AEI CONSULTANTS
ENVIRONMENTAL & CIVIL ENGINEERING

2500 Camino Diablo, Suite 200, Walnut Creek, CA 94597
Phone: (925) 283-6000 Fax: (925) 944-2895

June 30, 2004

RO 2449

Alameda County
JUL 09 2004
Environmental Health

Mr. Cory Kauffman
Cruise America Inc.
11 West Hampton Avenue
Mesa, AZ 85210

Subject: **Quarterly Groundwater Monitoring Report**
796 66th Avenue
Oakland, CA
AEI Project No. 5526

Dear Mr. Kauffman:

Enclosed are two copies of the Quarterly Groundwater Monitoring Report for the fuel release at the above referenced property. As required, a copy of the report has been sent to ACHCSA. Also enclosed is in the invoice for these activities.

This report includes a brief status of the groundwater treatment system installation for the County. The system was delivered to the property today and will be operating by the end of the week.

Please call either Peter McIntyre or myself at 800/801-3224 if you have any questions or comments.

Sincerely,

Jeff Rosenberg
Project Engineer

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

June 30, 2004

GROUNDWATER MONITORING REPORT

Second Quarter, 2004

796 66th Avenue
Oakland, California

Project No. 5526

Prepared For

Mr. Cory Kauffman
Cruise America, Inc.
11 West Hampton Avenue
Mesa, AZ 85210

Prepared By

AEI Consultants
2500 Camino Diablo Blvd, Suite 200
Walnut Creek, CA 94597
(925) 283-6000

AEI

AEI CONSULTANTS
Environmental & Civil Engineering

2500 Camino Diablo Blvd, Suite 200, Walnut Creek, CA 94597
Phone: (925) 283-6000 Fax: (925) 283-6121

June 30, 2004

Mr. Cory Kauffman
Cruise America, Inc.
11 West Hampton Avenue
Mesa, AZ 85210

Subject: **Quarterly Groundwater Monitoring Report**
Second Quarter, 2004
796 66th Avenue
Oakland, California
AEI Project No. 5526

Dear Mr. Kauffman:

AEI Consultants (AEI) has prepared this report on behalf of Cruise America Inc., in order to document the ongoing groundwater quality investigation at the above referenced property (Figure 1: Site Location Map). This investigation was initiated by the property owner in accordance with the requirements of the Alameda County Health Care Services Agency (ACHCSA). The ongoing monitoring has been required to monitoring groundwater quality and movement associated with the release of petroleum hydrocarbons from the former gasoline underground storage tank (UST) on the property. This report presents the findings of the seventh episode of groundwater monitoring and sampling performed during the second quarter 2004 on April 5, 2004 and an update of interim groundwater treatment system installation.

I Background

The site is currently occupied by Cruise America, an RV rental and repair facility. Currently, two buildings exist on the site, surrounded by paved vehicle storage areas (Figure 2). Cruise America acquired the property from McGuire Huster in August 1988.

In February 1987, three underground storage tanks (USTs) were removed from the property by Applied GeoSystems. The tanks consisted of one (1) 1,000-gallon gasoline UST, one (1) 5,000-gallon gasoline UST, and one (1) 8,000-gallon diesel UST. The former locations of the tanks are shown on Figure 2. Soil sample analyses following removal of the tanks indicated that a release of both gasoline and diesel had occurred at the site.

Records were reviewed at the Oakland Fire Services Agency, Office of Emergency Services, for information regarding the investigation and/or cleanup of the release. No records were available at the Alameda County Health Care Services Agency (ACHCSA), although they had a file number for the USTs, and no records were available at the Regional Water Quality Control Board (RWQCB).

A total of six groundwater monitoring wells and approximately 14 temporary soil borings had been installed at the site between 1987 and 1988 to investigate impacted groundwater associated with both the diesel and gasoline releases. Groundwater samples reportedly contained concentrations of 60,000 µg/l of total hydrocarbons, and fuel product sheen was observed.

A geotechnical investigation was performed on the property in July 1988 by Kaldveer Associates. According to field observations, significant hydrocarbon odor was detected in seven of the borings advanced; however, chemical analyses were not performed.

In August 1988, Purcell, Rhodes, and Associates excavated soil from the area of the former diesel UST and dispensing system. Samples from the excavated sidewall, the bottom soil samples, and soil samples from the stockpiled soil reportedly contained concentrations of total petroleum hydrocarbons (TPH) ranging from non-detect to 3,400 mg/kg. The soil was reportedly aerated on the western portion of the property; however, final sampling or the disposition of the soil is not known. In addition, groundwater with free phase fuel present was reportedly removed from the excavation (assumed to be the diesel UST excavation); however, no details were available on the liquid removal.

The monitoring wells mentioned above could not be located in July 2001, and are assumed to have been decommissioned and/or buried under asphalt surfacing. Laboratory reports were incomplete or not included, and site plans were not to scale or incomplete in the reports reviewed by AEI.

In July 2001, AEI performed a Phase II investigation on the site that included advancing six (6) soil borings (labeled SB-1 through SB-6). Although low concentrations of TPH as gasoline (TPH-g) and TPH as diesel (TPH-d) were reported in the groundwater beneath the site, high levels of methyl tertiary butyl ether (MTBE) were detected in boring SB-1.

In September of 2001, AEI advanced five (5) additional soil borings (labeled SB-7 through SB-11) in order to determine the source of the high levels of MTBE found in SB-1. Samples collected from SB-7 and SB-8 did not contain MTBE above laboratory reporting limits. MTBE concentrations varied from 630 µg/L in SB-9 to 13,000 µg/L in SB-10. These data indicated a leak in the 10,000-gallon gasoline UST on the southern portion of the property as the most likely source of the MTBE.

AEI removed the 10,000-gallon gasoline UST in November of 2001. Concentrations of TPH-g in four of the five soil samples ranged from 4.1 mg/kg to 280 mg/kg. Concentrations of MTBE and benzene, toluene, ethyl benzene, and xylenes (BTEX) were also detected in the five soil samples. Elevated concentrations of TPH as gasoline and MTBE were present in the groundwater sample at 44,000 µg/L and 42,000 µg/L, respectively. Elevated concentrations of BTEX were also present in the groundwater sample.

Based on these elevated concentrations of hydrocarbon contamination, the site was referred to the ACHCSA for oversight. Mr. Barney Chan of the ACHCSA requested a workplan to further

define the extent of the hydrocarbon plume. Following workplan approval, on September 6, 2002, six (6) borings (labeled SB-12 through SB-17) were advanced. The data from these soil borings was used to determine the placement of five groundwater-monitoring wells, which were installed on September 19, 2002. Locations of the former tank holds and boring locations are presented on Figure 2.

II Summary of Activities

AEI measured the depth to groundwater in the five wells on April 5, 2004. Prior to sampling, the depth to water from the top of the well casings was measured with an electric water level indicator. The wells were purged with a submersible electric pump, and sampled using disposable plastic bailers. Temperature, pH, specific conductivity, and oxidation-reduction potential (ORP) were measured and the turbidity was visually noted during the purging of the wells. AEI removed at least three well volumes from each well while purging. Once the wells recharged to 90% of their original volume, a water sample was collected. Well locations are shown in Figure 2.

The water samples were collected with clean, unused disposable bailers into 40 ml VOA vials. The vials were capped so neither headspace nor 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 (Department of Health Services Certification #1644).

Groundwater samples were submitted for chemical analysis for TPH-g by EPA Method 8015C, benzene, toluene, ethyl benzene, and xylenes (BTEX) by EPA Method 8021B, and MTBE by EPA method 8260B.

III Field Results

No measurable free phase product was observed during the sampling activities.

Groundwater elevations for the current monitoring episode ranged from 3.55 to 6.64 feet above mean sea level (amsl). These groundwater elevations of the five wells were an average of 0.11 feet lower than the previous monitoring episode, although it should be noted that the groundwater elevation increased by over 1 foot in MW-3, and decreased by over 1 foot in MW-2, since the last episode. Based on these measurements, an easterly groundwater flow direction was estimated, with a hydraulic gradient of approximately 0.02 ft/ft. These findings are relatively consistent with the previous monitoring events, although previous flow directions have been more southerly.

Groundwater elevation data are summarized in Table 1. The groundwater elevation contours and the groundwater flow direction are shown in Figure 3. Refer to Appendix A for the Groundwater Monitoring Well Field Sampling Forms, which also water quality measurements collected during well purging.

IV Groundwater Quality

TPH-g was detected above laboratory reporting limits in three wells, MW-1 (100 µg/L), MW-2 (210 µg/l) and MW-3 (120 µg/l). However, it should be noted that the detection limits for sample MW-5 were elevated. Benzene concentrations ranged from 0.8 µg/l (MW-4) to 14 µg/l (MW-2), however the detection limit for MW-5 was 2.5 µg/l. MTBE was detected four of the wells, ranging from 13 µg/l (MW-2) up to 13,000 µg/l (MW-5). Detailed sample analytical results are presented in Table 2 and Figure 4. Laboratory reports are included in Appendix B.

Generally, the shallow groundwater beneath the site is anaerobic, with dissolved oxygen concentrations measured at <1.0 mg/l and ORP measurements consistently negative.

V Summary

Sample analytical results for this episode are generally consistent with previous episodes. In May 2004, AEI installed twelve ozone sparge wells, associated underground conduits and lines, and electrical conduits for the interim groundwater treatment system. The ozone generator and compressor units have been obtained and system connection and startup will occur shortly. A baseline groundwater sampling episode will be performed on the well network prior to startup, corresponding approximately with the 3rd quarter 2004 regular monitoring event. A more frequent sampling schedule is planned during the first month after startup. A report will be issued within approximately 2 months of startup, which will includes well construction details, system configuration and operation, and groundwater treatment progress.

VI Report Limitation

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

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

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

Sincerely,
AEI Consultants

Jeff Rosenberg
Project Engineer

Peter McIntyre, RG
Project Manager

REGISTERED GEOLOGIST
PETER J. MCINTYRE
Exp. 8/31/06
No. 7702
STATE OF CALIFORNIA

Figures
- Figure 1: Site Location Map
- Figure 2: Site Plan
- Figure 3: Water Table Elevation Map
- Figure 4: Sample Analytical Data

Tables
- Table 1: Groundwater Elevation Data
- Table 2: Groundwater Sample Analytical Data

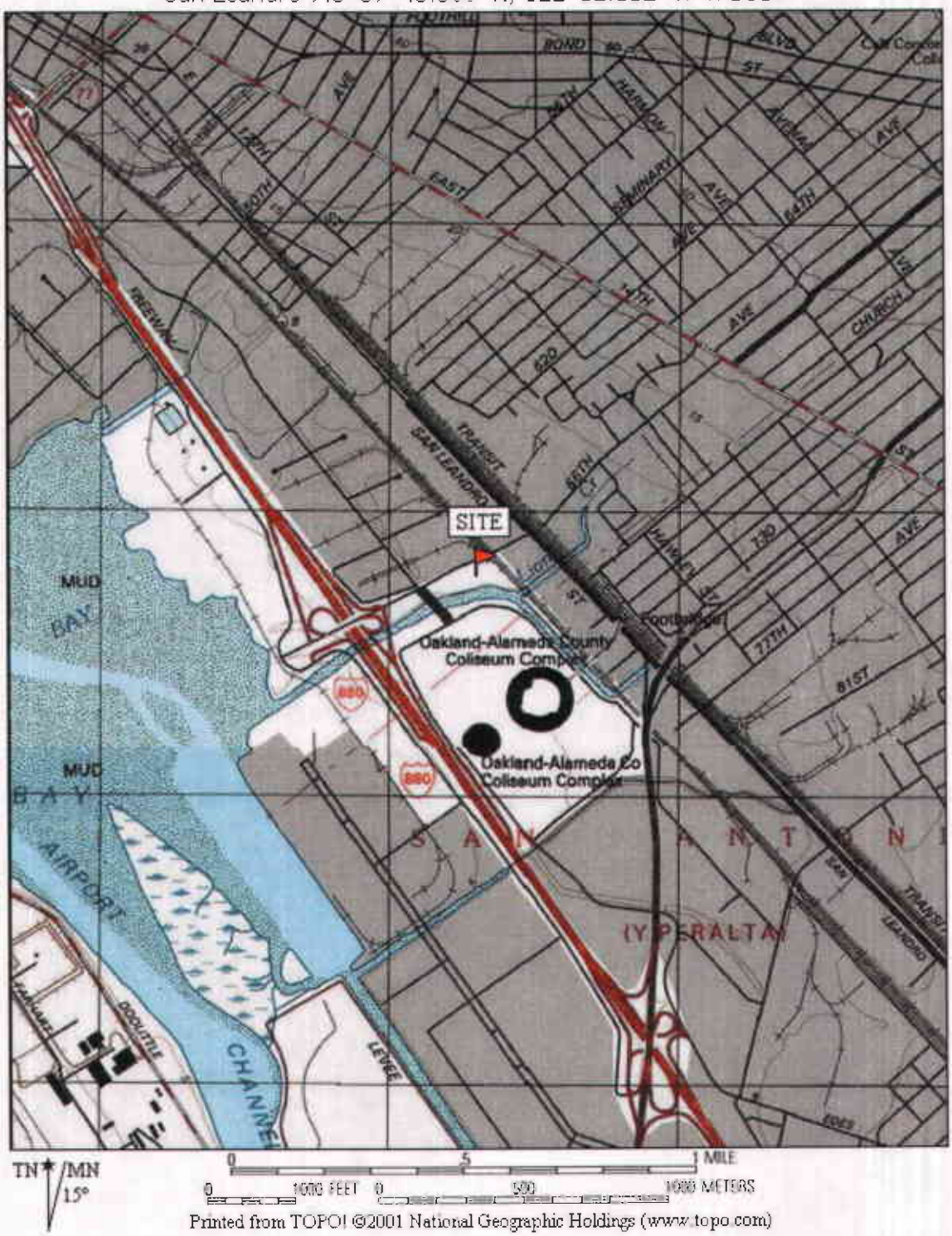
Appendix A: Groundwater Monitoring Well Field Sampling Forms
Appendix B: Laboratory Analyses with Chain of Custody Documentation

Distribution:

Mr. Amir Gholami
ACHCSA
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501

Mr. Cory Kauffman
Cruise America, Inc.
11 West Hampton Avenue
Mesa, AZ 85210

San Leandro 7.5' 37°45.309' N, 122°12.182' W WGS84



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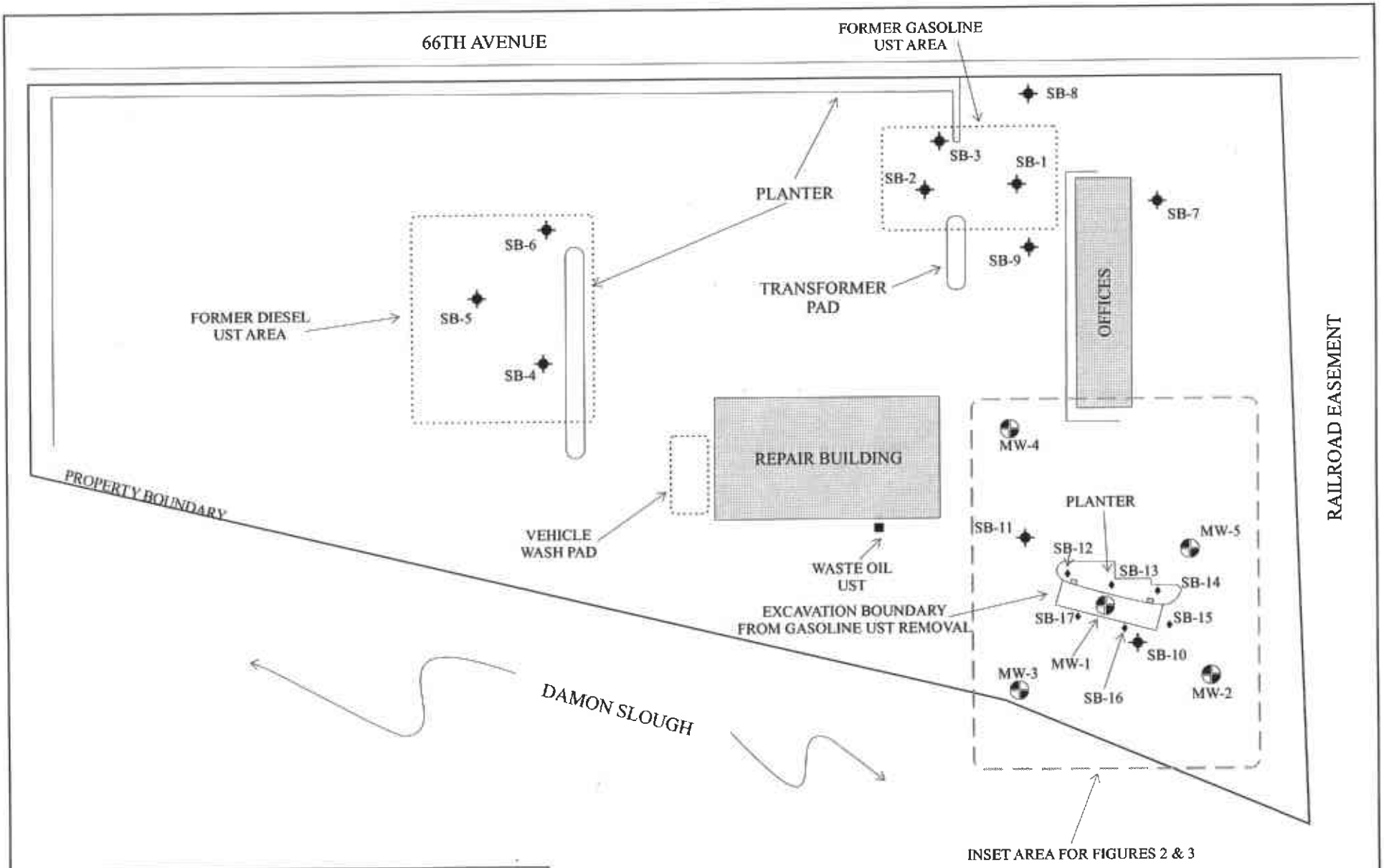
AEI CONSULTANTS	
SITE LOCATION MAP	
796 66th AVENUE OAKLAND, CALIFORNIA	**FIGURE 1** PROJECT NO. 5526



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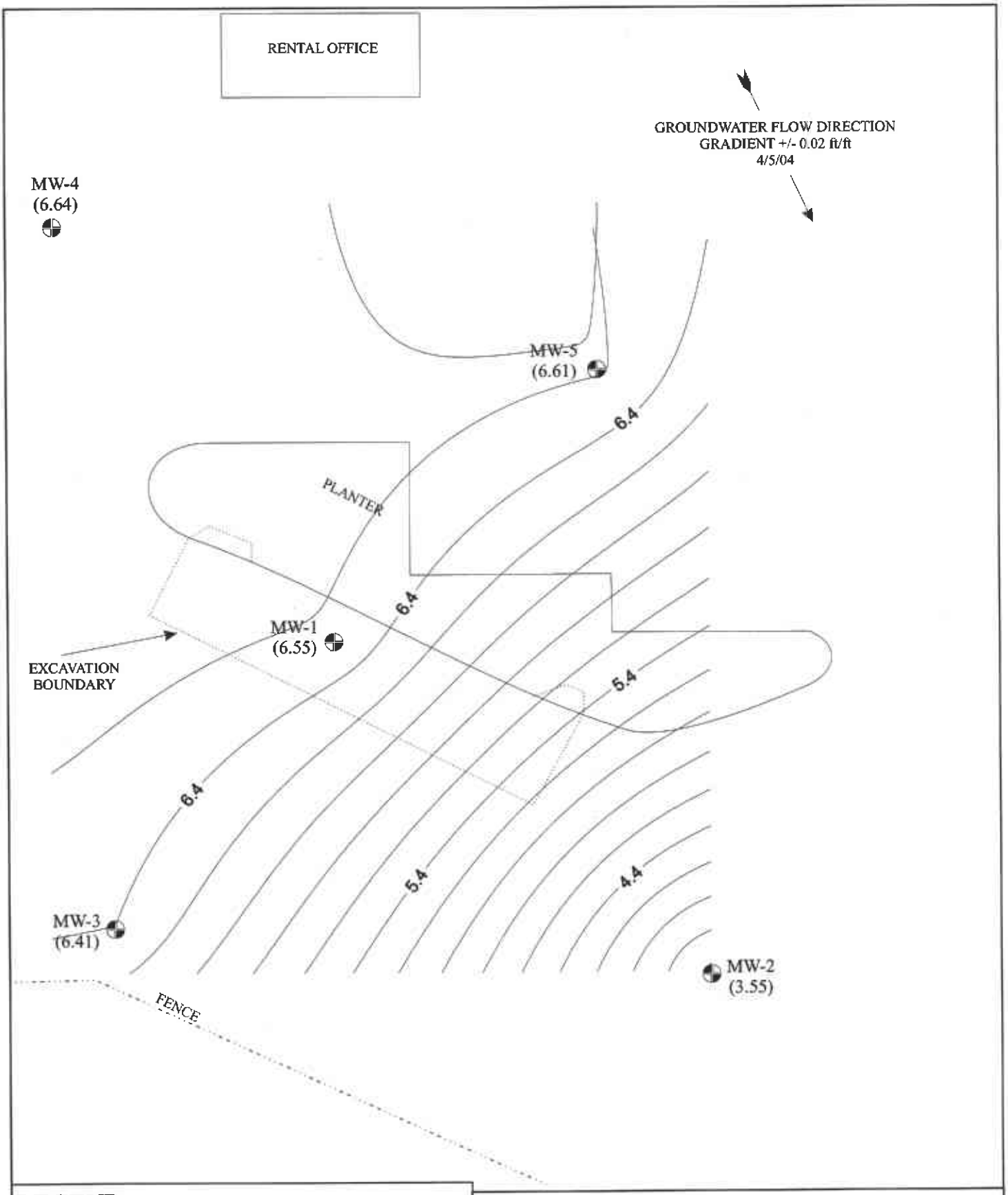
SITE PLAN

796 66th AVENUE
OAKLAND, CALIFORNIA

FIGURE 2
AEI PROJECT NO 5526



LEGEND

MONITORING WELL LOCATION

Water level elevation data as of 4/5/04 in feet above msl
Contour drawn in Surfer (R) v. 7.0
Contour Interval = 0.2 ft above msl
See Table 1 for details

N

SCALE: 1" = 20'

0' 10' 20'

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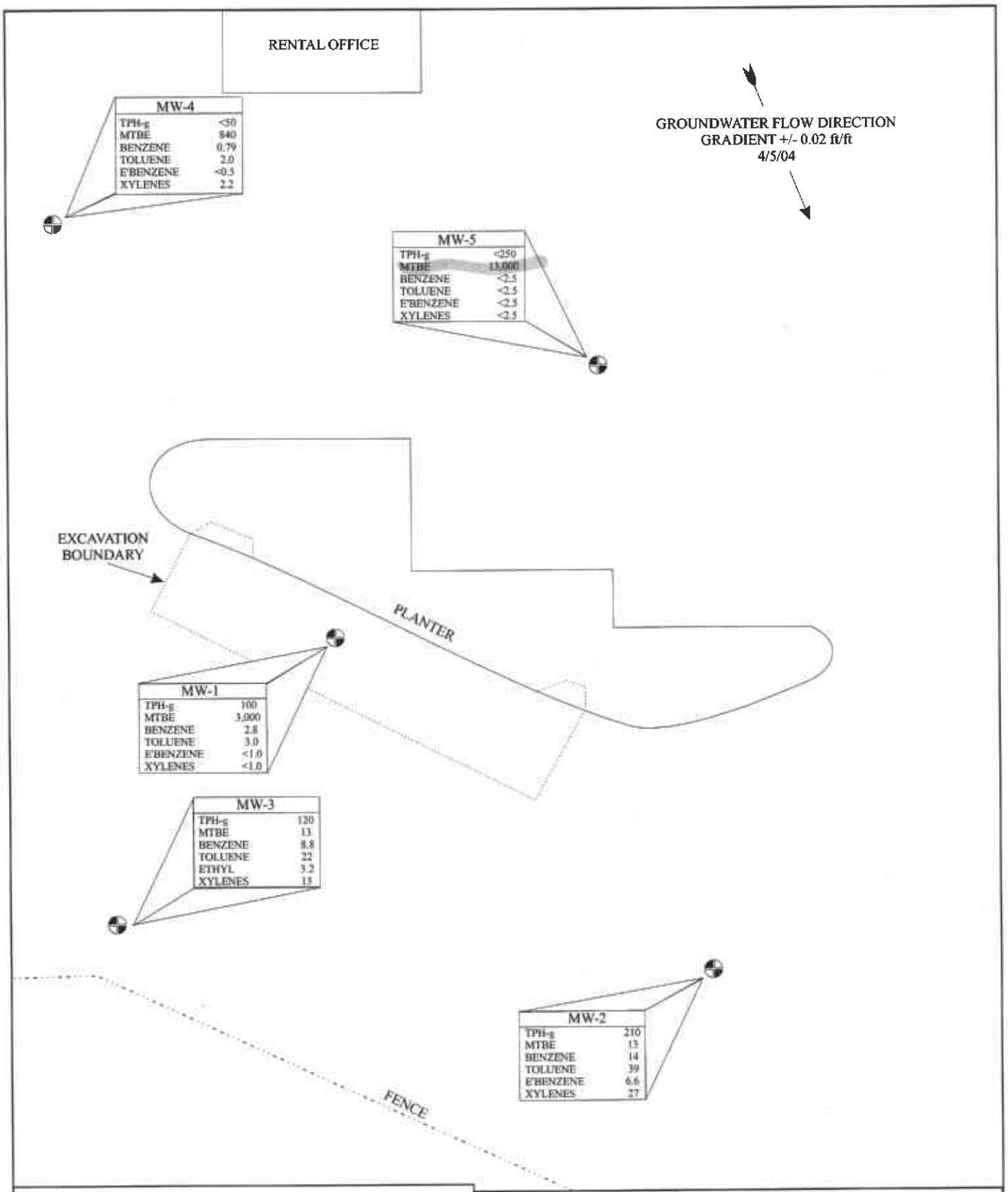
2500 CAMINO DIABLO, STE 200, WALNUT CREEK, CA

WATER TABLE ELEVATIONS

796 66TH AVENUE
OAKLAND, CALIFORNIA

FIGURE 3
AEI PROJECT NO 5526



LEGEND

- MONITORING WELL LOCATION

Analytical data from 4/5/04 event with results in µg/L

N

SCALE: 1" = 20'

0' 10' 20'

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2500 CAMINO DIABLO, STE 200, WALNUT CREEK, CA

GROUNDWATER SAMPLE ANALYTICAL DATA

796 66TH AVENUE
OAKLAND, CALIFORNIA

FIGURE 4
AEI PROJECT NO 5526

Table 1
Groundwater Elevation Data

Well ID (screen interval in ft bgs)	Date Collected	Well Elevation ft (amsl)	Depth to Water ft (TOC)	Water Table Elevation ft (amsl)
MW-1	9/30/2002	10.88	5.41	5.47
(4-14)	1/2/2003	10.88	4.77	6.11
	3/31/2003	10.88	4.95	5.93
	6/30/2003	10.88	4.54	6.34
	10/1/2003	10.88	4.66	6.22
	1/5/2004	10.88	4.07	6.81
	4/5/2004	**10.88**	**4.33**	**6.55**
MW-2	9/30/2002	10.77	8.00	2.77
(4-14)	1/2/2003	10.77	5.91	4.86
	3/31/2003	10.77	5.15	5.62
	6/30/2003	10.77	5.91	4.86
	10/1/2003	10.77	6.69	4.08
	1/5/2004	10.77	6.18	4.59
	4/5/2004	**10.77**	**7.22**	**3.55**
MW-3	9/30/2002	10.20	5.21	4.99
(4-14)	1/2/2003	10.20	5.31	4.89
	3/31/2003	10.20	4.58	5.62
	6/30/2003	10.20	3.83	6.37
	10/1/2003	10.20	4.02	6.18
	1/5/2004	10.20	5.03	5.17
	4/5/2004	**10.20**	**3.79**	**6.41**
MW-4	9/30/2002	11.07	5.50	5.57
(4-14)	1/2/2003	11.07	4.90	6.17
	3/31/2003	11.07	4.81	6.26
	6/30/2003	11.07	4.61	6.46
	10/1/2003	11.07	4.76	6.31
	1/5/2004	11.07	4.32	6.75
	4/5/2004	**11.07**	**4.43**	**6.64**
MW-5	9/30/2002	11.18	5.62	5.56
(4-14)	1/2/2003	11.18	5.12	6.06
	3/31/2003	11.18	4.93	6.25
	6/30/2003	11.18	4.75	6.43
	10/1/2003	11.18	4.88	6.30
	1/5/2004	11.18	4.19	6.99
	4/5/2004	**11.18**	**4.57**	**6.61**

Episode	Date	Average Water Table Elevation	Change From Previous	Gradient (direction)
1	9/30/2002	4.87	-	0.005 (S)
2	1/2/2003	5.62	0.75	0.022 (SSE)
3	3/31/2003	6.12	0.50	0.006 (SSE)
4	6/30/2003	6.09	-0.03	0.020 (SE)
5	10/1/2003	5.82	-0.27	0.029-0.001 (SE)
6	1/5/2004	6.06	0.24	0.03 (SE)
7	**4/5/2004**	5.95	-0.11	**0.02 (E)**

All well elevations and depths to water are measured from the top of the casing (TOC)

ft (amsl) = feet above mean sea level

Average Water Table calculated in Excel

Table 2:
Groundwater Sample Analytical Data

Sample ID	Date	TPH-g µg/L *(8015Cm)*	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE	
				(EPA method 8021B)			µg/L *(8021B)*	µg/L *(8260B)*
MW-1	9/30/2002	1,800	50	15	16	18	19,000	13,000
	1/2/2003	660	24	6.4	<2.5	<2.5	7,800	8,900
	3/31/2003	660	11	6.4	<5.0	<5.0	16,000	20,000
	6/30/2003	830	<5.0	6.8	<5.0	<5.0	16,000	17,000
	10/1/2003	720	<5.0	<5.0	<5.0	<5.0	14,000	13,000
	1/5/2004	<300	7.8	2.9	<3.0	<3.0	-	8,700
	4/5/2004	**100**	**2.8**	**3.0**	**<1.0**	**<1.0**	**2,300**	**3,000**
MW-2	9/30/2002	<50	<0.5	<0.5	<0.5	<0.5	<5.0	0.84
	1/2/2003	<50	<0.5	<0.5	<0.5	<0.5	19	20
	3/31/2003	<50	<0.5	<0.5	<0.5	<0.5	<5.0	3.9
	6/30/2003	<50	<0.5	<0.5	<0.5	<0.5	7.0	9.6
	10/1/2003	<50	<0.5	<0.5	<0.5	<0.5	7.7	6.7
	1/5/2004	71	4.7	13	2.7	12	-	7.8
	4/5/2004	**210**	**14**	**39**	**6.6**	**27**	**16**	**13**
MW-3	9/30/2002	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	1/2/2003	<50	0.89	0.50	<0.5	0.72	15	14
	3/31/2003	<50	<0.5	<0.5	<0.5	<0.5	<5.0	0.62
	6/30/2003	<50	<0.5	<0.5	<0.5	<0.5	<5.0	1.6
	10/1/2003	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	1/5/2004	63	4.4	11	2.2	9.9	-	7.9
	4/5/2004	**120**	**8.8**	**22**	**3.2**	**13**	**<5.0**	**<0.5**
MW-4	9/30/2002	<100	<0.5	<0.5	<0.5	<0.5	790	<10
	1/2/2003	<50	<0.5	<0.5	<0.5	<0.5	420	460
	3/31/2003	<50	<0.5	<0.5	<0.5	<0.5	1,500	1,400
	6/30/2003	<50	<0.5	<0.5	<0.5	<0.5	1,600	1,200
	10/1/2003	<50	<0.5	<0.5	<0.5	<0.5	1,800	1,400
	1/5/2004	<50	3.0	6.7	1.4	6.1	-	1,200
	4/5/2004	**<50**	**0.79**	**2.0**	**<0.5**	**2.2**	**800**	**840**
MW-5	9/30/2002	<2,000	<5.0	<5.0	<5.0	<5.0	19,000	<250
	1/2/2003	<50	<0.5	<0.5	<0.5	<0.5	7,000	7,000
	3/31/2003	<500	<5.0	<5.0	<5.0	<5.0	14,000	12,000
	6/30/2003	<500	<5.0	<5.0	<5.0	<5.0	13,000	15,000
	10/1/2003	<500	<5.0	<5.0	<5.0	<5.0	12,000	11,000
	1/5/2004	<1000	<10	<10	<10	<10	-	11,000
	4/5/2004	**<250**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**9,400**	**13,000**

ND = Not detected above the Method Detection Limit (unless otherwise noted)

µg/L = micrograms per liter (ppb)

mg/L = milligrams per liter (ppm)

- = Sample not analyzed by this method

Please refer to Appendix B: Sample Analytical Documentation for detailed lab data including reporting limits and dilution factors

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1

Project Name:	Cruise America	Date of Sampling:	4/5/2004
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	10.88		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.33		
Water Elevation (feet above msl)	6.55		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**18.9**		
Actual Volume Purged (gallons)	20.0		
Appearance of Purge Water	initially dark gray, clear at 8 gallons		
Free Product Present?	No	Thickness (ft):	na

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 40-ml VOA vials

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	4	19.26	7.08	3727		-136.2	
	8	19.29	7.05	3518		-139.9	
	12	19.31	7.02	3434		-142.7	
	16	19.36	6.99	3428		-144.3	
	20	19.35	6.95	3430		-147.9	

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

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-2

Project Name:	Cruise America	Date of Sampling:	4/5/2004
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	10.77		
Depth of Well	14.00		
Depth to Water (from top of casing)	7.22		
Water Elevation (feet above msl)	3.55		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**3.3**		
Actual Volume Purged (gallons)	4.0		
Appearance of Purge Water	light yellow color		
Free Product Present?	No	Thickness (ft):	na

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 40-ml VOA vials

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	2	18.70	7.09	17280		-159.1	
	4	19.15	7.15	17719		-150.9	

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

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Cruise America	Date of Sampling:	4/5/2004
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	10.20		
Depth of Well	14.00		
Depth to Water (from top of casing)	3.79		
Water Elevation (feet above msl)	6.41		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**4.9**		
Actual Volume Purged (gallons)	6.0		
Appearance of Purge Water	light yellow color, foamy at 4.5 gallons		
Free Product Present?	No	Thickness (ft):	na

GROUNDWATER SAMPLES

Number of Samples/Container Size				4 40-ml VOA vials			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	2	18.80	7.06	13160		-204.3	
	4	18.88	6.96	14774		-208.9	
	6	19.29	6.98	15218		-144.1	

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

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name:	Cruise America	Date of Sampling:	4/5/2004
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition			
Elevation of Top of Casing (feet above msl)	11.07		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.43		
Water Elevation (feet above msl)	6.64		
Well Volumes Purged	3		
Calculated 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)	6.0		
Appearance of Purge Water	dark gray color, light gray at 4 gallons		
Free Product Present?	No	Thickness (ft):	na

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 40-ml VOA vials

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	2	18.88	8.33	1814		-253.9	
	4	18.89	8.40	1832		-262.7	
	6	18.90	8.46	1833		-271.9	

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

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-5

Project Name:	Cruise America	Date of Sampling:	4/5/2004
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition			
Elevation of Top of Casing (feet above msl)	11.18		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.57		
Water Elevation (feet above msl)	6.61		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**4.5**		
Actual Volume Purged (gallons)	6.0		
Appearance of Purge Water	dark gray color, clear at 2.5 gallons		
Free Product Present?	No	Thickness (ft):	na

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 40-ml VOA vials

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	2	18.10	7.51	3772		-189.3	
	4	18.11	7.48	3581		-194.1	
	6	18.16	7.44	3345		-197.2	

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

McCampbell Analytical, Inc.

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

All Environmental, Inc.	Client Project ID: #6909; Cruise America	Date Sampled: 04/05/04
		Date Received: 04/05/04
2500 Camino Diablo, Ste. #200	Client Contact: Robert Flory	Date Extracted: 04/06/04-04/08/04
Walnut Creek, CA 94597	Client P.O.:	Date Analyzed: 04/06/04-04/08/04

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0404051

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1	W	100,a	2300	2.8	3.0	ND<1.0	ND<1.0	2	102
002A	MW-2	W	210,a	16	14	39	6.6	27	1	102
003A	MW-3	W	120,a	ND	8.8	22	3.2	13	1	104
004A	MW-4	W	ND	800	0.79	2.0	ND	2.2	1	100
005A	MW-5	W	ND<250	9400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	5	97.4

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	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

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

cluttered chromatogram; sample peak coelutes with surrogate peak.

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

DHS Certification No. 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.

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

All Environmental, Inc.	Client Project ID: #6909; Cruise America	Date Sampled: 04/05/04
2500 Camino Diablo, Ste. #200		Date Received: 04/05/04
Walnut Creek, CA 94597	Client Contact: Robert Flory	Date Extracted: 04/05/04-04/06/04
	Client P.O.:	Date Analyzed: 04/06/04

Oxygenated Volatile Organics by P&T and GC/MS*

Extraction method: SW5030B Analytical methods: SW8260B Work Order: 0404051

Lab ID	Client ID	Matrix	t-Butyl alcohol (TBA)	Methyl-t-butyl ether (MTBE)	DF	% SS
0404051-001B	MW-1	W	ND<500	3000	100	100
0404051-002B	MW-2	W	ND	13	1	96.4
0404051-003B	MW-3	W	ND	ND	1	106
0404051-004B	MW-4	W	ND<250	840	50	101
0404051-005B	MW-5	W	ND<2500	13,000	500	99.6

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	5.0	0.5	µg/L
	S	NA	NA	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in µg/L, soil/sludge/solid samples in µg/kg, wipe samples in µg/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.

surrogate diluted out of range or surrogate coelutes with another peak.

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

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.

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

QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W WorkOrder: 0404051

EPA Method: SW8021B/8015Cm Extraction: SW5030B BatchID: 11003 Spiked Sample ID: 0404053-004A

	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(btex)£	ND	60	100	99.9	0.250	102	101	1.74	70	130
MTBE	ND	10	99.6	107	7.49	102	104	1.85	70	130
Benzene	ND	10	109	110	0.142	112	111	0.415	70	130
Toluene	ND	10	114	105	9.07	104	109	4.62	70	130
Ethylbenzene	ND	10	111	110	1.01	109	109	0	70	130
Xylenes	ND	30	100	100	0	96.3	96	0.347	70	130
%SS:	97.4	10	105	105	0	104	106	1.03	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.

% 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.

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

cluttered chromatogram; sample peak coelutes with surrogate peak.

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

DHS Certification No. 1644

TL QA/QC Officer

McCampbell Analytical, Inc.

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

QC SUMMARY REPORT FOR SW8260B

Matrix: W WorkOrder: 0404051

EPA Method: SW8260B Extraction: SW5030B BatchID: 11006 Spiked Sample ID: 0404053-004B

	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
t-Butyl alcohol (TBA)	ND	50	79.1	74.5	6.03	81.1	77.7	4.34	70	130
Methyl-t-butyl ether (MTBE)	ND	10	101	97.1	3.47	86.8	84.6	2.65	70	130
%SS1:	106	10	102	100	1.58	98	95.3	2.85	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.

% 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.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.
NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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

DHS Certification No. 1644

TL QA/QC Officer

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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0404051

Report to:
Robert Flory
All Environmental, Inc.
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597

TEL: (925) 283-6000
FAX: (925) 283-6121
ProjectNo: #6909; Cruise America
PO:

Bill to:
Lesliegh Alderman
All Environmental, Inc.
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597

Requested TAT: 5 days
Date Received: 4/5/04
Date Printed: 4/5/04

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)														
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0404051-001	MW-1	Water	4/5/04	☐	A	B	A												
0404051-002	MW-2	Water	4/5/04	☐	A	B													
0404051-003	MW-3	Water	4/5/04	☐	A	B													
0404051-004	MW-4	Water	4/5/04	☐	A	B													
0404051-005	MW-5	Water	4/5/04	☐	A	B													

Test Legend:

1	G-MBTEX_W	2	MTBE_W	3	PREDF REPORT	4		5	
6		7		8		9		10	
11		12		13		14		15	

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.

0404051

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

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☑ (5 DAY)

EDF Required? Coelt (Normal) No Write On (DW) No

Report To: Robert Flory Bill To: AEI Consultants
Company: AEI Consultants
2500 Camino Diablo, Suite 200
E-Mail: rflory@aeiconsultants.com
Tele: (925) 944-2899 ext. 122 Fax: (925) 944-2895
Project #: [redacted] 6909 Project Name: Cruise America
Project Location:
Sampler Signature: Adrian Nieto

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	Soil	Air	Sludge	Other	METHOD PRESERVED Ice	HCl	HNO_3	Other	BTEX & 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 basic list by 8012B	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / (8260) MTBE Only	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010) Toatal lead	RCI	Other: TPH multi-range EPA 8015	TBA added 4/6 per P.M			Comments
+ MW-1		4/5		5	Voas	X					X	X			X								X								X			
+ MW-2															X								X								X			
+ MW-3															X								X								X			
+ MW-4															X								X								X			
+ MW-5															X								X								X			

Relinquished By:	Date:	Time:	Received By:
Adrian Nieto	4/6/04	6:11pm	Mal Valle
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB ____

	VOAS	O&G	METALS	OTHER
PRESERVATION	✓			

APPROPRIATE CONTAINERS ✓
PERSERVED IN LAB ____