BP OIL

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

February 18, 1993

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. Markus B. Niebanck, Hydro Environmental Tech., Inc., 2363 Mariner Square Drive, Suite 243, Alameda, Ca 94501

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

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

February 10, 1993

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
ALBERTO SANCHEZ SEVILLA
26392
Exp. Date 3/31/95
CIVIL
STATE OF CALIFORNIA

GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-018

February 10, 1993

INTRODUCTION

This report presents the results and findings of the December 15, 1993 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 California 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. 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 transferred from the bailer into laboratory-supplied 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 December 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 0.005 foot per foot in a general north-northwesterly 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 the five monitoring wells at concentrations of up to 36,000 and 6,200 parts per billion (ppb) TPH-G and benzene.

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
QC-1 (d)	09/15/92	---	---	---	36000	---	3800	3400	1400	3800	---	ANA
MW-1	12/15/92	49.80	31.26	18.54	27000	1100 (c)	1700	580	700	1900	---	ANA
QC-1 (d)	12/15/92	---	---	---	22000	---	1500	440	510	1300	---	ANA
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-2	12/15/92	51.07	32.40	18.67	34000	1600 (c)	6200	8900	2000	7900	---	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-3	12/15/92	49.95	31.93	18.02	12000	710 (c)	940	ND<50	310	120	---	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
MW-4	12/15/92	50.76	31.98	18.78	36000	2200 (c)	3700	4700	1200	4000	---	ANA

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
MW-6	12/15/92	50.32	32.42	17.90	58	ND<50	1.3	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
QC-2 (e)	12/15/92	—	—	—	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:

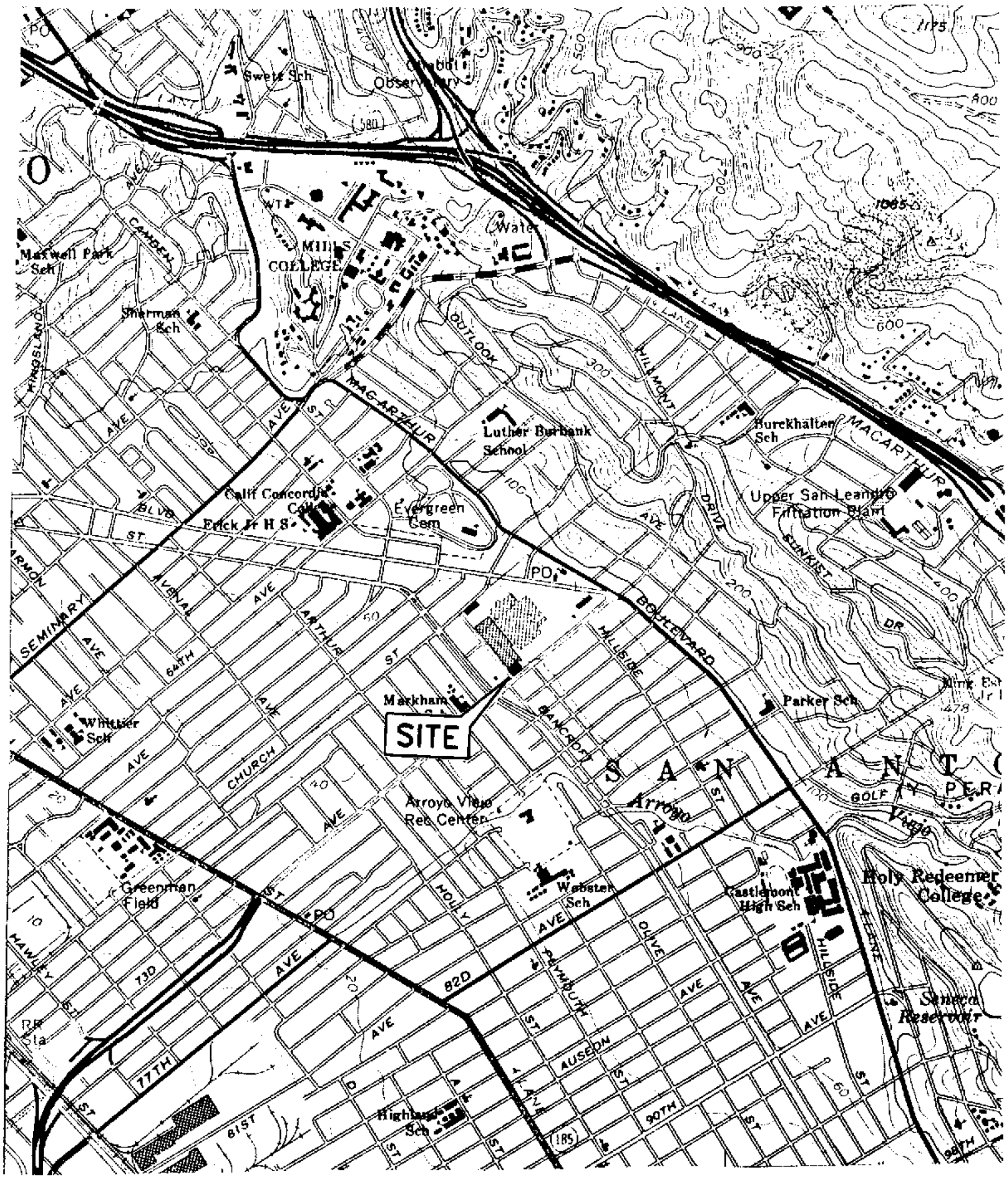
(a) Casing elevations surveyed to the nearest 0.01 foot relative to mean sea level.

(b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.

(c) The concentrations reported as diesel are primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.

(d) Blind duplicate of sample collected from MW-1.

(e) Travel blank.



N

SCALE IN FEET

0 1000 2000

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

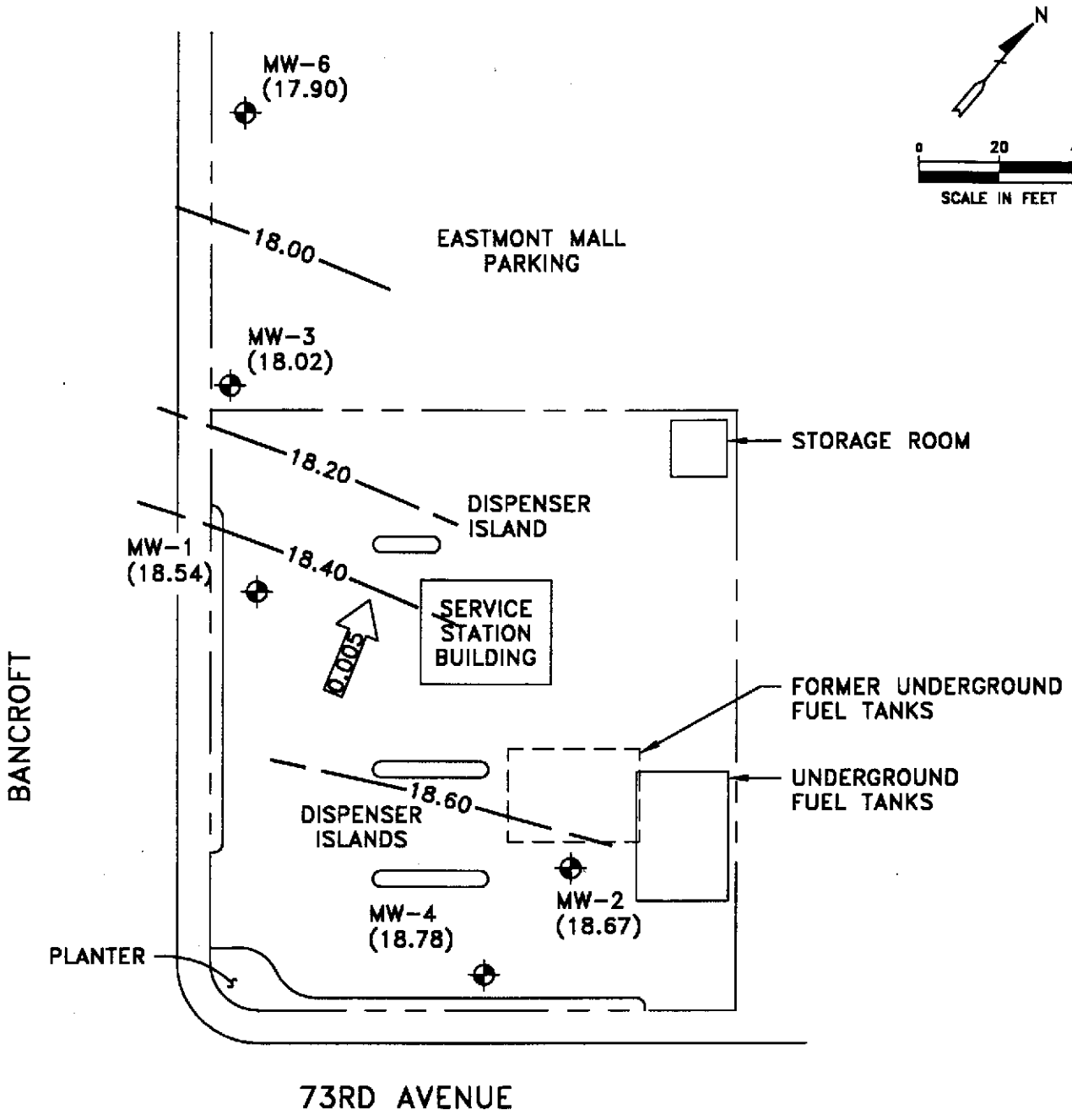
FIGURE 1

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
- (17.90) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 18.20 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL – 0.20 FOOT)
- 0.005 CALCULATED GROUNDWATER GRADIENT DIRECTION

FIGURE 2

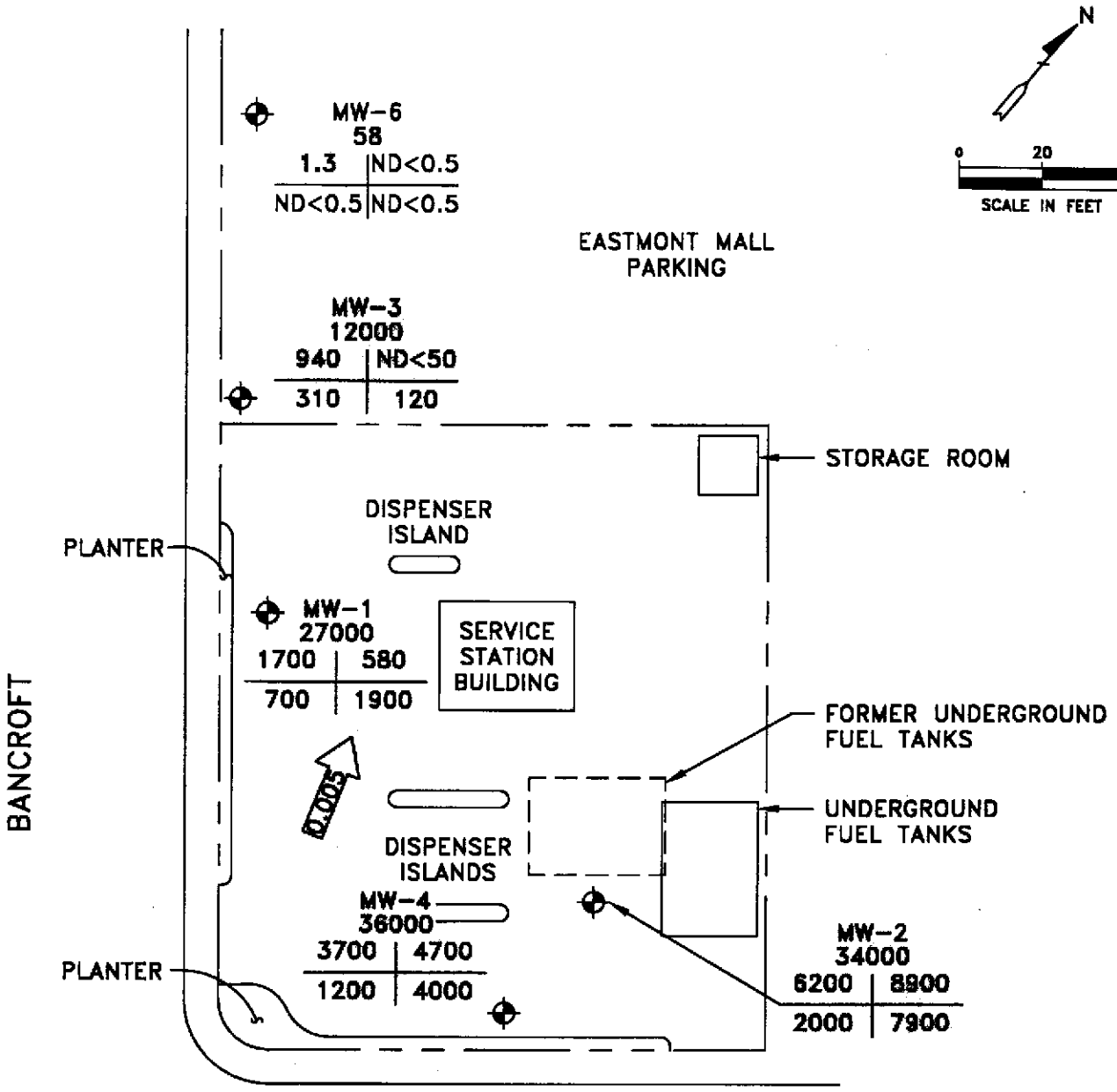
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP (DECEMBER 15, 1992)

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

PROJECT NO. 10-018

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10018D2.DWG 1-18-93 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

0.005 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER (DECEMBER 15, 1992)

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

PROJECT NO. 10-018

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10018G2F.DWG 1-18-93 JMB 1=40

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

Birch Technical Services

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: ALISTO	Date: 12/15/92	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: ____ mi

Equipment List:

- ☒ Water Guage (1) day
- ☒ Parameter Kit (1) day
- ☒ Disposable Bailers (5)
- ○ Plug(s) (___) (___ in)
- ○ Honda Pump (___) day
- ○ Poly Tubing (___ ft)
- ○ Dolphin Lock(s) (___)
- ☒ Nitrile Gloves (1 pair)
- ○ _____ (___)
- ○ _____ (___)

Travel Time: 3 hrs
Time at Site: 4.5 hrs
Total Time: 7.5 hrs

DTWorder	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	31.26	31.26			
3	MW-2	2	ok	ok	39.56	32.40	32.40			
2	MW-3	2	ok	ok	43.36	31.93	31.93			
5	MW-4	2	ok	ok	40.0	31.98	31.98			
1	MW-6	2	ok	ok	40.0	32.12	32.42			

Notes: Arrive @ 11:00 open wells measure DTW after equilization. Sample as described. Left site at 3:30.

Page ___ of ___ Inv#: ___

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Project Number: 10-018
Station Number: BP11117
Date: 12-15-92

Well Number: MW-1
Sample Type: ☒ Groundwater OTrip Blank ODuplicate of _____
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 39.52 Initial Water Level: 31.26

Total Volume Purged: 4 Time Elapsed: 15

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

Calculated Purge Volume:

39.52 (Total Depth) - 31.26 (Water Level) = 8.26 x .16 (Well Vol. Fac.) = 1.3 x 3 (#of vol. to Purge) = 3.9 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes ☒No — Depth to Product: none (ft) — Product Thickness: None (ft)

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 7.00 7 at 57 °F
Solution pH 4.00 4 at 57 °F
Solution pH 10.00 10 at 57 °F
Water Level Meter#: 10337

COMMENTS:
Duplicate sample QC-1 was collected from this well.

SAMPLING METHOD

☒ PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock): 1414

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
1	1359	60.0	6.48	1.12
2	1410	61.1	6.51	1.19
4	1414	61.1	6.52	1.22

	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_2SO_4

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Well Number: MW-2

Project Number: 10-018
Station Number: BP11117
Date: 12-15-92

Sample Type: X Groundwater O Trip Blank O Duplicate of _____

Sampled by: Dan Bird

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 39.56 Initial Water Level: 32.40

Total Volume Purged: 4 Time Elapsed: 11

PURGE METHOD:
O Honda Pump
O Disposable PolyTubing(____ft)
X Disposable PVC Bailer(s)(1)
O Other_____

Calculated Purge Volume:

39.56 (Total Depth) - 32.40 (Water Level) = 7.16 x .16 (Well Vol. Fac.) = 1.14 x 3 (#of vol. to Purge) = 3.4 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN: O Yes X No — Depth to Product: None (ft) — Product Thickness: None (ft)

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 7.00 7 at 57 °F
Solution pH 4.00 4 at 57 °F
Solution pH 10.00 10 at 57 °F
Water Level Meter#: 10337

SAMPLING METHOD

X PVC Disposable Bailer
O Teflon Bailer
O Other:_____

Time Sampled (24 hour clock): 1130

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
1	1118	64.8	6.27	1.25
2	1125	65.0	6.33	1.25
4	1130	65.2	6.35	1.25

	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_2SO_4

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Well Number: MW-3

Project Number: 10-018
Station Number: BP11117
Date: 12-15-92

Sample Type: ☒ Groundwater OTrip Blank ODuplicate of _____

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 43.36 Initial Water Level: 31.93

Total Volume Purged: 6 Time Elapsed: 11

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

Calculated Purge Volume:

43.36 (Total Depth) - 31.93 (Water Level) = 11.43 x .16 (Well Vol. Fac.) = 1.8 x 3 (#of vol. to Purge) = 5.5 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes ☒No Depth to Product None (ft) Product Thickness None (ft)

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 7.00 7 at 57 °F
Solution pH 4.00 4 at 57 °F
Solution pH 10.00 10 at 57 °F
Water Level Meter#: 10337

SAMPLING METHOD

☒PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock): 1329

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
2	1320	63.8	7.30	0.95
4	1325	59.7	6.76	1.17
6	1329	59.3	6.73	1.20

	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_2SO_4

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Project Number: 10-018
Station Number: BP11117
Date: 12-15-92

Well Number: MW-4
Sample Type: X Groundwater O Trip Blank O Duplicate of _____
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 40.0 Initial Water Level: 31.98

Total Volume Purged: 4 Time Elapsed: 12

PURGE METHOD:
O Honda Pump
O Disposable PolyTubing(____ft)
X Disposable PVC Bailer(s)(1)
O Other_____

Calculated Purge Volume:

40.0 (Total Depth) - 31.98 (Water Level) = 8.02 x .16 (Well Vol. Fac.) = 1.2 x 3 (#of vol. to Purge) = 3.6 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN O Yes X No Depth to Product None (ft) Product Thickness None (ft)

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 7.00 7 at 57 °F
Solution pH 4.00 4 at 57 °F
Solution pH 10.00 10 at 57 °F
Water Level Meter#: 10337

SAMPLING METHOD

X PVC Disposable Bailer
O Teflon Bailer
O Other:_____

Time Sampled (24 hour clock): 1200

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
1	1147	67.1	6.70	1.39
2	1154	65.3	6.65	1.25
4	1200	65.7	6.61	1.23

	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_2SO_4

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Well Number: MW-6

Project Number: 10-018
Station Number: BP1117
Date: 12-15-92

Sample Type: X Groundwater OTrip Blank ODuplicate of _____

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 40.0 Initial Water Level: 32.42

Total Volume Purged: 4 Time Elapsed: 10

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

Calculated Purge Volume:

40.0 (Total Depth) - 32.42 (Water Level) = 7.58 x .16 (Well Vol. Fac.) = 1.2 x 3 (#of vol. to Purge) = 3.6 (gallons) (Calculated Purge Volume)

Subjective Analysis Prior to Purging

SHEEN OYes XNo | Depth to Product none (ft) | Product Thickness none (ft)

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1030
Solution pH 7.00 7 at 57 °F
Solution pH 4.00 4 at 57 °F
Solution pH 10.00 10 at 57 °F
Water Level Meter#: 10337

SAMPLING METHOD

XPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock): 1258

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
1	1249	60.1	7.31	1.19
3	1253	58.6	7.44	1.16
4	1258	58.8	7.40	1.18

	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_2SO_4

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Project Number: 10-018
Station Number: BP11117
Date: 12-15-92

Well Number: QC-1
Sample Type: Groundwater OTrip Blank ⊗Duplicate of MW-1
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 _____ Initial Water Level:_____

Total Volume Purged:_____ Time Elapsed:_____

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
⊗Disposable 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 to Product _____(ft)
Product Thickness _____ (ft)

PARAMETER EQUIPMENT CALIBRATION

pH Meter #:_____ Time:_____
Solution pH 7.00 _____at _____°F
Solution pH 4.00_____at _____°F
Solution pH 10.00 _____ at _____°F
Water Level Meter#:_____

COMMENTS: Duplicate of MW-1

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock) 1420

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	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_2SO_4

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Project Number: 10-048
Station Number: BP11117
Date: 12-15-92

Well Number: DC-2

Sample Type: O Groundwater X Trip Blank ODuplicate of _____

Sampled by: Dan Birch

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) Volume Factors:

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

Total Depth of Well _____ 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 to Product _____(ft)
Product Thickness _____ (ft)

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #:_____ Time:_____
Solution pH 7.00 _____at _____°F
Solution pH 4.00_____at _____°F
Solution pH 10.00 _____ at _____°F
Water Level Meter#:_____

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock)

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)	Analysis Required	No. of	Container Type	Preservatives
					EPA 601		VOA's	
					TPH-G/BTEX		VOA's	HCl
					TPH- Diesel		Amber Liter	
					TOG 5520 BF		Amber Liter	H_2SO_4

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

ANAMETRIX INC
Environmental & Analytical Chemistry

Part of INCHCAPE ENVIRONMENTAL

REPORT

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

Workorder # : 9212243
Date Received : 12/15/92
Project ID : 10-018
Purchase Order: N/A

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

ANAMETRIX ID	CLIENT SAMPLE ID
9212243- 1	MW-1
9212243- 2	MW-2
9212243- 3	MW-3
9212243- 4	MW-4
9212243- 5	MW-6
9212243- 6	QC-1
9212243- 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

12-30-92
Date

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

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

Workorder # : 9212243
Date Received : 12/15/92
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
9212243- 1	MW-1	WATER	12/15/92	TPHd
9212243- 2	MW-2	WATER	12/15/92	TPHd
9212243- 3	MW-3	WATER	12/15/92	TPHd
9212243- 4	MW-4	WATER	12/15/92	TPHd
9212243- 5	MW-6	WATER	12/15/92	TPHd
9212243- 1	MW-1	WATER	12/15/92	TPHg/BTEX
9212243- 2	MW-2	WATER	12/15/92	TPHg/BTEX
9212243- 3	MW-3	WATER	12/15/92	TPHg/BTEX
9212243- 4	MW-4	WATER	12/15/92	TPHg/BTEX
9212243- 5	MW-6	WATER	12/15/92	TPHg/BTEX
9212243- 6	QC-1	WATER	12/15/92	TPHg/BTEX
9212243- 7	QC-2	WATER	12/15/92	TPHg/BTEX

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

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

Workorder # : 9212243
Date Received : 12/15/92
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, MW-3 and MW-4 are primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.

Cheryl Balmer 12/30/92
Department Supervisor Date

Luca Shor 12/30/92
Chemist Date

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

Anametrix W.O.: 9212243
Matrix : WATER
Date Sampled : 12/15/92

Project Number : 10-018
Date Released : 12/30/92

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	1700	6200	940	3700	1.3
Toluene	0.5	580	8900	ND	4700	ND
Ethylbenzene	0.5	700	2000	310	1200	ND
Total Xylenes	0.5	1900	7900	120	4000	ND
TPH as Gasoline	50	27000	34000	12000	36000	58
% Surrogate Recovery		103%	73%	105%	101%	98%
Instrument I.D.		HP4	HP4	HP4	HP4	HP4
Date Analyzed		12/18/92	12/18/92	12/18/92	12/18/92	12/17/92
RLMF		250	250	100	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 12/30/92
Analyst Date

Cheryl Bateman 12/30/92
Supervisor Date

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

Anametrix W.O.: 9212243
Matrix : WATER
Date Sampled : 12/15/92

Project Number : 10-018
Date Released : 12/30/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# QC-1 -06	Sample I.D.# QC-2 -07	Sample I.D.# BD1704E3 BLANK	Sample I.D.# BD1802E3 BLANK
Benzene	0.5	1500	ND	ND	ND
Toluene	0.5	440	ND	ND	ND
Ethylbenzene	0.5	510	ND	ND	ND
Total Xylenes	0.5	1300	ND	ND	ND
TPH as Gasoline	50	22000	ND	ND	ND
% Surrogate Recovery		105%	105%	96%	115%
Instrument I.D.		HP4	HP4	HP4	HP4
Date Analyzed		12/18/92	12/17/92	12/17/92	12/18/92
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.

Reggie Davison 12/30/92
Analyst Date

Cheryl Berliner 12/30/92
Supervisor Date

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

Anametrix W.O.: 9212243
Matrix : WATER
Date Sampled : 12/15/92
Date Extracted: 12/17/92

Project Number : 10-018
Date Released : 12/30/92
Instrument I.D.: HP23

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)
9212243-01	MW-1	12/18/92	250	1100
9212243-02	MW-2	12/18/92	250	1600
9212243-03	MW-3	12/17/92	50	710
9212243-04	MW-4	12/18/92	500	2200
9212243-05	MW-6	12/17/92	50	ND
DWBL121792	METHOD BLANK	12/17/92	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 12/30/92
Analyst Date

Cheryl Bateman 12/30/92
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 : 12/15/92
Date Analyzed : 12/18/92

Anametrix I.D. : 12243-03
Analyst : RP
Supervisor : CB
Date Released : 12/30/92
Instrument I.D.: HP4

COMPOUND	SPIKE AMT (ug/L)	SAMPLE CONC (ug/L)	REC MS (ug/L)	%REC MS	REC MD (ug/L)	%REC MD	RPD	%REC LIMITS
BENZENE	2000	940	3280	117%	2990	102%	-9%	49-159
TOLUENE	2000	0	2050	102%	1980	99%	-3%	53-156
ETHYLBENZENE	2000	310	2530	111%	2370	103%	-7%	54-151
TOTAL XYLENES	2000	120	2290	109%	2060	97%	-11%	56-157
p-BFB				97%		89%		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.	: MD1801E3
Matrix	: WATER	Analyst	: EV
Date Sampled	: N/A	Supervisor	: CB
Date Analyzed	: 12/18/92	Date Released	: 12/30/92
		Instrument ID	: HP4

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS
Benzene	20.0	18.0	90%	49-159
Toluene	20.0	18.5	93%	53-156
Ethylbenzene	20.0	19.0	95%	54-151
TOTAL Xylenes	20.0	19.0	95%	56-157
P-BFB			99%	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: 12/17/92
Date Analyzed : 12/18/92

Anametrix I.D. : LCSW1217
Analyst : RD
Supervisor :
Date Released : 12/30/92
Instrument I.D.: HP9

COMPOUND	SPIKE AMT (ug/L)	LCS REC (ug/L)	% REC LCS	LCSD REC (ug/L)	% REC LCSD	RPD	% REC LIMITS
DIESEL	1250	880	70%	920	74%	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

9212243 10/5

CHAIN-OF-CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
10-018	BP/1117

Send Report Attention of:	Report Due	Verbal Due
BRADY NAGLE	12/30/92	/ /

	Sample Number	Date	Time	Comp	Matrix	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: TPH GAS/BTEX	Type of Analysis: TPH DIESEL	Condition of Samples	Initial
1	MW-1	12/15/92	1414		W	Bancroft	3 1	VOAS AMBER	X	X		
2	MW-2	↓	1130		↓	↓	↓	↓	X	X		
3	MW-3		1329						X	X		
4	MW-4		1200						X	X		
5	MW-6		1258				↓	↓	X	X		
6	QC-1		1420				3	VOAS	X			
7	QC-2	↓	1430		↓	↓	3 ↓	VOAS	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
Daniel J Bee	12/15/92 1535	Michele D Aguilar	12-15-92 1535

Remarks:

COMPANY: ALISTO ENGINEERING GROUP
ADDRESS:
PHONE : 510 798 4070 FAX :