

Phone: (925) 283-6000

RO508

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October 14, 2002

Mr. Barney Chan Alameda Health Care Services Agency 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502

Subject:

**Groundwater Investigation** 

807 75th Street Oakland, CA 94621 AEI Project No. 3190

Dear Mr. Chan:

Alomeda County

Environmental Health
Te. Enclosed is the most recent quarterly monitoring report for the above referenced site.

AEI is currently collaborating with the property owner to develop an appropriate scope of work to better define the plume which helps us create an effective corrective action plan for the hydrocarbon impact.

Please call me at (925) 283-6000 x 117 if you have any questions.

Sincerely,

Andrew Wyckoff Project Geologist

October 14, 2002

## GROUNDWATER MONITORING AND SAMPLING REPORT

807 75<sup>TH</sup> Avenue Oakland, California

Project No. 3190

Prepared For

Omega Termite Control 807 75<sup>th</sup> Avenue Oakland, CA 95621

Prepared By

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

AEI

AEI

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October 14, 2002

Mr. Allan Kanady Omega Termite Control 807 75<sup>th</sup> Avenue Oakland, CA 95621 Alameda County

Environmental Health

RE:

Quarterly Groundwater Monitoring and Sampling Report

Eleventh Sampling Episode-August 2002 807 75<sup>th</sup> Avenue Oakland, California Project No. 3190

Dear Mr. Kanady:

AEI Consultants (AEI) has prepared this report to document the results of the tenth episode of groundwater monitoring and sampling at the above referenced site (Figure 1: Site Location Map). This groundwater investigation has been performed in accordance with the requirements of the Alameda County Health Care Services Agency (ACHCSA). The purpose of this activity is to monitor groundwater quality in the vicinity of the previous locations of the underground storage tanks at the site. This report presents the findings of the eleventh sampling episode of groundwater monitoring and sampling conducted on August 20, 2002.

#### Site Description and Background

The property is located on the northern corner of Snell Street and 75<sup>th</sup> Avenue in the City of Oakland. The site currently supports the operation of Omega Termite Control (Figure 1: Site Location Map).

On September 15, 1996, three gasoline underground storage tanks (USTs) were removed from the property by AEI. The tanks consisted of one 500-gallon, one 1,000-gallon and one 8,000-gallon tank. The former locations of the USTs are shown in Figure 2.

Soil samples were collected from beneath the 500-gallon and 1,000-gallon gasoline tanks and from the three sidewalls of the 8,000-gallon tank excavation. Concentrations of total petroleum hydrocarbons as gasoline (TPH-g) were present in the soil beneath the 500-gallon UST at concentrations of 4,300 milligrams per kilogram (mg/kg). Minor concentrations (41 mg/kg) of TPH-g were present beneath the 1,000-gallon tank. The three sidewall samples collected from the 8,000-gallon tank excavation indicated concentrations of TPH-g above 100 mg/kg were present in the western and northwestern samples.

Groundwater was encountered during the excavation of the 8,000-gallon tank. A groundwater grab sample collected from the excavation indicated significant concentrations of petroleum hydrocarbon contaminants.

AEI issued a workplan, dated January 10, 1997, to the Alameda County Health Care Services Agency (ACHCSA). The workplan defined the extent and magnitude of petroleum hydrocarbon contamination in the vicinity of the former tanks. Six soil borings were advanced on January 31, 1997. This investigation indicated that groundwater was impacted with up to 27,000 micrograms per liter ( $\mu$ g/L) of TPH-g and 5,000  $\mu$ g/L of benzene. Significant concentrations of TPH-g were also detected in the soil up to ten feet bgs from the excavation.

In response to a request by the ACHCSA for further investigation at the site, AEI submitted a workplan to the ACHCSA on May 21, 1999 for the installation and subsequent sampling of four groundwater monitoring wells at the site (Ref. # 3). This workplan was approved by Barney Chan of the ACHCSA and the four wells were installed in June, 1999 (Ref. # 4).

On March 16, 2000, the former UST excavation was expanded to remove soil contaminated with gasoline. Prior to removal of the soil, the water that was in the excavation was pumped into a Baker tank and stored on-site. The excavation was expanded in all directions. The contaminated soil was stockpiled on the north portion of the property and covered with Visqueen. During the over-excavation activities, a 500-gallon UST was discovered on the east corner of the excavation. The tank was removed, and additional contaminated soil was removed from the area of the former tank.

As requested by the ACHCSA, AEI installed a 10-foot length of 4-inch ID PVC pipe in the area of the former UST to act as a temporary extraction well (TW-5).

#### **Summary of Activities**

AEI conducted a quarterly groundwater monitoring investigation on three monitoring wells (MW-1, MW-3 and MW-4) and the one temporary extraction well (TW-5) on August 20, 2002. Monitoring well MW-2 had been graded over with approximately eight inches of hardpack dirt and gravel and was not locatable for this investigation. Well locations are shown in Figure 2. First, the depths to groundwater (from the top of the well casings) for each well were measured with an electric water level indicator. The wells were then purged using a battery powered submersible pump. Approximately three well volumes were removed from each well. Temperature, pH, specific conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were measured during the purging of the wells.

Once the groundwater parameters stabilized, and following recovery of water levels, water samples were collected from each well. Sample water was poured from polyethylene bailers into 40-milliliter (ml) VOA vials and 1-liter amber bottles, which were subsequently capped so that neither head space or air bubbles were visible within the vials. Samples were shipped on ice

under proper chain of custody protocol to McCampbell Analytical, Inc. of Pacheco, California (State Certification #1644).

Groundwater samples from the five wells were analyzed for TPH-g (EPA Method 5030/8015), TPH-d (EPA method 3550/8015), benzene, toluene, ethyl benzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE) (EPA Method 8020/602), and for total petroleum as oil and grease (EPA method 5520).

#### **Field Results**

Both hydrocarbon odor and sheen were observed in well MW-1. Hydrocarbon odor was also a detected in MW-3 and TW-5. Groundwater levels for this sampling episode ranged from -0.31 to -0.43 feet above mean sea level (amsl). These elevations are an average of 0.13 feet lower than the previous episode. Groundwater flow direction was estimated to be to the south with a hydraulic gradient of 0.002 ft/ft. These measurements differed slightly from the previous episode (southwest flow direction with a hydraulic gradient of 0.003 ft/ft.).

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

#### **Groundwater Quality**

Concentrations of TPH-g and BTEX decreased significantly in MW-1, MW-3, MW-4 and TW-5 compared to the previous analytical results. Heavier range hydrocarbons (TPH-d) were significantly higher in well TW-5 (21,000  $\mu$ g/l) than the other three wells (ranging from 120  $\mu$ g/L to 720  $\mu$ g/L). MTBE was not detected above laboratory reporting limits in any of the wells sampled during this investigation. Oil and grease were not detected in any of the wells sampled during this investigation.

A summary of groundwater analytical data is presented in Table 2. Laboratory results and chain of custody documents are included in Appendix B.

#### Conclusions

TPH-g concentrations in wells MW-1, MW-2, MW-3, MW-4 and TW-5 have fluctuated mildly since monitoring was initiated in 1999. BTEX concentrations have shown a decreasing trend in all monitoring wells, with the exception of MW-4 where BTEX concentrations have shown a general increase since monitoring was initiated..

As in the last monitoring episode, concentrations of TPH-d in wells MW-1, MW-3 and MW-4 were significantly lower than the concentrations of TPH-d present over the last two years in TW-5. This data once again indicates that the release from the former waste-oil tank, located nearby TW-5, may be confined to a small area.

In a letter dated June 28, 2002, the ACHCSA requested additional information in order to progress toward case closure. AEI is currently developing a site investigation plan which addresses the agency's technical comments and works toward an effective remedial action plan for the subject property.

Groundwater monitoring and sampling of the five wells will continue, with the next episode scheduled for November 2002. Analyses for TPH-d will continue during the next monitoring and sampling episode. Due to the non-detect results of total oil and grease in all wells sampled during this investigation, this chemical parameter will not be analyzed during the next apisode.

#### References

- 1. Underground Storage Tank Removal Final Report, prepared by AEI October 10, 1996
- 2. Phase II Soil and Groundwater Investigation Report, prepared by AEI March 17, 1997
- 3. Workplan, prepared by AEI May 21, 1999
- 4. Soil Boring and Groundwater Monitoring Well Installation Report, prepared by AEI-September 16, 1999
- 5. Quarterly Groundwater Monitoring and Sampling Report, prepared by AEI-July 28, 2000.
- 6. Quarterly Groundwater Monitoring and Sampling Report, prepared by AEI-November 3, 2000.
- 7. Quarterly Groundwater Monitoring and Sampling Report, prepared by AEI-February 7, 2001.
- 8. Quarterly Groundwater Monitoring and Sampling Report, prepared by AEI-July 2, 2001.
- 9. Quarterly Groundwater Monitoring and Sampling Report, prepared by AEI-February 20, 2002.
- 10. Quarterly Groundwater Monitoring and Sampling Report, prepared by AEI-June 21, 2002.

#### 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 which existed at the time and location of the work.

Please contact Peter McIntyre or either of the undersigned with any questions regarding the findings outlined in this report.

Sincerely,

**AEI Consultants** 

Andrew Wyckoff, M.A.

Project Geologist

J. P. Derhake, PE

Principal

Exp. 12 / 3/ /04

Figure 1

Site Location Map

Figure 2

Site Plan

Figure 3

Water Table Contour Map

Table 1

Groundwater Elevations

Table 2

Groundwater Sample Analytical Results

Appendix A

Groundwater Monitoring Well Field Sampling Forms

Appendix B

Laboratory Reports With Chain of Custody Documentation

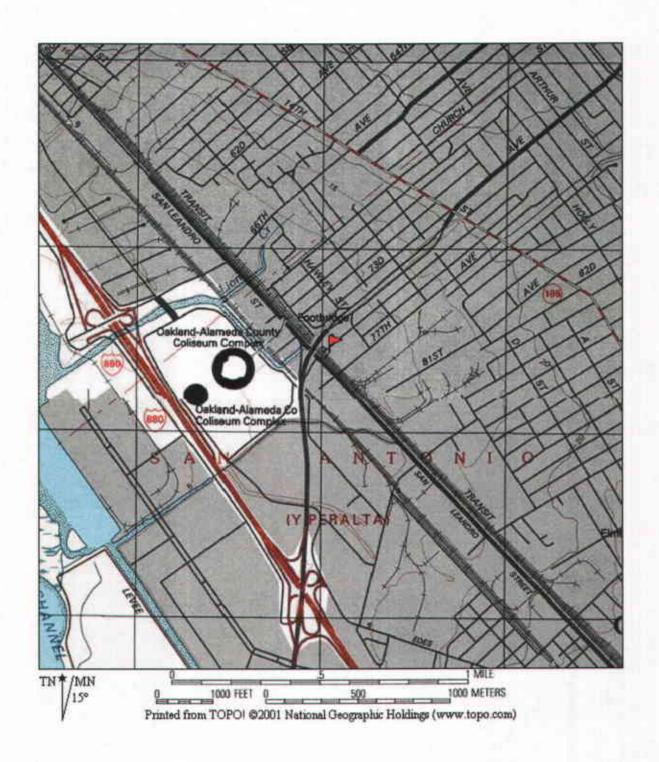
cc:

Mr. Barney Chan

**ACHCSA** 

1131 Harbor Bay Parkway, Suite 250

Alameda, CA 94502



## **AEI CONSULTANTS**

## SITE LOCATION MAP

807 75<sup>th</sup> STREET OAKLAND, CALIFORNIA FIGURE 1 PROJECT NO. 3190

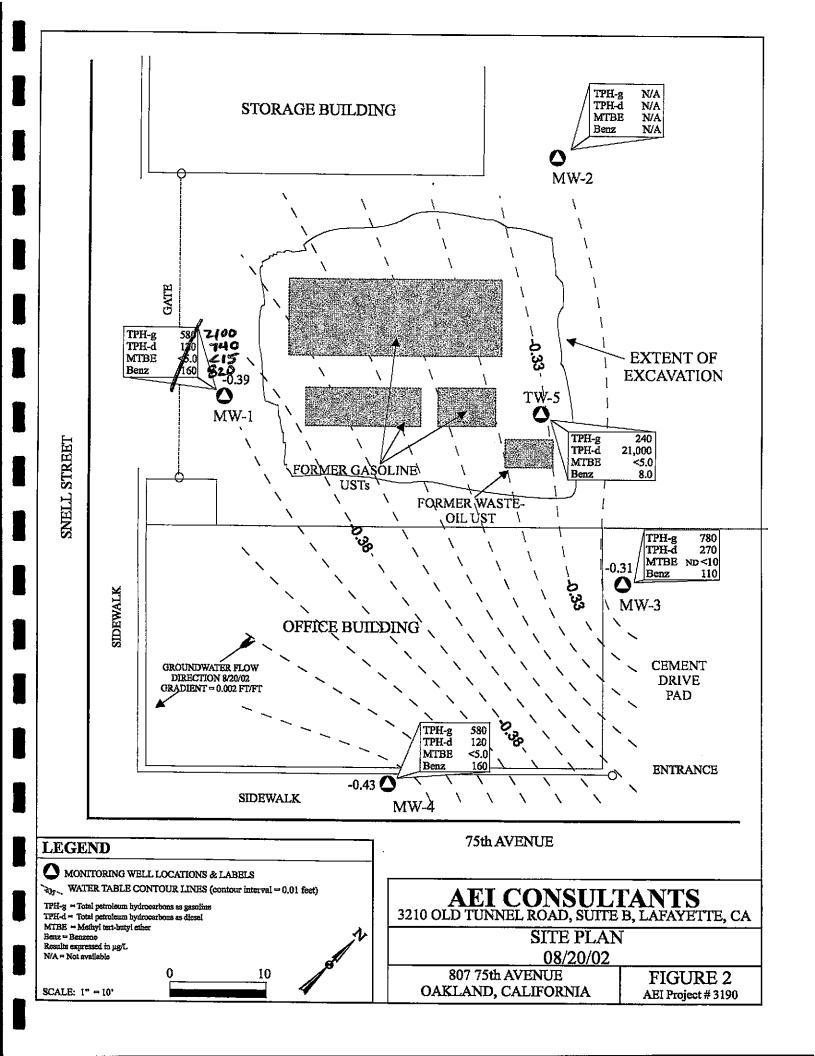


Table 1 Groundwater Elevations

Well ID	Date	Well	Depth	Groundwater
		Elevation	to Water	Elevation
		(ft amsl)	(ft)	(ft amsl)
	-			
MW-1	07/30/99	5.00	5.82	-0.82
	11/09/99	5.00	5.70	-0.70
l	02/23/00	5.00	2.84	2.16
l .	05/26/00	5.00	5.50	-0.50
	10/10/00	5.00	5.70	-0.70
	02/07/01	5.00	5.25	-0.25
	05/25/01	5.00	5.25	-0.25
	09/19/01	5.00	5.51	-0.51
	02/06/02	NS	NS	NS
	05/17/02	5.00	5.30	-0.30
	08/20/02	5.00	5.39	-0.39
MW-2	07/30/99	5.95	6.64	-0.69
	11/09/99	5.95	6.42	-0.47
	02/23/00	5.95	3.31	2.64
	05/26/00	5.95	6.34	-0.39
	10/10/00	5.95	6.52	-0.57
	02/07/01	5.95	5.90	0.05
	05/25/01	5.95	6.08	-0.13
	09/19/01	5.95	6.53	-0.38
	02/06/02	5.95	5.72	0.23
	05/17/02	5. <del>9</del> 5	6.17	-0.22
	08/20/02	5.95	NS	NS
MW-3	07/30/99	4.66	5.35	-0.69
	11/09/99	4.66	5.11	-0.45
	02/23/00	4.66	2.37	2.29
	05/26/00	4.66	4.98	-0.32
	10/10/00	4.66	5.24	-0.58
	02/07/01	4.66	4.73	-0.07
	05/25/01	4.66	4.73	<b>-0</b> .07
	09/19/01	4.66	5.07	-0.41
	02/06/02	4.66	4,69	-0.03
	05/17/02	4.66	4.80	-0.14
	08/20/02	4.66	4.97	-0.31
MW-4	07/30/99	4.59	5.45	-0.86
	11/09/99	4.59	5.31	-0.72
	02/23/00	4.59	2.72	1.87
	05/26/00	4.59	5.07	-0.48
	10/10/00	4.59	5.32	-0.73
	02/07/01	4.59	4.73	-0.14
	05/25/01	4.59	4.90	-0.31
	09/19/01	4.59	5.16	-0.57
	02/06/02	4.59	4.65	-0.06
	05/17/02	4.59	4.90	-0.31
	08/20/02	4.59	5.02	-0.43

Notes:

Depth to water measured from top of casings

ft amsl = feet above mean sea level

NS = not sampled

# APPENDIX A WELL FIELD SAMPLING FORMS

AEI	CONSULTA				TER MO		WELL 1	FIELD
		Monito	ring V	Vell 1	Number:	MW-1		
Project Na	ıme: Omega	<u> </u>		Da	te of Samp	ling: 8/20/02		<del></del> -
Job Numb						pler: Andrew	Wyckoff	
Project Ac	ldress: 807 75 <sup>th</sup>	Ave, Oaklar	nd					
		MON	ITOR	ING	WELL D	ATA		
Well Casin	ng Diameter (2"		<del></del>	2"				
Seal at Gra	ade Type and	Condition		Ce	ment / Goo	od		
	& Lock OK/R			OK		· · · · · · · · · · · · · · · · · · ·		
	of Top of Casing			5.0	0			
Depth of V	Well (feet bgs)			20.	.00			
Depth to V	Vater (feet toc)			5.3	9			
Water Ele	vation (feet ams	1)		39	9			
Three Wel	l Volumes (gall	ons)*						
	ing: (TD - DTW			7.0	1			
	ing: (TD - DTW							
6" cas	ing: (TD - DTW	7)(1.44)(3)						
	lume Purged (ga			7.5				
Appearance	e of Purge Wate	er		She	en visible,	slightly turbid		
<del></del>	· · · · · · · · · · · · · · · · · · ·	GRO	UNDW	AT	ER SAMP	LES		
Number of	Samples/Conta					As & one 1-lit	ter amber	bottle
-								
Time	Vol Remvd	Temp	рH	Ī	Cond	Dissolved	Redox	Comments
	(gal)	(deg C)	1		(µS)	Oxygen (DO) mg/L	(mV)	
1:14	1.5	18.64	6.4	1	1283	1.41	6.3	
1:16	3.5	19.16	6.2	9	1266	0.66	11.1	
1:17	5	18.68	6.2	0	1259	0.39	18.6	
1:19	6.5	18.40	6.1	1	1256	0.28	12.5	
Clinks I 3	COMMEN	ΓS (i.e., sam	ple odo	or, w	ell recharg	e time & perce	nt, etc.)	
Slight hyd	rocarbon odor							

AEI CONSU	LTAN				TER MO		WELL	FIELD
<del></del>		Monito	ring W	ell N	umber: 1	MW-2	<u>.</u>	
D : N								
Project Name: Om	ega					ling: 8/20/02		
Job Number: 3190	og gett i	0.11		Nan	ne of Sam	pler: Andrew	Wyckoff	
Project Address: 80	31 15 F	ive, Oaklar	ıa				<del></del>	
		MON	ITORI	ING V	WELL DA	ATA		
Well Casing Diame	ter (2"/4	"/6")		2"				
Seal at Grade Ty	pe and C	ondition		Cou	ld not find	l; Graded over	by proper	ty owner
Well Cap & Lock -	OK/Re	place		OK				
Elevation of Top of	Casing	(feet amsl)		5.95				
Depth of Well (feet				20.0	0			
Depth to Water (fee								
Water Elevation (fe								
Three Well Volume								
2" casing: (TD								
4" casing: (TD								
6" casing: (TD								
Actual Volume Pur								
Appearance of Purg	e Water							
<u> </u>		~~~						<del></del>
NT 1 CO 1	10		JNDW	ATE	R SAMP	LES		
Number of Samples	Contai	ner Size			·			
Time Mark	1	TD.		T	G 1	l w 1 1		
Time Vol R		Temp (deg C)	р¥	1	Cond (µS)	Dissolved Oxygen (DO) mg/L	Redox (mV)	Comments
		<u> </u>						
		····						
			_			<u> </u>	<u></u>	
CO3	43 4T'S 77"	0.0	,		11 1			
Wall not1-17	IMENT	S (1.e., sam	ple ode	or, we	II recharg	e time & perce	nt, etc.)	
Well not sampled b	ccause 1	i was grade	a over	with	airt and gi	ravel and not lo	ocatable	<del></del>

Project Name: Omega   Date of Sampling: 8/20/02	AEI	CONSULTAN				ATER MO		WELL	FIELD
Name of Sampler: Andrew Wyckoff			Monito	ring W	Vell	Number:	MW-3		
Name of Sampler: Andrew Wyckoff	Project Na	me: Omega			Da	ite of Samp	oling: 8/20/02		
Well Casing Diameter (2"/4"/6")   2"   Seal at Grade Type and Condition   Cement / Good   Well Cap & Lock OK/Replace   OK   Elevation of Top of Casing (feet amsl)   4.66   Depth of Well (feet bgs)   20.00   Depth to Water (feet toc)   4.97   Water Elevation (feet amsl)   -0.31   Three Well Volumes (gallons)*   2"   Casing: (TD - DTW)(0.16)(3)   7.36   4" casing: (TD - DTW)(0.65)(3)   6" casing: (TD - DTW)(1.44)(3)   Actual Volume Purged (gallons)   7.5   Appearance of Purge Water   Clear   Clear      Time   Vol Remvd   Temp   pH   Cond   Dissolved   Redox   Comment (µS)   Oxygen   (mV)   (DO) mg/L   1:47   1.5   19.36   6.41   1559   4.80   18.4   1:49   3.5   20.03   6.34   1566   4.66   27.9   1:51   5.5   19.17   6.33   1569   4.65   23.2   1:53   7   18.74   6.31   1560   4.53   3.7								Wyckoff	
Well Casing Diameter (2"/4"/6")   2"   Seal at Grade Type and Condition   Cement / Good	Project Ad	dress: 807 75 <sup>th</sup>	Ave., Oakla	nd					
Seal at Grade Type and Condition			MON	ITORI	ING	WELL D	ATA		
Well Cap & Lock OK/Replace   OK	Well Casir	ng Diameter (2"/-	4"/6")		2"				
Elevation of Top of Casing (feet amsl)   20.00	Seal at Gra	ide Type and (	Condition		Ce	ment / Goo	od		
Depth of Well (feet bgs)   20.00	Well Cap a	& Lock OK/Re	eplace		Ok	K			
Depth to Water (feet toc)   4.97	Elevation of	of Top of Casing	(feet amsl)		4.6	56			
Water Elevation (feet amsl)   -0.31	Depth of V	Vell (feet bgs)			20.	.00			
Three Well Volumes (gallons)*  2" casing: (TD - DTW)(0.16)(3) 7.36  4" casing: (TD - DTW)(0.65)(3) 6" casing: (TD - DTW)(1.44)(3)  Actual Volume Purged (gallons) 7.5  Appearance of Purge Water Clear   CROUNDWATER SAMPLES  Number of Samples/Container Size two 40 mL VOAs & one 1-liter amber bottle  Time Vol Remvd Temp pH Cond Dissolved Redox (μS) Oxygen (mV) (DO) mg/L  1:47 1.5 19.36 6.41 1559 4.80 18.4  1:49 3.5 20.03 6.34 1566 4.66 27.9  1:51 5.5 19.17 6.33 1569 4.65 23.2  1:53 7 18.74 6.31 1560 4.53 3.7	Depth to V	Vater (feet toc)			4.9	97			
2" casing: (TD - DTW)(0.16)(3)					-0.	31			
4" casing: (TD - DTW)(0.65)(3)         6" casing: (TD - DTW)(1.44)(3)         Actual Volume Purged (gallons)       7.5         Appearance of Purge Water       Clear         GROUNDWATER SAMPLES         Number of Samples/Container Size       two 40 mL VOAs & one 1-liter amber bottle         Time       Vol Remvd       Temp (deg C)       PH       Cond Dissolved (μS) Oxygen (mV)       Commerce (mV)         1:47       1.5       19.36       6.41       1559       4.80       18.4         1:49       3.5       20.03       6.34       1566       4.66       27.9         1:51       5.5       19.17       6.33       1569       4.65       23.2         1:53       7       18.74       6.31       1560       4.53       3.7	Three Wel	l Volumes (gallo	ns)*						
4" casing: (TD - DTW)(0.65)(3) 6" casing: (TD - DTW)(1.44)(3)  Actual Volume Purged (gallons)  Appearance of Purge Water   Clear   GROUNDWATER SAMPLES  Number of Samples/Container Size  two 40 mL VOAs & one 1-liter amber bottle  Time Vol Remvd Temp (deg C) (μS) Oxygen (mV)  (gal) (deg C) (μS) Oxygen (mV)  1:47 1.5 19.36 6.41 1559 4.80 18.4  1:49 3.5 20.03 6.34 1566 4.66 27.9  1:51 5.5 19.17 6.33 1569 4.65 23.2  1:53 7 18.74 6.31 1560 4.53 3.7	2" cas	ing: (TD - DTW	)(0.16)(3)		7.3	36			
Actual Volume Purged (gallons)   7.5									
Clear   Cle	6" cas	ing: (TD - DTW	)(1.44)(3)						
Number of Samples/Container Size   two 40 mL VOAs & one 1-liter amber bottle					7.5	j .			
Number of Samples/Container Size         two 40 mL VOAs & one 1-liter amber bottle           Time         Vol Remvd (gal)         Temp (deg C)         pH (μS)         Cond (μS)         Dissolved (mV)         Redox (mV)         Comment (mV)           1:47         1.5         19.36         6.41         1559         4.80         18.4           1:49         3.5         20.03         6.34         1566         4.66         27.9           1:51         5.5         19.17         6.33         1569         4.65         23.2           1:53         7         18.74         6.31         1560         4.53         3.7	Appearanc	e of Purge Water	r		Cle	ear			
Number of Samples/Container Size         two 40 mL VOAs & one 1-liter amber bottle           Time         Vol Remvd (gal)         Temp (deg C)         pH (μS)         Cond (μS)         Dissolved (mV)         Redox (mV)         Comment (mV)           1:47         1.5         19.36         6.41         1559         4.80         18.4           1:49         3.5         20.03         6.34         1566         4.66         27.9           1:51         5.5         19.17         6.33         1569         4.65         23.2           1:53         7         18.74         6.31         1560         4.53         3.7	<u> </u>		GROI	INDW	/ <b>A T</b>	FD SAME	TFC		
Time Vol Remvd (gal) (deg C) PH Cond (μS) Oxygen (mV)  1:47 1.5 19.36 6.41 1559 4.80 18.4  1:49 3.5 20.03 6.34 1566 4.66 27.9  1:51 5.5 19.17 6.33 1569 4.65 23.2  1:53 7 18.74 6.31 1560 4.53 3.7	Number of	Samples/Contai		0141044				iter amber	hottle
(gal)     (deg C)     (μS)     Oxygen (DO) mg/L     (mV)       1:47     1.5     19.36     6.41     1559     4.80     18.4       1:49     3.5     20.03     6.34     1566     4.66     27.9       1:51     5.5     19.17     6.33     1569     4.65     23.2       1:53     7     18.74     6.31     1560     4.53     3.7	Titalinger Or	Sumpress Contain	IICI GIZC		LW	0 40 11112 4	OAS & OIC I-	itoi aimoei	Dottic
(gal)     (deg C)     (μS)     Oxygen (DO) mg/L     (mV)       1:47     1.5     19.36     6.41     1559     4.80     18.4       1:49     3.5     20.03     6.34     1566     4.66     27.9       1:51     5.5     19.17     6.33     1569     4.65     23.2       1:53     7     18.74     6.31     1560     4.53     3.7	Time	Vol Remyd	Temp	рН		Cond	Dissolved	Redox	Comments
1:47     1.5     19.36     6.41     1559     4.80     18.4       1:49     3.5     20.03     6.34     1566     4.66     27.9       1:51     5.5     19.17     6.33     1569     4.65     23.2       1:53     7     18.74     6.31     1560     4.53     3.7		(gal)		r			Oxygen		
1:49     3.5     20.03     6.34     1566     4.66     27.9       1:51     5.5     19.17     6.33     1569     4.65     23.2       1:53     7     18.74     6.31     1560     4.53     3.7	1:47	1.5	19.36	6.41	$\dashv$	1559		18.4	
1:51     5.5     19.17     6.33     1569     4.65     23.2       1:53     7     18.74     6.31     1560     4.53     3.7	1:49	3.5							
1:53 7 18.74 6.31 1560 4.53 3.7	1:51	5.5	<del> </del>						
COMMENTS (i.e., sample odor, well recharge time & percent, etc.)	1:53	7	18.74	6.31		1560	4.53	3.7	
COMMENTS (i.e., sample odor, well recharge time & percent, etc.)									<u> </u>
Hydrocarbon odor	Hydrocarb		S (i.e., sam	ple odo	or, w	vell recharg	ge time & perce	ent, etc.)	

#### AEI CONSULTANTS - GROUNDWATER MONITORING WELL FIELD SAMPLING FORM Monitoring Well Number: MW-4 Project Name: Omega Date of Sampling: 8/20/02 Job Number: 3190 Name of Sampler: Andrew Wyckoff Project Address: 807 75th Ave., Oakland MONITORING WELL DATA Well Casing Diameter (2"/4"/6") 2" Cement / Good Seal at Grade -- Type and Condition Well Cap & Lock -- OK/Replace OK Elevation of Top of Casing (feet amsl) 4.59 Depth of Well (feet bgs) 20.00 Depth to Water (feet toc) 5.02 Water Elevation (feet amsl) -0.43 Three Well Volumes (gallons)\* 2" casing: (TD - DTW)(0.16)(3) 7.19 4" casing: (TD - DTW)(0.65)(3) 6" casing: (TD - DTW)(1.44)(3) Actual Volume Purged (gallons) 7.5 Appearance of Purge Water Clear **GROUNDWATER SAMPLES** Number of Samples/Container Size two 40 mL VOAs & one 1-liter amber bottle Time Vol Remyd Temp pН Cond Dissolved Redox Comments (gal) (deg C) $(\mu S)$ Oxygen (mV) (DO) mg/L 1:28 1.5 19.02 6.35 1552 0.89 241.2 1:30 3.5 20.02 6.33 1507 1.75 222.5 1:32 5.5 19.27 6.30 1550 0.39 192.6 1:34 7 18.87 6.29 1591 0.16 91.3 COMMENTS (i.e., sample odor, well recharge time & percent, etc.) No hydrocarbon odor

TD - total depth of well DTW - depth to water amsl - above mean sea level bgs - below ground surface

toc - top of casing

#### AEI CONSULTANTS - GROUNDWATER MONITORING WELL FIELD SAMPLING FORM Monitoring Well Number: TW-5 Project Name: Omega Date of Sampling: 8/20/02 Job Number: 3190 Name of Sampler: Andrew Wyckoff Project Address: 807 75th Ave., Oakland MONITORING WELL DATA Well Casing Diameter (2"/4"/6") Seal at Grade -- Type and Condition Plastic tubing bent (apparently run over by vehicle) Well Cap & Lock -- OK/Replace Elevation of Top of Casing (feet amsl) NA Depth of Well (feet bgs) ~10 Depth to Water (feet toc) 6.62 Water Elevation (feet amsl) Three Well Volumes (gallons)\* 2" casing: (TD - DTW)(0.16)(3) 4" casing: (TD - DTW)(0.65)(3) 6.59 6" casing: (TD - DTW)(1.44)(3) Actual Volume Purged (gallons) Appearance of Purge Water Clear **GROUNDWATER SAMPLES** Number of Samples/Container Size two 40 mL VOAs & one 1-liter amber bottle Time Vol Remvd Temp Cond pН Dissolved Redox Comments (gal) (deg C) $(\mu S)$ (mV) Oxygen (DO) mg/L 2:18 1.5 23.06 6.51 1197 0.59 -14.2 2:20 3.5 23.05 1197 -7.0 6.41 0.27 2:22 23.10 6.39 1197 0.21 -3.5 2:24 6.5 0.1923.12 6.39 1197 -3.5 COMMENTS (i.e., sample odor, well recharge time & percent, etc.) Slight hydrocarbon odor

## APPENDIX B

## LABORATORY ANALYTICAL AND CHAIN OF CUSTODY DOCUMENTATION

## 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: #3190; Omega	Date Sampled: 08/20/02
3210 Old Tunnel Rd., Ste. B		Date Received: 08/20/02
Lafayette, CA 94549-4157	Client Contact: Andrew Wyckoff	Date Extracted: 08/25/02-08/27/02
	Client P.O.:	Date Analyzed: 08/25/02-08/27/02

#### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with RTEX

	method: SW5030B				methods: SW80211				Order: 0	
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Велгепе	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1	w	2100,a	ND<15	820	4.5	6.4	9.6	1	#
002A	MW-3	w	780,a	ND<10	110	2.8	63	41	1	#
003A	MW-4	w	580,a	ND	160	1.7	34	13	1	112
004A	T <sub>MW-5</sub>	w	240,a,g,h	ND	8.0	1.2	1.1	0.54	1	102
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+										
	Limit for DF =1; not detected at or	W	50	5.0	0.5	0.5	0.5	0.5	1	μg/L
	e reporting limit	S	NA	NA	NA	NA	NA	NA	1	mg/K

<sup>\*</sup>water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, wipe samples in ug/wipe, product/oil/non-aqueous liquid samples in mg/L, and TCLP extracts in ug/L.

<sup>+</sup>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.



<sup>#</sup> cluttered chromatogram; sample peak coelutes with surrogate peak.

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http://www.mccampbell.com/E-mail: main@mccampbell.com/

-8-3*	<del> </del>			nup://www.m	ccampeen.com E-man: n	iam@niccamp	bell.com	
All Environme	ental, Inc.	Client Proje	ect ID: #3190;	Omega	Date Sampled:	08/20/02	·	
3210 Old Tun	nel Rd., Ste. B				Date Received:	08/20/02		
Lafayette, CA	94549-4157	Client Cont	tact: Andrew V	Vyckoff	Date Extracted:	08/20/02		
	. ) 13 13 - 113 /	Client P.O.	:		Date Analyzed:	08/20/02-	08/22/	02
	Dies	sel Range (C1	0-C23) Extrac	table Hydrocarbo	ns as Diesel*			
Extraction method: S	SW3510C		Analytical me	thods: SW8015C		Wo	rk Order:	0208342
Lab ID	Client ID	Matrix		TPH(d)			DF	% SS
0208342-001B	MW-1	w		740,a			1	112
0208342-002B	MW-3	w		270,d	1		1	80.7
0208342-003B	MW-4	w		120,d			1	78.3
0208342-004B	Tylw-5	w		21,000,a/m	,h		1	111

ND means not detected at or	<u></u>		
above the reporting limit	S	NA	NA
above die reporting mint			
* water and vapor samples are reported in u	g/L, wipe san	nples in ug/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous	liquid samples in
mg/L, and all TCLP / STLC / SPLP extracts			•

50

W

# 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.

+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 diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; k) kerosene/kerosene range; l) bunker oil; m) fuel oil; n) stoddard solvent.

Edward Hamilton, Lab Director

μg/L

Reporting Limit for DF = 1;

McCa	Client Contact: And   Client P.O.:   Petroleum Oil & Grod: SM5520B/F		Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com
All Environme	ental, Inc.	Client Project ID: #3190;	Omega Date Sampled: 08/20/02
3210 Old Tuni	nel Rd., Ste. B		Date Received: 08/20/02
Lafavette, CA	94549-4157	Client Contact: Andrew V	Wyckoff Date Extracted: 08/20/02
		Client P.O.:	Date Analyzed: 08/21/02
Analytical Methods		Petroleum Oil & Grease v	with Silica Gel Clean-Up*  Work Order: 0208342
Lab ID	<del></del>	Matrix	POG
0208342-001C			ND
0208342-002C		W	ND
0208342-003C	MW-4	W	ND
0208342-004C	MW-5	W	ND
Method 4	Accuracy and Reporting Unit	W	5.0 mg/L
Promot 1	and and responding Out	S	NA



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http://www.mccampbell.com E-mail: main@mccampbell.com

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

Matrix: W

WorkOrder: 0208342

EPA Method: SW802	21B/8015Cm E	xtraction:	SW5030E	3	BatchID:	3598	Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD* LCS		LCSD	LCS-LCSD Acceptance Criter		Criteria (%)
Оотпроили	μg/L μg/L		% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	60	N/A	N/A	N/A	104	103	0.757	80	120
МТВЕ	N/A	10	N/A	N/A	N/A	84.3	87.2	3.39	80	120
Benzene	N/A	10	N/A	N/A	N/A	105	100	4.68	80	120
Toluene	N/A	10	N/A	N/A	N/A	110	106	3.21	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	109	105	3.16	80	120
Xylenes	N/A	30	N/A	N/A	N/A	103	103	0	80	120
%SS:	N/A	100	N/A	N/A	N/A	113	106	6.39	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.

<sup>\*</sup> 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.

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http://www.mccampbell.com E-mail: main@mccampbell.com

#### QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0208342

EPA Method: SW8015C	E	xtraction:	SW35100	SW3510C BatchlD: 3590			Spiked Sample ID: N/A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%	
Compound	μg/L μg/L % Rec. % Re				% RPD	% Rec.	% Rec.	% Rec. % RPD		High	
TPH(d)	N/A	7500	N/A	N/A	N/A	108	111	2.83	70	130	
%SS:	N/A	100	N/A	N/A	N/A	101	104	2.53	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.

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Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

#### QC SUMMARY REPORT FOR SM5520B/F

Matrix: W

WorkOrder: 0208342

EPA Method: SM5520B/F	E	xtraction:	PRHEM-SGT_		BatchID: 3554		Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
3311,5411	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
POG	N/A	100	N/A	N/A	N/A	107	102	4.78	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.

## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

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

WorkOrder: 0208342

Client:

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

(925) 283-6000

FAX: ProjectNo: (925) 283-6121 #3190; Omega

PO:

20-Aug-02

					Requested Tests													
Sample ID	ClientSamplD	Matrix	Collection Date	Bottle	SM5520B/F	SW8015C	8021B/8015											
0208342-001	MW-1	Water	8/20/02		С	В	Α				T							
0208342-002	MW-3	Water	8/20/02		С	В	Α											
0208342-003	MW-4	Water	8/20/02		С	В	Α											
0208342-004	MW-5	Water	8/20/02		С	В	Α											

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

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