BP OIL

BP Oil Company
Environmental Resources Management
Building 13, Suite N
295 SW 41st Street
Renton, Washington 98055-4931
(206) 251-0667

September 26, 1994

Mr. Richard Hiett
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland CA 94612

RE: BP OIL FACILITY #11102
100 MacArthur Blvd
Oakland CA

Dear Mr. Hiett:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED AUGUST 18, 1994** for the above referenced facility.

If you should have any questions regarding this site, I may be reached at (206) 251-0689.

Respectfully,

Scott T. Hooton
Environmental Resources Management
Group Leader

STH:aa msword\ERM11102

cc: Ms. Jennifer Eberle, Alameda County Health Care Services Agency
80 Swan Way, Room 200, Oakland CA 94621

Mr. Brady Nagle, Alisto Engineering Group, 1777 Oakland Blvd., Suite 200, Walnut Creek, CA 94596

Mr. Larry Salia, TOSCO Northwest, 601 Union Street, Suite 2500, Seattle WA 98101

Site File

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11102
100 MacArthur Boulevard
Oakland, California

Project No. 10-076-03-001

Prepared for:

BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington

Prepared by:

Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California

August 18, 1994

William Howell
William Howell
Project Manager

Dan Salaices
Dan Salaices
Registered Geologist

REGISTERED GEOLOGIST
DANIEL J.
SALAICES
No. 5162
STATE OF CALIFORNIA

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11102
100 MacArthur Boulevard
Oakland, California

Project No. 10-076-03-001

August 18, 1994

INTRODUCTION

This report presents the results and findings of the June 22, 1994 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11102, 100 MacArthur Boulevard, 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 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. 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.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO.11102
100 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-076

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)	TOG (ppb)	1,1-DCA (ppb)	1,2-DCA (ppb)	DO (ppm)	LAB
MW-1	11/04/89	90.20	13.21	76.99	ND<500	ND<50	3.4	0.6	ND<0.3	ND<0.3	ND<5000	—	0.9	—	SAL
MW-1	11/11/89	90.20	13.32	76.88	—	—	—	—	—	—	—	—	—	—	—
MW-1	04/03/90	90.20	12.46	77.74	820	—	64	1.9	23	34	—	—	—	—	ANA
MW-1	07/30/90	90.20	12.92	77.28	190	ND<50	11	ND<5.0	ND<5.0	ND<5.0	ND<5000	—	ND	—	ANA
MW-1	11/20/90	90.20	14.08	76.12	50	79	2.4	ND<0.3	ND<0.3	ND<0.3	ND<5000	—	4.0	—	SAL
MW-1	03/01/91	90.20	13.61	76.59	ND<100	ND<1000	0.9	ND<0.3	ND<0.3	0.3	14000	—	ND	—	SAL
MW-1	08/19/91	90.20	15.74	74.46	370	ND<50	35	0.73	6.4	5.6	ND<5000	—	1.4	—	SEQ
MW-1	11/13/91	90.20	14.08	76.12	60	ND<50	0.68	ND<0.3	ND<0.3	ND<0.3	ND<5000	—	1.0	—	SEQ
MW-1	02/24/92	90.20	12.52	77.68	140	100	3.9	0.66	1.2	3.8	ND<5000	—	1.7	—	SEQ
MW-1	05/19/92	90.20	11.80	78.40	4200	910	440	21	260	37	ND<5000	—	ND	—	SEQ
MW-1	08/17/92	90.20	12.01	78.19	4000	560	350	14	150	17	ND<5000	—	ND	—	SEQ
MW-1	07/22/92	90.20	12.42	77.78	4000	—	ND<5.0	19	210	61	—	—	—	—	ANA
MW-1	08/14/92	90.20	12.75	77.45	2400	1700	330	20	150	47	ND<5000	—	ND<2.5	—	SEQ
MW-1	11/11/92	90.20	13.69	76.51	260	92	30	3.4	7.6	6.8	ND<5000	—	ND<2.5	—	ANA
MW-1	06/07/93	90.20	10.93	79.27	3400	440	98	11	21	7.6	—	6.2	0.9	—	PACE
QC-1 (c)	06/07/93	—	—	—	3700	—	120	12	26	9.5	—	—	—	—	PACE
MW-1	12/02/93	90.20	12.72	77.48	1100	120	8.3	3.6	0.6	1.5	ND<5000	2.6	1.8	—	PACE
MW-1	06/22/94	90.20	11.81	78.39	2100	ND<50	32	3.8	2.2	17	ND<5000	2.3	3.3	3.2	PACE
QC-1 (c)	06/22/94	—	—	—	2100	—	30	3.2	2.0	15	—	—	—	—	PACE
MW-2	11/04/89	87.91	15.84	72.07	ND<500	—	6.5	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SAL
MW-2	11/11/89	87.91	14.75	73.16	—	—	—	—	—	—	—	—	—	—	—
MW-2	04/03/90	87.91	15.25	72.66	ND<500	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	ANA
MW-2	07/30/90	87.91	15.59	72.32	61	—	6.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	ANA
MW-2	11/20/90	87.91	17.81	70.10	ND<50	—	0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SAL
MW-2	03/01/91	87.91	17.11	70.80	ND<100	—	0.4	ND<0.3	ND<0.3	ND<0.3	—	—	4.0	—	SAL
MW-2	08/19/91	87.91	17.97	69.94	ND<30	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SEQ
MW-2	11/13/91	87.91	16.76	71.15	38	—	0.32	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SEQ
MW-2	02/24/92	87.91	15.07	72.84	ND<50	—	ND<0.5	ND<0.5	ND<0.5	0.58	—	—	16	—	SEQ
MW-2	05/19/92	87.91	14.70	73.21	ND<50	—	0.55	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	SEQ
MW-2	07/22/92	87.91	15.60	72.31	90	—	1.3	0.6	0.9	1.9	—	—	—	—	ANA
MW-2	08/14/92	87.91	15.88	72.03	—	—	—	—	—	—	—	—	—	—	—
MW-2	11/11/92	87.91	16.19	71.72	52	—	2.8	ND<0.5	ND<0.5	0.9	—	—	—	—	ANA
QC-1 (c)	11/11/92	—	—	—	65	—	3.2	ND<0.5	ND<0.5	1.0	—	—	—	—	ANA
MW-2	06/07/93	87.91	14.42	73.49	1200	—	14	2.8	1.9	1.7	—	—	—	—	PACE
MW-2	12/02/93	87.91	14.94	72.97	790	—	3.4	0.5	10	ND<0.5	—	—	—	—	PACE
QC-1 (c)	12/02/93	—	—	—	2100	—	32	3.8	2.2	17.00	—	2.3	—	—	PACE
MW-2	06/22/94	87.91	14.25	73.66	110	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	3.9	PACE

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO.11102
100 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-076

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)	TOG (ppb)	1,1-DCA (ppb)	1,2-DCA (ppb)	DO (ppm)	LAB
MW-3	11/04/89	87.02	15.40	71.62	ND<500	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SAL
MW-3	11/11/89	87.02	14.10	72.92	—	—	—	—	—	—	—	—	—	—	—
MW-3	04/03/90	87.02	13.90	73.12	ND<100	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	ANA
MW-3	07/30/90	87.02	13.77	73.25	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	—	—	—	ANA
MW-3	11/20/90	87.02	14.67	72.35	ND<50	—	0.3	0.8	0.4	1.5	—	—	—	—	SAL
MW-3	03/01/91	87.02	15.22	71.80	ND<100	—	0.4	ND<0.3	ND<0.3	ND<0.3	—	—	ND	—	SAL
MW-3	08/19/91	87.02	13.15	73.87	ND<30	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SEQ
MW-3	11/13/91	87.02	15.66	71.36	ND<30	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	SEQ
MW-3	02/24/92	87.02	15.01	72.01	ND<50	—	0.65	1.4	0.66	4.4	—	—	ND	—	SEQ
MW-3	05/19/92	87.02	15.52	71.50	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	SEQ
MW-3	07/22/92	87.02	15.63	71.39	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	—	ND<0.50	—	ANA
MW-3	09/14/92	87.02	13.57	73.45	—	—	—	—	—	—	—	—	—	—	—
MW-3	11/11/92	87.02	14.13	72.89	ND<50	—	ND<0.5	0.7	ND<0.5	1.3	—	—	—	—	ANA
MW-3	06/07/93	87.02	12.13	74.89	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
MW-3	12/02/93	87.02	13.29	73.73	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
MW-3	06/22/94	87.02	12.78	74.24	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	2.9	PACE
QC-2 (d)	11/11/92	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	ANA
QC-2 (d)	06/07/93	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (d)	12/02/93	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (d)	06/22/94	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
1,1-DCA	1,1-dichloroethane
1,2-DCA	1,2-dichloroethane
DO	Dissolved oxygen
ppb	Parts per billion
ppm	Parts per million
ND	Not detected above reported detection limit
—	Not analyzed/measured/applicable
SAL	Superior Analytical Laboratory
ANA	Anametrix, Inc.
SEQ	Sequoia Analytical Laboratory
PACE	Pace, Inc.

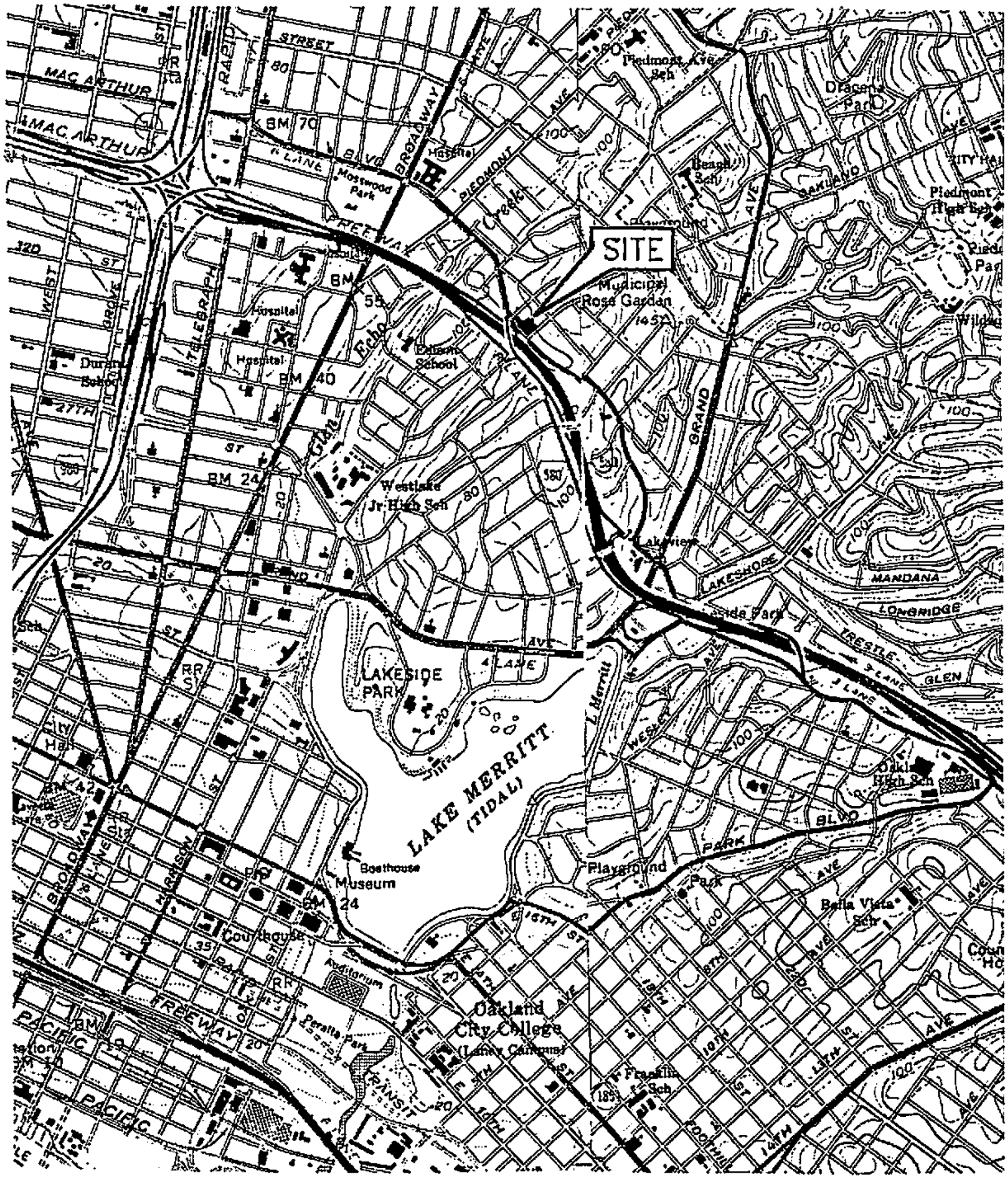
NOTES:

(a) Top of casing elevations surveyed to the nearest 0.01 foot above mean sea level.

(b) Groundwater elevations in feet above mean sea level.

(c) Blind duplicate.

(d) Travel blank.



SOURCE:
USGS MAP, OAKLAND EAST & WEST QUADRANGLES, CALIFORNIA. 7.5 MINUTE SERIES. 1959. PHOTOREVISED 1980.

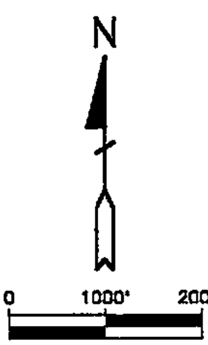


FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10-076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

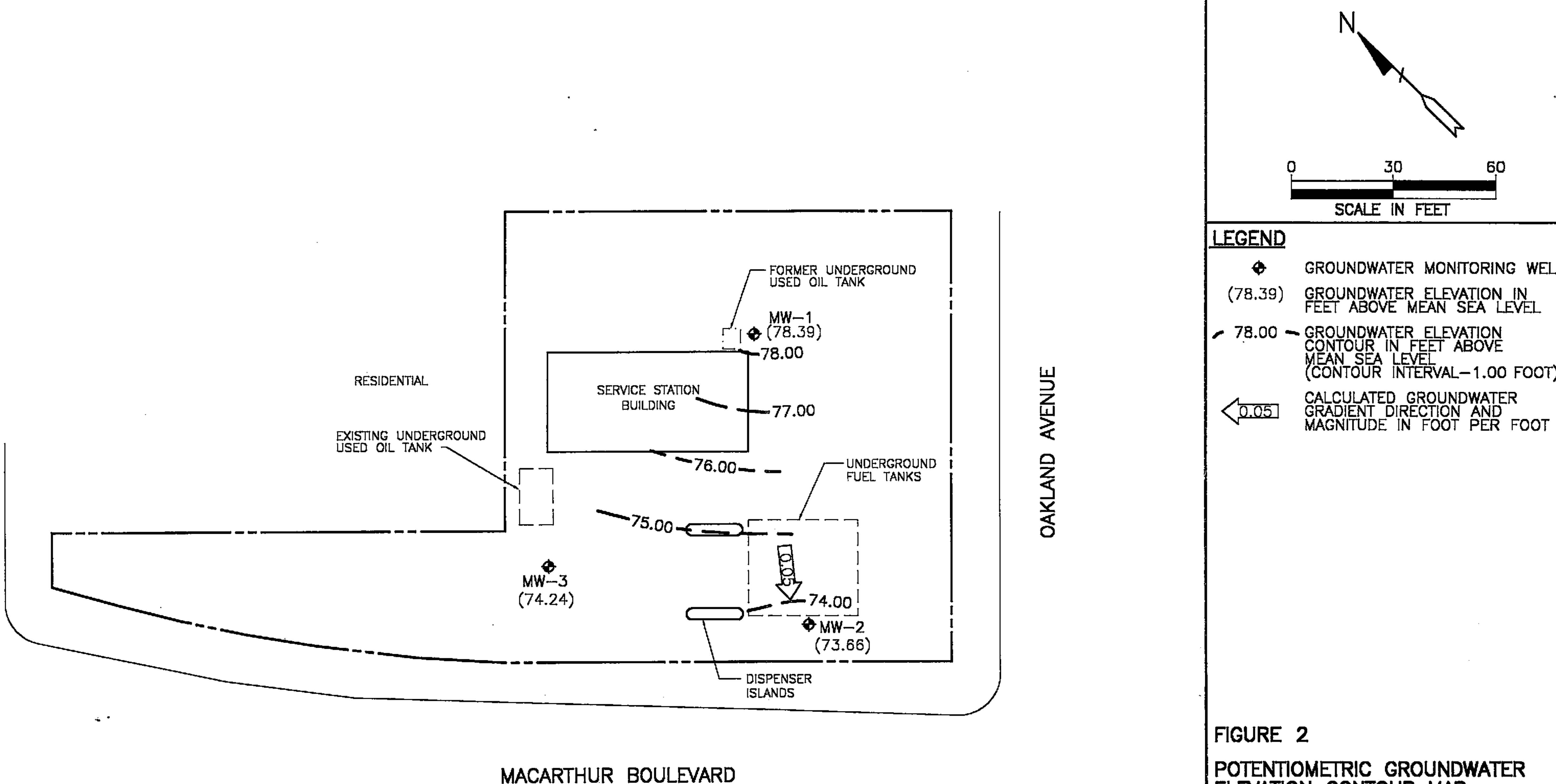

N
0
30
60
SCALE IN FEET
LEGEND
GROUNDWATER MONITORING WELL
(78.39) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
78.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–1.00 FOOT)
0.05 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT
FORMER UNDERGROUND USED OIL TANK
MW–1
(78.39)
78.00
RESIDENTIAL
SERVICE STATION BUILDING
77.00
EXISTING UNDERGROUND USED OIL TANK
76.00
UNDERGROUND FUEL TANKS
75.00
0.05
MW–3
(74.24)
74.00
MW–2
(73.66)
DISPENSER ISLANDS
OAKLAND AVENUE
MACARTHUR BOULEVARD

FIGURE 2

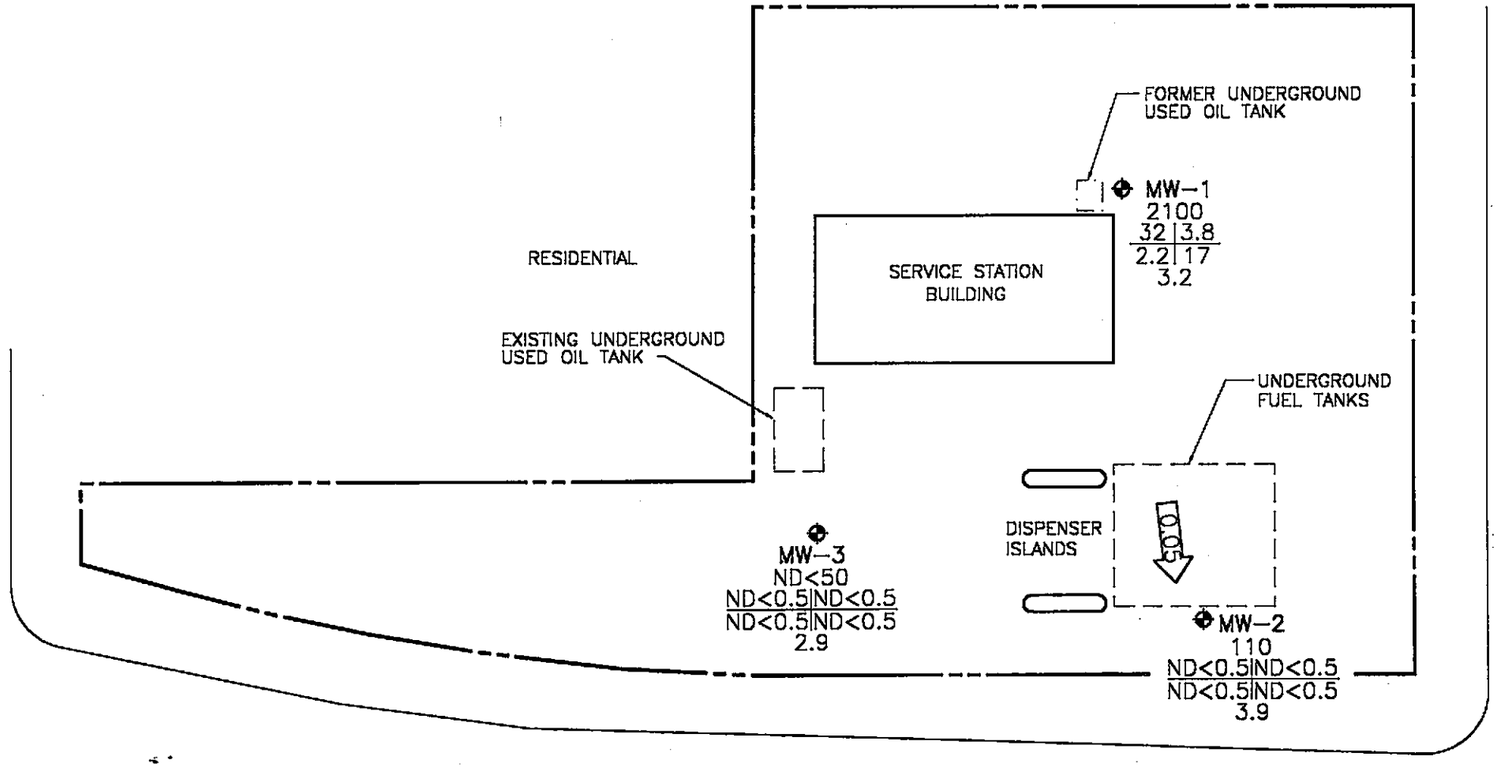
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

JUNE 22, 1994

BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10–076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA



N

0 30 60

SCALE IN FEET

LEGEND

◆	GROUNDWATER MONITORING WELL
TPH-G / B | T / E | X / DO	CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
DO	DISSOLVED OXYGEN
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
⇦ 0.05	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

JUNE 22, 1994

BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10-076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10076E-JUN94 6-9-94 RDM 1=30

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

ALISTO

ENGINEERING GROUP

1777 OAKLAND BLVD, STE 200

WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

Field Report / Sampling Data Sheet

Ø Groundwater Sampling

Date: 6/22/94 Project No. 10-076-3-~~8~~-901

Day: Wednesday Station No. 11102

Weather: Sunny Address 100 MacArthur Blvd Oakland

SAMPLER: DC

Well ID	SAMPLE #	WATER DEPTH	Well ID	SAMPLE #	WATER DEPTH	Well ID	SAMPLE	WATER DEPTH
MW-3	S-1	12.78						
MW-2	S-2	14.25						
MW-1	S-3	11.81						
QC-1	S-4	—						
QC-2	S-5	—						

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW-3	12.78	4"	No lock		

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

23.60 − 12.78 = 10.82 x.65 = 7.03 x 3 = 21.10

Purge Method: OSurface Pump ODisp.Tube OWinch XDisp. Bailer(s) OSys Port

Comments: Tagged @ 12:50 Hand bailed box

Gal.	Time	Temp °F	pH	E.C.	D.O.
7.5	1329	72.3	6.69	1.16	3.1
15	1335	69.0	6.77	1.03	
21.25	1345	68.2	6.80	1.00	2.9

Ø EPA 601 ~~HCL~~ ~~DC~~ DC

Ø TPH-G/BTEX HCL

~~Ø TPH Diesel None~~ DC

~~Ø TOG 5520 None~~ DC

Time Sampled: 1355

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW-2	14.25	4"	no lock		

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

24.80 − 14.25 = 10.55 x .65 = 6.86 x 3 = 20.57

Purge Method: OSurface Pump ODisp.Tube OWinch XDisp. Bailer(s) OSys Port

Comments: Tagged @ 12:55

Gal.	Time	Temp °F	pH	E.C.	D.O.
7.5	1420	69.6	6.62	2.12	3.8
15	1427	69.1	6.55	2.19	3.9
21	1439	69.0	6.52	2.18	3.9

~~Ø EPA 601~~

Ø TPH-G/BTEX HCL

~~Ø TPH Diesel~~ DC

~~Ø TOG 5520~~ DC

Time Sampled: 1445

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW-1	11.81	4"	OK		

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

23.20 − 11.81 = 11.39 x .65 = 7.40 x 3 = 22.21

Purge Method: OSurface Pump ODisp.Tube OWinch XDisp. Bailer(s) OSys Port

Comments: Tagged @ 1300

Gal.	Time	Temp °F	pH	E.C.	D.O.
7.5	1515	68.6	6.85	1.49	3.3
15	1522	66.9	6.75	1.37	
22.5	1530	66.5	6.85	1.39	3.2

Ø EPA 601 HCL

Ø TPH-G/BTEX HCL

Ø TPH Diesel None

Ø TOG 5520 None

Time Sampled: 1550

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

QC-1 duplicate of MW-1 (S-4)

Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port

Comments:

O EPA 601

Ø TPH-G/BTEX X HCL

O TPH Diesel

O TOG 5520

Time Sampled: 1557 made up to fool lab

QC-2 trip blank (S-5) time collected 1600 (made up to fool lab)

6/20/94

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Alisto Engineering Group
1777 Oakland Blvd., Ste. 200
Walnut Creek, CA 94596

July 01, 1994
PACE Project Number: 440623508

Attn: Mr. Bill Howell

Client Reference: BP Site #11102/10-076-03-003

PACE Sample Number:			70 0345855	
Date Collected:			06/22/94	
Date Received:			06/23/94	
Client Sample ID:			S-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	06/29/94
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	06/29/94
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	06/29/94
Benzene	ug/L	0.5	ND	06/29/94
Toluene	ug/L	0.5	ND	06/29/94
Ethylbenzene	ug/L	0.5	ND	06/29/94
Xylenes, Total	ug/L	0.5	ND	06/29/94

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

PACE Sample Number:			70 0345863	
Date Collected:			06/22/94	
Date Received:			06/23/94	
Client Sample ID:			S-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	06/28/94
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	110	06/28/94
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	06/28/94
Benzene	ug/L	0.5	ND	06/28/94
Toluene	ug/L	0.5	ND	06/28/94
Ethylbenzene	ug/L	0.5	ND	06/28/94
Xylenes, Total	ug/L	0.5	ND	06/28/94

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
Page 3

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

PACE Sample Number:			70 0345871	
Date Collected:			06/22/94	
Date Received:			06/23/94	
Client Sample ID:			S-3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	06/28/94
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	2100	06/28/94
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	06/28/94
Benzene	ug/L	0.5	32	06/28/94
Toluene	ug/L	0.5	3.8	06/28/94
Ethylbenzene	ug/L	0.5	2.2	06/28/94
Xylenes, Total	ug/L	0.5	17	06/28/94
HALOGENATED VOLATILE ORGANICS BY 8010				
VOLATILE HALOCARBONS BY EPA 8010			-	06/28/94
Dichlorodifluoromethane	ug/L	2.0	ND	06/28/94
Chloromethane	ug/L	2.0	ND	06/28/94
Vinyl Chloride	ug/L	2.0	ND	06/28/94
Bromomethane	ug/L	2.0	ND	06/28/94
Chloroethane	ug/L	2.0	ND	06/28/94
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	06/28/94
1,1-Dichloroethene	ug/L	0.5	ND	06/28/94
Methylene Chloride	ug/L	2.0	ND	06/28/94
trans-1,2-Dichloroethene	ug/L	0.5	ND	06/28/94
1,1-Dichloroethane	ug/L	0.5	2.3	06/28/94
cis-1,2-Dichloroethene	ug/L	0.5	ND	06/28/94
Chloroform	ug/L	0.5	ND	06/28/94
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	06/28/94
Carbon Tetrachloride	ug/L	0.5	ND	06/28/94
1,2-Dichloroethane (EDC)	ug/L	0.5	3.3 Q1	06/28/94
Trichloroethene (TCE)	ug/L	0.5	ND	06/28/94
1,2-Dichloropropane	ug/L	0.5	ND	06/28/94
Bromodichloromethane	ug/L	0.5	ND	06/28/94
Dibromomethane	ug/L	0.5	ND	06/28/94
2-Chloroethylvinyl ether	ug/L	0.5	ND	06/28/94
cis-1,3-Dichloropropene	ug/L	0.5	ND	06/28/94
trans-1,3-Dichloropropene	ug/L	0.5	ND	06/28/94

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July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0345871	
Date Collected:			06/22/94	
Date Received:			06/23/94	
Client Sample ID:			S-3	
ORGANIC ANALYSIS				
HALOGENATED VOLATILE ORGANICS BY 8010				
1,1,2-Trichloroethane	ug/L	0.5	ND	06/28/94
Tetrachloroethene	ug/L	0.5	ND	06/28/94
Dibromochloromethane	ug/L	0.5	ND	06/28/94
Chlorobenzene	ug/L	0.5	ND	06/28/94
1,1,1,2-Tetrachloroethane	ug/L	0.5	ND	06/28/94
Bromoform	ug/L	0.5	ND	06/28/94
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	06/28/94
1,2,3-Trichloropropane	ug/L	0.5	ND	06/28/94
Bromobenzene	ug/L	0.5	ND	06/28/94
1,3-Dichlorobenzene	ug/L	0.5	ND	06/28/94
1,4-Dichlorobenzene	ug/L	0.5	ND	06/28/94
Benzyl Chloride	ug/L	0.5	ND	06/28/94
1,2-Dichlorobenzene	ug/L	0.5	ND	06/28/94
Bromochloromethane (Surrogate Recovery)	%		115	06/28/94
1,4-Dichlorobutane (Surrogate Recovery)	%		103	06/28/94
TOTAL OIL AND GREASE (EPA 9070/413.1)				
Total Oil and Grease (Freon Extractable)	mg/L	5.0	ND	06/28/94
Date Extracted			06/28/94	
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	0.18	06/28/94
Date Extracted			06/27/94	

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REPORT OF LABORATORY ANALYSIS

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PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

PACE Sample Number:			70 0345880	
Date Collected:			06/22/94	
Date Received:			06/23/94	
Client Sample ID:			S-4	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	06/29/94
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	2100	06/29/94
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	06/29/94
Benzene	ug/L	0.5	30	06/29/94
Toluene	ug/L	0.5	3.2	06/29/94
Ethylbenzene	ug/L	0.5	2.0	06/29/94
Xylenes, Total	ug/L	0.5	15	06/29/94

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REPORT OF LABORATORY ANALYSIS

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

PACE Sample Number:			70 0345898	
Date Collected:			06/22/94	
Date Received:			06/23/94	
Client Sample ID:			S-5	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	06/29/94
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	06/29/94
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	06/29/94
Benzene	ug/L	0.5	ND	06/29/94
Toluene	ug/L	0.5	ND	06/29/94
Ethylbenzene	ug/L	0.5	ND	06/29/94
Xylenes, Total	ug/L	0.5	ND	06/29/94

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

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Client Reference: BP Site #11102/10-076-03-003

MDL Method Detection Limit
ND Not detected at or above the MDL.
Q1 Quantitation was based upon a one point calibration.

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

EXTRACTABLE FUELS EPA 3510/8015
Batch: 70 31643
Samples: 70 0345871

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Extractable Fuels, as Diesel	mg/L	0.05	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Extractable Fuels, as Diesel	mg/L	0.05	1.00	92%	92%	0%

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QUALITY CONTROL DATA

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

HALOGENATED VOLATILE ORGANICS 8010/8020
Batch: 70 31599
Samples: 70 0345871

METHOD BLANK:

Parameter	Units	MDL	Method Blank
VOLATILE HALOCARBONS BY EPA 8010			-
Dichlorodifluoromethane	ug/L	2.0	ND
Chloromethane	ug/L	2.0	ND
Vinyl Chloride	ug/L	2.0	ND
Bromomethane	ug/L	2.0	ND
Chloroethane	ug/L	2.0	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND
1,1-Dichloroethene	ug/L	0.5	ND
Methylene Chloride	ug/L	2.0	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND
Carbon Tetrachloride	ug/L	0.5	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	ND
Trichloroethene (TCE)	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
Dibromomethane	ug/L	0.5	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
1,1,1,2-Tetrachloroethane	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
1,2,3-Trichloropropane	ug/L	0.5	ND
Bromobenzene	ug/L	0.5	ND

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QUALITY CONTROL DATA

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Client Reference: BP Site #11102/10-076-03-003

HALOGENATED VOLATILE ORGANICS 8010/8020
Batch: 70 31599
Samples: 70 0345871

METHOD BLANK:

Parameter	Units	MDL	Method Blank
1,3-Dichlorobenzene	ug/L	0.5	ND
1,4-Dichlorobenzene	ug/L	0.5	ND
Benzyl Chloride	ug/L	0.5	ND
1,2-Dichlorobenzene	ug/L	0.5	ND
Bromochloromethane (Surrogate Recovery)	%		112
1,4-Dichlorobutane (Surrogate Recovery)	%		101
VOLATILE AROMATICS BY EPA 8020			
Benzene	ug/L	0.3	ND
Toluene	ug/L	0.3	ND
Chlorobenzene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND
1,3-Dichlorobenzene	ug/L	0.5	ND
1,4-Dichlorobenzene	ug/L	0.5	ND
1,2-Dichlorobenzene	ug/L	0.5	ND
a,a,a-Trifluorotoluene (Surro. Recovery	%		111

SPIKE AND SPIKE DUPLICATE:

Parameter	Units	MDL	700344271	Spike	Spike Recv	Spike Dupl Recv	RPD
1,1-Dichloroethane	ug/L	0.5	ND	20	79%	118%	40%
Trichloroethene (TCE)	ug/L	0.5	ND	20	91%	91%	0%
1,1,2-Trichloroethane	ug/L	0.5	ND	20	100%	96%	4%
Tetrachloroethene	ug/L	0.5	ND	20	94%	95%	1%
Benzene	ug/L	0.3	0.3	20	92%	96%	4%
Toluene	ug/L	0.3	0.6	20	90%	94%	4%
Xylenes, Total	ug/L	0.5	0.8	60	98%	102%	4%

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QUALITY CONTROL DATA

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Client Reference: BP Site #11102/10-076-03-003

HALOGENATED VOLATILE ORGANICS 8010/8020
Batch: 70 31599
Samples: 70 0345871

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
1,1-Dichloroethane	ug/L	0.5	20	85%	80%	6%
Trichloroethene (TCE)	ug/L	0.5	20	83%	89%	7%
1,1,2-Trichloroethane	ug/L	0.5	20	90%	98%	9%
Tetrachloroethene	ug/L	0.5	20	88%	94%	7%
Benzene	ug/L	0.3	20	92%	95%	3%
Toluene	ug/L	0.3	20	91%	95%	4%
Xylenes, Total	ug/L	0.5	60	88%	95%	8%

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QUALITY CONTROL DATA

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

PURGEABLE FUELS AND AROMATICS
Batch: 70 31662
Samples: 70 0345863, 70 0345871, 70 0345880, 70 0345898

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

SPIKE AND SPIKE DUPLICATE:

Parameter	Units	MDL	700343810	Spike	Spike Recv	Spike Dupl Recv	RPD
Benzene	ug/L	0.5	12	100	110%	109%	1%
Toluene	ug/L	0.5	ND	100	110%	109%	1%
Ethylbenzene	ug/L	0.5	0.6	100	109%	109%	0%
Xylenes, Total	ug/L	0.5	0.9	300	111%	110%	1%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Benzene	ug/L	0.5	100	112%	108%	4%
Toluene	ug/L	0.5	100	111%	109%	2%
Ethylbenzene	ug/L	0.5	100	110%	112%	2%
Xylenes, Total	ug/L	0.5	300	111%	109%	2%

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QUALITY CONTROL DATA

July 01, 1994
PACE Project Number: 440623508

Client Reference: BP Site #11102/10-076-03-003

PURGEABLE FUELS AND AROMATICS
Batch: 70 31692
Samples: 70 0345855

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

SPIKE AND SPIKE DUPLICATE:

Parameter	Units	MDL	700346690	Spike	Spike Recv	Spike Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	120	1000	64%	62%	3%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	102%	94%	8%

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QUALITY CONTROL DATA

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TOTAL OIL AND GREASE (EPA 9070/413.1)
Batch: 70 31679
Samples: 70 0345871

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Total Oil and Grease (Freon Extractable	mg/L	5.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Total Oil and Grease (Freon Extractable	mg/L	5.0	20.0	95%	100%	5%

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FOOTNOTES
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MDL Method Detection Limit
ND Not detected at or above the MDL.
RPD Relative Percent Difference

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440623.508

CHAIN OF CUSTODY

No. 053019 Page 1 of 1

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
Alisto Engineering	1777 Oakland Blvd, Ste 200	Walnut Ck	CA	94596

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
11102	100 Macarthur, Oakland CA	10-076-03-~~007~~-001

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
Bill Howell	(510) 295-6100	(510) 295-1823	

BP CONTACT	BP ADDRESS	PHONE NUMBER	FAX NO.
Scott Hooton	Renton WA		

LAB CONTACT	LABORATORY ADDRESS	PHONE NUMBER	FAX NO.
Pace, Inc.	Novato, CA	(415) 883 6100	(415) 883 2673

SAMPLED BY (Please Print Name)	SAMPLED BY (Signature)	SHIPMENT DATE	SHIPMENT METHOD
David Cusack	David Cusack		Courier

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks

AIRBILL NUMBER:

ANALYSIS REQUIRED

SAMPLE DESCRIPTION	Time Sampled ← COLLECTION TIME	COLLECTION DATE	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	HCl TPH GAS BTEX	HCl 601	None TOG	None TPH Diesel
S-1	1355	6/22/04	H_2O	3	VOA	345855	X	~~X~~	DC	
S-2	1445	↓	↓	3	↓	345863	↓			
S-3	1550			10	6 VOA 4 1L	345867-1		X	X	X
S-4	1557			3	VOA	345860				
S-5	1600	↓	↓	2	↓	345869-8	↓			

COMMENTS: no 601, TPH D or TOG for S-1

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
David Cusack	6/23	1045	Ed Kolby Pace	6/23/04	1045
Ed Kolby Pace	6/23	1520	[illegible]	6/23/04	1520

ADDITIONAL COMMENTS: 10/4; X2

CLV-16722

Distribution: White - Original (with Data); Yellow - BP; Pink - Lab; Blue - Consultant Field Staff