

**BP OIL**

BP Oil Company  
16400 Southcenter Parkway, Suite 301  
Tukwila, Washington 98188  
(206) 575-4077

December 15, 1992

Mr. Ron Owcarz  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, CA 94621

RE: BP OIL FACILITY #11124

~~31901 Alvarado Blvd.~~ 3315 High St  
~~Union City, CA~~ Oak, CA 94619

Dear Mr. Owcarz:

Attached please find our GROUND WATER MONITORING AND SAMPLING REPORT for the above referenced facility.

Based upon the frequency and occurrence of dissolved-phase fuel constituents at this location, no further monitoring is necessary or warranted. We hereby request case closure.

Please call me at (206) 394-5243 with questions regarding this submission.

Respectfully,

Scott T. Hooton  
Environmental Resources Management

STH:jc ERM11124

cc: Ms. Penny Silzer, California Regional Water Quality Control Board, San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, CA 94612

Mr. Al Sevilla, Alisto, 1000 Burnett Ave., Concord, CA 94520  
Suite 420

Mr. David Baker, Mobil Oil Corp, 3225 Gallows Road, Fairfax, VA 22037

Site file

SECRET 11/25

**QUARTERLY GROUNDWATER MONITORING  
AND SAMPLING REPORT**

**BP Oil Company Service Station No. 11124  
3315 High Street  
Oakland, California 619**

**Project No. 10-020**


**Prepared for:**


**BP Oil Company  
Environmental Resource Management  
16400 Southcenter Parkway, Suite 301  
Tukwila, Washington**

**Prepared by:**

**Alisto Engineering Group  
1000 Burnett Avenue, Suite 420  
Concord, California**

**November 23, 1992**

  
\_\_\_\_\_  
**Brady Nagle  
Project Manager**

  
\_\_\_\_\_  
**Al Sevilla, P.E.  
Principal**



# QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11124  
3315 High Street  
Oakland, California

Project No. 10-020

November 23, 1992

## INTRODUCTION

This report presents the results and findings of the September 30, 1992 quarterly groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11124, 3315 High Street, Oakland, California. A site vicinity map is shown in Figure 1.

## FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Alameda County Health Care Services Agency and the Regional Water Quality Control Board, San Francisco Bay Region.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on the top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well in reference to mean sea level. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Before sample collection, each well was purged of 3 casing volumes, while recording field readings of pH, temperature, and electrical conductivity, unless the monitoring well would not produce sufficient groundwater. Ground water samples were collected for laboratory analysis by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were carefully transferred from the bailer into the appropriate clean glass containers. The water sampling field survey forms are presented in Appendix A.

## SAMPLING AND ANALYTICAL RESULTS

The results of monitoring and laboratory analysis of the groundwater samples for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as



interpreted from the results of this monitoring event are shown in Figure 2. The results of groundwater analysis are shown in Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

### SUMMARY OF FINDINGS

The findings of the September 30, 1992 groundwater monitoring and sampling event are summarized as follows:

- No free product was observed in any of the groundwater monitoring wells.
- Groundwater elevation data indicate a gradient of approximately 0.018 foot/foot in a general southwest direction across the site.
- No total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene, or total xylenes were detected above reported detection limits in the samples from Monitoring Wells MW-1 through MW-4.
- Total oil and grease (TOG) was detected in the samples collected from MW-4 at a concentration of 5,200 parts per billion. TOG was not detected above reported detection limits in the four previous sampling events.



TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING AND SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11124  
 3315 HIGH STREET, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-020

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	LAB
MW-1	08/18/86	154.99	10.10	144.89	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<1.0	---	---
MW-1	11/12/90	154.99	11.42	143.57	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---
MW-1	07/15/91	154.99	10.66	144.33	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---
MW-1	10/15/91	154.99	11.67	143.32	ND<50	ND<0.5	0.8	0.6	0.8	ND<5000	---
MW-1	01/15/92	154.99	10.03	144.96	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	---
MW-1	04/17/92	154.99	10.31	144.68	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	---
MW-1	09/30/92	154.99	11.64	143.35	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	ANA
MW-2	08/18/86	152.02	10.00	142.02	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<1.0	---	---
MW-2	11/12/90	152.02	10.94	141.08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---
MW-2	07/15/91	152.02	9.87	142.15	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---
MW-2	10/15/91	152.02	11.16	140.86	ND<50	ND<0.5	0.7	ND<0.5	1.5	ND<5000	---
MW-2	01/15/92	152.02	8.81	143.21	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	---
MW-2	04/17/92	152.02	8.41	143.61	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	---
MW-2	09/30/92	152.02	11.13	140.89	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	ANA
MW-3	08/18/86	---	9.60	---	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<1.0	---	---
MW-3	11/12/90	---	---	---	---	---	---	---	---	---	---
MW-3 (c)	07/15/91	---	---	---	---	---	---	---	---	---	---
MW-3	10/15/91	---	---	---	---	---	---	---	---	---	---
MW-3	01/15/92	---	---	---	---	---	---	---	---	---	---
MW-3	04/17/92	---	---	---	---	---	---	---	---	---	---
MW-3	09/30/92	---	---	---	---	---	---	---	---	---	---

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING AND SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11124  
 3315 HIGH STREET, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-020

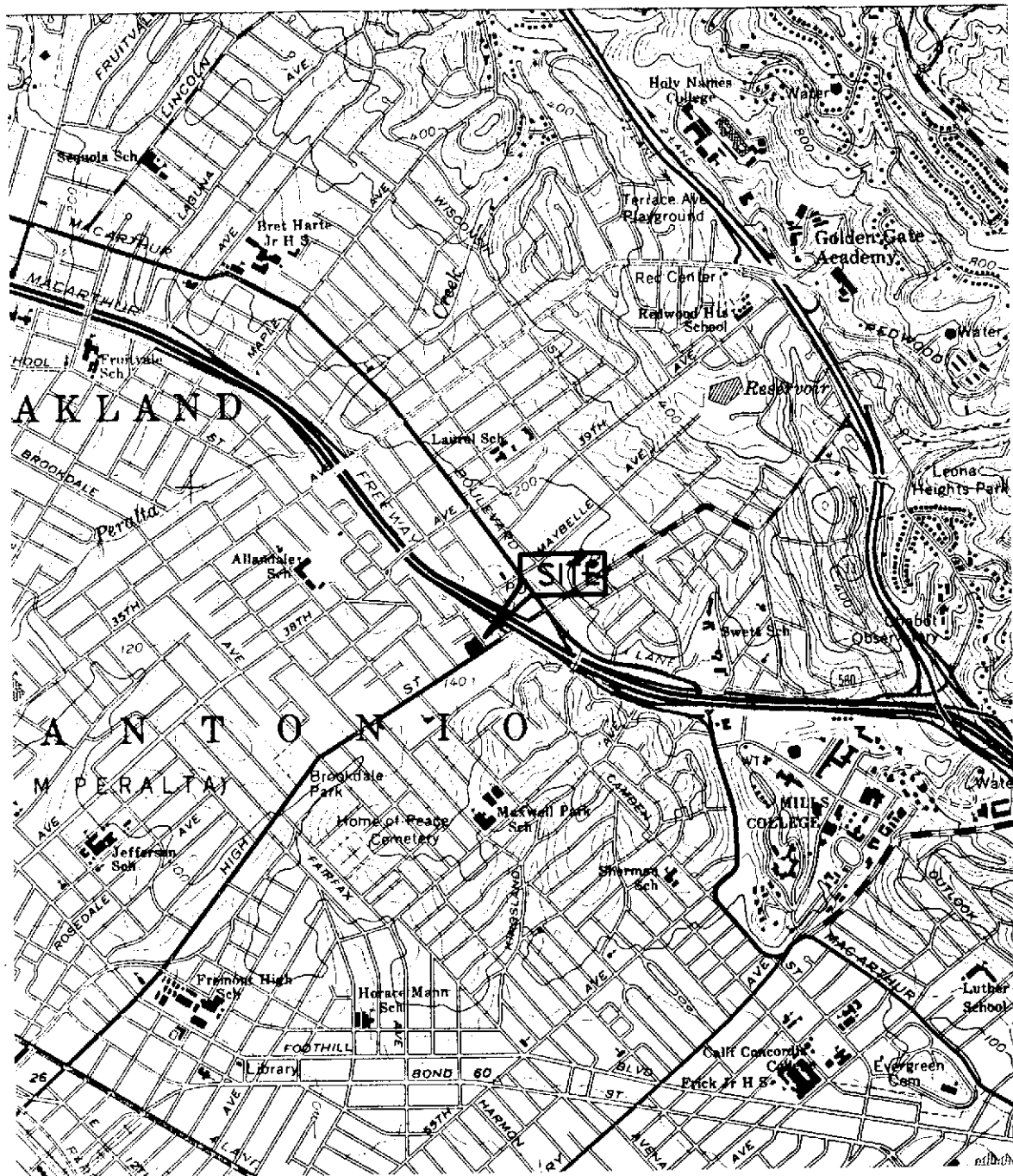
WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	LAB
MW-4	07/15/91	152.77	9.62	143.15	ND<50	ND<0.5	ND<0.5	ND<0.5	0.8	---	---
MW-4	10/15/91	152.77	11.30	141.47	ND<50	ND<0.5	0.7	0.6	1.1	ND<5000	---
MW-4	01/15/92	152.77	8.81	143.96	ND<50	ND<0.5	2.7	ND<0.5	ND<0.5	ND<5000	---
MW-4	04/17/92	152.77	8.20	144.57	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	---
MW-4 (d)	04/17/92	152.77	8.20	144.57	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	---
MW-4	09/30/92	152.77	11.33	141.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	5200	ANA
QC-1 (d)	09/30/92	152.77	11.33	141.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ANA
QC-2 (e)	09/30/92	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ANA

ABBREVIATIONS:

TPH-G Total petroleum hydrocarbons as gasoline  
 B Benzene  
 T Toluene  
 E Ethylbenzene  
 X Total xylenes  
 TOG Total oil and grease  
 ND Not detected above reported detection limits  
 ppb Parts per billion  
 --- Not analyzed/measured  
 ANA Anametrix, Inc.

NOTES:

- (a) Casing elevations were surveyed to the nearest 0.01 foot relative to mean sea level.
- (b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.
- (c) Monitoring well abandoned.
- (d) Blind duplicate of MW-4.
- (e) Travel blank.

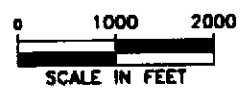


SOURCE:  
 USGS MAP, OAKLAND EAST QUADRANGLE, CALIFORNIA.  
 7.5 MINUTE SERIES, 1959. PHOTOREVISED 1980.



FIGURE 1  
 SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11124  
 3315 HIGH STREET  
 OAKLAND, CALIFORNIA



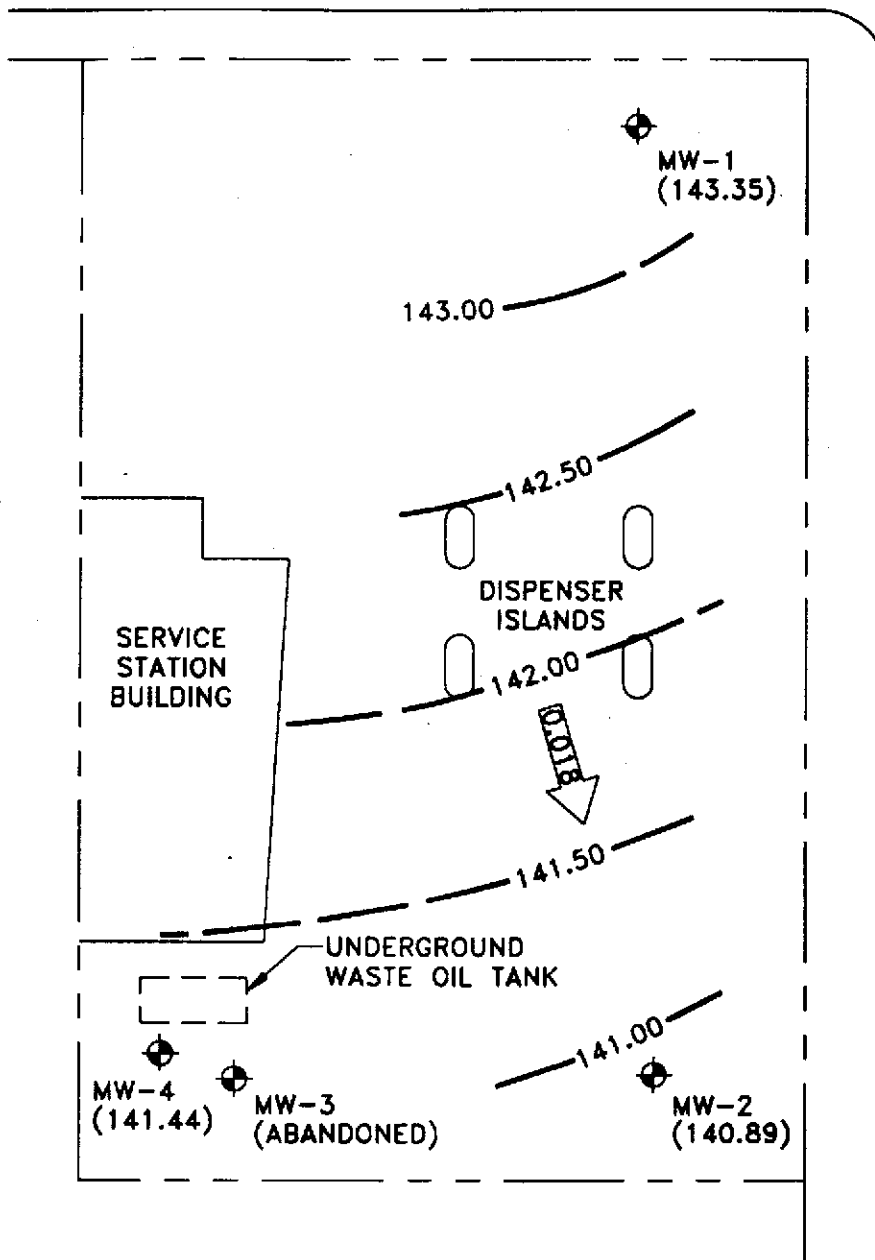
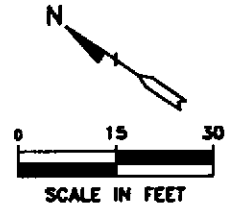
ALISTO PROJECT NO. 10-020



**ALISTO ENGINEERING GROUP**  
 CONCORD, CALIFORNIA

1002001P.DWG 3-20-83 JWB 1x1

PORTER STREET



LEGEND:

GROUNDWATER MONITORING WELL  
 (143.35) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL

143.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL  
 (CONTOUR INTERVAL - 0.5 FOOT)

CALCULATED GROUNDWATER GRADIENT DIRECTION

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP  
 (SEPTEMBER 30, 1992)

BP OIL SERVICE STATION NO. 11124  
 3315 HIGH STREET  
 OAKLAND, CALIFORNIA

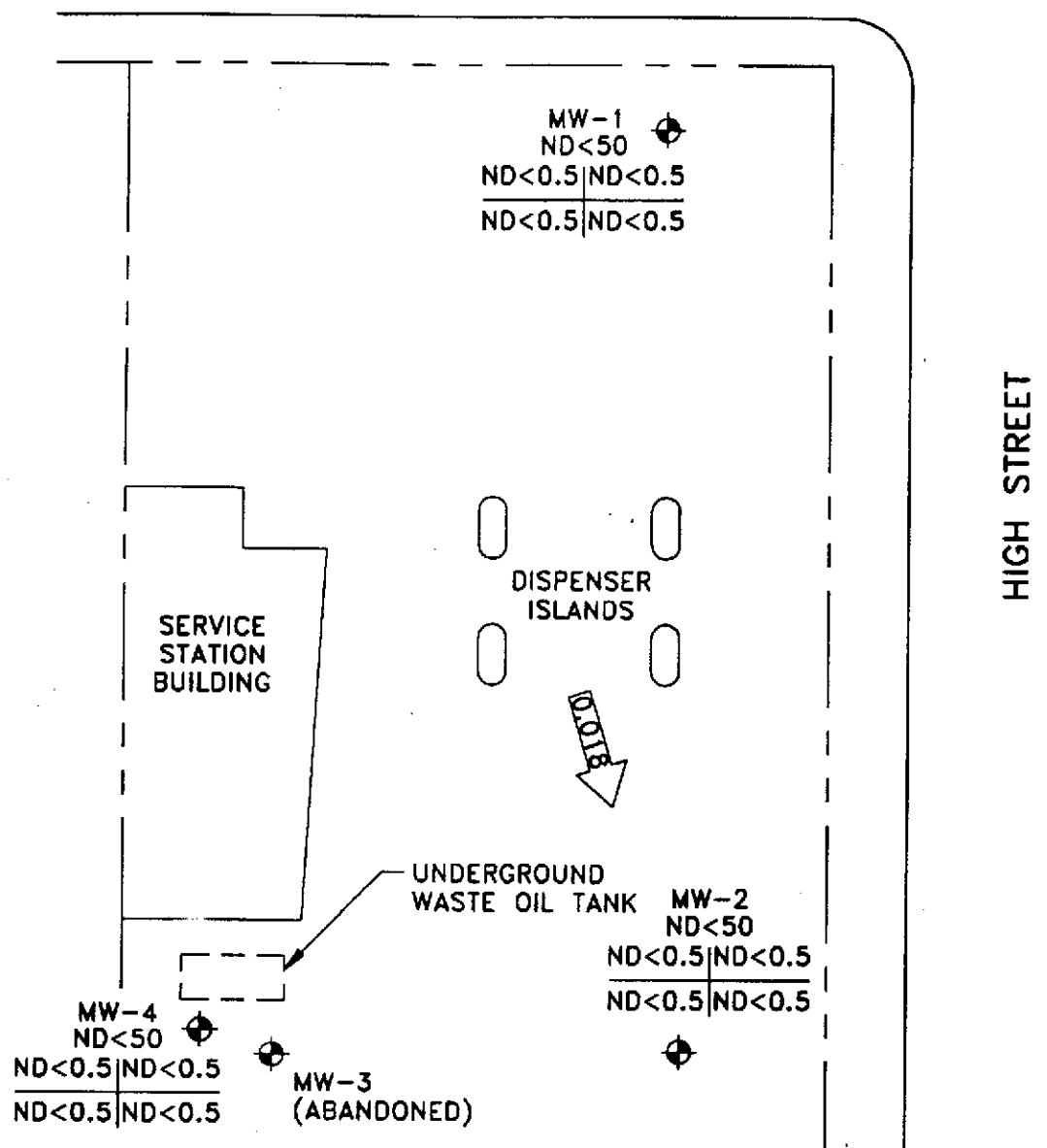
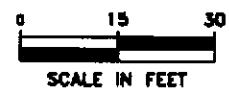
PROJECT NO. 10-020



ALISTO ENGINEERING GROUP  
 CONCORD, CALIFORNIA



PORTER STREET



**LEGEND:**

GROUNDWATER MONITORING WELL

TPH-G	CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION (PPB)
B	
T	
E	
X	

- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X TOTAL XYLENES
- ND NOT DETECTED ABOVE REPORTED DETECTION LIMIT

CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

**FIGURE 3**  
**CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER (SEPTEMBER 30, 1992)**  
 BP OIL SERVICE STATION NO. 11124  
 3315 HIGH STREET  
 OAKLAND, CALIFORNIA  
 PROJECT NO. 10-020

1000017.DWG 11-11-92 JWB 1:30

**APPENDIX A**

**WATER SAMPLING FIELD SURVEY FORMS**

# Field Report / Data Sheet

Groundwater Sampling  Groundwater Monitoring  Well Development  Drill Support  Stockpile Sampling

116 Liberty st Santa Cruz, Ca 95060 (408) 459-0718	Firm: <u>ALISTO</u> Project Number: <u>10-020</u>	Date: <u>9/30/92</u> Field Technician: <u>DAN BIRCH</u>	Station #: <u>BP11124</u> Address: <u>3315 High St. Oakland</u>	Day: M Tu <b>(W)</b> Th F Weather: <u>Overcast</u> Milage: _____ mi
----------------------------------------------------------	------------------------------------------------------	------------------------------------------------------------	--------------------------------------------------------------------	---------------------------------------------------------------------------

<b>Equipment List:</b> O _____ ( ) O _____ ( )	<input checked="" type="checkbox"/> Water Guage ( <u>2</u> ) day <input checked="" type="checkbox"/> Parameter Kit ( <u>1</u> ) day <input checked="" type="checkbox"/> Disposable Bailers ( <u>3</u> ) <input type="checkbox"/> Plug(s) ( <u>   </u> ) ( <u>   </u> ) in	<input checked="" type="checkbox"/> Honda Pump ( <u>1</u> ) day <input checked="" type="checkbox"/> Poly Tubing ( <u>88</u> ) ft <input type="checkbox"/> Dolphin Lock(s) ( <u>   </u> ) <input checked="" type="checkbox"/> Nitrile Gloves ( <u>1</u> ) pair	Travel Time: _____ hrs Time at Site: <u>2.25</u> hrs Total Time: _____ hrs
------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------

DT/Order	Well ID	Diam	Lock	Exp Cap	Total Depth (feet)	1st Depth to Water (feet)	2nd Depth to Water (feet)	Depth to Product (feet)	Product Thickness	Comments
1	MW-1	2	OK	OK	31.5'	11.64	11.64			
2	MW-2	2	OK	OK	25.8	11.13	11.13			
3	MW-4	2	OK	OK	30.4'	11.33	11.33			

**Notes:** Arrive @ 11:30, open wells and calibrate Hydruk. Measure DTW, prepare paperwork determining purge volumes. Sample wells as shown on sampling forms. Left site at 1:45. Travel to next site.

# Birch Technical Services

116 Liberty Street  
 Santa Cruz, Ca 95060  
 (408) 459-0718

# GROUND-WATER SAMPLING FORM

Well Number: MW-1

Well Type:  Monitor  Extraction  \_\_\_\_\_

Project Number: 10-020  
 Station Number: BP11127  
 Date: 9/30/92

Sampled by: DAN BIRCH

## WELL PURGING

**PURGE VOLUME** Casing Diameter (inches)  2"  3"  4"  4.5"  6"  \_\_\_\_\_  
 Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469 \_\_\_\_\_

Total Depth of Well (BOW) 31.5 Initial Water Level: 11.64 **PURGE METHOD:**  
 Honda Pump  
 Disposable Poly Tubing (33 ft)  
 Disposable PVC Bailer(s) (\_\_\_\_)  
 Other \_\_\_\_\_

Calculated Purge Volume:  
31.5 - 11.64 = 19.86 x .16 = 3.18 x 3 = 9.5 (gallons)  
 Total Depth    Water Level                      Well Vol. Fac.                      #of vol. to Purge                      Calculated Purge Volume

### Subjective Analysis Prior to Purging

SHEEN  No    Depth of Product \_\_\_\_\_ (ft)    Emulsion  No  
 O Yes  No

### PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112    Time: 1215  
 Solution pH 4.00 4 at 69.2  
 Solution pH 10.00 10 at 69.2  
 Solution pH 7.00 7 at 69.2  
 Water Level Meter#: 10337

### COMMENTS:

### SAMPLING METHOD

PVC Disposable Bailer    Time Sampled 1145  
 Teflon Bailer  
 Other: \_\_\_\_\_

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
2	1133	68.1	7.19	0.71
5	1136	68.9	7.22	0.73
7	1140	69.1	7.25	0.75
10	1143	69.2	7.22	0.79

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<input checked="" type="checkbox"/> TPH-G/BTEX	3	VOA's	HCl
<input checked="" type="checkbox"/> TPH- Diesel	1	Amber Liter	
<input checked="" type="checkbox"/> TOG 5520 BF	1	Amber Liter	H <sub>2</sub> NO <sub>3</sub>

# Birch Technical Services

116 Liberty Street  
 Santa Cruz, Ca 95060  
 (408) 459-0718

# GROUND-WATER SAMPLING FORM

Well Number: MW-2

Project Number: 10-020  
 Station Number: BP11124  
 Date: 9/30/92

Well Type:  Monitor  Extraction   
 Sampled by: Dan Birch

## WELL PURGING

**PURGE VOLUME** Casing Diameter (inches) 2" 03" 04" 04.5" 06" 0  
 Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469

Total Depth of Well (BOW) 25.8 Initial Water Level: 11.13 **PURGE METHOD:**  
 Honda Pump  
 Disposable Poly Tubing (26 ft)  
 Disposable PVC Bailer(s) (    )  
 Other                     

Calculated Purge Volume:  
 $\frac{25.8 - 11.13}{2.3} \times 3 = 14.67 \times 0.16 = 2.3 \times 3 = 7$  (gallons)  
 Total Depth    Water Level                      Well Vol. Fac.                      #of vol. to Purge                      Calculated Purge Volume

### Subjective Analysis Prior to Purging

SHEEN:  Yes  No    Depth of Product \_\_\_\_\_ (ft)    Emulsion:  Yes  No

### COMMENTS:

### PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112    Time: 1215  
 Solution    pH 4.00 4 at 69.2  
 Solution    pH 10.00 10 at 69.2  
 Solution    pH 7.00 7 at 69.2  
 Water Level Meter#: 10337

### SAMPLING METHOD

PVC Disposable Bailer    Time Sampled  
 Teflon Bailer                      (24 hr)  
 Other: \_\_\_\_\_                      1230

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
1	1225	67.1	7.00	0.71
3	1228	67.6	7.04	0.61
5	1230	67.7	6.99	0.61

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<input checked="" type="checkbox"/> TPH-G/BTEX	3	VOA's	HCl
TPH- Diesel		Amber Liter	
<input checked="" type="checkbox"/> TOG 5520 BF	1	Amber Liter	H <sub>2</sub> NO <sub>3</sub>

# Birch Technical Services

116 Liberty Street  
 Santa Cruz, Ca 95060  
 (408) 459-0718

# GROUND-WATER SAMPLING FORM

Well Number: MW-4

Well Type:  Monitor  Extraction  O \_\_\_\_\_

Project Number: 10-020

Station Number: BP1124

Date: 9/30/92

Sampled by: DAN BIRCH

## WELL PURGING

**PURGE VOLUME**

Casing Diameter (inches) X 02" 03" 04" 04.5" 06" 0 \_\_\_\_\_  
 Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469 \_\_\_\_\_

Total Depth of Well (BOW) 30.4

Initial Water Level: 11.33

**PURGE METHOD:**

Total Volume Purged: 10

Time Elapsed: 11

Honda Pump  
 Disposable Poly Tubing (31 ft)  
 Disposable PVC Bailer(s) (\_\_\_\_)  
 Other \_\_\_\_\_

Calculated Purge Volume:

$$\frac{30.4 - 11.33}{2.31} = 19.07 \times 0.16 = 3.1 \times 3 = 9.3 \text{ (gallons)}$$

Total Depth    Water Level                      Well Vol. Fac.                      # of vol. to Purge                      Calculated Purge Volume

### Subjective Analysis Prior to Purging

SHEEN  Yes  No      Depth of Product \_\_\_\_\_ (ft)      Emulsion  Yes  No

### PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112      Time: 1215  
 Solution      pH 4.00 4 at 69.2  
 Solution      pH 10.00 10 at 69.2  
 Solution      pH 7.00 7 at 69.2  
 Water Level Meter #: 10337

COMMENTS:

### SAMPLING METHOD

PVC Disposable Bailer      Time Sampled (24 hr) 1320  
 Teflon Bailer  
 Other: \_\_\_\_\_

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
4	1309	69.1	7.01	0.71
8	1316	68.7	7.10	0.75
10	1320	68.5	7.19	0.79

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<input checked="" type="checkbox"/> TPH-G/BTEX	3	VOA's	HCl
TPH- Diesel		Amber Liter	
<input checked="" type="checkbox"/> TOG 5520 BF	1	Amber Liter	H <sub>2</sub> NO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub>

# Birch Technical Services

116 Liberty Street  
 Santa Cruz, Ca 95060  
 (408) 459-0718

# GROUND-WATER SAMPLING FORM

Project Number: 10-020  
 Station Number: BP11124  
 Date: 9/30/92

Well Number: QC-1  
 Well Type: SAMPLE O Monitor O Extraction X WELL Duplicate of MW-4  
 Sampled by: \_\_\_\_\_

## WELL PURGING

**PURGE VOLUME**

Casing Diameter (inches) X 2" O3" O4" O4.5" O6" O\_\_\_\_  
 Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469 \_\_\_\_\_

Total Depth of Well (BOW) \_\_\_\_\_ Initial Water Level: \_\_\_\_\_ **PURGE METHOD:**  
 O Honda Pump  
 Total Volume Purged: \_\_\_\_\_ Time Elapsed: \_\_\_\_\_ O Disposable Poly Tubing (\_\_\_\_ ft)  
 O Disposable PVC Bailer(s) (\_\_\_\_)  
 O Other \_\_\_\_\_

**Calculated Purge Volume:**

\_\_\_\_\_ = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ (gallons)  
 Total Depth Water Level Well Vol. Fac. #of vol. to Purge Calculated Purge Volume

### Subjective Analysis Prior to Purging

SHEEN Depth of Product Emulsion  
 O Yes O No \_\_\_\_\_ (ft) O Yes O No

### PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 912 Time: \_\_\_\_\_  
 Solution pH 4.00 \_\_\_\_\_ at \_\_\_\_\_ °C  
 Solution pH 10.00 \_\_\_\_\_ at \_\_\_\_\_ °C  
 Solution pH 7.00 \_\_\_\_\_ at \_\_\_\_\_ °C  
 Water Level Meter#: \_\_\_\_\_

**COMMENTS:**

*Duplicate sample from MW-4. Sample was labelled QC-1; 1339. Purging, subjective and parameters from MW-4 apply to this sample.*

### SAMPLING METHOD

OPVC Disposable Bailer Time Sampled (24 hr)  
 OTeflon Bailer \_\_\_\_\_  
 OOther: \_\_\_\_\_ 1339

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<del>X</del> TPH-G/BTEX	3	VOA's	HCl
<del>X</del> TPH-Diesel	3	Amber Liter	
TOG 5520 BF		Amber Liter	H <sub>2</sub> NO <sub>3</sub>

# Birch Technical Services

116 Liberty Street  
 Santa Cruz, Ca 95060  
 (408) 459-0718

# GROUND-WATER SAMPLING FORM

Project Number: 10-020  
 Station Number: BP11124  
 Date: 9/30/92

Well Number: QC-2  
 Well Type: SAMPLE O Monitor O Extraction  TRIP BLANK  
 Sampled by: \_\_\_\_\_

## WELL PURGING

**PURGE VOLUME** Casing Diameter (inches) O 2" O 3" O 4" O 4.5" O 6" O \_\_\_\_  
 Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469 \_\_\_\_\_

Total Depth of Well (BOW) \_\_\_\_\_ Initial Water Level: \_\_\_\_\_ **PURGE METHOD:**  
 Total Volume Purged: \_\_\_\_\_ Time Elapsed: \_\_\_\_\_ O Honda Pump  
 O Disposable Poly Tubing (\_\_\_\_ ft)  
 O Disposable PVC Bailer(s) (\_\_\_\_)  
 O Other \_\_\_\_\_

**Calculated Purge Volume:**  
 \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ (gallons)  
 Total Depth Water Level Well Vol. Fac. #of vol. to Purge Calculated Purge Volume

### Subjective Analysis Prior to Purging

### PARAMETER EQUIPMENT CALIBRATION

SHEEN Depth of Product Emulsion  
 O Yes O No \_\_\_\_\_ (ft) O Yes O No

pH Meter #: \_\_\_\_\_ Time: \_\_\_\_\_  
 Solution pH 4.00 \_\_\_\_\_ at \_\_\_\_\_ °C  
 Solution pH 10.00 \_\_\_\_\_ at \_\_\_\_\_ °C  
 Solution pH 7.00 \_\_\_\_\_ at \_\_\_\_\_ °C  
 Water Level Meter #: \_\_\_\_\_

**COMMENTS:** Trip blank supplied by Anamatrix. Re-labelled QC-2; 1410.

### SAMPLING METHOD

OPVC Disposable Bailer Time Sampled  
 OTeflon Bailer (24 hr)  
 OOther: \_\_\_\_\_ 1410

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<input checked="" type="checkbox"/> TPH-G/BTEX	3	VOA's	HCl
TPH- Diesel		Amber Liter	
TOG 5520 BF		Amber Liter	H <sub>2</sub> NO <sub>3</sub>



**APPENDIX B**

**LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS**

RECEIVED  
OCT 19 1992



MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9210037  
Date Received : 10/02/92  
Project ID : 10-020  
Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9210037- 1	MW-1
9210037- 2	MW-2
9210037- 3	MW-4
9210037- 4	QC-1
9210037- 5	QC-2

This report consists of 19 pages not including the cover letter, and is organized in sections according to the specific Anamatrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anamatrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anamatrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

Sarah Schoen, Ph.D.  
Laboratory Director

10-16-92

Date

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9210037  
Date Received : 10/02/92  
Project ID : 10-020  
Purchase Order: N/A  
Department : GC  
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9210037- 1	MW-1	WATER	09/30/92	TPHg/BTEX
9210037- 2	MW-2	WATER	09/30/92	TPHg/BTEX
9210037- 3	MW-4	WATER	09/30/92	TPHg/BTEX
9210037- 4	QC-1	WATER	09/30/92	TPHg/BTEX
9210037- 5	QC-2	WATER	09/30/92	TPHg/BTEX

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9210037  
Date Received : 10/02/92  
Project ID : 10-020  
Purchase Order: N/A  
Department : GC  
Sub-Department: TPH

QA/QC SUMMARY :

- The BTEX matrix spike duplicate recoveries were outside Anamatrix control limits due to an error in adding the spike solution.

Lucien Siles 10/16/92  
Department Supervisor Date

Reggie Davison 10/16/92  
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9210037  
Matrix : WATER  
Date Sampled : 09/30/92

Project Number : 10-020  
Date Released : 10/15/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-1	Sample I.D.# MW-2	Sample I.D.# MW-4	Sample I.D.# QC-1	Sample I.D.# QC-2
Benzene	0.5	ND	ND	ND	ND	ND
Toluene	0.5	ND	ND	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND	ND	ND
% Surrogate Recovery		100%	99%	103%	98%	96%
Instrument I.D.		HP21	HP21	HP21	HP21	HP21
Date Analyzed		10/07/92	10/07/92	10/07/92	10/07/92	10/07/92
RLMF		1	1	1	1	1

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.

RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Reggie Davison 10/15/92  
Analyst Date

Luma Shor 10/15/92  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9210037  
Matrix : WATER  
Date Sampled : N/A

Project Number : 10-020  
Date Released : 10/15/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# BO0703E3 BLANK
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
TPH as Gasoline	50	ND
% Surrogate Recovery		86%
Instrument I.D.		HP21
Date Analyzed		10/07/92
RLMF		1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Reggie Dawson 10/15/92  
Analyst Date

Luise Shar 10/15/92  
Supervisor Date

TOTAL VOLATILE HYDROCARBON MATRIX SPIKE REPORT  
 EPA METHOD 5030 WITH GC/FID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 10-020 MW-4  
 Matrix : WATER  
 Date Sampled : 09/30/92  
 Date Analyzed : 10/07/92

Anamatrix I.D. : 9210037-03  
 Analyst : RV  
 Supervisor : IS  
 Date Released : 10/15/92  
 Instrument I.D.: HP21

COMPOUND	SPIKE AMT (ug/L)	SAMPLE CONC (ug/L)	REC MS	%REC MS	REC MD (ug/L)	%REC MD	RPD	%REC LIMITS
BENZENE	10.0	0.0	8.8	88%	4.3	43%	-69%	49-159
TOLUENE	10.0	0.0	9.7	97%	4.6	46%	-71%	53-156
ETHYLBENZENE	10.0	0.0	9.9	99%	4.8	48%	-69%	54-151
TOTAL XYLENES	10.0	0.0	10.3	103%	5.2	52%	-66%	56-157
p-BFB				92%		71%		53-147

\* Quality control established by Anamatrix, Inc.

BTEX LABORATORY CONTROL SAMPLE REPORT  
 EPA METHOD 5030 WITH GC/PID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anamatrix I.D.:	LCSW1007
Matrix	: WATER	Analyst	: <i>JS</i>
Date Sampled	: N/A	Supervisor	: <i>JS</i>
Date Analyzed	: 10/07/92	Date Released	: 10/15/92
		Instrument ID	: HP21

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS
<hr style="border-top: 1px dashed black;"/>				
Benzene	10.0	8.7	87%	49-159
Toluene	10.0	9.6	96%	53-156
Ethylbenzene	10.0	9.9	99%	54-151
TOTAL Xylenes	10.0	10.3	103%	56-157
P-BFB			89%	53-147

\* Limits established by Anamatrix, Inc.



REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9210037  
Date Received : 10/02/92  
Project ID : 10-020  
Purchase Order: N/A  
Department : PREP  
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9210037- 1	MW-1	WATER	09/30/92	5520BF
9210037- 2	MW-2	WATER	09/30/92	5520BF
9210037- 3	MW-4	WATER	09/30/92	5520BF

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9210037  
Date Received : 10/02/92  
Project ID : 10-020  
Purchase Order: N/A  
Department : PREP  
Sub-Department: PREP

QA/QC SUMMARY :

- No QA/QC problems encountered for samples.

Carl C. Bault      10-15-92  
Department Supervisor      Date

PK Patel      10-15-92  
Chemist      Date

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE  
 ANAMETRIX, INC. (408) 432-8192

Project # : 10-020  
 Matrix : WATER  
 Date sampled : 09/30/92  
 Date ext. TOG : 10/08/92  
 Date anl. TOG : 10/08/92

Anamatrix I.D. : 9210037  
 Analyst : APP  
 Supervisor : *CEB*  
 Date released : 10/15/92

Workorder #	Sample I.D.	Reporting Limit (mg/L)	Amount Found (mg/L)
9210037-01	MW-1	5	ND
9210037-02	MW-2	5	ND
9210037-03	MW-4	5	5.2
GWBL100892	METHOD BLANK	5	ND

ND - Not detected at or above the practical quantitation limit for the method.  
 TOG - Total Oil & Grease is determined by Standard Method 5520BF.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

TOTAL OIL AND GREASE LAB CONTROL SAMPLE REPORT  
 STANDARD METHOD 5520BF  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE	Anametrix I.D. : LCSW1008
Matrix : WATER	Analyst : <i>DR</i>
Date sampled : N/A	Supervisor : <i>CS</i>
Date extracted : 10/08/92	Date Released : 10/15/92
Date analyzed : 10/08/92	

COMPOUND	SPIKE AMT. (mg/L)	LCS (mg/L)	%REC LCS	LCS (mg/L)	%REC LCS	%RPD	%REC LIMITS
Motor Oil	50	32	64%	33	66%	3%	54-106%

\* Quality control limits established by Anametrix, Inc.

