



BP OIL

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

93 SEP -7 AM 11:50

September 2, 1993

Mr. Richard Hiatt  
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, California

Dear Mr. Hiatt:

Attached please find our GROUNDWATER MONITORING AND SAMPLING DATED AUGUST 16, 1993 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:aa ERM11102

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

Mr. Al Sevilla, Alisto, 1777 Oakland Blvd., Suite 200,  
Walnut Creek, CA 94596

Mr. Robert Merriken, Mobil Oil Corp, 3225 Gallows Road,  
Fairfax, VA 22037

Site file



PT. CH.  
ENVIRONMENTAL

## GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-076-02-001

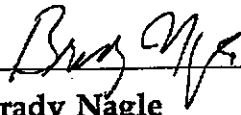
Prepared for:

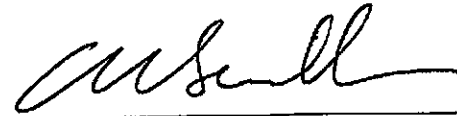
BP Oil Company  
Environmental Resource Management  
16400 Southcenter Parkway, Suite 301  
Tukwila, Washington

Prepared by:

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

August 16, 1993

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

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



# GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-076-02-001

August 16, 1993

## INTRODUCTION

This report presents the results and findings of the June 7, 1993 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 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. 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 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. 10-078

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER	GROUNDWATER ELEVATION (b)	TPH-G (ppb) ✓	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	1,1-DCA (ppb)	1,2-DCA (ppb)	TOG (ppb)	LAB
MW-1	11/04/89	90.20	13.21	76.99	ND<500	ND<50	3.4	0.8	ND<0.3	ND<0.3	--	0.9	ND<5000	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	ND<5000	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	--	4.0	ND<5000	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	--	ND	14000	SAL
MW-1	08/19/91	90.20	15.74	74.46	370	ND<50	35	0.73	6.4	5.6	--	1.4	ND<5000	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	--	1.0	ND<5000	SEQ
MW-1	02/24/92	90.20	12.52	77.68	140	100	3.9	0.66	1.2	3.8	--	1.7	ND<5000	SEQ
MW-1	05/19/92	90.20	11.80	78.40	4200	910	440	21	250	37	--	ND	ND<5000	SEQ
MW-1	06/17/92	90.20	12.01	78.19	4000	560	350	14	150	17	--	ND	ND<5000	SEQ
MW-1	07/22/92	90.20	12.42	77.76	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<2.5	ND<5000	SEQ
MW-1	11/11/92	90.20	13.69	76.51	260	92	30	3.4	7.6	6.8	--	ND<2.5	ND<5000	ANA
MW-1	06/07/93	90.20	10.93	79.27	3400	440	98	11	21	7.6	6.2	0.9	--	PAGE
QC-1 (c)	06/07/93	--	--	--	3700	--	120	12	26	9.6	--	--	--	PAGE
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	72.68	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<0.50	ND<0.50	ND<0.50	0.58	--	16	--	SEQ
MW-2	05/19/92	87.91	14.70	73.21	ND<50	--	0.55	ND<0.50	ND<0.50	ND<0.50	--	--	--	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	--	--	--	PAGE

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

ALISTO PROJECT NO. 10-078

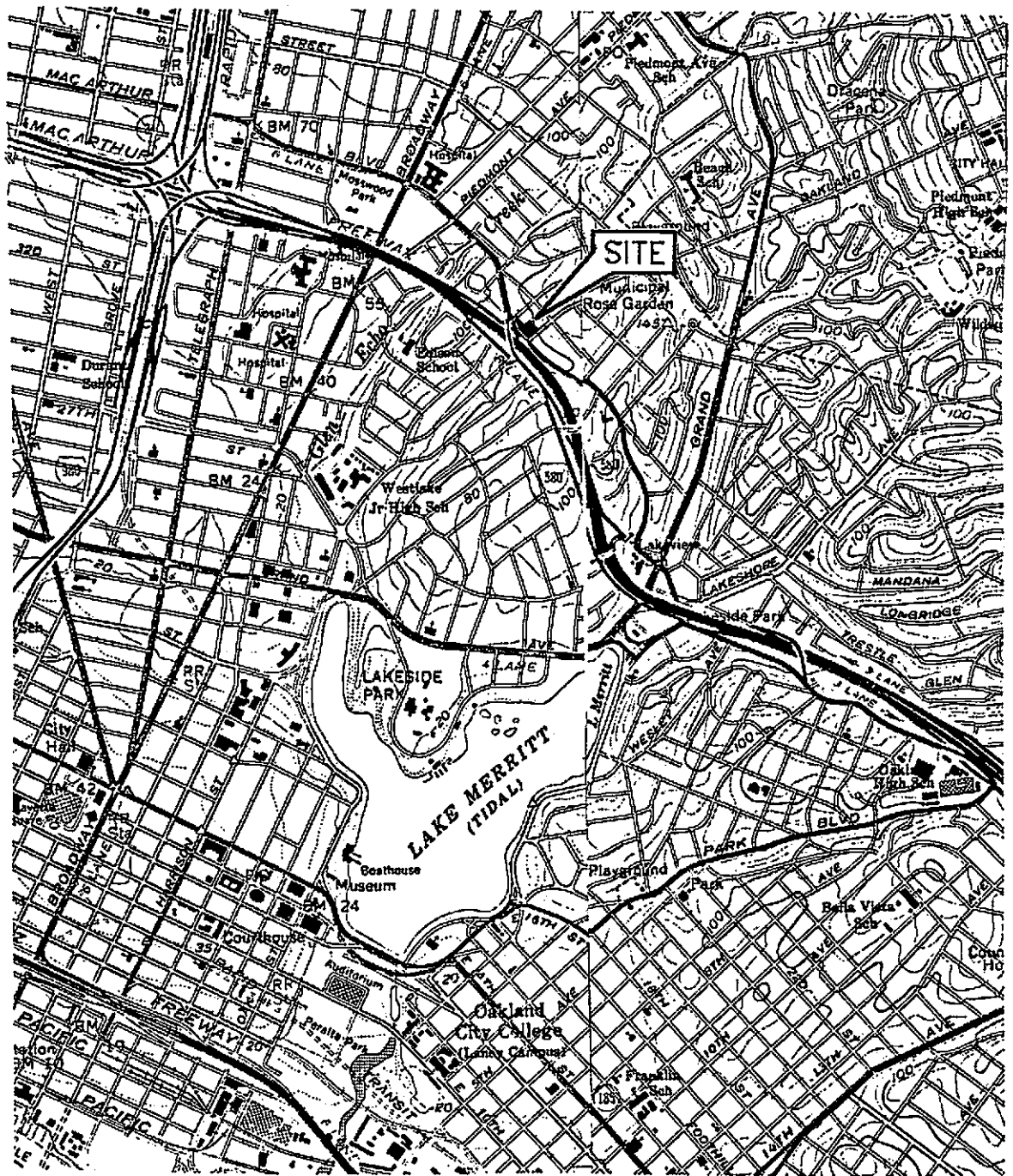
WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER	GROUNDWATER ELEVATION (b)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	1,1-DCA (ppb)	1,2-DCA (ppb)	TOG (ppb)	LAB
MW-3	11/04/89	87.02	15.40	71.62	ND<500	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	---	SAL
MW-3	11/11/89	87.02	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	15.68	71.38	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	0.68	4.4	---	ND	---	SEQ
MW-3	05/19/92	87.02	15.52	71.50	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---	---	---	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<0.50	ND<5000	ANA
MW-3	08/14/92	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
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

ABBREVIATIONS:

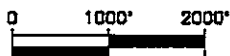
TPH-G Total petroleum hydrocarbons as gasoline  
 TPH-D Total petroleum hydrocarbons as diesel  
 B Benzene  
 T Toluene  
 E Ethylbenzene  
 X Total xylenes  
 1,1-DCA 1,1-dichloroethane  
 1,2-DCA 1,2-dichloroethane  
 TOG Total oil and grease  
 ppb Parts per billion  
 ND Not detected above reported detection limit  
 --- Not analyzed/available/measured  
 ANA Anamatrix, Inc.  
 SAL Superior Analytical Laboratory  
 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**

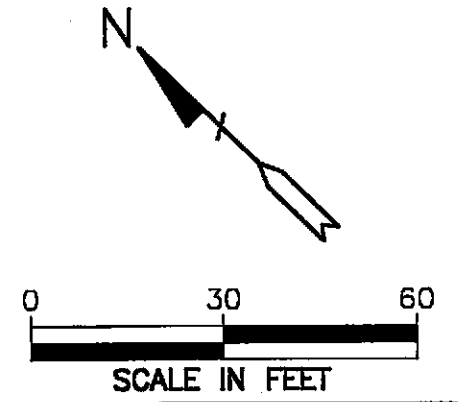
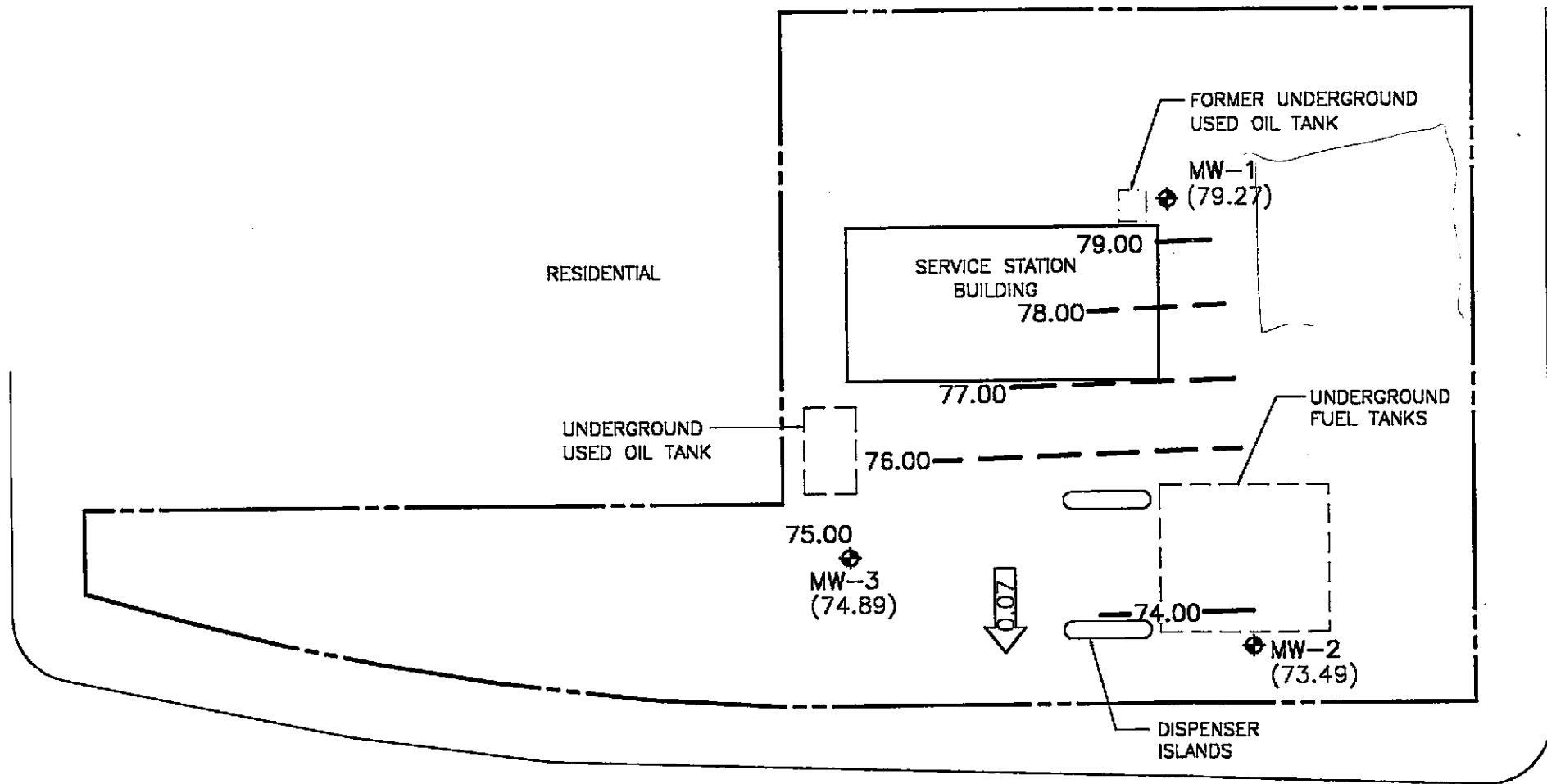
**SITE VICINITY MAP**

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

**PROJECT NO. 10-076**

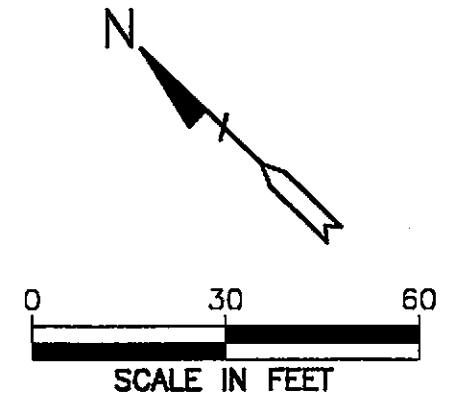
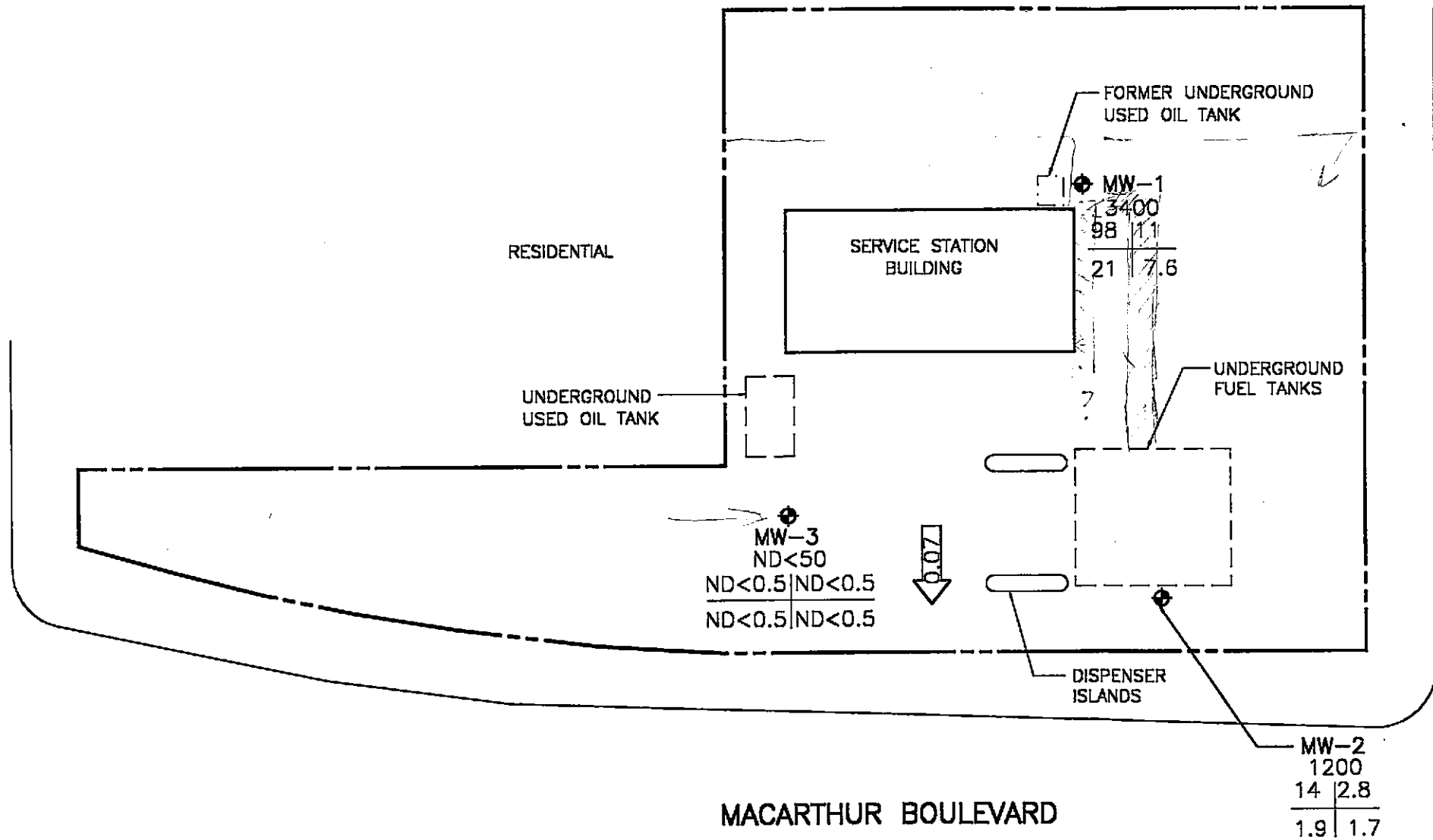


**ALISTO ENGINEERING GROUP**  
 WALNUT CREEK, CALIFORNIA



- LEGEND**
- ◆ GROUNDWATER MONITORING WELL
  - (79.27) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
  - 75.00- GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL -1.00 FOOT)
  - ←0.07→ CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

**FIGURE 2**  
**POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP**  
**JUNE 7, 1993**  
 BP OIL SERVICE STATION NO. 11102  
 100 MACARTHUR BOULEVARD  
 OAKLAND, CALIFORNIA  
 PROJECT NO. 10-076



**LEGEND**

- ⊕ GROUNDWATER MONITORING WELL
- TPH-G CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION
- 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
- ← 0.07 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

**FIGURE 3**  
**CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER**  
**JUNE 7, 1993**  
 BP OIL SERVICE STATION NO. 11102  
 100 MACARTHUR BOULEVARD  
 OAKLAND, CALIFORNIA  
 PROJECT NO. 10-076



**APPENDIX A**  
**WATER SAMPLING FIELD SURVEY FORMS**













**APPENDIX B**

**LABORATORY REPORT AND CHAIN OF CUSTODY RECORD**



**REPORT OF LABORATORY ANALYSIS**

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

June 24, 1993  
PACE Project Number: 430608522  
PACE WPP# 2685

Attn: Mr. Brady Nagle

Client Reference: BP Station # 11102

PACE Sample Number: 70 0088747  
Date Collected: 06/07/93  
Date Received: 06/08/93

Parameter	Units	MDL	DATE ANALYZED
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	06/16/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	3400	06/16/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	06/16/93
Benzene	ug/L	0.5	98 ✓	06/16/93
Toluene	ug/L	0.5	11	06/16/93
Ethylbenzene	ug/L	0.5	21	06/16/93
Xylenes, Total	ug/L	0.5	7.6	06/16/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L ✓	0.05	0.41	06/11/93
Date Extracted			06/10/93	

TOTAL PETRO HYDROCARBONS (IR, EPA 418.1)

Total Petroleum Hydrocarbons, by IR	mg/L	5.0	ND	06/15/93
Date Extracted			06/14/93	

HALOGENATED VOLATILE COMPOUNDS EPA 8010

Dichlorodifluoromethane	ug/L	2.0	ND	06/17/93
Chloromethane	ug/L	2.0	ND	06/17/93
Vinyl Chloride	ug/L	2.0	ND	06/17/93
Bromomethane	ug/L	2.0	ND	06/17/93
Chloroethane	ug/L	2.0	ND	06/17/93
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	06/17/93
1,1-Dichloroethene	ug/L	0.5	ND	06/17/93
Methylene Chloride	ug/L	2.0	ND	06/17/93
trans-1,2-Dichloroethene	ug/L	0.5	ND	06/17/93
cis-1,2-Dichloroethene	ug/L	0.5	ND	06/17/93
1,1-Dichloroethane	ug/L	0.5	6.2 ✓	06/17/93
Chloroform	ug/L	0.5	ND	06/17/93
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	06/17/93

Mr. Brady Nagle  
Page 2

June 24, 1993  
PACE Project Number: 430608522

Client Reference: BP Station # 11102

PACE Sample Number: 70 0088747  
Date Collected: 06/07/93  
Date Received: 06/08/93  
Client Sample ID: ~~MM-1~~

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

HALOGENATED VOLATILE COMPOUNDS EPA 8010

Carbon Tetrachloride	ug/L	0.5	ND	06/17/93
1,2-Dichloroethane (EDC) <i>DCA</i>	ug/L	0.5	<del>0.9</del>	06/17/93
Trichloroethene (TCE)	ug/L	0.5	ND	06/17/93
1,2-Dichloropropane	ug/L	0.5	ND	06/17/93
Bromodichloromethane	ug/L	0.5	ND	06/17/93
2-Chloroethylvinyl ether	ug/L	0.5	ND	06/17/93
cis-1,3-Dichloropropene	ug/L	0.5	ND	06/17/93
trans-1,3-Dichloropropene	ug/L	0.5	ND	06/17/93
1,1,2-Trichloroethane	ug/L	0.5	ND	06/17/93
Tetrachloroethene	ug/L	0.5	ND	06/17/93
Dibromochloromethane	ug/L	0.5	ND	06/17/93
Chlorobenzene	ug/L	0.5	ND	06/17/93
Bromoform	ug/L	0.5	ND	06/17/93
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	06/17/93
1,3-Dichlorobenzene	ug/L	0.5	ND	06/17/93
1,4-Dichlorobenzene	ug/L	0.5	ND	06/17/93
1,2-Dichlorobenzene	ug/L	0.5	ND	06/17/93
Bromochloromethane (Surrogate Recovery)			107 %	06/17/93
1,4-Dichlorobutane (Surrogate Recovery)			129 %	06/17/93

Mr. Brady Nagle  
 Page 3

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

PACE Sample Number: 70 0088755  
 Date Collected: 06/07/93  
 Date Received: 06/08/93  
 Client Sample ID: MW-2

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			06/17/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1200 06/17/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			06/17/93
Benzene	ug/L	0.5	14 06/17/93
Toluene	ug/L	0.5	2.8 06/17/93
Ethylbenzene	ug/L	0.5	1.9 06/17/93
Xylenes, Total	ug/L	0.5	1.7 06/17/93

Mr. Brady Nagle  
 Page 4

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

PACE Sample Number: 70 0088763  
 Date Collected: 06/07/93  
 Date Received: 06/08/93  
 Client Sample ID: MW-3

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND 06/17/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			
Benzene	ug/L	0.5	ND 06/17/93
Toluene	ug/L	0.5	ND 06/17/93
Ethylbenzene	ug/L	0.5	ND 06/17/93
Xylenes, Total	ug/L	0.5	ND 06/17/93

Mr. Brady Nagle  
 Page 5

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

PACE Sample Number: 70 0088771  
 Date Collected: 06/07/93  
 Date Received: 06/08/93  
 Client Sample ID: QC-1

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

<u>PURGEABLE FUELS AND AROMATICS</u>			
<u>TOTAL FUEL HYDROCARBONS, (LIGHT):</u>			
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	3700
<u>PURGEABLE AROMATICS (BTXE BY EPA 8020M):</u>			
Benzene	ug/L	0.5	120
Toluene	ug/L	0.5	12
Ethylbenzene	ug/L	0.5	26
Xylenes, Total	ug/L	0.5	9.5

Mr. Brady Nagle  
 Page 6

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

PACE Sample Number: 70 0088780  
 Date Collected: 06/07/93  
 Date Received: 06/08/93  
 Client Sample ID: QC-2

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
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

These data have been reviewed and are approved for release.

  
 Darrell C. Cain  
 Regional Director

Mr. Brady Nagle  
Page 7

FOOTNOTES  
for pages 1 through 6

June 24, 1993  
PACE Project Number: 430608522

Client Reference: BP Station # 11102

MDL Method Detection Limit  
ND Not detected at or above the MDL.

Mr. Brady Nagle  
 Page 8

QUALITY CONTROL DATA

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

EXTRACTABLE FUELS EPA 3510/8015  
 Batch: 70 21904  
 Samples: 70 0088747

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>Reference Value</u>	<u>Recv</u>	<u>Dupl Recv</u>	<u>RPD</u>
Extractable Fuels, as Diesel	mg/L	0.05	1.00	93%	89%	4%



Mr. Brady Nagle

QUALITY CONTROL DATA

June 24, 1993

Page 9

PACE Project Number: 430608522

Client Reference: BP Station # 11102

HALOGENATED VOLATILE COMPOUNDS EPA 8010

Batch: 70 22151

Samples: 70 0088747

METHOD BLANK:

Parameter	Units	MDL	Method Blank
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
cis-1,2-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	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
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
Bromoform	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	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
Bromochloromethane (Surrogate Recovery)			132 %
1,4-Dichlorobutane (Surrogate Recovery)			145 %

Mr. Brady Nagle  
 Page 10

QUALITY CONTROL DATA

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

HALOGENATED VOLATILE COMPOUNDS EPA 8010

Batch: 70 22151  
 Samples: 70 0088747

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference	Dupl		RPD
			Value	Recv	Recv	
1,1-Dichloroethane	ug/L	0.5	10.00	115%	114%	0%
Trichloroethene (TCE)	ug/L	0.5	10.00	103%	102%	0%
1,1,2-Trichloroethane	ug/L	0.5	10.00	105%	110%	4%
Tetrachloroethene	ug/L	0.5	10.00	94%	93%	1%

Mr. Brady Nagle  
 Page 11

QUALITY CONTROL DATA

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

**PURGEABLE FUELS AND AROMATICS**

Batch: 70 22066  
 Samples: 70 0088747, 70 0088755, 70 0088763, 70 0088771, 70 0088780

**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

**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	85%	96%	12%
Benzene	ug/L	0.5	100	103%	105%	1%
Toluene	ug/L	0.5	100	105%	107%	1%
Ethylbenzene	ug/L	0.5	100	104%	107%	2%
Xylenes, Total	ug/L	0.5	300	108%	103%	4%

Mr. Brady Nagle  
 Page 12

QUALITY CONTROL DATA

June 24, 1993  
 PACE Project Number: 430608522

Client Reference: BP Station # 11102

TOTAL PETRO HYDROCARBONS (IR, EPA 418.1)

Batch: 70 21960

Samples: 70 0088747

METHOD BLANK:

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>Method Blank</u>
Total Petroleum Hydrocarbons, by IR	mg/L	16.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>Reference Value</u>	<u>Recv</u>	<u>Dup1 Recv</u>	<u>RPD</u>
Total Petroleum Hydrocarbons, by IR	mg/L	5.0	16.0	66%	66%	0%

Mr. Brady Nagle  
Page 13

FOOTNOTES  
for pages 8 through 12

June 24, 1993  
PACE Project Number: 430608522

Client Reference: BP Station # 11102

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



**B.P. OIL COMPANY**  
 16400 Southcenter Parkway, Suite 301, Tukwila, WA 98188  
**CHAIN OF CUSTODY**

430608.522

No 0912

Novato, CA, 11 Digital Drive, 94949  
 Phone: (415) 883-6100 Fax: (415) 883-2673

Huntington Beach, CA, 5702 Bolsa Avenue, 92649  
 Phone: (714) 892-2565 Fax: (714) 890-4032

Consultant's Name: **ALISTO ENGINEERING** Consultant Project #: **10-076** Page **1** of **1**

Address: **1777 OAKLAND BLVD., WALNUT CREEK**

Project Contact: **BRAOY NABLE** Phone #: **510 295 1650** Fax #: \_\_\_\_\_ Consultant Work Order #: **10-076**

Sampled by (print): **DAN BIRCH** Sampler's Signature: *[Signature]* B.P. Site Location #: **BP1102**

Shipment Method: \_\_\_\_\_ Airbill #: \_\_\_\_\_ Shipment Date: \_\_\_\_\_ B.P. Site Location: **BP1102 MacArthur**

TAT:  24 hr  48 hr  72 hr  Standard (10 day) ANALYSIS REQUIRED

Sample Condition as Received  
 Temperature ° C: \_\_\_\_\_  
 Cooler #: \_\_\_\_\_  
 Inbound Seal Yes No  
 Outbound Seal Yes No

Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1	HVOC 8010											COMMENTS
MW-1	6/7/93	1310	H <sub>2</sub> O	10*	8874.7	X	X	X	X											Hel, H <sub>2</sub> NO <sub>3</sub>
MW-2		1324	Hel	3	8875.5	X														
MW-3		1415		1	8876.3	X														
QC-1		1312		↓	8877.1	X														
QC-2	↓		↓	2	8878.0	X														
10/3, C/5																				

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time	Additional Comments:
<i>[Signature]</i>	6/8/93	1630	<i>[Signature]</i>	6/8/93	1630	Need 6 voas, 4 GL's (10/19)
<i>[Signature]</i>	6/8/93	1400	<i>[Signature]</i>	6/8/93	1400	