



BP OIL

BP Oil Company

93 NOV - 1 10:15
16400 Springcenter Parkway, Suite 301
Tukwila, Washington 98188
(206) 575-4077

October 28, 1993

California Regional Water Quality Control Board
Mr. Eddy So
San Francisco Bay Region
2101 Webster St., Ste. 500
Oakland, CA 94612

RE: BP OIL FACILITY #11120
6400 Dublin Blvd.
Dublin, CA

Attached please find our GROUNDWATER MONITORING AND SAMPLING
DATED OCTOBER 21, 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:jc ERM11120

cc: ~~M~~ Eva Chu, 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

Site file

11/23/93
Markus Niekamick
paid Report of m/s
5,6,7 install area
sent to Hooton
1/14/93. We need
copy

GROUNDWATER MONITORING AND SAMPLING REPORT

**BP Oil Company Service Station No. 11120
6400 Dublin Boulevard
Dublin, California**

Project No. 10-170-01-001



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
295-1650**

October 21, 1993



**Brady Nagle
Project Manager**



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



GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11120
6400 Dublin Boulevard
Dublin, California

Project No. 10-170-01-001

October 21, 1993

INTRODUCTION

This report presents the results and findings of the August 25, 1993 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11120, 6400 Dublin Boulevard, Dublin, 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 Environmental Health 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 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. 11120
 6400 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-170

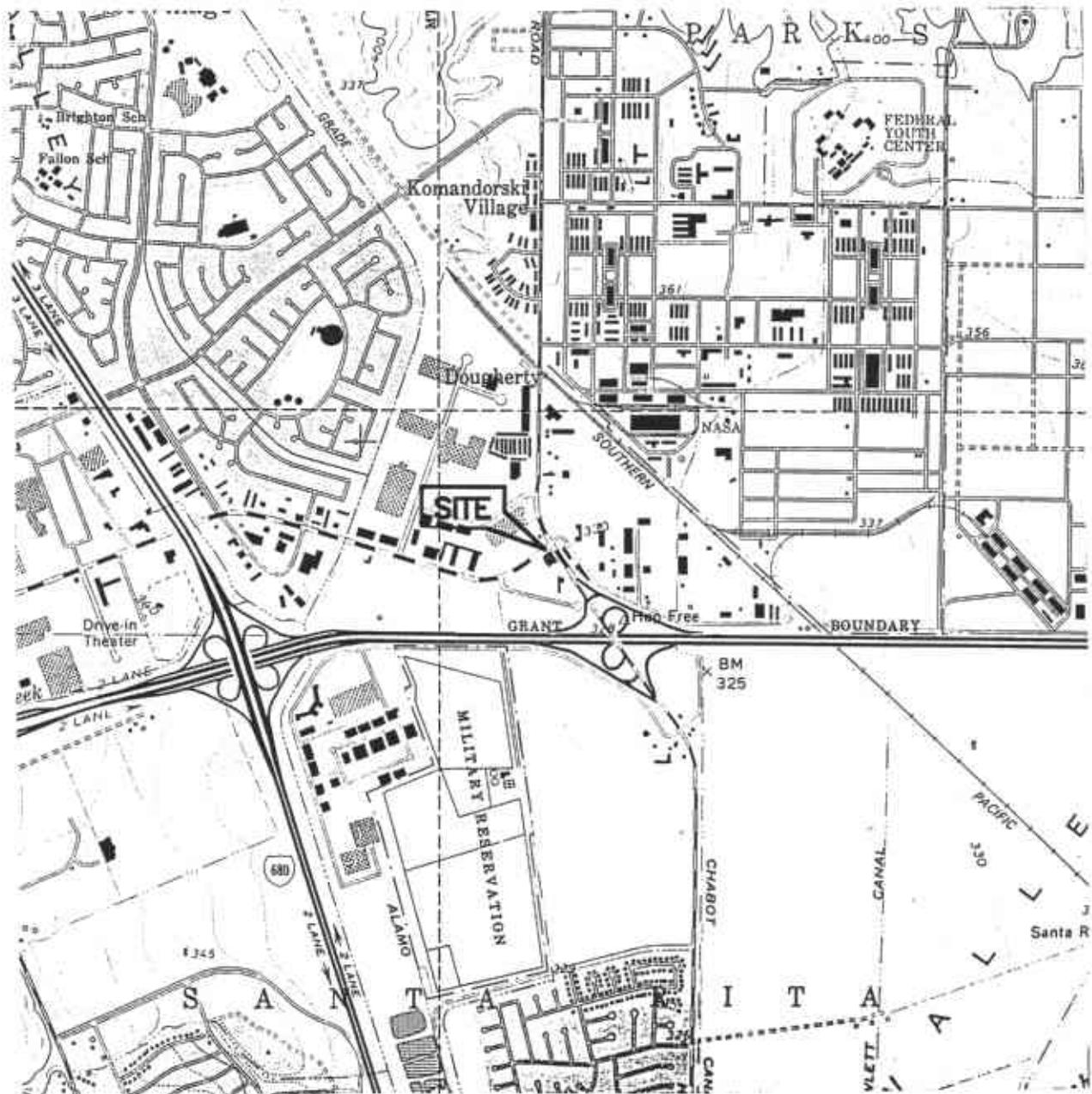
WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-1	10/27/92	328.96	8.10	320.77	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	ND	PACE
MW-1	04/09/93	328.96	4.79	324.17	ND<50	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-1	08/25/93	328.96	6.85	322.11	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	10/27/92	328.50	7.64	320.86	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	04/09/93	328.50	4.12	324.38	ND<50	80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	08/25/93	328.50	6.31	322.19	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-3	10/27/92	329.36	8.43	320.93	210	ND<50	3	0.7	0.9	30	---	---	PACE
MW-3	04/09/93	329.36	4.90	324.46	400	260	6.1	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-3	08/25/93	329.36	7.13	322.23	440	440	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-4	10/27/92	329.45	8.61	320.84	2300	190	23	54	50	320	---	---	PACE
MW-4	04/09/93	329.45	5.25	324.20	1800	500	78	3.5	68	1.0	---	---	PACE
MW-4	08/25/88	329.45	7.32	322.13	1800	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-1 (c)	08/25/93	---	---	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-5	04/09/93	329.60	5.18	324.42	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-5	08/25/93	329.60	7.28	322.32	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	04/09/93	329.55	5.37	324.18	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	08/25/93	329.55	7.42	322.13	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-7	04/09/93	329.49	5.36	324.13	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-7	08/25/93	329.49	7.44	322.05	ND<50	150	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (d)	08/25/93	---	---	---	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
 TOG Total oil and grease
 HVOC Halogenated volatile organic compounds
 ppb Parts per billion
 ND Not detected above reported detection limit
 --- Not analyzed/available
 PACE Paca, Inc.

NOTES:

(a) Top of casing elevations surveyed to an arbitrary datum.
 (b) Groundwater elevations relative to an arbitrary datum.
 (c) Blind duplicate.
 (d) Travel blank.



SOURCE:
 USGS MAP, DUBLIN QUADRANGLE,
 CALIFORNIA, 7.5 MINUTE SERIES, 1961.
 PHOTOREVISED 1980.

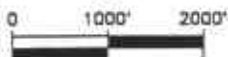
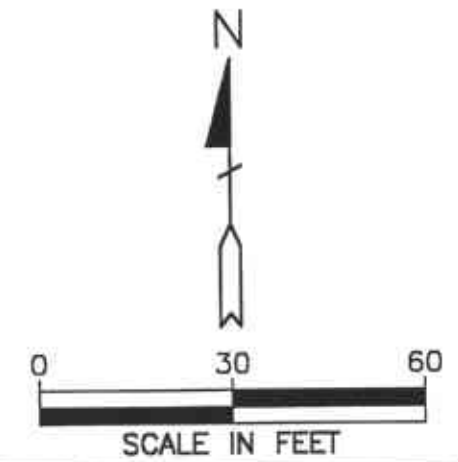
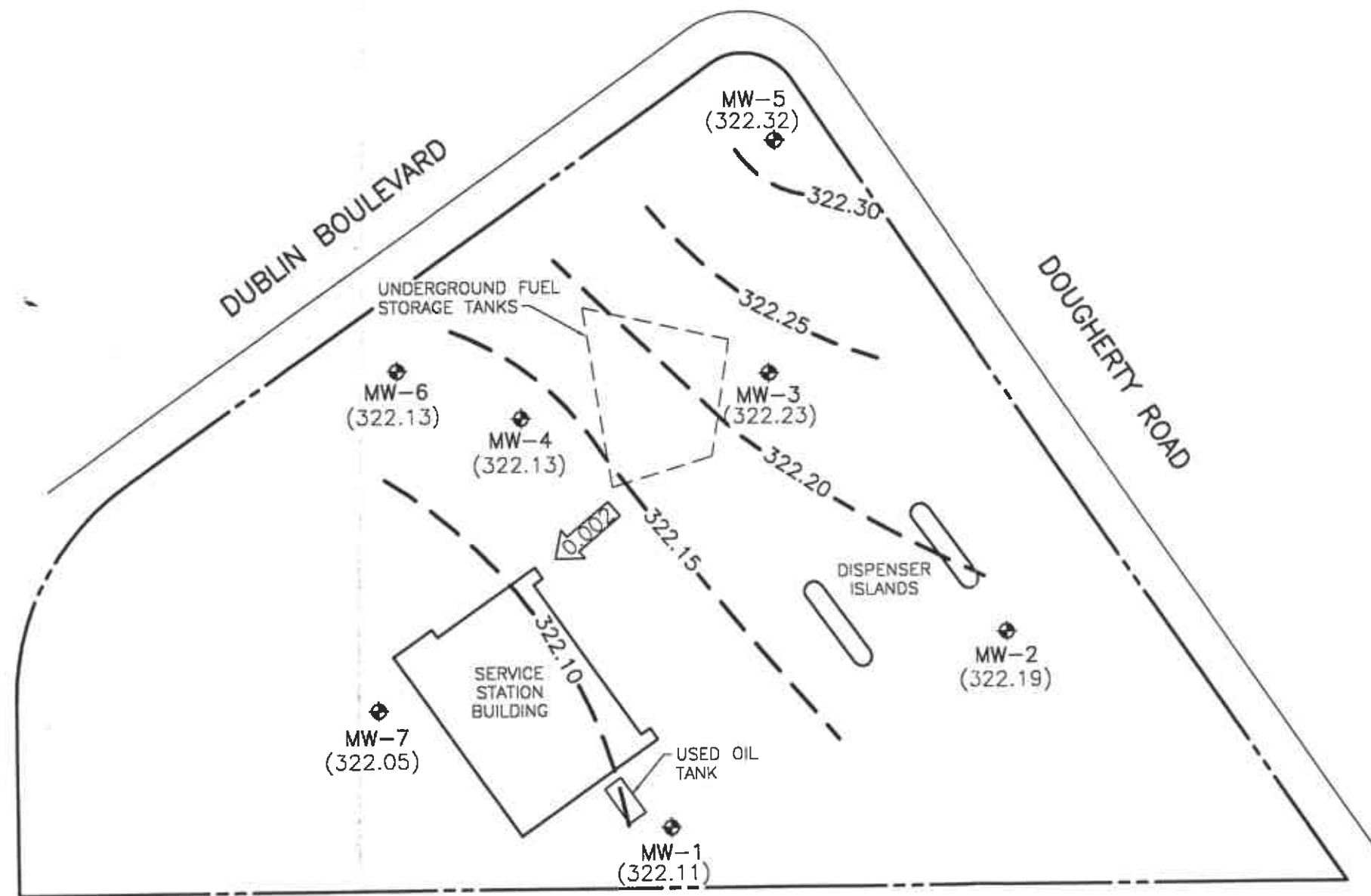


FIGURE 1
SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11120
 6400 DUBLIN BOULEVARD
 DUBLIN, CALIFORNIA
 PROJECT NO. 10-170



ALISTO ENGINEERING GROUP
 WALNUT CREEK, CALIFORNIA



LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (322.23) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- - - 322.20 - GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL-0.05 FOOT)
- ← 0.002 ← CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2

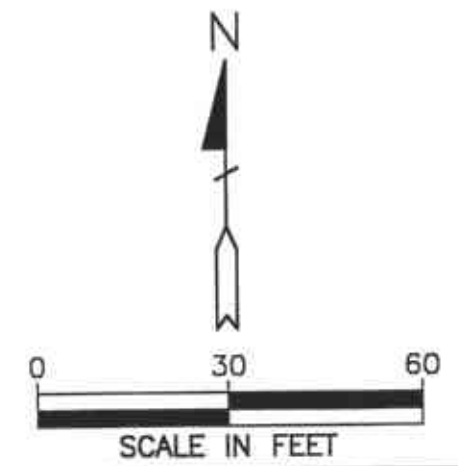
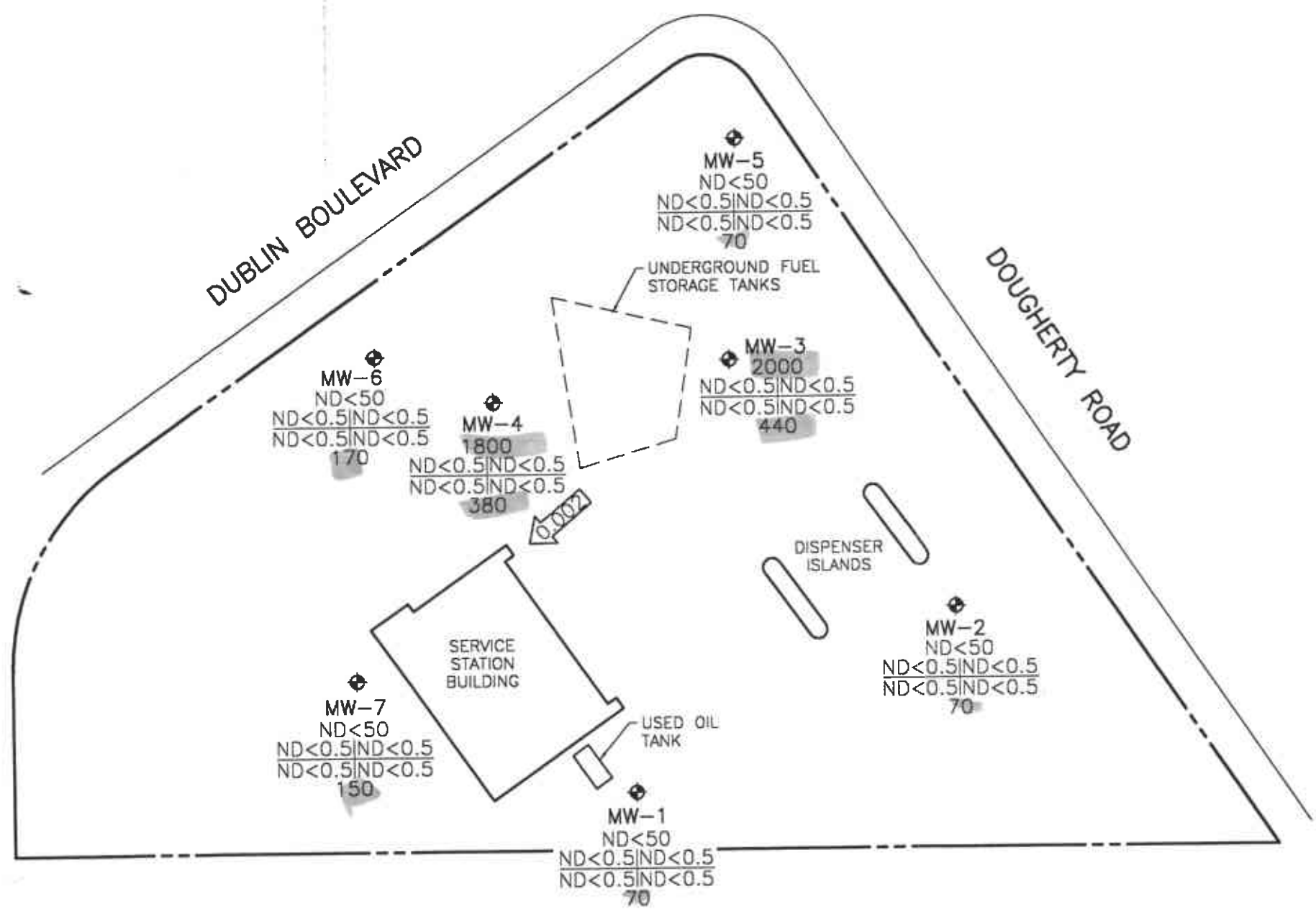
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

AUGUST 25, 1993

BP OIL SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA

PROJECT NO. 10-170





LEGEND

- ◆ GROUNDWATER MONITORING WELL
- TPH-G CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION
- B | T
- E | X
- TPH-D 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 LIMIT
- ←0.002 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3
CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
AUGUST 25, 1993
 BP OIL SERVICE STATION NO. 11120
 6400 DUBLIN BOULEVARD
 DUBLIN, CALIFORNIA
 PROJECT NO. 10-170

APPENDIX A
WATER SAMPLING FIELD SURVEY FORMS

ALISTO ENGINEERING GROUP GROUNDWATER MONITORING

Client: BP
 Alisto Project No: 10-170
 Service Station No: 11120

Date: 8/25/93
 Field Personnel: LB
 Site Address: Dublin, Ca

FIELD ACTIVITY:

- Groundwater Monitoring
- Groundwater Sampling
- Well Development

QUALITY CONTROL SAMPLES:

- QC-1 Sample Duplicate (Well ID)
- QC-2 Trip Blank
- QC-3 Rinsate Blank

Well ID	Well Diam	Order Measured/ Sampled	Total Depth	Depth to Water	Depth to Product	Product Thickness	Comments
MW-1	5	2"	18.20	6.85	∅	∅	
MW-2	4		18.25	6.31			
MW-3	6		18.61	7.13			
MW-4	7		18.15	7.32			
MW-5	1	✓	21.35	7.28			
MW-6	3	4"	19.25	7.42			
MW-7	2	2"	20.25	7.44	↓	↓	

Notes:

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-170
 Service Station No: 1120

Date: 8/25/93
 Field Personnel: LCB
 Address: Dublin, Ca

Well ID: MW-1 Field Activity: Well Development Well Sampling Product Bailing

Casing Diameter:

- 2 Inch (0.16 Gal/foot)
- 3 Inch (0.37 Gal/foot)
- 4 Inch (0.65 Gal/foot)
- 4.5 Inch (0.83 Gal/foot)
- 6 Inch (1.47 Gal/foot)

Purge Method:

- Pump (dispos. Poly Tubing)
- Disposable Bailers
- Other
- 1.66 PVC Standard Bailer
- 3.50 PVC Standard Bailer

Well Data:

- Depth to Product
- Product Thickness
- 6.85 Depth to Water

Sampling Method:

- Disposable Bailer
- Pump

Decontamination Method:

- Triple Rinse (Liquinox)
- Steam Cleaned

Calculated Purge Volume

$$\frac{18.20}{18.20} - \frac{6.85}{6.85} = 11.35 \text{ ft} \times .16 \text{ Gal/Ft} = 1.82 \text{ Gal} \times 3 = 5.46$$

Total Depth of Well Depth to Water Water Column Conversion Factor Casing Vol Vols to Purge Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1424	84.0	7.42	^{X1000} 1.81	1.50	Clear	TPH-G/BTEX	VOA	HCL
1426	82.2	7.30	1.79	2.50	↓	TPH-Diesel	Amber Liter	Solvent Rinsed
1427	81.3	7.21	1.76	3.50		EPA 601	VOA	
1429	80.7	7.16	1.74	4.50		TOG 5520BF	Amber Liter	H ₂ SO ₄
1430	80.1	7.12	1.71	5.50				

Begin 1422

Stop 1430

Sampled 1434

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-170
 Service Station No: 1120

Date: 8/25/93
 Field Personnel: LCB
 Address: Dublin, Ca

Well ID: MW-2 Field Activity: Well Development Well Sampling Product Bailing

Casing Diameter: 2 Inch (0.16 Gal/foot) 3 Inch (0.37 Gal/foot) 4 Inch (0.65 Gal/foot) 4.5 Inch (0.83 Gal/foot) 6 Inch (1.47 Gal/foot)
Purge Method: Pump (dispos. Poly Tubing) Disposable Bailers Other 1.66 PVC Standard Bailer 3.50 PVC Standard Bailer
Well Data: Depth to Product Product Thickness 6.31 Depth to Water

Sampling Method: Disposable Bailer Pump
Decontamination Method: Triple Rinse (Liquinox) Steam Cleaned

Calculated Purge Volume

$$\frac{18.25 - 6.31}{11.94 \text{ ft} \times .16 \text{ Gal/Ft}} = 1.91 \text{ Gal} \times 3 = 5.73$$
 Total Depth of Well Depth to Water Water Column Conversion Factor Casing Vol Vols to Purge Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm)	Purge Vol (Gal)	Comments/Turbidity	Analysis Required	Container Type	Preserv
1411	84.6	7.48	1.98 ^{x1000}	1.25	clear	TPH-G/BTEX	VOA	HCL
1412	81.1	7.34	1.89	2.50		TPH-Diesel	Amber Liter	Solvent Rinsed
1413	80.7	7.29	1.84	3.75		EPA 601	VOA	
1415	80	7.26	1.82	4.75		TOG 5520BF	Amber Liter	H ₂ SO ₄
1416	79.7	7.23	1.80	5.75				

Begin 1409 Stop 1416 Sampled 1420

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-770
 Service Station No: 1120

Date: 8/25/93
 Field Personnel: LCB
 Address: Dublin, Ca

Well ID: MW-3 Field Activity: Well Development Well Sampling Product Bailing

Casing Diameter:

- 2 Inch (0.16 Gal/foot)
 3 Inch (0.37 Gal/foot)
 4 Inch (0.65 Gal/foot)
 4.5 Inch (0.83 Gal/foot)
 6 Inch (1.47 Gal/foot)

Purge Method:

- Pump (dispos. Poly Tubing)
 Disposable Bailers
 Other
 1.66 PVC Standard Bailer
 3.50 PVC Standard Bailer

Well Data:

- Depth to Product
 Product Thickness
 7.13 Depth to Water

Sampling Method:

- Disposable Bailer
 Pump

Decontamination Method:

- Triple Rinse (Liquinox)
 Steam Cleaned

Calculated Purge Volume

$$\frac{18.61}{18.61} - \frac{7.13}{7.13} = 11.48 \text{ ft} \times .16 \text{ Gal/Ft} = 1.84 \text{ Gal} \times 3 = 5.52$$

Total Depth of Well Depth to Water Water Column Conversion Factor Casing Vol Vols to Purge Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1436	84.5	7.60	^{X1000} 1.23	1.50	Clean	<input checked="" type="checkbox"/> TPH-G/BTEX	VOA	HCL
1438	81.9	7.51	1.20	2.75		TPH-Diesel	Amber Liter	Solvent Rinsed
1439	81.2	7.46	1.18	3.75		EPA 601	VOA	
1440	80.6	7.42	1.16	4.75		TOG 5520BF	Amber Liter	H ₂ SO ₄
1441	80.1	7.36	1.15	5.75				

Begin 1434

Stop 1441

1446

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-170
 Service Station No: 1120

Date: _____
 Field Personnel: _____
 Address: _____

Well ID: MW-4 Field Activity: Well Development Well Sampling Product Bailing

Casing Diameter:

- 2 Inch (0.16 Gal/foot)
 3 Inch (0.37 Gal/foot)
 4 Inch (0.65 Gal/foot)
 4.5 Inch (0.83 Gal/foot)
 6 Inch (1.47 Gal/foot)

Purge Method:

- Pump (dispos. Poly Tubing)
 Disposable Bailers
 Other
 1.66 PVC Standard Bailer
 3.50 PVC Standard Bailer

Well Data:

- Depth to Product
 Product Thickness
7.32 Depth to Water

Sampling Method:

- Disposable Bailer
 Pump

Decontamination Method:

- Triple Rinse (Liquinox)
 Steam Cleaned

Calculated Purge Volume

$$\frac{18.15 - 7.32}{10.83 \text{ ft} \times 0.16 \text{ Gal/Ft}} = 1.73 \text{ Gal} \times 3 = 5.19$$

Total Depth of Well Depth to Water Water Column Conversion Factor Casing Vol Vols to Purge Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/Turbidity	Analysis Required	Container Type	Preserv
1450	84.6	7.60	^{x1000} 1.44	1	Clear	<input checked="" type="checkbox"/> TPH-G/BTEX	VOA	HCL
1452	81.7	7.91	1.42	2	↓	TPH-Diesel	Amber Liter	Solvent Rinsed
1453	80.9	7.49	1.41	3		EPA 601	VOA	
1454	80.2	7.42	1.38	4		TOG 5520BF	Amber Liter	H ₂ SO ₄
1455	79.6	7.36	1.38	5.25				

Begin 1448

Stop 1455

Sampled 1500

Qc1 taken from this well

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-170
 Service Station No: 11120

Date: 8/25/93
 Field Personnel: LCB
 Address: Dublin, Ca

Well ID: MW-5 Field Activity: Well Development Well Sampling Product Bailing

Casing Diameter:

- 2 Inch (0.16 Gal/foot)
 3 Inch (0.37 Gal/foot)
 4 Inch (0.65 Gal/foot)
 4.5 Inch (0.83 Gal/foot)
 6 Inch (1.47 Gal/foot)

Purge Method:

- Pump (dispos. Poly Tubing)
 Disposable Bailers
 Other
 1.66 PVC Standard Bailer
 3.50 PVC Standard Bailer

Well Data:

- Depth to Product
 Product Thickness
7.28 Depth to Water

Sampling Method:

- Disposable Bailer
 Pump

Decontamination Method:

- Triple Rinse (Liquinox)
 Steam Cleaned

Calculated Purge Volume

$$\frac{21.35}{7.28} = 2.93 \text{ ft} \times 16 \text{ Gal/Ft} = 46.88 \text{ Gal} \times 3 = 140.64 \text{ Gal}$$

Total Depth of Well: 21.35
 Depth to Water: 7.28
 Water Column: 14.07 ft
 Conversion Factor: 16 Gal/Ft
 Casing Vol: 2.25
 Vols to Purge: 3
 Total Volume: 6.75

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1305	86.4	7.01	X1000 .88	1.50	Clear	<input checked="" type="checkbox"/> TPH-G/BTEX	VOA	HCL
1308	87.8	7.14	.85	2.50	↓	TPH-Diesel	Amber Liter	Solvent Rinsed
1311	80.4	7.15	.85	3.75		EPA 601	VOA	
1314	79.7	7.16	.83	5.25		TOG 5520BF	Amber Liter	H ₂ SO ₄
1317	79.2	7.14	.83	6.75				

Begin 1302

Stop 1317

Sampled 1321

Replaced lock

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-770
 Service Station No: 1120

Date: 8/25/93
 Field Personnel: LCB
 Address: Dublin, Ga

Well ID: MW-6 Field Activity: Well Development Well Sampling Product Bailing

<u>Casing Diameter:</u>	<u>Purge Method:</u>	<u>Well Data:</u>
<input type="checkbox"/> 2 Inch (0.16 Gal/foot)	<input checked="" type="checkbox"/> Pump (dispos. Poly Tubing)	<input type="checkbox"/> Depth to Product
<input type="checkbox"/> 3 Inch (0.37 Gal/foot)	<input type="checkbox"/> Disposable Bailers	<input checked="" type="checkbox"/> Product Thickness
<input checked="" type="checkbox"/> 4 Inch (0.65 Gal/foot)	<input type="checkbox"/> Other	<u>7.42</u> Depth to Water
<input type="checkbox"/> 4.5 Inch (0.83 Gal/foot)	<input type="checkbox"/> 1.66 PVC Standard Bailer	
<input type="checkbox"/> 6 Inch (1.47 Gal/foot)	<input type="checkbox"/> 3.50 PVC Standard Bailer	

<u>Sampling Method:</u>	<u>Decontamination Method:</u>
<input checked="" type="checkbox"/> Disposable Bailer	<input checked="" type="checkbox"/> Triple Rinse (Liquinox)
<input type="checkbox"/> Pump	<input type="checkbox"/> Steam Cleaned

Calculated Purge Volume

<u>19.25</u> - <u>7.42</u>	= <u>11.83</u> ft X <u>65</u> Gal/Ft = <u>7.69</u> Gal X <u>3</u> = <u>23.07</u>
Total Depth of Well	Depth to Water
Water Column	Conversion Factor
	Casing Vol
	Vols to Purge
	Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm)	Purge Vol (Gal)	Comments/Turbidity	Analysis Required	Container Type	Preserv	
1352	79.3	7.57	<u>1.15</u> ^{x1000}	4	Clear	<input checked="" type="checkbox"/>	VOA	HCL	
1354	78.7	7.43	1.17	9			TPH-Diesel	Amber Liter	Solvent Rinsed
1356	78.3	7.37	1.18	14			EPA 601	VOA	
1358	78.1	7.33	1.15	19			TOC 5520BF	Amber Liter	H ₂ SO ₄
1400	77.9	7.29	1.13	23.25	✓				

Begin | 350 Stop 1400 Sampled 1407

ALISTO ENGINEERING GROUP

Groundwater Development and Sampling Form

Client: BP
 Alisto Project No: 10-170
 Service Station No: 1120

Date: 8/25/93
 Field Personnel: LCB
 Address: Dublin, Ca

Well ID: MW-7 Field Activity: Well Development Well Sampling Product Bailing

Casing Diameter:

- 2 Inch (0.16 Gal/foot)
- 3 Inch (0.37 Gal/foot)
- 4 Inch (0.65 Gal/foot)
- 4.5 Inch (0.83 Gal/foot)
- 6 Inch (1.47 Gal/foot)

Purge Method:

- Pump (dispos. Poly Tubing)
- Disposable Bailers
- Other
- 1.66 PVC Standard Bailer
- 3.50 PVC Standard Bailer

Well Data:

- Depth to Product
- Product Thickness
- 7.94 Depth to Water

Sampling Method:

- Disposable Bailer
- Pump

Decontamination Method:

- Triple Rinse (Liquinox)
- Steam Cleaned

Calculated Purge Volume

$$\frac{20.25}{7.44} = 2.72 \text{ ft} \times 1.16 \text{ Gal/Ft} = 3.16 \text{ Gal} \times 3 = 9.48 \text{ Gal}$$

Total Depth of Well Depth to Water Water Column Conversion Factor Casing Vol Vols to Purge Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv	
1327	84.5	7.47	1.11	1.25	clear	<input checked="" type="checkbox"/>	VOA	HCL	
1329	81.5	7.39	1.15	2.50			TPH-Diesel	Amber Liter	Solvent Rinsed
1330	79.3	7.38	1.16	3.75			EPA 601	VOA	
1331	78.9	7.36	1.15	5.00			TOG 5520BF	Amber Liter	H ₂ SO ₄
1332	78.5	7.35	1.17	6.25					

Begin 1325
Stop 1332
Sampled 1337

Replaced lock

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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

September 07, 1993
 PACE Project Number: 430826520

Attn: Mr. Bill Howell

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141346
 Date Collected: 08/25/93
 Date Received: 08/26/93
 Client Sample ID: MW-1

<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):			-	09/02/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/02/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):				
Benzene	ug/L	0.5	ND	09/02/93
Toluene	ug/L	0.5	ND	09/02/93
Ethylbenzene	ug/L	0.5	ND	09/02/93
Xylenes, Total	ug/L	0.5	ND	09/02/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	0.07	08/31/93
Date Extracted			08/30/93	

Mr. Bill Howell
 Page 2

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141354
 Date Collected: 08/25/93
 Date Received: 08/26/93
 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):			-	09/02/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/02/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/02/93
Benzene	ug/L	0.5	ND	09/02/93
Toluene	ug/L	0.5	ND	09/02/93
Ethylbenzene	ug/L	0.5	ND	09/02/93
Xylenes, Total	ug/L	0.5	ND	09/02/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L	0.05	0.07	08/31/93
Date Extracted			08/30/93	

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
 Page 3

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141362
 Date Collected: 08/25/93
 Date Received: 08/26/93
 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):			-	09/02/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	2000	09/02/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/02/93
Benzene	ug/L	0.5	ND	09/02/93
Toluene	ug/L	0.5	ND	09/02/93
Ethylbenzene	ug/L	0.5	ND	09/02/93
Xylenes, Total	ug/L	0.5	ND	09/02/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L	0.05	0.44	08/31/93
Date Extracted			08/30/93	

Mr. Bill Howell
 Page 4

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141370
 Date Collected: 08/25/93
 Date Received: 08/26/93
 Client Sample ID: MW-4

<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):			-	09/02/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1800	09/02/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/02/93
Benzene	ug/L	0.5	ND	09/02/93
Toluene	ug/L	0.5	ND	09/02/93
Ethylbenzene	ug/L	0.5	ND	09/02/93
Xylenes, Total	ug/L	0.5	ND	09/02/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L	0.05	0.38	08/31/93
Date Extracted			08/30/93	

Mr. Bill Howell
 Page 5

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141389
 Date Collected: 08/25/93
 Date Received: 08/26/93
 Client Sample ID: MW-5

<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):		-	09/02/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND 09/02/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):		-	09/02/93
Benzene	ug/L	0.5	ND 09/02/93
Toluene	ug/L	0.5	ND 09/02/93
Ethylbenzene	ug/L	0.5	ND 09/02/93
Xylenes, Total	ug/L	0.5	ND 09/02/93
EXTRACTABLE FUELS EPA 3510/8015			
Extractable Fuels, as Diesel	mg/L	0.05	0.07 08/31/93
Date Extracted			08/30/93

Mr. Bill Howell
 Page 6

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141397
 Date Collected: 08/25/93
 Date Received: 08/26/93
 Client Sample ID: MW-6

<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):			-	09/03/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/03/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/03/93
Benzene	ug/L	0.5	ND	09/03/93
Toluene	ug/L	0.5	ND	09/03/93
Ethylbenzene	ug/L	0.5	ND	09/03/93
Xylenes, Total	ug/L	0.5	ND	09/03/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L	0.05	0.17	08/31/93
Date Extracted			08/30/93	

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
 Page 7

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141400
 Date Collected: 08/25/93
 Date Received: 08/26/93
 Client Sample ID: MW-7

<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):			-	09/03/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/03/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/03/93
Benzene	ug/L	0.5	ND	09/03/93
Toluene	ug/L	0.5	ND	09/03/93
Ethylbenzene	ug/L	0.5	ND	09/03/93
Xylenes, Total	ug/L	0.5	ND	09/03/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L	0.05	0.15	08/31/93
Date Extracted			08/30/93	

Mr. Bill Howell
 Page 8

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141419
 Date Collected: 08/25/93
 Date Received: 08/26/93
 Client Sample ID: QC-1

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

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/03/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1600	09/03/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/03/93
Benzene	ug/L	0.5	ND	09/03/93
Toluene	ug/L	0.5	ND	09/03/93
Ethylbenzene	ug/L	0.5	ND	09/03/93
Xylenes, Total	ug/L	0.5	ND	09/03/93

Mr. Bill Howell
 Page 9

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PACE Sample Number: 70 0141427
 Date Collected: 08/25/93
 Date Received: 08/26/93
 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):			-	09/03/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/03/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/03/93
Benzene	ug/L	0.5	ND	09/03/93
Toluene	ug/L	0.5	ND	09/03/93
Ethylbenzene	ug/L	0.5	ND	09/03/93
Xylenes, Total	ug/L	0.5	ND	09/03/93

These data have been reviewed and are approved for release.



Darrell C. Cain
 Regional Director

Mr. Bill Howell
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FOOTNOTES
for pages 1 through 9

September 07, 1993
PACE Project Number: 430826520

Client Reference: BP Station # 11120

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

Mr. Bill Howell
 Page 11

QUALITY CONTROL DATA

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

EXTRACTABLE FUELS EPA 3510/8015

Batch: 70 24129

Samples: 70 0141346, 70 0141354, 70 0141362, 70 0141370, 70 0141389
 70 0141397, 70 0141400

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	85%	100%	16%

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
 Page 12

QUALITY CONTROL DATA

September 07, 1993
 PACE Project Number: 430826520

Client Reference: BP Station # 11120

PURGEABLE FUELS AND AROMATICS

Batch: 70 24256

Samples: 70 0141346, 70 0141354, 70 0141362, 70 0141370, 70 0141389
 70 0141397, 70 0141400, 70 0141419, 70 0141427

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	93%	93%	0%
Benzene	ug/L	0.5	100	94%	96%	2%
Toluene	ug/L	0.5	100	94%	94%	0%
Ethylbenzene	ug/L	0.5	100	91%	93%	2%
Xylenes, Total	ug/L	0.5	300	98%	99%	1%

Mr. Bill Howell
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FOOTNOTES
for pages 11 through 12

September 07, 1993
PACE Project Number: 430826520

Client Reference: BP Station # 11120

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

No 0374

430826.520



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 #: 10-170-01/001		Page 1 of 1
Address: 1777 Oakland Blvd #200, Walnut Creek, Ca 94596				
Project Contact: Bill Howell		Phone #: (510) 295-1650 Fax #: 295-1823		Consultant Work Order #:
Sampled by (print): LOB		Sampler's Signature: <i>July B...</i>		B.P. Site Location #: 11120
Shipment Method: Courier		Airbill #:	Shipment Date:	B.P. Site Location: Dublin, Ca
TAT: <input type="checkbox"/> 24 hr <input type="checkbox"/> 48 hr <input type="checkbox"/> 72 hr <input checked="" type="checkbox"/> 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	TPH/Diesel	TRPH	HVOC														
						EPA 8015/8020	EPA 8015	EPA 418.1	8010														
MW-1	8/25/93	W	HCL Vials	4	14134.6	X	X																
MW-2					35.4																		
MW-3					36.2																		
MW-4					37.0																		
MW-5					38.9																		
MW-6					39.7																		
MW-7					40.0																		
QC-1				3	41.9	X																	
QC-2				2	42.7	X																	
10/2, H/1																							

COMMENTS

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time	Additional Comments:
<i>July B...</i>	8/26/93	1200	<i>Ed...</i>	8/26	1200	
<i>John...</i>	8/26	1310	<i>...</i>	8/26	1310	