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, Suite 200
Oakland, CA 94621

RE: BP OIL FACILITY #11117
7210 Bancroft Avenue
Oakland, CA 94621

Dear Mr. Owcarz:

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

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

Respectfully,

Scott T. Hooton
Environmental Resources Management

STH:jc ERM11117

cc: Mr. Eddy So, 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

QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11117
7210 Bancroft Avenue
Oakland, California

Project No. 10-018

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 94520

(510) 798-4070

November 23, 1992

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal

QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11117
7210 Bancroft Avenue
Oakland, California

Project No. 10-018

November 23, 1992

INTRODUCTION

This report presents the results and findings of the September 15, 1992 quarterly groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11117, 7210 Bancroft Avenue, 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 within 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. Groundwater 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 15, 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 0.008 foot/foot in a general north-northwest direction across the site.
- Dissolved-phase total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, and total xylenes (BTEX) were detected in the groundwater samples from Monitoring Wells MW-1 through MW-4 at concentrations of up to 75,000 and 7,600 parts per billion (ppb) TPH-G and benzene.
- Concentrations of up to 3,200 ppb of dissolved-phase total petroleum hydrocarbons as diesel (TPH-D) detected in the samples from MW-1, MW-2, and MW-4 are primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING AND SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11117
7210 BANCROFT AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-018

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	Organic Lead (ppb)	LAB
MW-1	01/05/92	49.81	33.16	16.65	57000	50000	2400	1000	1100	3100	ND	---
MW-1	01/10/92	49.81	33.16	16.65	---	---	---	---	---	---	---	---
MW-1	06/05/92	49.81	29.01	20.80	31000	---	2800	2100	800	2300	---	---
MW-1	07/24/92	49.80	29.45	20.35	---	---	---	---	---	---	---	---
MW-1	07/27/92	49.80	29.45	20.35	---	---	---	---	---	---	---	---
MW-1	09/15/92	49.80	30.53	19.27	40000	1200 (c)	3400	3000	1300	3400	---	ANA
MW-1	09/15/92	49.80	30.53	19.27	36000	---	3800	3400	1400	3800	---	ANA
QC-1 (d)												
MW-2	01/05/92	51.07	Dry	Dry	---	---	---	---	---	---	---	---
MW-2	01/10/92	51.06	Dry	Dry	---	---	---	---	---	---	---	---
MW-2	06/05/92	51.06	30.05	21.01	11000	---	2000	180	490	1900	---	---
MW-2	07/24/92	51.07	30.72	20.35	---	---	---	---	---	---	---	---
MW-2	07/27/92	51.07	30.52	20.55	---	---	---	---	---	---	---	---
MW-2	09/15/92	51.07	31.56	19.51	75000	3200 (c)	2000	6500	2300	13000	---	ANA
MW-3	01/05/92	49.95	33.69	16.26	7400	4000	790	23	210	40	ND	---
MW-3	01/10/92	50.00	33.74	16.26	---	---	---	---	---	---	---	---
MW-3	06/05/92	50.00	29.65	20.35	2000	---	130	5.3	93	20	---	---
MW-3	07/24/92	49.95	30.14	19.81	---	---	---	---	---	---	---	---
MW-3	07/27/92	49.95	30.14	19.81	---	---	---	---	---	---	---	---
MW-3	09/15/92	49.95	31.07	18.88	450	ND<50	55	3.1	34	7.1	---	ANA
MW-4	07/24/92	50.76	30.02	20.74	42000	---	3200	3600	1400	4100	---	---
MW-4	07/27/92	50.76	30.02	20.74	---	---	---	---	---	---	---	---
MW-4	09/15/92	50.76	31.14	19.62	55000	1700 (c)	7600	13000	2800	9500	---	ANA

23-Nov-92

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING AND SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11117
7210 BANCROFT AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-018

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	Organic Lead (ppb)	LAB
MW-6	07/24/92	50.32	30.63	19.69	ND	---	1.6	ND	ND	ND	---	---
MW-6	07/27/92	50.32	30.63	19.69	---	---	---	---	---	---	---	---
MW-6	09/15/92	50.32	31.52	18.80	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ANA
QC-2 (e)	09/15/92	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ANA

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
ND	Not detected above reported detection limits
---	Not analyzed/available
ANA	Anametrix, Inc.
SUP	Superior Analytical Laboratory

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) The concentrations reported as diesel from MW-1, MW-2, and MW-4 are primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.

(d) Blind duplicate of MW-1.

(e) Travel blank.

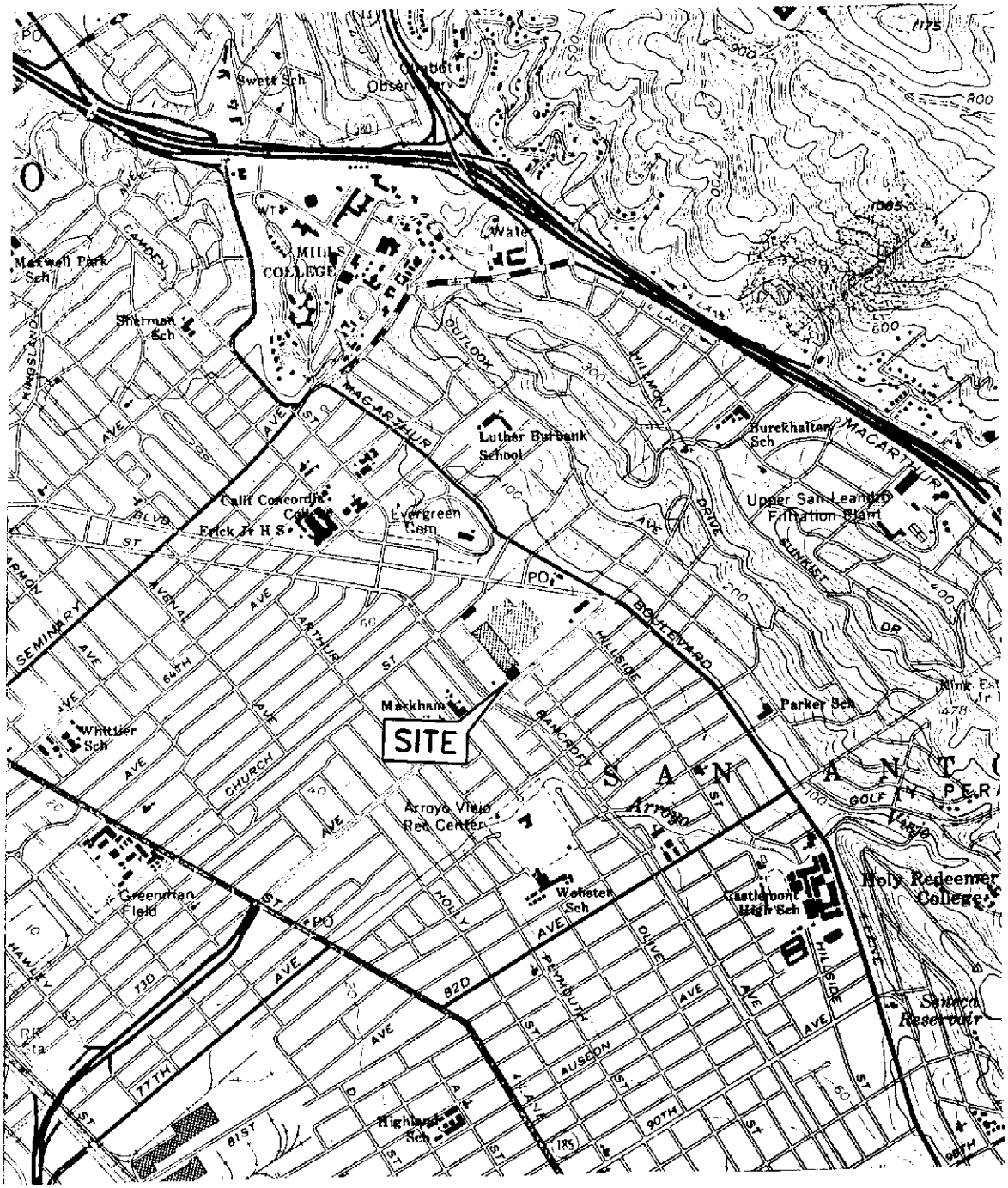


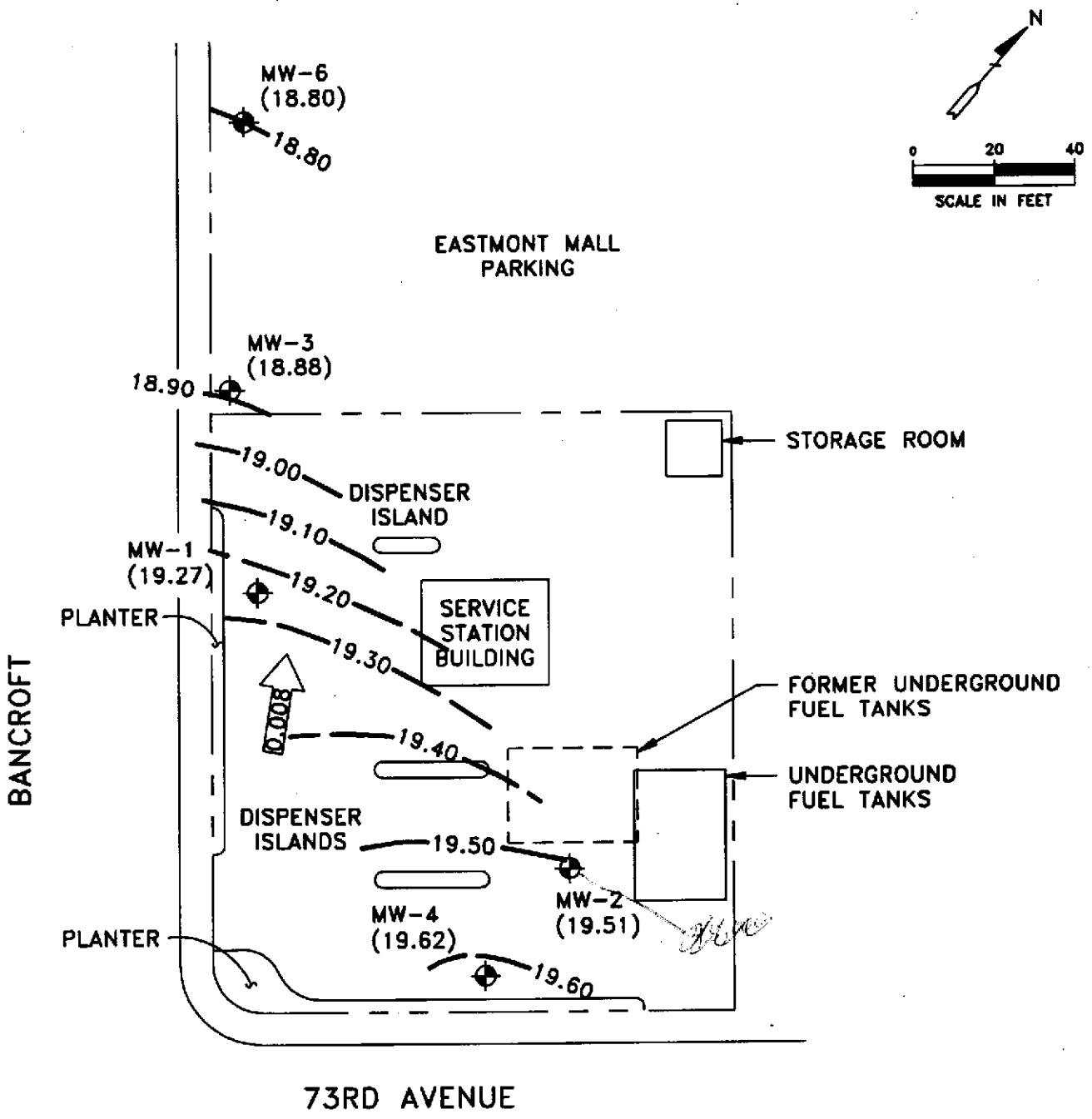
FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11117
7210 BANCROFT AVENUE
OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-018

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA



LEGEND:

- ⊕ GROUNDWATER MONITORING WELL
- (18.80) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 18.90 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL – 0.10 FOOT)
- 0.008 CALCULATED GROUNDWATER GRADIENT DIRECTION

FIGURE 2

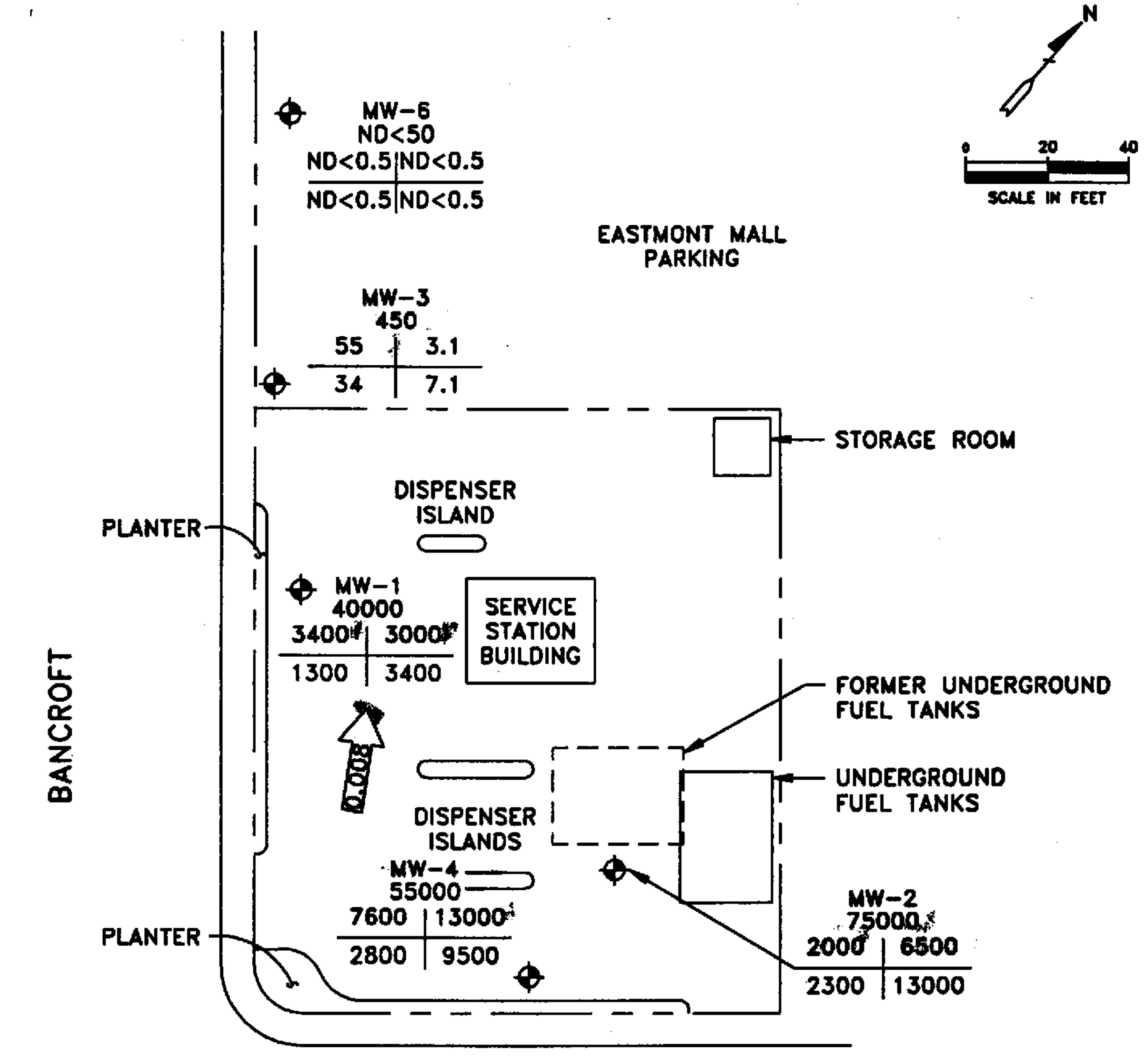
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP (SEPTEMBER 15, 1992)

BP OIL SERVICE STATION NO. 11117
7210 BANCROFT AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. 10-018

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10018018.DWG 11-11-92 JMB 1=400



LEGEND:

⌖	GROUNDWATER MONITORING WELL
TPH-G B | T E | X	CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION (PPB)
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
0.008 ⇨	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER (SEPTEMBER 9, 1992)

BP OIL SERVICE STATION NO. 11117
7210 BANCROFT AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. 10-018

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

Birch Technical Services

Field Report / Data Sheet

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

X Groundwater Sampling O Groundwater Monitoring O Well Development O Drill Support O Stockpile Sampling

Firm: ALISTO	Date: 9/14/92	Station #: BP11117	Day: M (Tu) W Th F
Project Number: 10-018	Field Technician: DAN BIRCH	Address: 7210 Bancroft Ave Oakland	Weather: clear, cool
			Milage: 75 mi

Equipment List:

- X Water Guage (1/2) day
- X Parameter Kit (1) day
- X Disposable Bailers (5)
- O Plug(s) ( ) ( ) in
- O Honda Pump ( ) day
- O Poly Tubing ( ) ft
- X Dolphin Lock(s) ( )
- X Nitrile Gloves (1 pair)
- O ( )
- O ( )

Travel Time: 1.75 hrs
Time at Site: 4.5 hrs
Total Time: 6.25 hrs

DTW 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
4	MW-1	2	ok	ok	39.52	30.53	30.53			
3	MW-2	2	ok	ok	39.56	31.56	31.56			Replaced lock.
2	MW-3	2	ok	ok	43.36	31.07	31.07			Traffic box full of water.
5	MW-4	2	ok	ok	40.0'	31.14	31.14			
1	MW-6	2	ok	ok	400'	31.52	31.52			

Notes: Travel 8:45 to 10:00 stopping at lab for containers and trip blanks. Open wells, allow some time while I calibrate Hydak then measure DTW cleaning DTW probe between wells w/ TSP-DT solutions. Low purge volumes were removed using new disposable bailers. Disposable bailers and knots of string down wells were thrown away. Collected QC-1 (well duplicate from MW-1) at 1410. Leave site at 2:35 travel until 3:00.

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

Well Number: MW-1

Project Number: 10-018
Station Number: BP11117
Date: 9/15/92

Well Type: XMonitor OExtraction O_____

Sampled by: DAN Birch

WELL PURGING

PURGE VOLUME

Casing Diameter (inches)	X2"	O3"	O4"	O4.5"	O6"	O____
Volume Factors:	0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 39.52 Initial Water Level: 30.53

Total Volume Purged: 5 Time Elapsed: 18

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
XODisposable PVC Bailer(s)(1)
OOther_____

Calculated Purge Volume:

39.52 (Total Depth) - 30.53 (Water Level) = 8.99 x .16 (Well Vol. Fac.) = 1.4 x 3 (#of vol. to Purge) = 4.3 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes XNo | Depth of Product _____(ft) | Emulsion OYes XNo

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 4.00 4 at 68.8 °C
Solution pH 10.00 10 at 68.9 °C
Solution pH 7.00 7 at 68.8 °C
Water Level Meter#: 10337

COMMENTS: QC-1 Sample duplicate was collected from this well. QC-2 (Trip blank from lab) was labelled with a "QC-2-1415" Sample designation.

SAMPLING METHOD

XOPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr)
1402
1410

QC-1

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
1	1335	68.9	6.99	3.01
3	1345	68.2	6.97	2.97
5	1353	68.3	6.95	2.95
	1			

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
X	TPH- Diesel	1	Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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

GROUND-WATER SAMPLING FORM

Well Number: MW-2

Project Number: 10-018
Station Number: BP11117
Date: 9/15/92

Well Type: ⊗Monitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

⊗2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 39.56 Initial Water Level: 31.56

Total Volume Purged: 5 Time Elapsed: 28

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
⊗Disposable PVC Bailer(s)(1)
OOther_____

Calculated Purge Volume:

39.56 (Total Depth) - 31.56 (Water Level) = 8.00 x .16 (Well Vol. Fac.) = 1.28 x 3 (#of vol. to Purge) = 3.8 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes ⊗No | Depth of Product _____(ft) | Emulsion OYes ⊗No

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 4.00 4 at 68.8 °C
Solution pH 10.00 10 at 68.8 °C
Solution pH 7.00 7 at 68.6 °C
Water Level Meter#: 10337

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1235

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
1	1201	69.3	6.71	2.01
2	1207	69.1	6.69	2.79
3	1214	68.3	6.68	2.91
5	1229	68.5	6.69	2.91

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
X	TPH- Diesel	1	Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

Well Number: MW-3

Project Number: 10-018
Station Number: BP11117
Date: 9/15/92

Well Type: ☒Monitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) ☒2" O3" O4" O4.5" O6" O____
Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469 _____

Total Depth of Well (BOW) 43.36
Initial Water Level: 31.07
Total Volume Purged: 6
Time Elapsed: 20

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
☒Disposable PVC Bailer(s)(1)
OOther_____

Calculated Purge Volume:

43.36 (Total Depth) - 31.07 (Water Level) = 12.29 x .16 (Well Vol. Fac.) = 1.9 x 3 (#of vol. to Purge) = 5.9 (gallons) (Calculated Purge Volume)

Subjective Analysis Prior to Purging

SHEEN OYes ☒No
Depth of Product _____(ft)
Emulsion OYes ☒No

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 4.00 4 at 68.8 °C
Solution pH 10.00 10 at 68.8 °C
Solution pH 7.00 7 at 68.8 °C
Water Level Meter#: 10337

SAMPLING METHOD

☒PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1145

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
1	1120	69.9	6.80	2.09
3	1131	68.9	6.77	2.03
6	1140	68.7	6.75	2.01

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
X	TPH- Diesel	1	Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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

GROUND-WATER SAMPLING FORM

Well Number: MW-4

Project Number: 10-018
Station Number: BP1117
Date: 9/15/92

Well Type: ØMonitor OExtraction O_____

Sampled by: Dan Birch

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

Ø2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 40.0'
Initial Water Level: 31.14
Total Volume Purged: 5
Time Elapsed: 19

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
XDisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

40 (Total Depth) - 31.14 (Water Level) = 8.86 x .16 (Well Vol. Fac.) = 1.4 x 3 (#of vol. to Purge) = 4.3 (gallons) (Calculated Purge Volume)

Subjective Analysis Prior to Purging

SHEEN OYes XNo
Depth of Product _____(ft)
Emulsion OYes XNo

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 4.00 4 at 68.8 °C
Solution pH 10.00 10 at 68.8 °C
Solution pH 7.00 7 at 68.8 °C
Water Level Meter#: 10937

SAMPLING METHOD

XPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1315

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
1	1250	69.1	7.01	2.09
3	1257	69.7	6.99	2.17
4	1305	69.4	6.96	2.25
5	1309	69.4	6.94	2.29

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX		VOA's	HCl
X	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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

GROUND-WATER SAMPLING FORM

Project Number: 10-018
Station Number: BP11117
Date: 9/15/92

Well Number: MW-6
Well Type: ⊗Monitor OExtraction O_____
Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches)	⊗2"	O3"	O4"	O4.5"	O6"	O____
Volume Factors:	0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 40.0' Initial Water Level: 31.52

Total Volume Purged: 5 Time Elapsed: 16

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
⊗Disposable PVC Bailer(s)(1)
OOther_____

Calculated Purge Volume:

40.0 (Total Depth) - 31.52 (Water Level) = 8.48 x .16 (Well Vol. Fac.) = 1.35 x 3 (#of vol. to Purge) = 4.1 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN ⊗No OYes | Depth of Product _____(ft) | Emulsion ⊗No OYes

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 10:30
Solution pH 4.00 4 at 68.8 °C
Solution pH 10.00 10 at 68.8 °C
Solution pH 7.00 7 at 68.8 °C
Water Level Meter#: 10337

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr) 1105

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
1	1045	69.8	6.91	2.56
3	1051	69.7	6.87	2.59
5	1059	68.9	6.88	2.57

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
X	TPH- Diesel	1	Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

~~Well~~ Number: QC-1

Project Number: 10-018
Station Number: BP11117
Date: 9/15/92

~~Well~~ SAMPLE Type: OMonitor OExtraction X Duplicate

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

X 2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) _____ Initial Water Level:_____

Total Volume Purged:_____ Time Elapsed:_____

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
XDisposable PVC Bailer(s)(____)
OOther_____

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 OYes XNo | Depth of Product _____(ft) | Emulsion OYes XNo

COMMENTS: QC-1 is a duplicate sample of MW-1. Purging, parameter and sampling data from MW-1 applies to this sample.

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 4.00 4 at 68.9 °C
Solution pH 10.00 10 at 68.8 °C
Solution pH 7.00 7 at 68.8 °C
Water Level Meter#: 10337

SAMPLING METHOD

XPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1410

WELL SAMPLING PARAMETERS

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

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

Well Number: QC-2

~~SAMPLE~~

Project Number: 10-018
Station Number: BP 11117
Date: 1/15/92

~~Well~~ Type: OMonitor OExtraction ☒ TRIP BLANK

Sampled by: Dan Birch

WELL PURGING

PURGE VOLUME

Casing Diameter (inches)	O 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:_____

Total Volume Purged:_____ Time Elapsed:_____

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
ODisposable PVC Bailer(s)(____)
OOther_____

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 OYes ONo | Depth of Product _____(ft) | Emulsion OYes ONo

PARAMETER EQUIPMENT CALIBRATION

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: QC-2 is a trip blank supplied by Anametrix. The 3 VOA's were re-labelled QC-2 1415 and submitted with other samples for TPHGBTEX.

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr) 1415

WELL SAMPLING PARAMETERS

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

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

REPORT

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

Workorder # : 9209197
Date Received : 09/16/92
Project ID : 10-018
Purchase Order: N/A

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

ANAMETRIX ID	CLIENT SAMPLE ID
9209197- 1	MW-1
9209197- 2	MW-2
9209197- 3	MW-3
9209197- 4	MW-4
9209197- 5	MW-6
9209197- 6	QC-1
9209197- 7	QC-2

This report consists of 8 pages not including the cover letter, and is organized in sections according to the specific Anametrix 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 Anametrix 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.

Anametrix 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 Anametrix.

Sarah Schoen, Ph.D.
Laboratory Director

9-29-92
Date

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

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

Workorder # : 9209197
Date Received : 09/16/92
Project ID : 10-018
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9209197- 1	MW-1	WATER	09/15/92	TPHd
9209197- 2	MW-2	WATER	09/15/92	TPHd
9209197- 3	MW-3	WATER	09/15/92	TPHd
9209197- 4	MW-4	WATER	09/15/92	TPHd
9209197- 5	MW-6	WATER	09/15/92	TPHd
9209197- 1	MW-1	WATER	09/15/92	TPHg/BTEX
9209197- 2	MW-2	WATER	09/15/92	TPHg/BTEX
9209197- 3	MW-3	WATER	09/15/92	TPHg/BTEX
9209197- 4	MW-4	WATER	09/15/92	TPHg/BTEX
9209197- 5	MW-6	WATER	09/15/92	TPHg/BTEX
9209197- 6	QC-1	WATER	09/15/92	TPHg/BTEX
9209197- 7	QC-2	WATER	09/15/92	TPHg/BTEX

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

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

Workorder # : 9209197
Date Received : 09/16/92
Project ID : 10-018
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentrations reported as diesel for samples MW-1, MW-2 and MW-4 are primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.
- The benzene recoveries for the BTEX matrix spike and matrix spike duplicate and ethylbenzene recovery for the matrix spike duplicate on sample MW-3 are outside of Anametrix control limits due to the presence of relatively high concentrations of benzene and ethylbenzene in the sample.

Cheryl Balmer 9/29/92
Department Supervisor Date

Reggie Davison 9/29/92
Chemist Date

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

Anametrix W.O.: 9209197
Matrix : WATER
Date Sampled : 09/15/92

Project Number : 10-018
Date Released : 09/29/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-1 -01	Sample I.D.# MW-2 -02	Sample I.D.# MW-3 -03	Sample I.D.# MW-4 -04	Sample I.D.# MW-6 -05
Benzene	0.5	3400	2000	55	7600	ND
Toluene	0.5	3000	6500	3.1	13000	ND
Ethylbenzene	0.5	1300	2300	34	2800	ND
Total Xylenes	0.5	3400	13000	7.1	9500	ND
TPH as Gasoline	50	40000	75000	450	55000	ND
% Surrogate Recovery		102%	104%	116%	88%	104%
Instrument I.D.		HP12	HP12	HP12	HP12	HP12
Date Analyzed		09/18/92	09/18/92	09/21/92	09/18/92	09/18/92
RLMF		250	250	1	250	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.

Anametrix 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 9/29/92
Analyst Date

Cheryl Balmer 9/29/92
Supervisor Date

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

Anametrix W.O.: 9209197
Matrix : WATER
Date Sampled : 09/15/92

Project Number : 10-018
Date Released : 09/29/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# QC-1 -06	Sample I.D.# QC-2 -07	Sample I.D.# BS2101E3 BLANK	Sample I.D.# BS1801E3 BLANK
Benzene	0.5	3800	ND	ND	ND
Toluene	0.5	3400	ND	ND	ND
Ethylbenzene	0.5	1400	ND	ND	ND
Total Xylenes	0.5	3800	ND	ND	ND
TPH as Gasoline	50	36000	ND	ND	ND
% Surrogate Recovery		69%	104%	106%	99%
Instrument I.D.		HP12	HP12	HP12	HP12
Date Analyzed		09/18/92	09/18/92	09/21/92	09/18/92
RLMF		250	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.

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

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

Peggie Davison 11/10/92
Analyst Date

Cheryl Bulmer 11/10/92
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9209197
Matrix : WATER
Date Sampled : 09/15/92
Date Extracted: 09/23/92

Project Number : 10-018
Date Released : 09/29/92
Instrument I.D.: HP23

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)
9209197-01	MW-1	09/25/92	100	1200
9209197-02	MW-2	09/25/92	250	3200
9209197-03	MW-3	09/24/92	50	ND
9209197-04	MW-4	09/25/92	250	1700
9209197-05	MW-6	09/24/92	50	ND
DWBL092392	METHOD BLANK	09/24/92	50	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.
ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3510.

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

Reggie Davison 9/29/92
Analyst Date

Cheryl Baeman 9/29/92
Supervisor Date

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

Sample I.D. : 10-018 MW-3
Matrix : WATER
Date Sampled : 09/15/92
Date Analyzed : 09/18/92

Anametrix I.D. : 9209197-03
Analyst : RD
Supervisor : CS
Date Released : 09/29/92
Instrument I.D.: HP12

COMPOUND	SPIKE AMT (ug/L)	SAMPLE CONC (ug/L)	REC MS	%REC MS	REC MD (ug/L)	%REC MD	RPD	%REC LIMITS
BENZENE	20.0	55.0	61.0	30%	55.0	0%	-10%	49-159
TOLUENE	20.0	3.1	19.0	80%	18.0	75%	-5%	53-156
ETHYLBENZENE	20.0	34.0	45.0	55%	41.0	35%	-9%	54-151
M+P-XYLENES	13.3	6.3	15.4	68%	14.6	62%	-5%	56-157
O-XYLENE	6.7	0.8	6.1	79%	6.0	78%	-2%	56-157
p-BFB				115%		100%		53-147

* Quality control established by Anametrix, Inc.

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

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: LCSW0918
Matrix	: WATER	Analyst	:
Date Sampled	: N/A	Supervisor	:
Date Analyzed	: 09/18/92	Date Released	: 09/29/92
		Instrument ID	: HP12

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS
Benzene	20.0	19.0	95%	49-159
Toluene	20.0	19.0	95%	53-156
Ethylbenzene	20.0	18.0	90%	54-151
M+P-Xylenes	13.3	12.4	93%	56-157
O-Xylene	6.7	6.8	101%	58-154
P-BFB			96%	53-147

* Limits established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3510 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
Matrix : WATER
Date Sampled : N/A
Date Extracted: 09/23/92
Date Analyzed : 09/24/92

Anametrix I.D. : LCSW0923
Analyst : RD
Supervisor : [illegible]
Date Released : 09/28/92
Instrument I.D.: HP23

COMPOUND	SPIKE AMT (ug/L)	LCS REC (ug/L)	% REC LCS	LCSD REC (ug/L)	% REC LCSD	RPD	% REC LIMITS
DIESEL	1250	1130	90%	1180	94%	4%	63-130

*Quality control established by Anametrix, Inc.

Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

9209147 (10)
11:30
10/32

CHAIN-OF-CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME	Send Report Attention of:	Report Due	Verbal Due
10-018	BP11117	BRADY NAGEL	9,30,92	9,30,92

	Sample Number	Date	Time	Comp	Matrix	Station Location	Number of Cntnrs	Type of Containers	TPH6BTEX	TPH-Diesel	Condition of Samples	Initial
1	MW-1	9/15/92	1402		W	Bancroft	4	VOA's Amber	X	X	ALL SAMPLES COLD PROPER ~~CONTAINER~~ NO BUBBLES	CN
2	MW-2	↓	1235		↓		4	↓	X	X	↓	↓
3	MW-3	↓	1145		↓		4	↓	X	X	↓	↓
4	MW-4	↓	1315		↓		4	↓	X	X	↓	↓
5	MW-6	↓	1105		↓		4	↓	X	X	↓	↓
6	QC-1	↓	1410		↓		3	VOA's	X		↓	↓
7	QC-2	↓	1415		↓		3	↓	X		↓	↓

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	**Date/Time**	**Received by: (Signature)**	**Date/Time**
Relinquished by: (Signature)	**Date/Time**	**Received by Lab:**	**Date/Time**
[signature]	9/16/92 1:17	Calvin Robinson	11:00 9-16-92

Remarks: Please fax copy of C-O-C to BRADY

COMPANY: ADDRESS: ALISTO ENGINEERING

PHONE : 510 798 4070 **FAX :** 510 798 4099