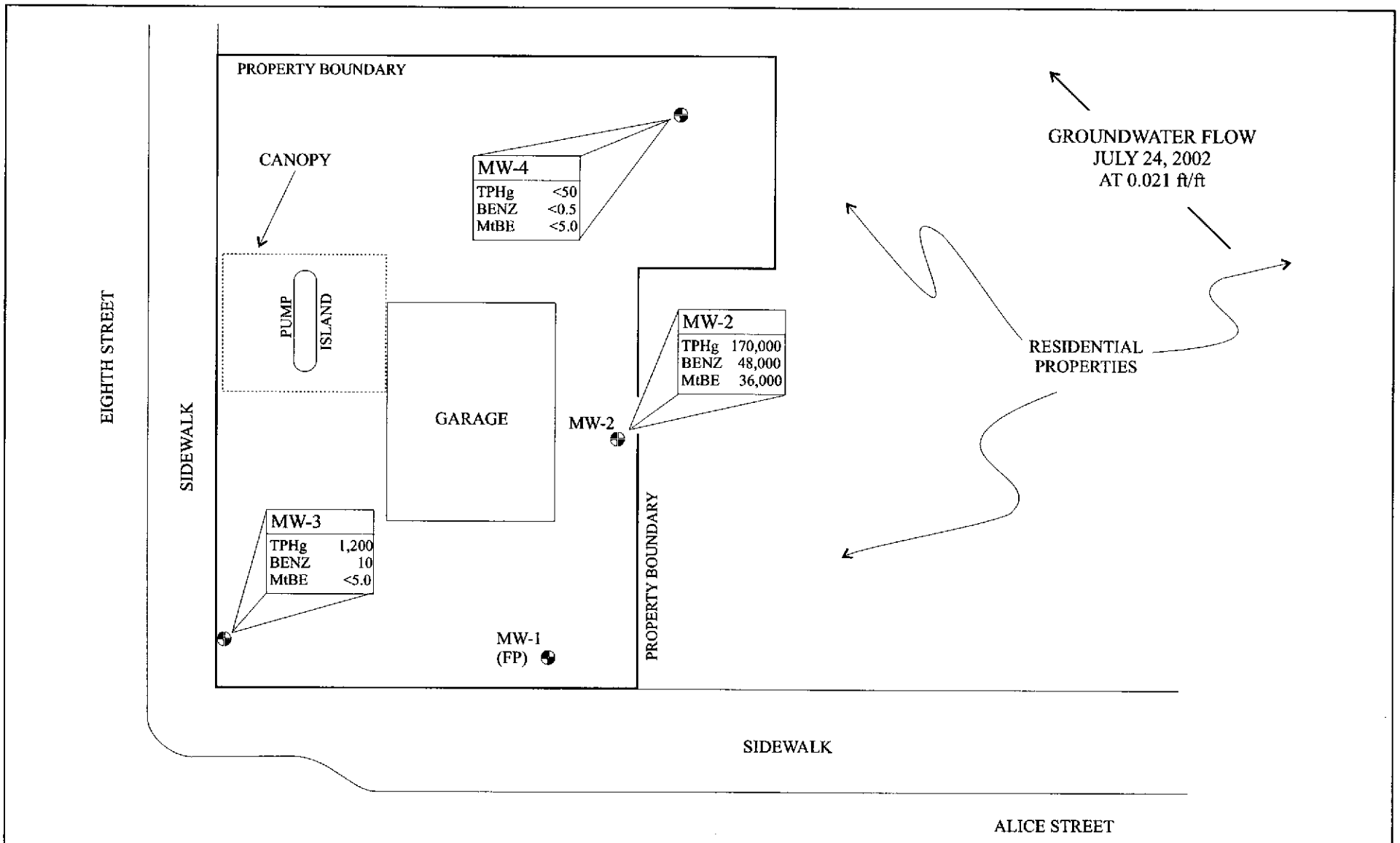
FIGURE 2
PROJECT NO. 4332

N

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.

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

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 msl)	Depth to Water (ft)	Groundwater Elevation (ft amsl)	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**
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**	-	-
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**	-	-
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**	-	-

* = 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 msl = feet above mean sea level

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

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

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)**

** MW-2 through MW-4 only

Table 2
Groundwater Sample Analytical Data

Well/Sample ID	Date Collected	NAPL thichness (ft)	TPHg µg/L	MTBE µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/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**
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**
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**	**10.00**	**17.0**	**11**	**25**
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**
MDL			50	5.0	0.5	0.5	0.5	0.5

µg/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)

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

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

AEI CONSULTANTS - GROUNDWATER MONITORING WELL FIELD SAMPLING FORM	
Monitoring Well Number: MW-1	
Project Name: LUM	Date of Sampling: 7/24/02
Job Number: 4332	Name of Sampler: N. Garfield
Project Address: 245 8th Street, Oakland	
MONITORING WELL DATA	
Well Casing Diameter (2"/4"/6")	4"
Seal at Grade -- Type and Condition	Good
Well Cap & Lock – OK/Replace	OK
Elevation of Top of Casing	27.63
Depth of Well	25
Depth to LNAPL	14.19
Depth to water	
LNAPL thickness <0.01 ft (sheen present)	
Appearance of Purge Water	Well not purged
GROUNDWATER SAMPLES	
Number of Samples/Container Size	

Time	Vol Remvd (gal)	Temp (deg C)	pH	Cond (mS)	Comments

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)
No measurable product thickness upon removal of pump.

LNAPL – light non-aqueous phase liquid (floating product)
TD - Total Depth of Well
DTW - Depth To Water

AEI CONSULTANTS - GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-2

Project Name: LUM	Date of Sampling: 7/24/02
Job Number: 4332	Name of Sampler: N. Garfield
Project Address: 245 8th Street, Oakland	

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"
Seal at Grade -- Type and Condition	Good
Well Cap & Lock – OK/Replace	OK
Elevation of Top of Casing	28.16
Depth of Well	25
Depth to Water	14.91
Water Elevation	13.25
Three Well Volumes (gallons)*	
2" casing: (TD - DTW)(0.16)(3)	4.84
4" casing: (TD - DTW)(0.65)(3)	
6" casing: (TD - DTW)(1.44)(3)	
Actual Volume Purged (gallons)	5.0
Appearance of Purge Water	Grey, turbid

GROUNDWATER SAMPLES

Number of Samples/Container Size	(2)-40 ml VOAs

Time	Vol Remvd (gal)	Temp (deg C)	PH	Cond (µs/cm)	Comments
2:30	1	19.6	6.79	1402	
2:31	2	18.8	6.80	1266	Light grey color
2:33	3.5	18.7	6.95	1142	
2:34	5	18.3	6.64	1113	

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

Strong hydrocarbon odor, heavy sheen present (no measurable NAPL thickness)

TD - Total Depth of Well
DTW - Depth To Water

AEI CONSULTANTS - GROUNDWATER MONITORING WELL FIELD SAMPLING FORM	
Monitoring Well Number: MW-3	
Project Name: LUM	Date of Sampling: 7/24/02
Job Number: 4332	Name of Sampler: N. Garfield
Project Address: 245 8th Street, Oakland	
MONITORING WELL DATA	
Well Casing Diameter (2"/4"/6")	4"
Seal at Grade -- Type and Condition	Good
Well Cap & Lock -- OK/Replace	OK
Elevation of Top of Casing	29.21
Depth of Well	25
Depth to Water	16.40
Water Elevation	12.81
Three Well Volumes (gallons)*	
2" casing: (TD - DTW)(0.16)(3)	
4" casing: (TD - DTW)(0.65)(3)	16.77
6" casing: (TD - DTW)(1.44)(3)	
Actual Volume Purged (gallons)	17.0
Appearance of Purge Water	Grey and turbid, clears quickly
GROUNDWATER SAMPLES	
Number of Samples/Container Size	(2)-40 ml VOAs

Time	Vol Remvd (gal)	Temp (deg C)	pH	Cond (µs/cm)	Comments
2:45	4	20.4	7.74	412	
2:47	8	20.0	6.70	343	
2:50	12	19.8	6.79	331	
2:52	17	19.2	7.33	322	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)
No sheen, moderate HC odor

TD - Total Depth of Well
DTW - Depth To Water

AEI CONSULTANTS - GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name: LUM	Date of Sampling: 7/24/02
Job Number: 4332	Name of Sampler: N. Garfield
Project Address: 245 8th Street, Oakland	

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4"
Seal at Grade -- Type and Condition	Good
Well Cap & Lock -- OK/Replace	OK
Elevation of Top of Casing	29.38
Depth of Well	25
Depth to Water	16.44
Water Elevation	12.94
Three Well Volumes (gallons)*	
2" casing: (TD - DTW)(0.16)(3)	
4" casing: (TD - DTW)(0.65)(3)	16.69
6" casing: (TD - DTW)(1.44)(3)	
Actual Volume Purged (gallons)	17
Appearance of Purge Water	Clear

GROUNDWATER SAMPLES

Number of Samples/Container Size	(2)-40 ml VOAs

Time	Vol Remvd (gal)	Temp (deg C)	PH	Cond (µs/cm)	Comments
2:15	4	22.9	6.53	457	
2:17	8	21.0	6.51	446	
2:20	12	19.7	6.49	486	
2:23	17	19.8	6.53	540	Well dry at 15 gallons.
					Wait 2 min for recharge

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

No sheen or odor present

TD - Total Depth of Well
DTW - Depth To Water

McCampbell 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

All Environmental, Inc. 3210 Old Tunnel Rd., Ste. B Lafayette, CA 94549-4157	Client Project ID: #4332; Lum	Date Sampled: 07/24/02
		Date Received: 07/25/02
	Client Contact: Nathan	Date Reported: 08/01/02
	Client P.O.:	Date Completed: 08/01/02

August 01, 2002

Enclosed are:

1). the results of **3** samples from your **#4332; Lum project,**

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager

McCampbell 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

All Environmental, Inc.	Client Project ID: #4332; Lum	Date Sampled: 07/24/02
3210 Old Tunnel Rd., Ste. B		Date Received: 07/25/02
Lafayette, CA 94549-4157	Client Contact: Nathan	Date Extracted: 07/28/02
	Client P.O.:	Date Analyzed: 07/28/02

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0207372

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-2	W	170,000,a	36,000	48,000	12,000	3700	8600	200	112
002A	MW-3	W	1200,a	ND	10	17	11	25	1	---#
003A	MW-4	W	ND	ND	ND	ND	ND	ND	1	97.2
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	ug/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 and sludge samples in mg/kg, wipe samples in ug/wipe, and TCLP extracts in ug/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: 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); 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.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCampbell 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

All Environmental, Inc.	Client Project ID: #4332; Lum	Date Sampled: 07/24/02
3210 Old Tunnel Rd., Ste. B		Date Received: 07/25/02
Lafayette, CA 94549-4157	Client Contact: Nathan	Date Extracted: 07/28/02-07/29/02
	Client P.O.:	Date Analyzed: 07/28/02-07/29/02

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

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 0207372

Lab ID	0207372-001B	0207372-002B	0207372-003B		Reporting Limit for DF =1	
Client ID	MW-2	MW-3	MW-4			
Matrix	W	W	W			
DF	2000	1	1		S	W
Compound	**Concentration**				ug/kg	µg/L
Diisopropyl ether (DIPE)	ND<1000	ND	ND		NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<1000	ND	ND		NA	0.5
Methyl-t-butyl ether (MTBE)	43,000	1.3	ND		NA	0.5
tert-Amyl methyl ether (TAME)	ND<1000	ND	ND		NA	0.5
t-Butyl alcohol (TBA)	ND<10,000	ND	ND		NA	5.0
1,2-Dibromoethane (EDB)	ND<1000	ND	ND		NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<1000	ND	ND		NA	0.5
Surrogate Recoveries (%)						
%SS:	98.6	101	98.7			
Comments						

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

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

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) sample diluted due to high organic content.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCampbell 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: 0207372

EPA Method: SW8021B/8015Cm Extraction: SW5030B BatchID: 3163 Spiked Sample ID: N/A

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)	N/A	60	N/A	N/A	N/A	97.6	105	6.89	80	120
MTBE	N/A	10	N/A	N/A	N/A	91.4	95.9	4.82	80	120
Benzene	N/A	10	N/A	N/A	N/A	102	107	4.34	80	120
Toluene	N/A	10	N/A	N/A	N/A	112	117	4.59	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	108	112	3.94	80	120
Xylenes	N/A	30	N/A	N/A	N/A	107	110	3.08	80	120
%SS:	N/A	100	N/A	N/A	N/A	106	110	3.55	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.

McCampbell 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 SW8260B

Matrix: W WorkOrder: 0207372

EPA Method: SW8260B	Extraction: SW5030B	BatchID: 3167	Spiked Sample ID: N/A

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
tert-Amyl methyl ether (TAME)	N/A	10	N/A	N/A	N/A	115	120	4.38	70	130
Methyl-t-butyl ether (MTBE)	N/A	10	N/A	N/A	N/A	116	120	3.05	70	130
Diisopropyl ether (DIPE)	N/A	10	N/A	N/A	N/A	112	117	4.31	70	130
Ethyl tert-butyl ether (ETBE)	N/A	10	N/A	N/A	N/A	119	124	4.07	70	130

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.

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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0207372

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:

25-Jul-02

Sample ID	ClientSampID	Matrix	Collection Date	Bottle	Requested Tests	
					8021B/8015	SW8260B
0207372-001	MW-2	Water	7/24/02 3:15:00 AM		A	B
0207372-002	MW-3	Water	7/24/02 3:15:00 AM		A	B
0207372-003	MW-4	Water	7/24/02 3:15:00 AM		A	B

Comments:

	Date/Time		Date/Time
Relinquished by:		**Received by:**	
Relinquished by:		**Received by:**	
Relinquished by:		**Received by:**	

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.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

0207372

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553
Telephone: (925) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

Report To: Nathan 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:
Sampler Signature:

SAMPLE ID	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX: Water	Soil	Air	Sludge	Other	METHOD PRESERVED: Ice	HCl	HNO_3	Other	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	Other: Ethel Oxy's Lead Scav (8260)	Comments
MW-2		7/24	3:15	3	VOA	X									X															X	
MW-3		↓	↓	↓	↓	↓									↓															←	
MW-4		↓	↓	↓	↓	↓									↓																

Relinquished By:	Date:	Time:	Received By:
	7/24/02	5:43	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

Remarks:

VOAS | O&G | METALS | OTHER

ICE/T° ✓
HEAD SPACE ABSENT ✓
PRESERVATION APPROPRIATE ✓
CONTAINERS ✓