

December 16, 1994  
SCI 469.009

Mr. Robert Mibach  
Director, Physical Plant  
Peralta Community College District  
333 East 8th Street  
Oakland, California 94606

**Quarterly Groundwater Monitoring  
November 1994 Event  
College of Alameda  
555 Atlantic Avenue  
Alameda, California**

Dear Mr. Mibach:

This letter presents the results of quarterly groundwater monitoring conducted by Subsurface Consultants, Inc. (SCI) at the referenced site. The monitoring program has been implemented in accordance with Regional Water Quality Control Board and Alameda County Health Care Services Agency (ACHCSA) guidelines due to the presence of petroleum hydrocarbons in the soil beneath previous underground fuel storage tanks. Five wells currently exist at the site. Wells MW-1, MW-3 and MW-5 are being monitored quarterly; wells MW-2 and MW-4 are being monitored semi-annually.

**Groundwater Sampling**

The sampling event was performed between November 3 and November 7, 1994. Initially, the depth to water below the top of casing (TOC) was measured in all the wells using an electric well sounder. Current and previous groundwater elevation data are presented in Table in Table 1.

Prior to purging, wells MW-1, MW-2, MW-3 and MW-5 were checked for free floating product using a steel tape with petroleum product sensitive paste. The slow recharging wells, MW-1 and MW-3, were then purged by bailing them dry with a disposable bailer. Wells MW-2 and MW-5 were purged by bailing with a disposable bailer until temperature, pH, and conductivity measurements had stabilized. Well MW-4 is being sampled semi-annually and was not sampled during this event. Well sampling forms are attached.

**Subsurface Consultants, Inc.**

The wells were sampled after they had recharged to within 80% of their initial volume. The samples were retained in glass containers pre-cleaned by the supplier in accordance with EPA protocol. The samples were placed in an ice chest and remained refrigerated until transmittal to the analytical laboratory. Chain of Custody records accompanied the samples to the laboratory.

### **Analytical Testing**

Groundwater samples were transmitted to Curtis and Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory. The testing program included the following analyses:

1. Total extractable hydrocarbons (TEH),
2. Benzene, toluene, ethylbenzene, and xylenes (BTEX), and
3. Total oil and grease (TOG).

The results of all analytical testing events are presented in Table 2. Analytical test reports and Chain-of-Custody forms are attached.

### **Conclusions**

Groundwater level data indicate that groundwater currently flows in a north-northwest direction at a gradient of about 1 percent. Groundwater flow contours for the current event are presented on Plate 2.

TEH within the diesel range were detected in well MW-5, near the former waste oil tank area. The analytical laboratory has indicated that the sample chromatogram resembles a light weight oil, and does not resemble diesel. TEH was not detected in the other wells sampled.

Oil and grease and BTEX were not detected in the wells sampled during this event.

### **Ongoing Monitoring**

In accordance with the monitoring schedule, the next monitoring event will occur in February 1995. During that event, water level readings will be obtained from all the wells and wells MW-1, MW-3, MW-4 and MW-5 will be sampled. The groundwater samples will be analyzed for total extractable hydrocarbons, total oil and grease, and BTXE.

Mr. Robert Mibach  
Peralta Community College District  
October 18, 1994  
SCI 469.009  
Page 3

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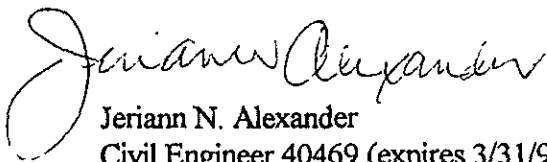
If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



Marianne Watada  
Project Engineer



Jeriann N. Alexander  
Civil Engineer 40469 (expires 3/31/95)

MFV:JNA:sld

2 copies submitted

Attachments: Table 1 - Contaminant Concentrations in Groundwater  
Table 2 - Groundwater Elevations  
Plate 1 - Site Plan  
Plate 2 - Study Area Plan  
Analytical Test Report  
Chain-of-Custody Form  
Well Sampling Forms

cc: Ms. Juliet Shin  
Alameda County Health Care Services Agency  
Hazardous Materials Division  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, California 94502

■ Subsurface Consultants, Inc.

**Table 1.**  
**Groundwater Elevations**

<u>Well</u>	<u>TOC Elevation</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
MW-1	12.16	02/24/92	1.64	10.52
		03/09/92	4.28	7.88
		03/24/92	4.33	7.83
		04/28/92	4.54	7.62
		06/29/92	5.92	6.24
		07/27/92	5.74	6.42
		08/27/92	6.04	6.12
		09/24/92	6.16	6.00
		12/16/92	6.19	5.97
		01/21/93	6.83	5.33
		02/07/94	6.01	6.15
		05/03/94	5.03	7.13
		06/02/94	5.14	7.02
		08/23/94	5.20	6.96
		11/03/94	5.51	6.65
MW-2	11.07	02/24/92	4.45	6.62
		01/21/93	6.83	4.24
		03/24/92	3.73	7.34
		04/28/92	4.25	6.82
		06/29/92	4.40	6.67
		07/27/92	4.00	7.07
		08/27/92	4.33	6.74
		09/24/92	4.36	6.71
		12/16/92	4.08	6.99
		01/21/93	4.40	6.67
		02/07/94	3.60	7.47
		05/03/94	4.04	7.03
		06/02/94	4.17	6.90
		08/23/94	4.28	6.79
		11/03/94	4.33	6.74
MW-3	12.65	02/24/92	13.12	-0.47
		03/09/92	8.75	3.90
		03/24/92	6.87	5.78
		04/28/92	6.31	6.34
		06/04/92	7.10	5.55
		06/29/92	10.78	1.87
		07/27/92	6.88	5.77
		09/24/92	7.38	5.27
		12/16/92	6.50	6.15
		01/21/92	10.25	2.40

*Always  
check units!*

**Table 1**  
**Groundwater Elevations**  
 (continued)

■ Subsurface Consultants, Inc.

<u>Well</u>	<u>TOC Elevation</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
		02/07/94	11.44	1.21
		05/03/94	7.02	5.63
		06/02/94	9.15	3.50
		08/23/94	7.13	5.52
		11/03/94	7.54	5.11
MW-4	12.22	02/07/94	5.92	6.30
		05/03/94	5.50	6.72
		06/02/94	5.17	7.05
		08/23/94	5.73	6.49
		11/03/94	6.41	5.81
MW-5	12.69	02/07/94	4.89	7.80
		05/03/94	4.50	8.19
		06/02/94	4.49	8.20
		08/23/94	4.83	7.86
		11/03/94	5.14	7.55

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TOC = Top of Casing  
 Groundwater depth measured below TOC  
 TOC elevation surveyed relative to mean sea level

**Table 2  
Contaminant Concentrations in Groundwater**

	<u>Sampling Date</u>	<u>TVH (ug/l)</u>	<u>TEH</u>		<u>TOG (mg/l)</u>	<u>Benzene (ug/l)</u>	<u>Toluene (ug/l)</u>	<u>Ethyl-Benzene (ug/l)</u>	<u>Total Xylenes (ug/l)</u>	<u>EPA 8010 Chemicals</u>
			<u>Kerosene Range (ug/l)</u>	<u>Diesel Range (ug/l)</u>						
<b><u>Fuel Oil Tank Area</u></b>										
MW-1	02/19/92	--	<50	<b>94</b>	--	<0.5	<0.5	<0.5	<0.5	--
	06/29/92	--	<50	<b>110</b>	--	<0.5	<0.5	<0.5	<0.5	--
	09/29/92	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	12/22/92	--	<50	<b>180</b>	--	<0.5	<0.5	<0.5	<0.5	--
	01/26/94	--	<b>60</b>	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	05/04/94	--	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	08/25/94	--	*	<b>480</b>	<5	<0.5	<0.5	<0.5	<0.5	--
	11/07/94	--	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
MW-4	01/26/94	--	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	08/25/94	--	*	<b>530</b>	<5	<0.5	<0.5	<0.5	<0.5	--
<b><u>Gasoline Tank Area</u></b>										
Tank Excavation	08/15/91	<b>800</b>	--	--	--	<b>78</b>	<b>99</b>	<b>10</b>	<b>52</b>	--
MW-2	02/19/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--
	06/29/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--
	09/29/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--
	12/22/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--
	01/25/94	--	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	05/04/94	--	*	<b>50</b>	<5	<0.5	<0.5	<0.5	<0.5	--
	11/04/94	--	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--

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Table 2.  
(continued)  
Contaminant Concentrations in Groundwater

	<u>Sampling Date</u>	<u>TVH (ug/l)</u>	<u>TEH</u>		<u>TOG (mg/l)</u>	<u>Benzene (ug/l)</u>	<u>Toluene (ug/l)</u>	<u>Ethyl-Benzene (ug/l)</u>	<u>Total Xylenes (ug/l)</u>	<u>EPA 8010 Chemicals</u>
			<u>Kerosene Range (ug/l)</u>	<u>Diesel Range (ug/l)</u>						
<b><u>Waste Oil Tank Area</u></b>										
MW-3	02/19/92	<5000+	680	<50	<5	<50	<50	<50	84	ND
	06/29/92	<50	*	190	<5	<0.5	<0.5	<0.5	<0.5	ND
	09/29/92	<50	*	410	<5	<0.5	<0.5	<0.5	<0.5	ND
	12/21/92	<500	*	400	<5	<5	<5	<5	<5	ND
	01/26/94	--	70	<50	<5	<0.5	<0.5	<0.5	0.8	--
	05/05/94	--	<50	140	<5	<0.5	<0.5	<0.5	<0.5	--
	08/25/94	--	*	900	<5	14.5	5.1	<0.5	<0.5	--
	11/07/94	--	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
MW-5	01/25/94	--	*	5,200++	<5	<0.5	<0.5	<0.5	<0.5	--
	05/04/94	--	*	3,500++	<5	<0.5	<0.5	<0.5	<0.5	--
	08/25/94	--	*	5,000++	<5	<0.5	<0.5	<0.5	<0.5	--
	11/04/94	--	*	4,600++	<5	<0.5	<0.5	<0.5	<0.5	--

TVH = Total volatile hydrocarbons as gasoline, EPA 8015/5030 modified

TEH = Total extractable hydrocarbons, EPA 3550/8015 modified

TOG = Total oil and grease, EPA 3550 and SMWW 17:5520 B&F

ug/l = Micrograms per liter or parts per billion (ppb)

mg/l = Milligrams per liter or parts per million (ppm)

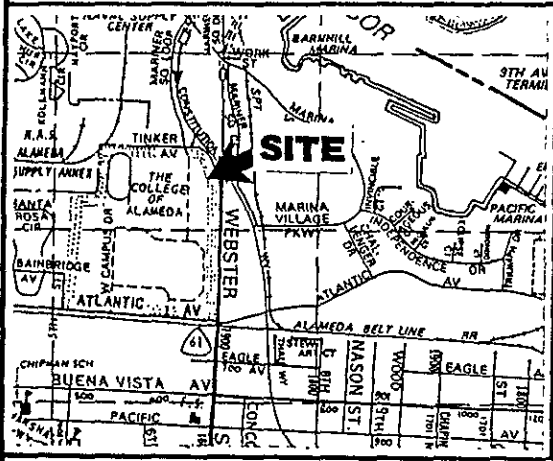
-- = Test not requested

+ = Sample diluted due to foaming during purge and trap extraction

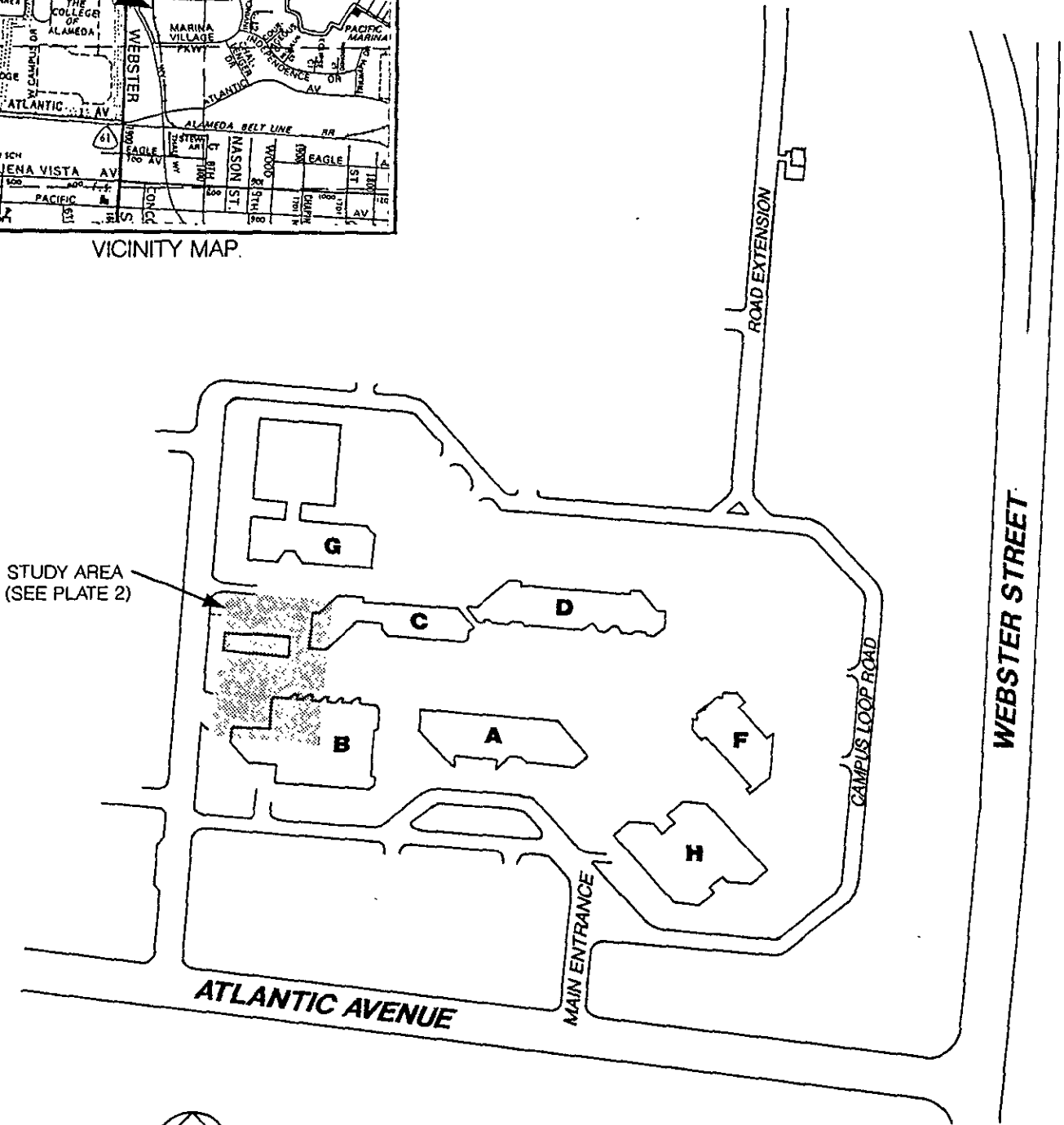
ND = Not detected at or above reporting limits. Reporting limits vary from 1.0 to 20 ug/l. See test reports for individual reporting limits.

\* = Quantitated as diesel range

++ = Laboratory indicates that the sample chromatogram resembles a light weight oil.



VICINITY MAP.



STUDY AREA  
(SEE PLATE 2)



APPROXIMATE SCALE (feet)



### SITE PLAN

# Subsurface Consultants

COLLEGE OF ALAMEDA - ALAMEDA, CA

PLATE





JOB NUMBER  
469.009

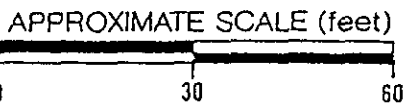
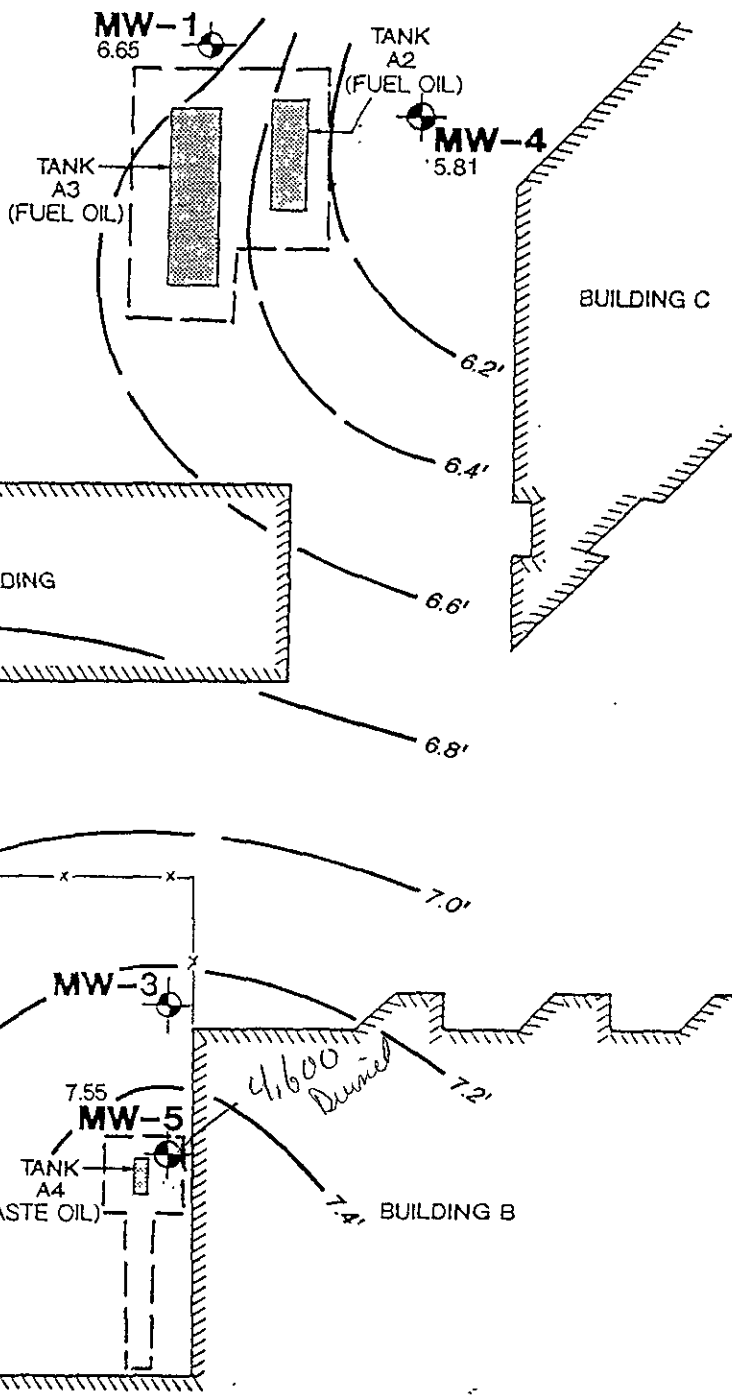
DATE  
3/12/92

APPROVED  
UW

# 1



 MONITORING WELL  
 LIMITS OF PREVIOUS EXCAVATION  
 FORMER TANK LOCATION  
 6.15' GROUNDWATER ELEVATIONS 11/3/94  
 GROUNDWATER ELEVATION CONTOURS (FEET) 11/3/94



<b>STUDY AREA PLAN</b>		
COLLEGE OF ALAMEDA - ALAMEDA, CA		PLATE
JOB NUMBER 469.009	DATE 12/12/94	APPROVED MLW
		<b>2</b>

Subsurface Consultants

## WELL SAMPLING FORM

Project Name: College of Alameda Well Number: MW-1  
 Job No.: 469.009 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 11/4/94  
 TOC Elevation: \_\_\_\_\_ Weather: sunny

Depth to Casing Bottom (below TOC) 12.00 feet  
 Depth to Groundwater (below TOC) 5.51 feet  
 Feet of Water in Well 6.49 feet  
 Depth to Groundwater When 80% Recovered 6.81 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 1.1 gallons  
 Depth Measurement Method Tape & Paste Electronic Sounder / Other  
 Free Product none  
 Purge Method disposable bailer

### FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>7.34</u>	<u>19.5</u>	<u>220 X 100</u>	_____	<u>clean / organic odor</u>
<u>2</u>	<u>7.37</u>	<u>19.5</u>	<u>215 X 100</u>	_____	<u>Semi-clear</u>
<u>3</u>	<u>7.68</u>	<u>19.0</u>	<u>220 X 100</u>	_____	<u>murky / Heavy particulates</u>
<u>3.5</u>	<u>7.90</u>	<u>19.5</u>	<u>210 X 100</u>	_____	<u>Dry @ 3.5 gals.</u>

Total Gallons Purged 3.5 gallons  
 Depth to Groundwater Before Sampling (below TOC) 7.69' on 11/4 @ 8:45 a.m. feet  
 Sampling Method telfon bailer  
 Containers Used 2 40 ml 2 liter \_\_\_\_\_ pint

**Subsurface Consultants**

JOB NUMBER

DATE

APPROVED

PLATE

## WELL SAMPLING FORM

Project Name: College of Alameda Well Number: MW-2  
 Job No.: 469.009 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 11/4/94  
 TOC Elevation: \_\_\_\_\_ Weather: Sunny

Depth to Casing Bottom (below TOC) 10.00 feet  
 Depth to Groundwater (below TOC) 4.33 feet  
 Feet of Water in Well 5.67 feet  
 Depth to Groundwater When 80% Recovered 5.46 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) .93 gallons  
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other  
 Free Product none  
 Purge Method disposable bailer

### FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>8.00</u>	<u><del>20.5</del> 21.0</u>	<u>3000</u>		<u>clear/no odor</u>
<u>1</u>	<u>7.70</u>	<u>21.0</u>	<u>3300</u>		<u>semi-clear / SLIGHT ODOR</u>
<u>2</u>	<u>7.61</u>	<u>21.0</u>	<u>2925</u>		<u>murky</u>
<u>3</u>	<u>7.56</u>	<u>21.0</u>	<u>2825</u>		<u>↓</u>

Total Gallons Purged 3 gallons  
 Depth to Groundwater Before Sampling (below TOC) 4.41 feet  
 Sampling Method felson bailer  
 Containers Used 2 40 ml 2 liter \_\_\_\_\_ pint

**Subsurface Consultants**

JOB NUMBER

DATE

APPROVED

PLATE

## WELL SAMPLING FORM

Project Name: College of Alameda Well Number: MW-3  
 Job No.: 469.009 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 11/4/94  
 TOC Elevation: \_\_\_\_\_ Weather: Sunny

Depth to Casing Bottom (below TOC) 15.00 feet  
 Depth to Groundwater (below TOC) 7.54 feet  
 Feet of Water in Well 7.46 feet  
 Depth to Groundwater When 80% Recovered 9.03 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 1.22 gallons  
 Depth Measurement Method Tape & Paste / **Electronic Sounder** / Other  
 Free Product none  
 Purge Method disposable bailer

### FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>7.32</u>	<u>18.0</u>	<u>395 x 100</u>	_____	<u>Yellow-Green / Rotten Egg odor</u>
<u>2</u>	<u>7.29</u>	<u>18.0</u>	<u>400 x 100</u>	_____	↓
<u>3</u>	<u>7.32</u>	<u>18.0</u>	<u>420 x 100</u>	_____	↓
<u>4</u>	<u>7.31</u>	<u>17.5</u>	<u>420 x 100</u>	_____	<u>Green / same color / same odor / Dry @ 4 gals.</u>

Total Gallons Purged 4 gallons  
 Depth to Groundwater Before Sampling (below TOC) 9.89' on 11/4/94 @ 9:30 a.m. feet  
 Sampling Method telfon bailer  
 Containers Used 2 40 ml 2 liter \_\_\_\_\_ pint

**Subsurface Consultants**

JOB NUMBER

DATE

APPROVED

PLATE

### WELL SAMPLING FORM

Project Name: College of Alameda Well Number: MW-5  
 Job No.: 469.009 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 11/4/94  
 TOC Elevation: \_\_\_\_\_ Weather: Sunny

Depth to Casing Bottom (below TOC) 13.50 feet  
 Depth to Groundwater (below TOC) 5.14 feet  
 Feet of Water in Well 7.36 feet  
 Depth to Groundwater When 80% Recovered 7.61 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 1.20 gallons  
 Depth Measurement Method Tape & Paste Electronic Sounder / Other  
 Free Product none  
 Purge Method disposable bailer

### FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
1	7.16	19.0	140x100		semi-clean / organic odor
2	7.10	19.0	165x100		lightly murky
3	7.14	19.0	155x100		↓
4	7.10	19.5	175x100		↓

Total Gallons Purged 4 gallons  
 Depth to Groundwater Before Sampling (below TOC) 5.17' feet  
 Sampling Method teflon bailer  
 Containers Used 2 40 ml 2 liter \_\_\_\_\_ pint

<b>Subsurface Consultants</b>			PLATE
	JOB NUMBER	DATE	APPROVED





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L   R E P O R T

Prepared for:

Subsurface Consultants

171 12th Street

Suite 201

Oakland, CA 94608

Date: 15-NOV-94

Lab Job Number: 118344

Project ID: 469.009

Location: College of Alameda

Reviewed by:

*May Plusan*

Reviewed by:

*Cynthia E. Selley*

This package may be reproduced only in its entirety.



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 118344  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 469.009  
LOCATION: COLLEGE OF ALAMEDA

DATE SAMPLED: 11/04,07/94  
DATE RECEIVED: 11/07/94  
DATE EXTRACTED: 11/09/94  
DATE ANALYZED: 11/10,11/94  
DATE REPORTED: 11/15/94

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
California DOHS Method  
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
118344-1	MW-1	ND	ND	50
118344-2	MW-2	ND	ND	50
118344-3	MW-3	ND	ND	50
118344-4	MW-5	**	4,600*	50
	METHOD BLANK	ND	ND	50

ND = Not detected at or above reporting limit. Reporting limit applies to all analytes.

\* Sample chromatogram does not resemble diesel standard pattern.

\*\* Kerosene range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY:

RPD, %	5
RECOVERY, %	108



LABORATORY NUMBER: 118344  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 469.009  
 LOCATION: COLLEGE OF ALAMEDA

DATE SAMPLED: 11/04,07/94  
 DATE RECEIVED: 11/07/94  
 DATE ANALYZED: 11/14/94  
 DATE REPORTED: 11/15/94

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
 Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT (ug/L)
118344-1	MW-1	ND	ND	ND	ND	0.5
118344-2	MW-2	ND	ND	ND	ND	0.5
118344-3	MW-3	ND	ND	ND	ND	0.5
118344-4	MW-5	ND	ND	ND	ND	0.5
	METHOD BLANK	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	103

Client: Subsurface Consultants

Laboratory Login Number: 118344

Project Name: College of Alameda

Report Date: 15 November 94

Project Number: 469.009

ANALYSIS: Hydrocarbon Oil &amp; Grease (Gravimetric)

METHOD: SMWW 17:5520BF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
118344-001	MW-1	Water	07-NOV-94	07-NOV-94	09-NOV-94	ND	mg/L	5	TR	17460
118344-002	MW-2	Water	04-NOV-94	07-NOV-94	09-NOV-94	ND	mg/L	5	TR	17460
118344-003	MW-3	Water	07-NOV-94	07-NOV-94	09-NOV-94	ND	mg/L	5	TR	17460
118344-004	MW-5	Water	04-NOV-94	07-NOV-94	09-NOV-94	ND	mg/L	5	TR	17460

ND = Not Detected at or above Reporting Limit (RL).

## Q C B a t c h R e p o r t

Client: Subsurface Consultants  
 Project Name: College of Alameda  
 Project Number: 469.009

Laboratory Login Number: 118344  
 Report Date: 15 November 94

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 17460

## Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	09-NOV-94

## Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	93%	SMWW 17:5520BF	09-NOV-94
BSD	87%	SMWW 17:5520BF	09-NOV-94

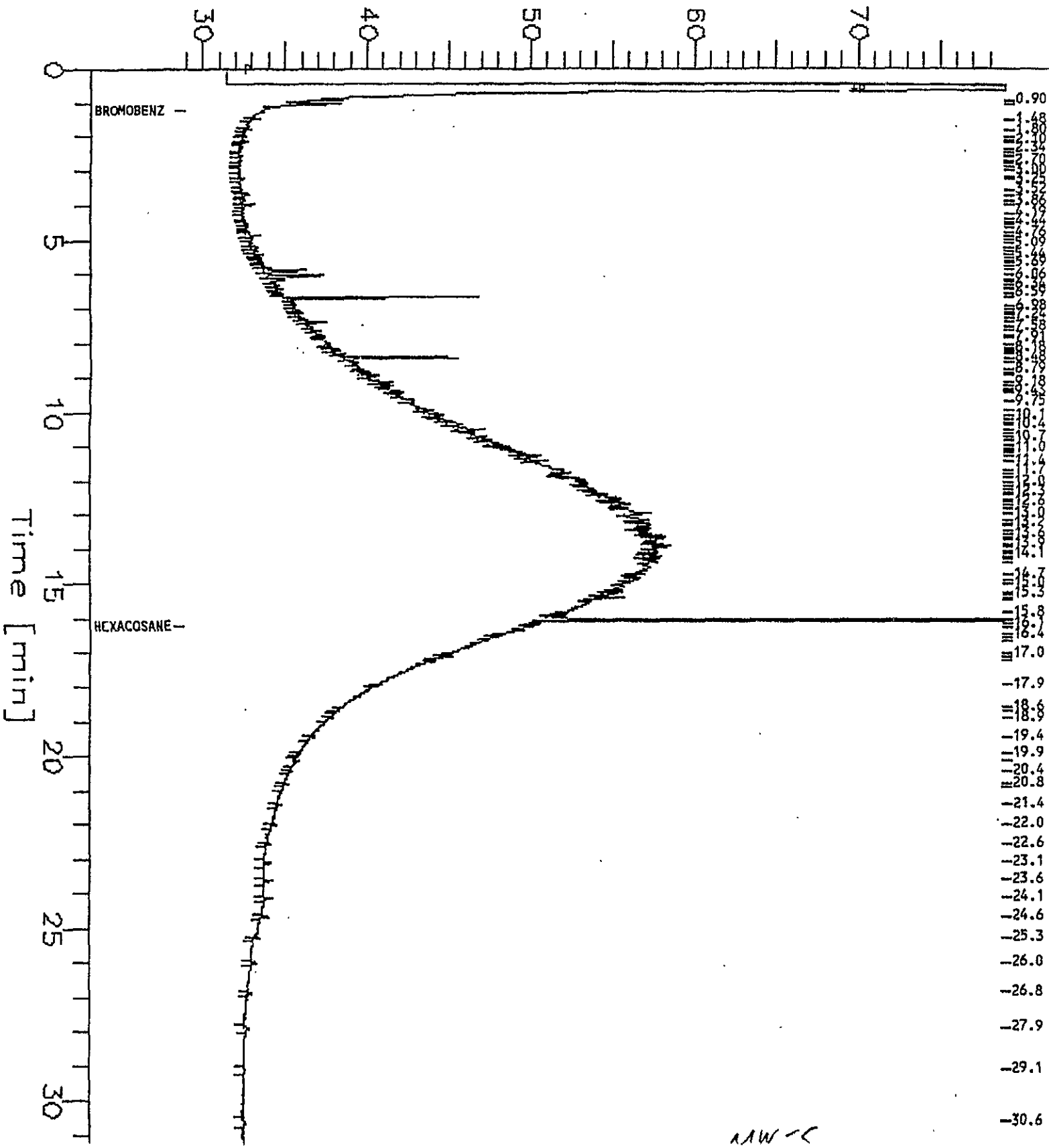
Average Spike Recovery	90%	Control Limits	80% - 120%
Relative Percent Difference	6.7%		< 20%

Sample Name : 118344-004 500:2.5  
FileName : g:\gc13\cha\314a018.raw  
Method : TEH.ins  
Start Time : 0.00 min  
Scale Factor: -1

End Time : 31.92 min  
Plot Offset: 29 mV

Sample #: 17447  
Date : 11/11/94 04:05 AM  
Time of Injection: 11/11/94 03:32 AM  
Low Point : 28.92 mV  
Plot Scale: 50 mV  
Page 1 of 1  
High Point : 78.92 mV

### Response [mV]



RAW-5

