



January 15, 2003

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

**Subject: Quarterly Groundwater Monitoring**  
796 66<sup>th</sup> Avenue  
Oakland, CA  
AEI Project No. 5526

*Alameda County  
JAN 17 2003  
Environmental Health*

Dear Mr. Chan:

Enclosed is the final report for the Cruise America property.

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

Sincerely,

Nathan Garfield  
Staff Geologist



# INVOICE

<b>DATE</b>	<b>INVOICE #</b>
1/15/03	2003-7546

<b>BILL TO:</b>	<b>PROJECT ADDRESS:</b>
MR. CORY KAUFFMANN CRUISE AMERICA 11 WEST HAMPTON AVENUE MESA, ARIZONA 85210 480 464-7395	796 66 <sup>TH</sup> AVENUE OAKLAND, CA

<b>TERMS</b>	<b>PROJECT MANAGER</b>	<b>PROJECT #</b>
DUE UPON RECEIPT	NNG	5526

PROJECT TYPE	DESCRIPTION	AMOUNT
QGWM	QUARTERLY GROUNDWATER MONITORING - 2 <sup>ND</sup> EPISODE	\$2,280.00
	MTBE CONFIRMATION BY EPA 8260 3 SAMPLES AT \$85.00 PER SAMPLE	\$ 425.00
A FINANCE CHARGE OF 1.5% PER MONTH (ANNUAL RATE 18.0%) WILL BE CHARGED TO ALL PAST DUE ACCOUNTS		<b>TOTAL</b>
		<b>\$ 2,705.00</b>

**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

<b>FOR OFFICE USE ONLY</b>
<input type="checkbox"/> SYSTEM

Los Angeles  
(310) 798-4255

Phoenix  
(602) 240-5990

Corporate Headquarters  
San Francisco  
(800) 801-3224

Seattle  
(425) 401-8500

New York  
(212) 279-7770

January 15, 2003

Alameda County  
JAN 17 2003  
Environmental Health

**GROUNDWATER MONITORING REPORT  
Second Episode**

796 66th Avenue  
California, Oakland, California

Project No. 5526

Prepared For

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

Prepared By

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

**AEI**



January 15, 2003

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

**Subject: Quarterly Groundwater Monitoring Report  
Second Episode, 2003  
796 66th Avenue  
California, Oakland, California  
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 (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 purpose of this activity is to monitor groundwater quality in the vicinity of previous underground storage tanks. This report presents the findings of the second episode of groundwater monitoring and sampling conducted on January 2, 2003.

### **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. 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, nor were any records 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. Excavation sidewall and 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, ethylbenzene, 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 Alameda County Environmental Health, Local Oversight Program (LOP) for oversight. Mr. Barney Chan of the LOP requested a workplan to further define the extent of the hydrocarbon plume. AEI submitted the workplan on July 11, 2002 and received approval on July 17, 2002.

On September 6, 2002 a total of six (6) borings (labeled SB-12 through SB-17) were advanced using a GeoProbe® direct push-drilling rig. Five (5) of the borings were advanced to a depth of 10 feet bgs. Boring SB-17 was advanced to 50 feet bgs using a dual casing. The data from these soil borings was used to determine the placement of five groundwater monitoring wells, which were installed on September 19, 2002.

This report presents the data from the second episode of sampling conducted on January 2, 2003.

## II Summary of Activities

AEI measured the depth to groundwater in the five wells on January 2, 2003. 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, oxidation-reduction potential (ORP) and dissolved oxygen (DO) were measured during the purging of the wells. AEI removed at least 3 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.

Water was poured from the bailers into 40 ml VOA glass vials and capped so neither head space 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 (State Certification #1644).

Groundwater samples were submitted for chemical analysis for TPH-g (EPA Method 5030/8015), MTBE (EPA Method 8020 and EPA Method 8260), benzene, toluene, ethylbenzene, and xylenes (BTEX) (EPA Method 8020/602).

## III Field Results

A hydrocarbon odor was noted while purging wells MW-1 and MW-5. Groundwater levels for the current monitoring episode ranged from 4.86 to 6.17 feet above mean sea level (amsl). These groundwater elevations were an average of 0.75 feet higher than the previous monitoring episode. The direction of the groundwater flow at the time of measurement was towards the south-southeast with a gradient of 0.022 ft/ft.

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.

#### **IV Groundwater Quality**

MTBE was detected in all five of the wells. While concentrations in wells MW-1, MW-4 and MW-5 were roughly 50% of the levels detected in the previous episode of sample, this is the first time that MTBE was detected in wells MW-2 and MW-3. Both MW-2 and MW-3 are downgradient of the former tank location. The presence of MTBE in these wells indicates that the plume may be migrating downgradient, and may pose a risk to the waters of Damon Slough. Dissolved hydrocarbon concentrations are shown in Figure 4, and MTBE isocontours are plotted on Figure 5.

Well MW-1 also contained elevated levels of TPH-g, benzene and toluene. None of the other wells contained significant concentrations of TPH-g or BTEX.

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

#### **V Conclusions and Recommendations**

Considerable hydrocarbon concentrations are present in groundwater beneath the site. The most significant contaminant is MTBE. The detection of MTBE in the water samples from MW-2 and MW-3 indicate that the plume may be migrating downgradient towards the waters of Damon Slough.

Continued groundwater monitoring and sample collection are recommended to assess the mobility of the contaminants. The next monitoring episode is scheduled to occur in April of 2003.

#### **VI References**

1. *Underground Storage Tank Removal Draft Report*, March 4, 2002 issued by AEI Consultants.
2. *Site Investigation Workplan*, July 11, 2002 issued by AEI Consultants.
3. *Workplan – Site Investigation : Addendum*, August 6, 2002 issued by AEI Consultants.
4. *Monitoring Well Installation Report*, November 11, 2002 issued by AEI Consultants.

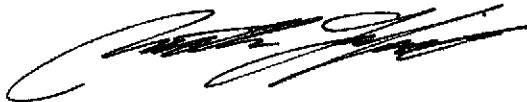
## VI Report Limitation

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,



Nathan Garfield  
Staff Geologist



Joseph P. Derhake, PE  
Principal



### Figures

- Figure 1: Site Location Map
- Figure 2: Site Plan
- Figure 3: Water Table Elevation Map
- Figure 4: Dissolved Hydrocarbons Map
- Figure 5: MTBE Isocontour Map

### Tables

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

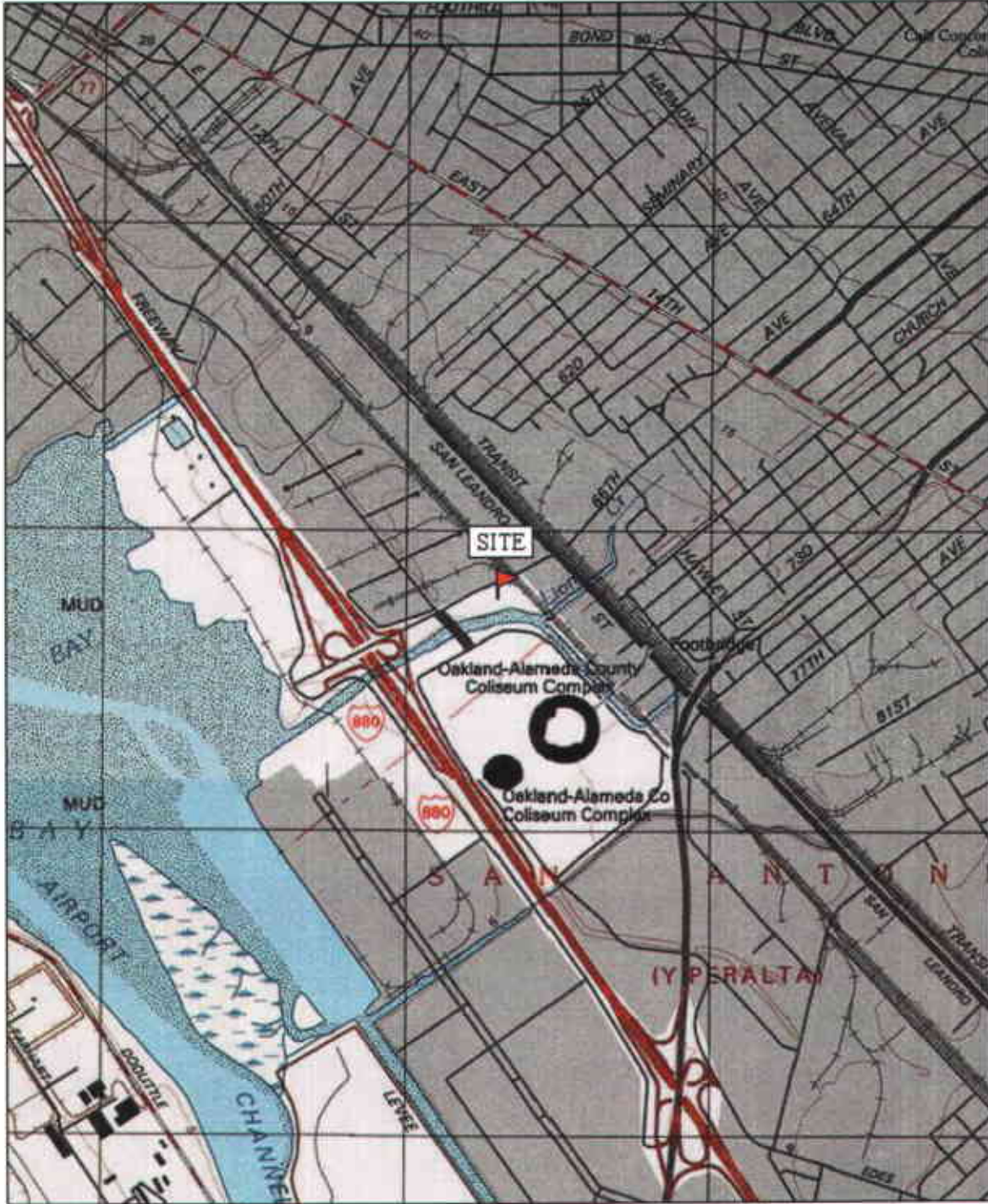
### Attachments

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

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



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



TN\* / MN  
15°

0 1000 FEET 0 500 1000 METERS 1 MILE

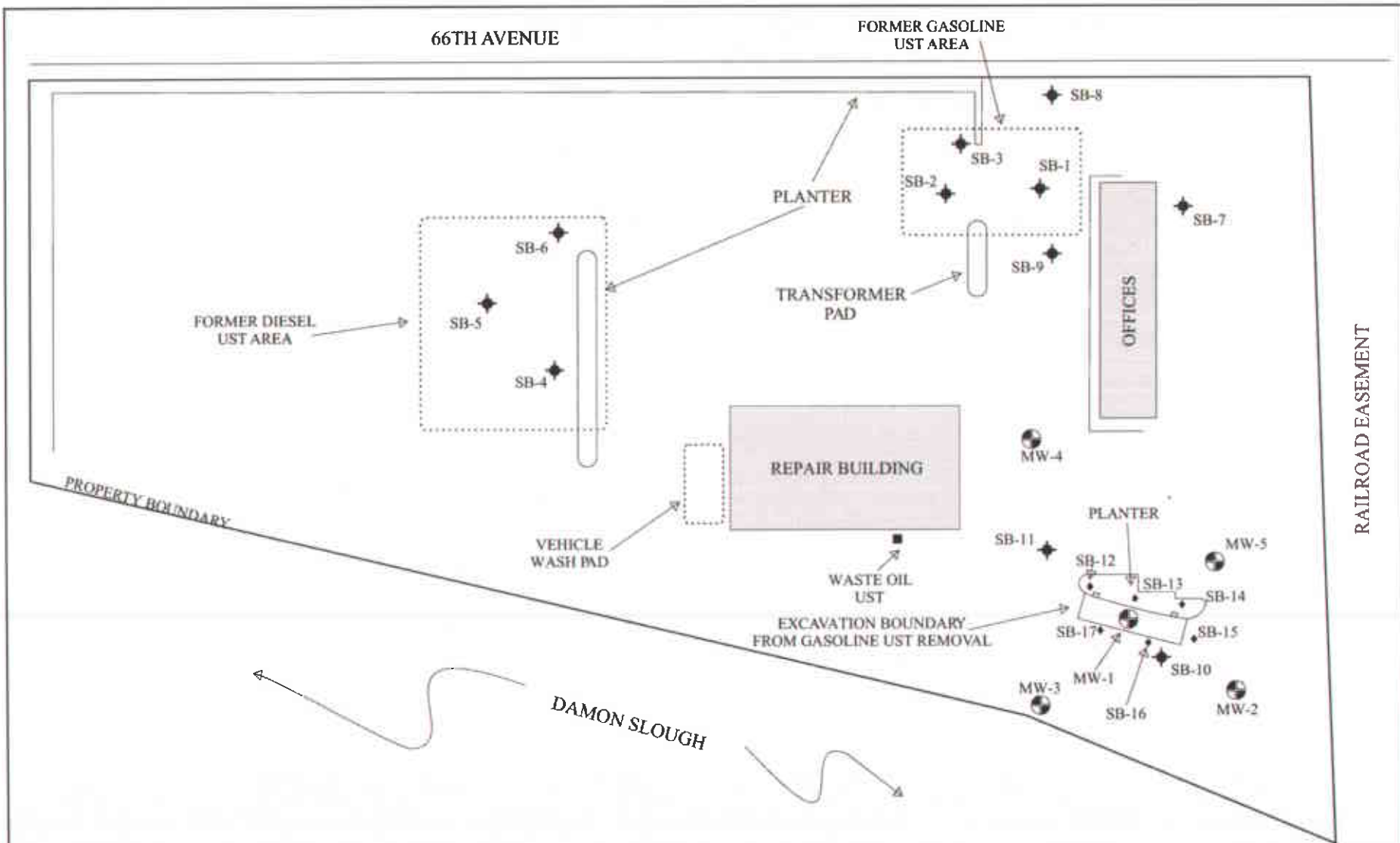
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AEI CONSULTANTS

SITE LOCATION MAP

796 66<sup>th</sup> AVENUE  
OAKLAND, CALIFORNIA

FIGURE 1  
PROJECT NO. 5526



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

**SITE PLAN**

796 66th AVENUE  
 OAKLAND, CALIFORNIA

**FIGURE 2**  
 AEI PROJECT NO 5526

- SB-X ◆ LOCATION OF BORINGS ADVANCED 7-9/01
- MW-1 ● LOCATION OF MONITORING WELLS INSTALLED 9/02
- SB-X ◆ LOCATION OF BORINGS ADVANCED 9/02



RENTAL OFFICE

GROUNDWATER FLOW DIRECTION  
WITH GRADIENT 0.022 FT/FT  
1/2/2003



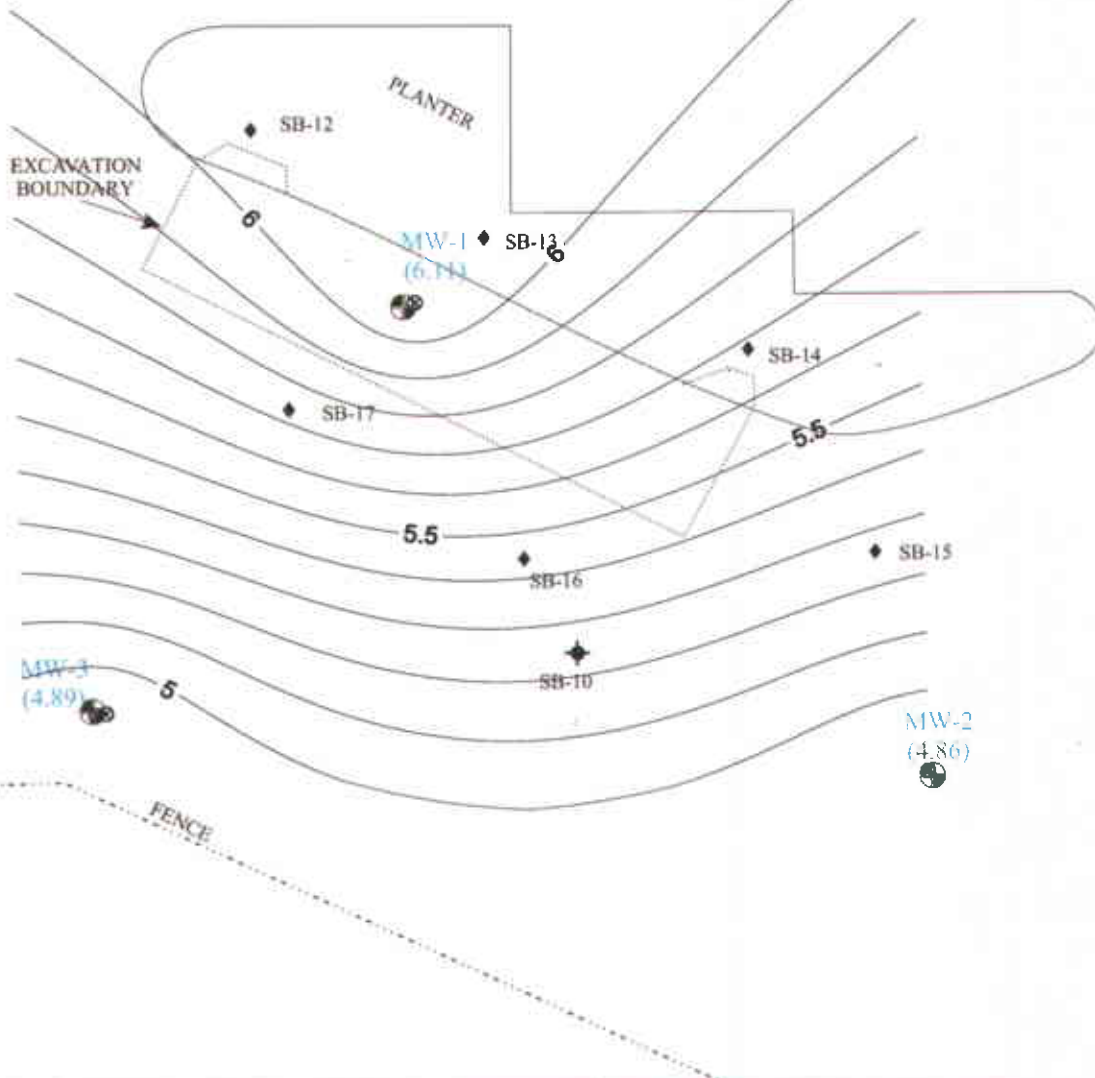
MW-4  
(6.17)



SB-11



MW-5  
(6.07)



**LEGEND**

-  MW-X MONITORING WELL LOCATION
-  SB-X SOIL SAMPLES COLLECTED 9/6/02
-  SB-X SOIL SAMPLES COLLECTED 7/17 & 9/28/01



CONTOURS DRAWN IN SURFER v. 7.0

CONTOUR INTERVAL IS 0.1 FEET

**AEI Consultants**

3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

SCALE: 1" = 20'

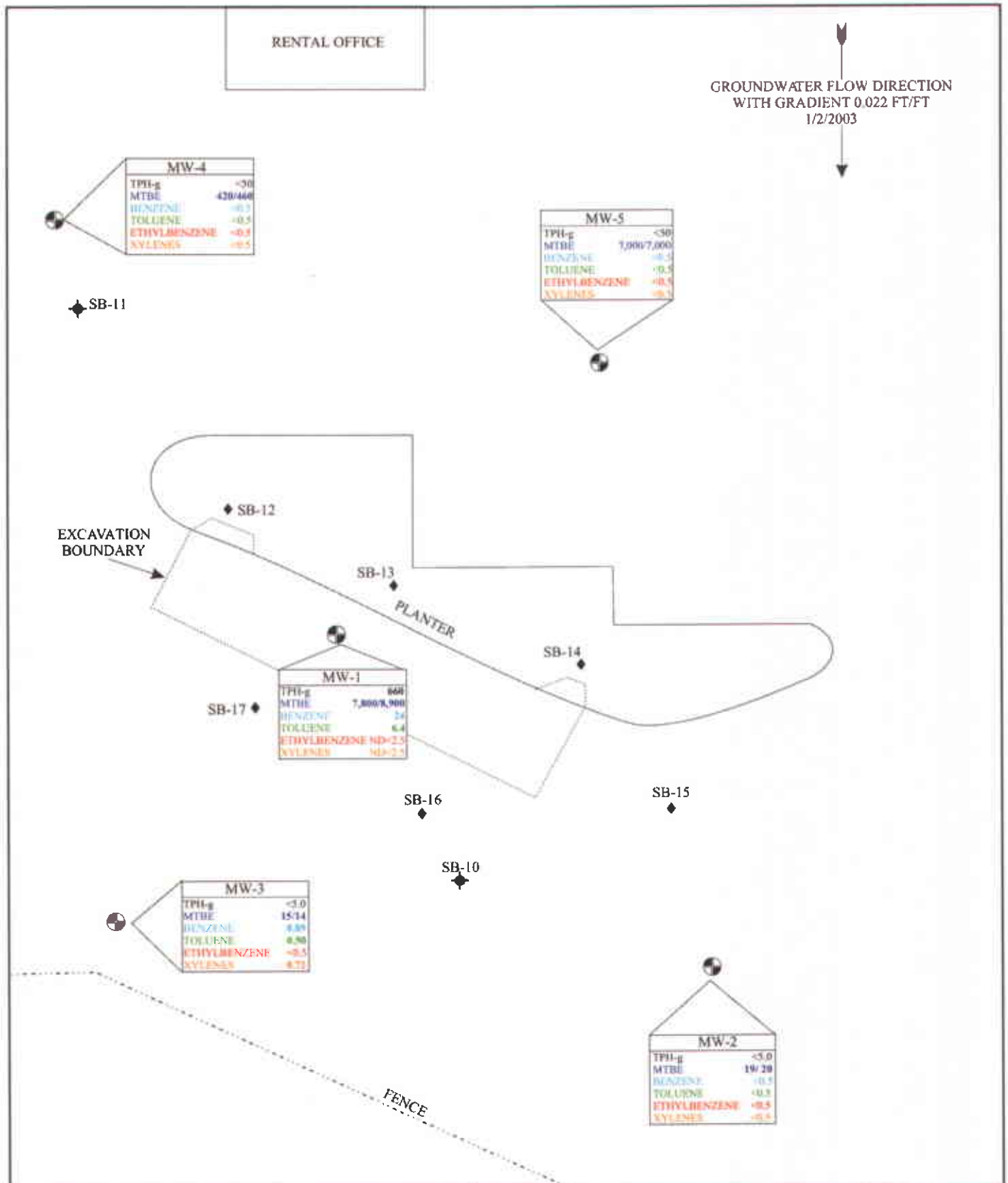
DRAWN BY: N. GARFIELD

DATE: 1/13/2003

**WATER TABLE ELEVATION**

796 66TH AVENUE  
OAKLAND, CALIFORNIA

**FIGURE 3**  
AEI PROJECT NO 5526



**LEGEND**

- MW-X MONITORING WELL LOCATION
- ◆ SB-X SOIL SAMPLES COLLECTED 9/6/02
- ◆ SB-X SOIL SAMPLES COLLECTED 7/17 & 9/28/01

TPH-g Total Petroleum Hydrocarbons as gasoline  
 MTBE Methyl Tertiary Butyl Ether  
 Expressed as: result by EPA 8020/ result by EPA 8260

Soil sample results in mg/kg  
 Groundwater results in µg/L.. except lead (mg/L)



**AEI Consultants**

3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

SCALE: 1" = 20'

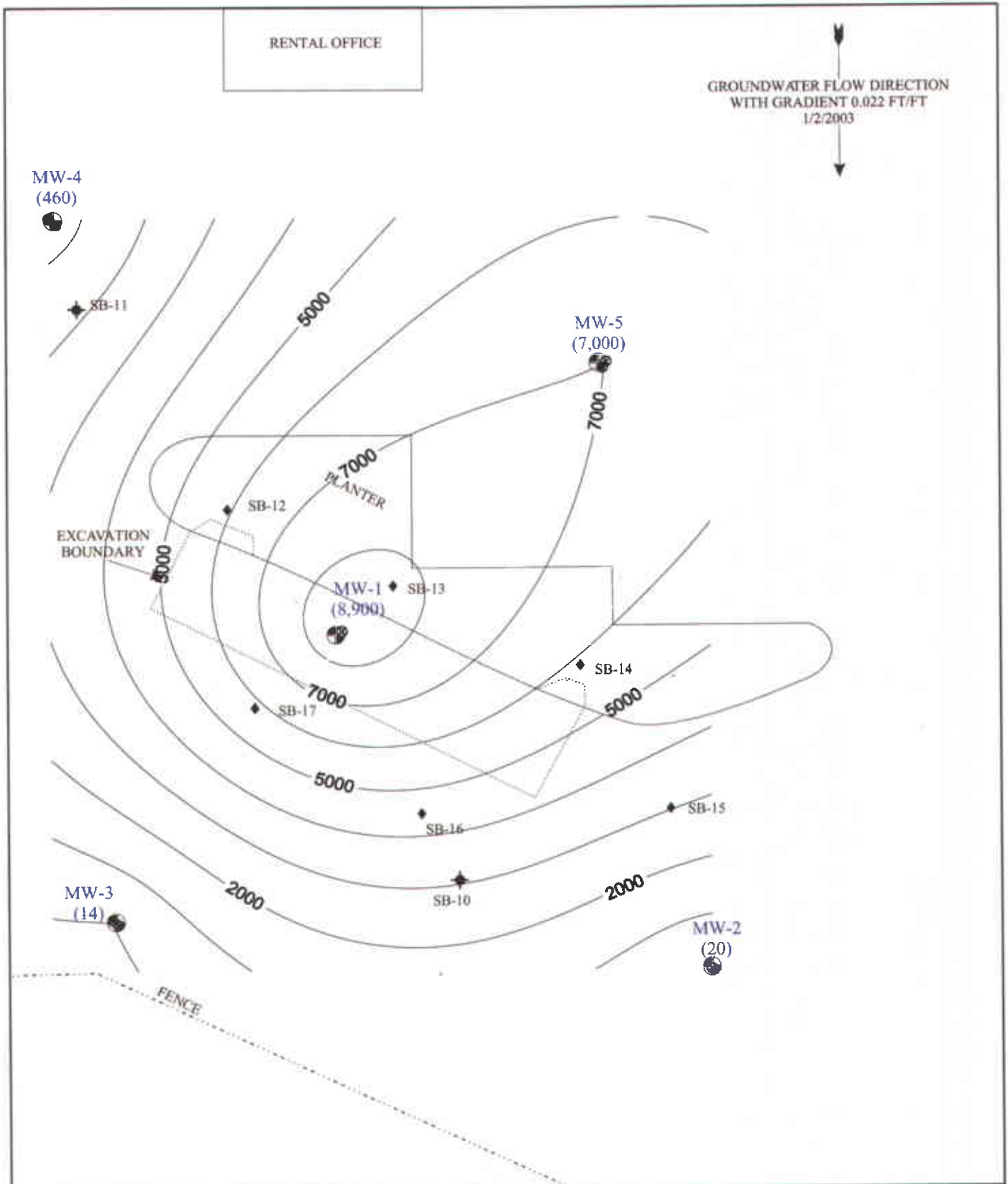
DRAWN BY: N. GARFIELD

DATE: 1/13/2003

**DISSOLVED HYDROCARBONS**

796 66TH AVENUE  
 OAKLAND, CALIFORNIA

**FIGURE 4**  
 AEI PROJECT NO 5526



**LEGEND**

- MW-X MONITORING WELL LOCATION
- ◆ SB-X SOIL SAMPLES COLLECTED 9/6/02
- ◆ SB-X SOIL SAMPLES COLLECTED 7/17 & 9/28/01
- MTBE METHYL TERTIARY BUTYL ETHER RESULTS EXPRESSED IN ug/L.



CONTOURS DRAWN IN SURFER v. 7.0  
 CONTOUR INTERVAL IS 1,000 ug/L.

<b>AEI Consultants</b>		
3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA		
SCALE: 1" = 20'	DRAWN BY: N. GARFIELD	DATE: 1/13/2003
<b>MTBE ISOCONTOURS</b>		
796 66TH AVENUE OAKLAND, CALIFORNIA		<b>FIGURE 5</b> AEI PROJECT No 5526

**Table 1**  
**Groundwater Elevation Data**

<b>Well ID</b>	<b>Date Collected</b>	<b>Well Elevation ft (amsl)</b>	<b>Depth to Water ft (TOC)</b>	<b>Water Table Elevation ft (amsl)</b>
MW-1	9/30/02	10.88	5.41	5.47
	1/2/03	10.88	4.77	6.11
MW-2	9/30/02	10.77	8.00	2.77
	1/2/03	10.77	5.91	4.86
MW-3	9/30/02	10.20	5.21	4.99
	1/2/03	10.20	5.31	4.89
MW-4	9/30/02	11.07	5.50	5.57
	1/2/03	11.07	4.90	6.17
MW-5	9/30/02	11.18	5.62	5.56
	1/2/03	11.18	5.12	6.06

<b>Episode</b>	<b>Date</b>	<b>Average Water Table Elevation</b>	<b>Change From Previous</b>	<b>Gradient (direction)</b>
1	9/30/02	4.87	-	0.005 (S)
2	1/2/03	5.62	0.75	0.022 (SSE)

All well elevations and depths to water are measured from the top of the casing (TOC)  
ft (amsl) = feet above mean sea level

**Table 2:  
Groundwater Sample Analytical Data**

Sample ID	Date	TPH-g µg/L	MTBE(µg/L) (EPA 8020) (EPA 8260)		Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L
MW-1	9/30/02	1,800	19,000	13,000	50	15	16	18
	1/2/03	660	7,800	8,900	24	6.4	ND<2.5	ND<2.5
MW-2	9/30/02	<50	<5.0	0.84	<0.5	<0.5	<0.5	<0.5
	1/2/03	<50	19	20	<0.5	<0.5	<0.5	<0.5
MW-3	9/30/02	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5
	1/2/03	<50	15	14	0.89	0.50	<0.5	0.72
MW-4	9/30/02	ND<100	790	ND<10	<0.5	<0.5	<0.5	<0.5
	1/2/03	<50	420	460	<0.5	<0.5	<0.5	<0.5
MW-5	9/30/02	ND<2,000	19,000	ND<250	ND<5.0	ND<5.0	ND<5.0	ND<5.0
	1/2/03	<50	7,000	7,000	<0.5	<0.5	<0.5	<0.5
MDL		50	5.0		0.5	0.5	0.5	0.5

MDL = Method Detection Limit

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

\* Sample GW was collected from standing water within the tank excavation

**APPENDIX A**

**WELL FIELD SAMPLING FORMS**



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

**Monitoring Well Number: MW-1**

Project Name:	Cruise America	Date of Sampling:	1/2/2003
Job Number:	5526	Name of Sampler:	S Moore
Project Address:	796 66th Avenue, Oakland	(need a new drum)	

**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)	4.77		
Water Elevation (feet above msl)	6.11		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	18.0		
Actual Volume Purged (gallons)	18.0		
Appearance of Purge Water	clear		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
11:00:00	1	20.9	6.93	1080	2.1	-6.3	gray/strong odor
	3	20.7	6.86	893	9.74	-40.1	
	5	20.6	7.05	1186	4.42	-33	
	8	20.7	6.9	1708	4.06	-36.2	still gray
	10	20.7	6.88	1670	1.87	-34.2	
	13	20.5	6.97	1230	3.23	-48.2	
	16	20.69	6.85	1101	1.41	-50.6	

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


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

**Monitoring Well Number: MW-2**

Project Name:	Cruise America	Date of Sampling:	1/2/2003
Job Number:	5526	Name of Sampler:	S Moore
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)	5.91		
Water Elevation (feet above msl)	4.86		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	3.9		
Actual Volume Purged (gallons)	4.0		
Appearance of Purge Water	clear		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
		21.34	6.94	2294	0.19	-150.5	

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

sulfide odor

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

**Monitoring Well Number: MW-3**

Project Name:	Cruise America	Date of Sampling:	1/2/2003
Job Number:	5526	Name of Sampler:	S Moore
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)	5.31		
Water Elevation (feet above msl)	4.89		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	4.2		
Actual Volume Purged (gallons)	4.5		
Appearance of Purge Water	clear		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
		20.72	6.77	2142	0.16	-134.5	

**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:	1/2/2003
Job Number:	5526	Name of Sampler:	S Moore
Project Address:	796 66th Avenue, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK <input type="button" value="▼"/>		
Elevation of Top of Casing (feet above msl)	11.07		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.90		
Water Elevation (feet above msl)	6.17		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	4.4		
Actual Volume Purged (gallons)	4.5		
Appearance of Purge Water	gray turning clear		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size		3 40 mL VOA					
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
	1	18.92	9.12	533	3.77	-128.6	gray
	2.5	18.55	8.51	570	2.35	-203.2	
	3.5	18.64	8.22	565	1.88	-211.2	
	4.5	18.55	8.16	514	3.20	-197.5	

**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:	1/2/2003
Job Number:	5526	Name of Sampler:	S Moore
Project Address:	796 66th Avenue, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK <input type="button" value="v"/>		
Elevation of Top of Casing (feet above msl)	11.18		
Depth of Well	14.00		
Depth to Water (from top of casing)	5.12		
Water Elevation (feet above msl)	6.06		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	4.3		
Actual Volume Purged (gallons)	4.5		
Appearance of Purge Water	strong odor/gray		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
	1	19.67	7	1103	1.35	-80.6	gray/strong odor
	2.5	19.01	6.99	1292	1.21	-96.8	
	3.5	19.05	6.99	1160	1.13	-102	
	4.5	19.01	6.97	1110	1.08	-103	

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


**APPENDIX B**

**LABORATORY ANALYTICAL AND  
CHAIN OF CUSTODY DOCUMENTATION**



McC Campbell Analytical Inc.

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

All Environmental, Inc. 3210 Old Tunnel Rd., Ste. B Lafayette, CA 94549-4157	Client Project ID: #5526; Cruise Am.	Date Sampled: 01/02/03
		Date Received: 01/02/03
	Client Contact: Nathan Garfield	Date Reported: 01/08/03
	Client P.O.: Nathan Garfield	Date Completed: 01/08/03

WorkOrder: 0301010

January 08, 2003

Dear Nathan:

Enclosed are:

- 1). the results of 5 analyzed samples from your #5526; Cruise Am. 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. McC Campbell 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



**McC Campbell Analytical Inc.**

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All Environmental, Inc.  3210 Old Tunnel Rd., Ste. B  Lafayette, CA 94549-4157	Client Project ID: #5526; Cruise Am.	Date Sampled: 01/02/03
		Date Received: 01/02/03
	Client Contact: Nathan Garfield	Date Extracted: 01/03/03-01/04/03
	Client P.O.: Nathan Garfield	Date Analyzed: 01/03/03-01/04/03

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0301010


Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1	W	660,a	7800	24	6.4	ND<2.5	ND<2.5	5	--#
002A	MW-2	W	ND	19	ND	ND	ND	ND	1	108
003A	MW-3	W	ND	15	0.89	0.50	ND	0.72	1	119
004A	MW-4	W	ND	420	ND	ND	ND	ND	1	105
005A	MW-5	W	ND	7000	ND	ND	ND	ND	1	101

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	NA	1	mg/Kg

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

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

 Edward Hamilton, Lab Director





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

All Environmental, Inc.  3210 Old Tunnel Rd., Ste. B  Lafayette, CA 94549-4157	Client Project ID: #5526; Cruise Arn.	Date Sampled: 01/02/03
		Date Received: 01/02/03
	Client Contact: Nathan Garfield	Date Extracted: 01/03/03-01/06/03
	Client P.O.: Nathan Garfield	Date Analyzed: 01/03/03-01/06/03

**Methyl tert-Butyl Ether\***

Extraction method: SW5030B

Analytical methods: SW8260B

Work Order: 0301010

Lab ID	Client ID	Matrix	Methyl-t-butyl ether (MTBE)	DF	% SS
001B	MW-1	W	8900	500	98.2
002B	MW-2	W	20	10	111
003B	MW-3	W	14	10	111
004B	MW-4	W	460	10	111
005B	MW-5	W	7000	400	106

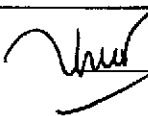
Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.5	µg/L
	S	NA	NA

\* water and vapor samples and all TCLP & SFLP 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.

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



McC Campbell Analytical Inc.

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

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0301010

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5513			Spiked Sample ID: 0301007-012A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	109	110	0.335	112	111	0.652	80	120
MTBE	ND	10	98	92.7	5.58	99.4	95.2	4.36	80	120
Benzene	ND	10	115	111	3.81	113	111	1.30	80	120
Toluene	0.5502	10	105	100	4.04	107	105	1.70	80	120
Ethylbenzene	ND	10	113	111	2.49	111	110	1.12	80	120
Xylenes	ND	30	113	110	2.99	110	110	0	80	120
%SS:	113	100	109	105	3.68	105	104	1.29	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.



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### QC SUMMARY REPORT FOR SW8260B

Matrix: W

WorkOrder: 0301010

EPA Method: SW8260B		Extraction: SW5030B			BatchID: 5524		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
Methyl-t-butyl ether (MTBE)	N/A	10	N/A	N/A	N/A	93.4	94.2	0.793	70	130
%SS1:	N/A	100	N/A	N/A	N/A	108	107	1.56	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 2<sup>ND</sup> AVENUE SOUTH, #D7  
PACHECO, CA 94553

0301010

Telephone: (925) 798-1620

Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH  24 HOUR  48 HOUR  5 DAY

Report To: ~~XXXXXXXXXX~~ Bill To: Nathan Garfield

Company: All Environmental ~~XXXXXXXXXX~~

3210 Old Tunnel Road, Suite B

Lafayette, CA 94549-4157

Tele: (925) 283-6000

Fax: (925) 283-6121

Project #: ~~5526~~ 5526

Project Name: Cruise Am.

Project Location: 66<sup>th</sup> Ave

Sampler Signature:

Analysis Request

Other

Comments

BTEX & TPH as Gas (602/8020 - 8015) MTBE  
TPH as Diesel (8015)

Total Petroleum Oil & Grease (5520 E&F/B&F)

Total Petroleum Hydrocarbons (418.1)

EPA 601 / 8010

BTEX ONLY (EPA 602 / 8020)

EPA 608 / 8080

EPA 608 / 8080 PCB'S ONLY

EPA 624 / 8240 (8260) 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)

RCI

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other					
+ MW-1		01/02																	
+ MW-2		I																	
+ MW-3		I																	
+ MW-4		I																	
+ MW-5		I																	

Relinquished By: <i>[Signature]</i>	Date: 1/2/03	Time: 2:50	Received By: <i>Mick Valle</i>
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

Remarks: EFF to [ngarfield@aeiconsultants.com](mailto:ngarfield@aeiconsultants.com)

**McC Campbell Analytical Inc.**



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

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0301010

**Client:**

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

TEL: (925) 283-6000  
 FAX: (925) 283-6121  
 ProjectNo: #5526; Cruise Am.  
 PO: Nathan Garfield

Date Received: 1/2/03

Date Printed: 1/2/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests					
					8021B/8015	SW8260B				
0301010-001	MW-1	Water	1/2/03	<input type="checkbox"/>	A	B				
0301010-002	MW-2	Water	1/2/03	<input type="checkbox"/>	A	B				
0301010-003	MW-3	Water	1/2/03	<input type="checkbox"/>	A	B				
0301010-004	MW-4	Water	1/2/03	<input type="checkbox"/>	A	B				
0301010-005	MW-5	Water	1/2/03	<input type="checkbox"/>	A	B				

Prepared by: Sonia 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.