BP OIL

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

May 18, 1993

Mr. Rafat Shahid
Alameda County Health Agency
80 Swan Way, Room 200
Oakland, CA 94621

RE: BP OIL FACILITY #11116
7197 Village Parkway
Dublin, CA

Dear Mr. Shahid:

Attached please find our **GROUNDWATER 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
Group Leader

STH:jc ERM11116

cc: Mr. Eddy So, California Regional Water Quality Control Board, San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, Ca 94612

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

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

Site file

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11116
7197 Village Parkway
Dublin, California

Project No. 10-017

Prepared for:

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

Prepared by:

Alisto Engineering Group
1777 Oakland Road, Suite 200
Walnut Creek, California 94596
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April 27, 1993

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11116
7197 Village Parkway
Dublin, California

Project No. 10-017

April 27, 1993

INTRODUCTION

This report presents the results and findings of the February 10, 1993 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11116, 7197 Village Parkway, 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 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.

Depth to groundwater measurements were performed concurrently with the neighboring Unocal Corporation service station, 7375 Amador Valley Boulevard; the former Shell Oil Company service station, 7194 Amador Valley Boulevard; and the Arco Products Company service station, 7249 Village Parkway. The results are presented in Tables 2, 3, and 4.

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 collected for this and previous quarters at the BP Oil Company site are summarized in Table 1. The potentiometric surface elevations for groundwater in the vicinity, as interpreted from the results of this coordinated 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. 11116
7197 VILLAGE PARKWAY, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-017

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-1	10/12/90	335.17	9.92	325.25	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-1	11/15/90	335.17	10.16	325.01	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-1	12/11/90	335.17	9.97	325.20	---	---	---	---	---	---	---	---	---
MW-1	02/15/91	335.17	9.89	325.28	ND<50	50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	41 (c)	SUP
MW-1	05/14/91	335.17	8.43	326.74	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	7,500	ND	SUP
MW-1	08/23/91	335.17	9.98	325.19	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	ANA
MW-1	11/13/91	335.17	10.09	325.08	ND<30	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SEQ
MW-1	02/25/92	335.17	8.28	326.89	ND<30	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SEQ
MW-1	04/15/92	335.17	8.50	326.67	---	---	---	---	---	---	---	---	---
MW-1	06/03/92	335.17	9.06	326.11	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-1	08/12/92	335.17	10.01	325.16	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-1	11/10/92	335.17	10.67	324.50	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-1	02/10/93	335.17	5.25	329.92	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	PACE
MW-2	10/12/90	334.58	9.60	324.98	93	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-2	11/15/90	334.58	9.68	324.90	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-2	12/11/90	334.58	9.47	325.11	---	---	---	---	---	---	---	---	---
MW-2	02/15/91	334.58	9.28	325.30	ND<50	60 (d)	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	45 (c)	SUP
MW-2	05/14/91	334.58	7.74	326.84	130 (e)	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	6,000	ND	SUP
MW-2	08/23/91	334.58	9.81	324.77	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	ANA
MW-2	11/13/91	334.58	9.73	324.85	ND<30	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SEQ
MW-2	02/25/92	334.58	7.55	327.03	ND<30	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SEQ
MW-2	04/15/92	334.58	8.00	326.58	---	---	---	---	---	---	---	---	---
MW-2	06/03/92	334.58	8.56	326.02	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-2	08/12/92	334.58	9.62	324.96	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-2	11/10/92	334.58	10.27	324.31	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-2	02/10/93	334.58	6.46	328.12	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11116
7197 VILLAGE PARKWAY, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-017

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-3	10/12/90	335.13	10.08	325.05	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-3	11/15/90	335.13	10.12	325.01	76	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-3	12/11/90	335.13	9.92	325.21	---	---	---	---	---	---	---	---	---
MW-3	02/15/90	335.13	9.84	325.29	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SUP
MW-3	05/14/91	335.13	8.40	326.73	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SUP
MW-3	08/23/91	335.13	10.27	324.86	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	ANA
MW-3	11/13/91	335.13	10.27	324.86	ND<30	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SEQ
MW-3	02/25/92	335.13	8.15	326.98	ND<30	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5,000	ND	SEQ
MW-3	04/15/92	335.13	8.63	326.50	---	---	---	---	---	---	---	---	---
MW-3	06/03/92	335.13	9.18	325.95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-3	08/12/92	335.13	10.18	324.95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-3	11/10/92	335.13	10.78	324.35	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	ANA
MW-3	02/10/93	335.13	7.16	327.97	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5,000	ND	PACE
AW-4	11/15/90	333.41	8.51	324.90	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-4	12/11/90	333.41	9.19	324.22	---	---	---	---	---	---	---	---	---
AW-4	02/15/91	333.41	8.32	325.09	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
AW-4	05/14/91	333.41	6.97	326.44	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
AW-4	08/23/91	333.41	8.59	324.82	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	ANA
AW-4	11/13/91	333.41	8.57	324.84	ND<30	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SEQ
AW-4	02/25/92	333.41	6.26	327.15	ND<30	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SEQ
AW-4	04/15/92	333.41	7.05	326.36	---	---	---	---	---	---	---	---	---
AW-4	06/03/92	333.41	7.41	326.00	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-4	08/12/92	333.41	8.45	324.96	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-4	11/10/92	333.41	9.10	324.31	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-4 (e)	02/10/93	333.41	---	---	---	---	---	---	---	---	---	---	---

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11116
7197 VILLAGE PARKWAY, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-017

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
AW-5	11/15/90	334.81	9.67	325.14	ND<50	---	1.3	ND<0.5	ND<0.5	1.0	---	---	ANA
AW-5	12/11/90	334.81	9.44	325.37	---	---	---	---	---	---	---	---	---
AW-5	02/15/91	334.81	10.00	324.81	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
AW-5	05/14/91	334.81	8.64	326.17	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
AW-5	08/23/91	334.81	9.58	325.23	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	ANA
AW-5	11/13/91	334.81	9.80	325.01	100	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SEQ
AW-5	02/25/92	334.81	7.89	326.92	ND<30	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SEQ
AW-5	04/15/92	334.81	8.54	326.27	---	---	---	---	---	---	---	---	---
AW-5	06/03/92	334.81	8.97	325.84	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-5	08/12/92	334.81	9.73	325.08	61	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-5	11/10/92	334.81	10.27	324.54	99	---	ND<0.5	ND<0.5	ND<0.5	0.8	---	---	ANA
QC-1 (f)	11/10/92	---	---	---	86	---	ND<0.5	ND<0.5	ND<0.5	0.7	---	---	ANA
AW-5	02/10/93	334.81	7.29	327.52	82	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
AW-6	11/15/90	334.90	9.58	325.32	230	---	25	ND<0.5	ND<0.5	0.8	---	---	ANA
AW-6	12/11/90	334.90	9.58	325.32	---	---	---	---	---	---	---	---	---
AW-6	02/15/91	334.90	9.66	325.24	ND<50	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
AW-6	05/14/91	334.90	8.38	326.52	90	---	2	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
AW-6	08/23/91	334.90	9.61	325.29	57	---	ND<0.5	0.7	1.3	4.6	---	---	ANA
AW-6	11/13/91	334.90	9.58	325.32	200	---	ND<0.3	ND<0.3	ND<0.3	0.94	---	---	SEQ
AW-6	02/25/92	334.90	8.00	326.90	19000	---	8000	4700	600	2400	---	---	SEQ
AW-6	03/05/92	334.90	7.98	326.92	14000	---	5200	2500	550	2200	---	---	SEQ
AW-6	04/15/92	334.90	8.33	326.57	1100	---	400	ND<3.0	30	ND<3.0	---	---	SEQ
AW-6	06/03/92	334.90	8.91	325.99	77	---	4.4	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-6	08/12/92	334.90	9.61	325.29	80	---	4.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
AW-6	11/10/92	334.90	10.10	324.80	450	---	120	2.1	4.5	9.7	---	---	ANA
AW-6	02/10/93	334.90	7.13	327.77	14000	---	610	17	15	720	---	---	PACE
QC-1 (g)	02/10/93	---	---	---	12000	---	520	15	13	610	---	---	PACE

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11116
7197 VILLAGE PARKWAY, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-017

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
QC-2 (h)	11/10/92	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
QC-2 (h)	02/10/93	---	---	---	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 at or above reported detection limit
---	Not analyzed/available
ANA	Anametrix, Inc
SUP	Superior Analytical Laboratory
SEQ	Sequoia Analytical laboratory
PACE	Pace, Inc

NOTES:

(a) Top of casing elevation for all wells surveyed in reference to the City of Dublin monument at intersection of Village Parkway and Amador Valley Boulevard, with an elevation of 335.92 feet above mean sea level.

(b) In feet above mean sea level.

(c) Methylene chloride.

(d) Typical chromatogram patterns not present.

(e) Well could not be located.

(f) Blind duplicate of sample collected from MW-5.

(g) Blind duplicate of sample collected from AW-6.

(h) Travel blank.

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING
UNOCAL CORPORATION SERVICE STATION
7375 AMADOR VALLEY BOULEVARD, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-017

WELL ID	DATE OF MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)
MW-1	08/12/92	336.72	11.32	325.40
MW-1	11/10/92	336.72	11.97	324.75
MW-1	02/10/93	336.72	8.63	328.09
MW-2	08/12/92	337.36	11.48	325.88
MW-2	11/10/92	337.36	12.15	325.21
MW-2	02/10/93	337.36	8.81	328.55
MW-3	08/12/92	337.53	11.64	325.89
MW-3	11/10/92	337.53	12.33	325.20
MW-3	02/10/93	337.53	8.95	328.58
MW-4	08/12/92	337.00	11.62	325.38
MW-4	11/10/92	337.00	12.32	324.68
MW-4	02/10/93	337.00	8.94	328.06

NOTES:

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

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

TABLE 3 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING
SHELL OIL COMPANY SERVICE STATION
7194 AMADOR VALLEY BOULEVARD, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-017

WELL ID	DATE OF MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)
MW-1	08/12/92	334.83	9.15	325.68
MW-1	11/10/92	334.83	10.04	324.79
MW-2	08/12/92	336.96	11.58	325.38
MW-2	11/10/92	336.96	12.05	324.91
MW-3	08/12/92	336.93	10.94	325.99
MW-3	11/10/92	336.93	11.84	325.09
MW-4	08/12/92	337.14	11.36	325.78
MW-4	11/10/92	337.14	12.12	325.02
MW-5	08/12/92	334.96	9.40	325.56
MW-5	11/10/92	334.96	9.65	325.31
MW-6	08/12/92	335.42	9.72	325.70
MW-6	11/10/92	335.42	10.56	324.86
MW-7	08/12/92	333.23	8.65	324.58
MW-7	11/10/92	333.23	8.82	324.41
MW-8	08/12/92	335.80	9.82	325.98
MW-8	11/10/92	335.80	10.41	325.39
MW-9	08/12/92	334.57	8.97	325.60
MW-9	11/10/92	334.57	9.61	324.96
MW-10 (c)	—	—	—	—
MW-11	08/12/92	334.20	8.75	325.45
MW-11	11/10/92	334.20	9.47	324.73
MW-12	08/12/92	332.53	9.83	322.70
MW-12	11/10/92	332.53	8.32	324.21
MW-13	08/12/92	335.64	10.91	324.73
MW-13	11/10/92	335.64	10.69	324.95
RW-1 (d)	08/12/92	—	—	—
RW-1 (d)	11/10/92	—	—	—

NOTES.

(a) Top of casing elevation for all wells surveyed to the nearest 0 01 foot above mean sea level

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

(c) Monitoring Well MW-10 was destroyed.

(d) Data not available.

TABLE 4 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING
ARCO PRODUCTS SERVICE STATION 6041
7249 VILLAGE PARKWAY, DUBLIN, CALIFORNIA

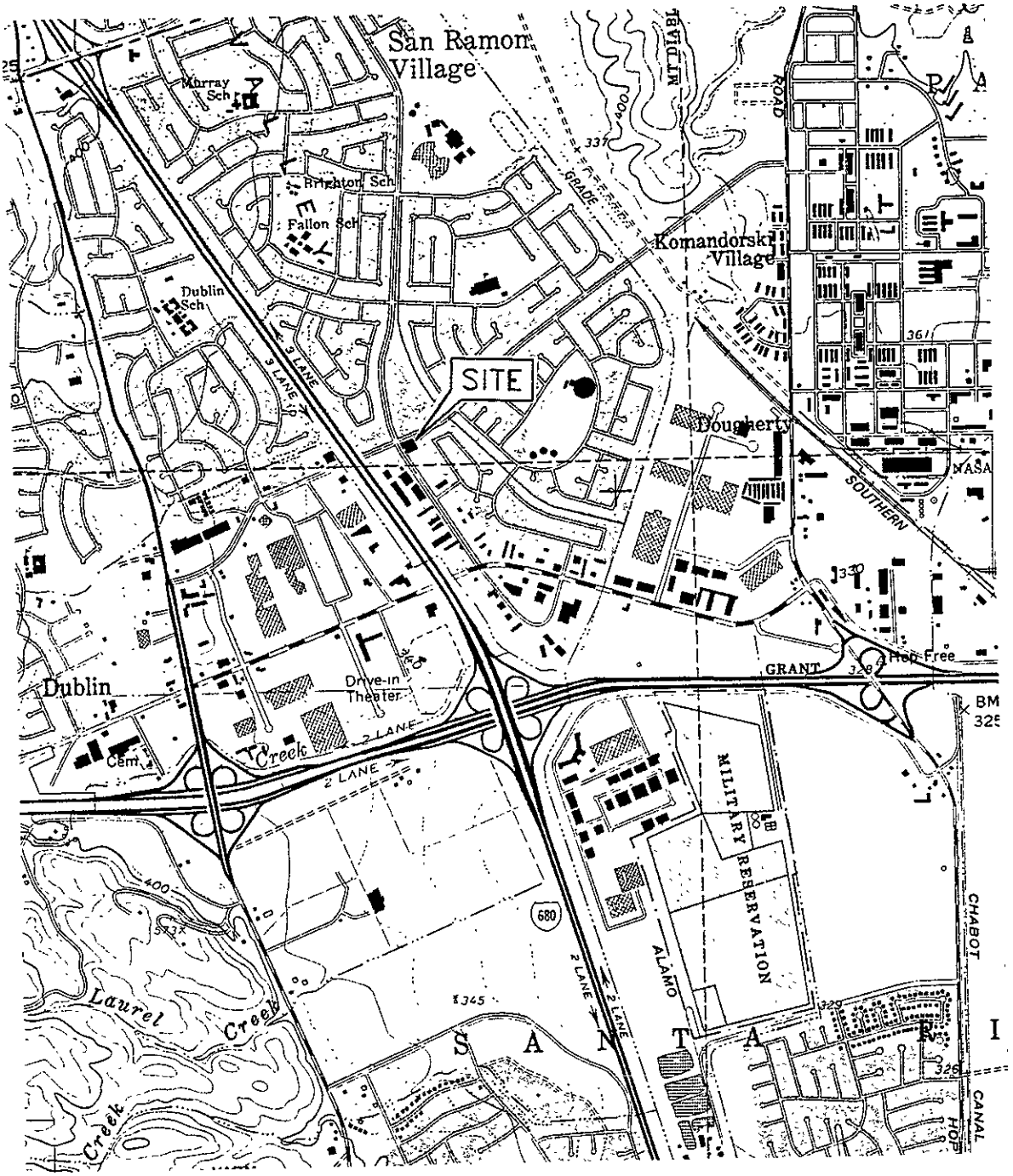
ALISTO PROJECT NO. 10-017

WELL ID	DATE OF MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)
MW-1	11/10/92	336.56	11.74	324.82
MW-1	02/10/93	336.56	9.66	326.90
MW-2	11/10/92	334.80	10.12	324.68
MW-2	02/10/93	334.80	7.30	327.50
MW-3	11/10/92	335.53	10.72	324.81
MW-3	02/10/93	335.53	7.87	327.66
MW-4	11/10/92	334.22	9.58	324.64
MW-4	02/10/93	334.22	6.80	327.42
MW-5	11/10/92	335.87	11.02	324.85
MW-5	02/10/93	335.87	8.00	327.87
MW-6	11/10/92	335.84	11.03	324.81
MW-6	02/10/93	335.84	8.22	327.62

NOTES:

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

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



N

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

FIGURE 1

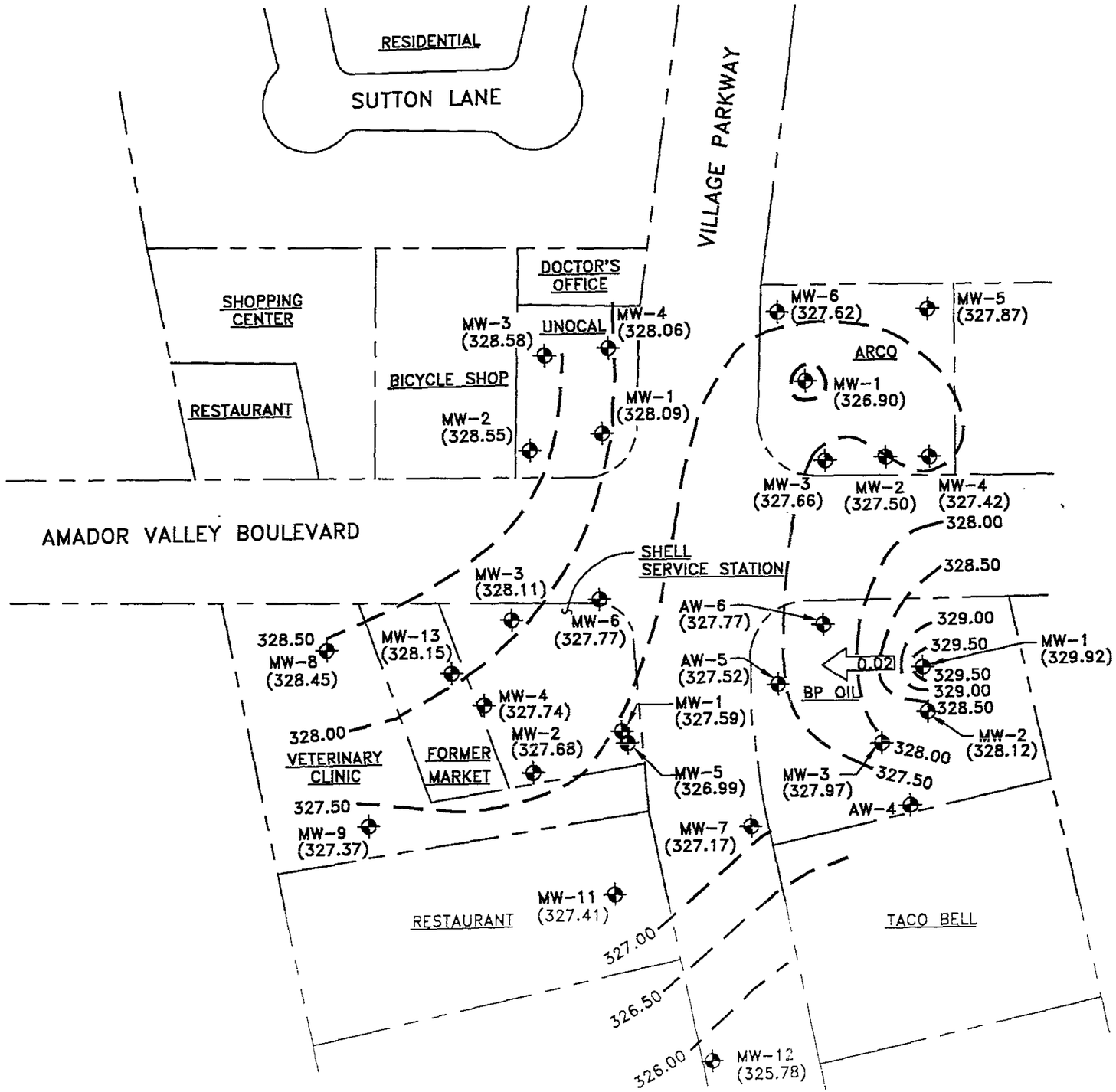
SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11116
7197 VILLAGE PARKWAY
DUBLIN, CALIFORNIA

0 1000' 2000'

ALISTO PROJECT NO. 10-017

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA



LEGEND:

- ⌖ GROUNDWATER MONITORING WELL
- (329.92) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 326.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL – 0.50 FOOT)
- 0.02 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

FIGURE 2

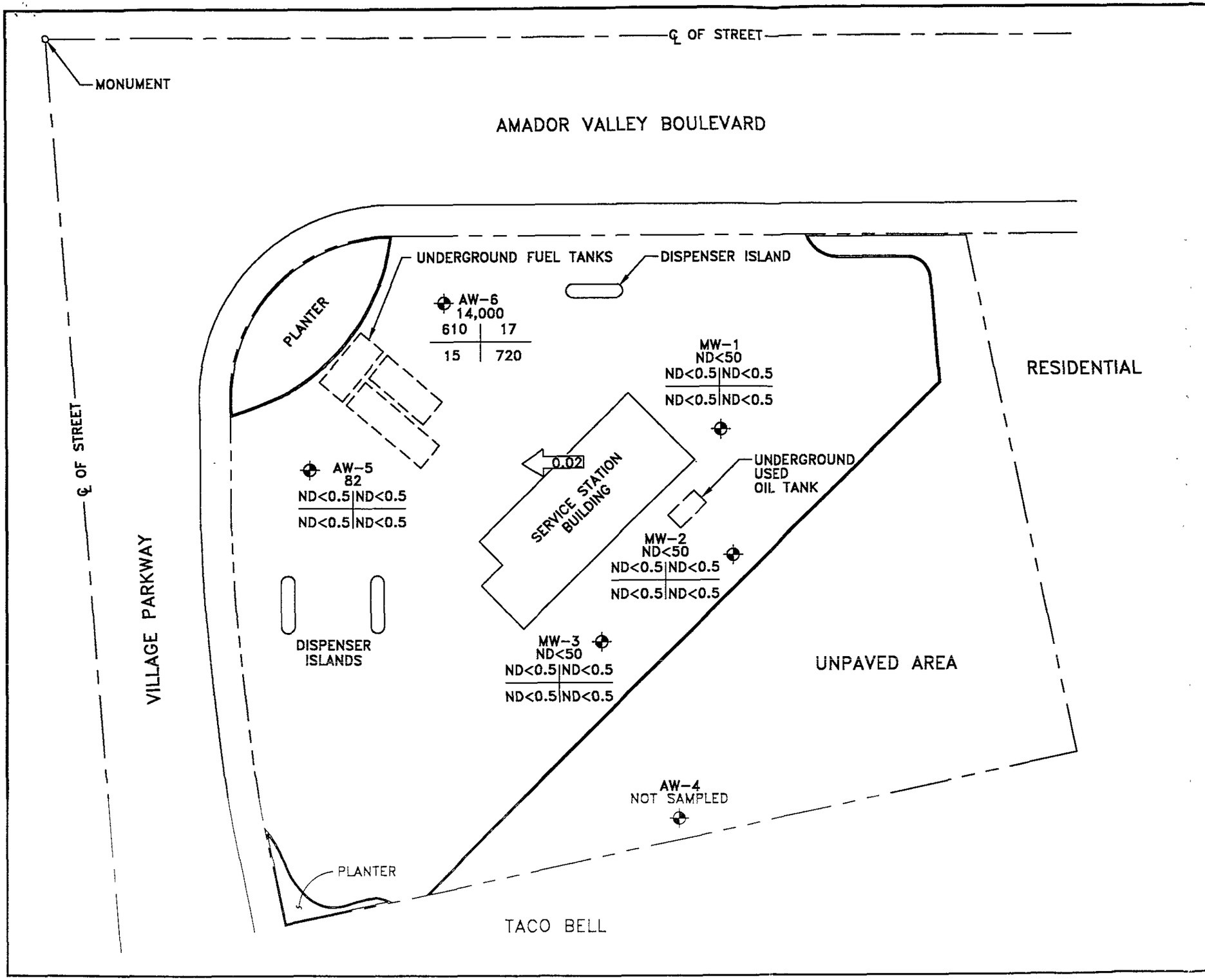
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP
(FEBRUARY 10, 1993)

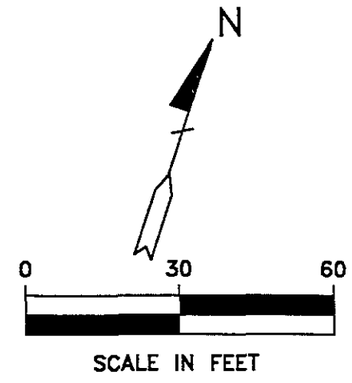
BP OIL SERVICE STATION NO. 11116
7197 VILLAGE PARKWAY
DUBLIN, CALIFORNIA

PROJECT NO. 10-017

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10017D8E.DWG 4-27-93 KH 1=100





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
- 0.02 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER (FEBRUARY 10, 1993)

BP OIL SERVICE STATION NO. 11116
7197 VILLAGE PARKWAY
DUBLIN, CALIFORNIA

PROJECT NO. 10-017

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10017E-E.DWG 4-26-93 1=30

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

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

Field Report / Data Sheet

ØGroundwater Sampling OGroundwater Monitoring OWell Development ODrill Support OStockpile Sampling

Firm:	Date:	Station #:	Day: M Tu (W) Th F
AUSTO	2/10/93	BP11116	
Project Number:	Field Technician:	Address:	Weather:
10-017	DAN BIRCH	7197 Village Pkwy, Dublin	Clear, cool
			Milage: mi

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
	MW-1	2	ok	ok	25.90	5.25	5.25			
	MW-2	2	ok	ok	25.70	6.46	6.46			
	MW-3	2	ok	ok	25.44	7.16	7.16			
	AW-4	4			34.24					well destroyed during plowing of field.
	AW-5	4	ok	ok	33.14	7.29	7.29			
	AW-6	4	ok	ok	16.81	7.13	7.13			

Notes: Travel to site and check in with station Manager. Open wells to let breathe before measuring depth to water. I was unable to locate AW-4 on adjacent triangular lot. The well was buried or destroyed by plowing of the field. Wells were sampled as discribed on "Groundwater sampling form".

Inv#:

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Well Number: MW-1

Project Number: 10-017
Station Number: BP11116
Date: 2/10/93

Sample Type: ⊗Groundwater OTrip Blank ODuplicate of _____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

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

Total Depth of Well 25.90 Initial Water Level: 5.25

Total Volume Purged: 10 Time Elapsed: 12

PURGE METHOD:
⊗Honda Pump
⊗Disposable PolyTubing(28 ft)
OSpeed Winch
ODisposable PVC Bailer(s)(____)
OOther _____

Calculated Purge Volume:

Total Depth	Water Level		Well Vol. Fac.		#of vol. to Purge		Calculated Purge Volume
25.90	5.25	= 20.65 x	.16	= ~~3.03~~ 3.3 x	3	=	9.9 (gallons)

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: 1115
Solution pH 7.00 7 at 59 °F
Solution pH 4.00 4 at 59 °F
Solution pH 10.00 10 at 59 °F
Water Level Meter#: 10337

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther: _____

Time Sampled (24 hour clock) 1343

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
3	1335	64.8	7.09	7.06
6	1339	65.5	6.57	7.42
10	1343	65.6	6.60	7.44

	Analysis Required	No. of	Container Type	Preservatives
X	EPA 601	3	VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
X	TPH- Diesel	1	Amber Liter	
X	TOG 5520 BF	1	Amber Liter	H_2SO_4

Birch Technical Services

GROUNDWATER SAMPLING FORM

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

Project Number: 10-017
Station Number: BP11116
Date: 2/10/93

Well Number: MW-2
Sample Type: ⊗Groundwater OTrip Blank ODuplicate of _____
Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

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

Total Depth of Well 25.70 Initial Water Level: 6.46
Total Volume Purged: 10 Time Elapsed: 7

PURGE METHOD:
⊗Honda Pump
ODisposable PolyTubing(29 ft)
OSpeed Winch
ODisposable PVC Bailer(s)(___)
OOther_____

Calculated Purge Volume:

25.70 (Total Depth) - 6.46 (Water Level) = 19.24 x .16 (Well Vol. Fac.) = 3.0 x 3 (#of vol. to Purge) = 9.0 (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: 1115
Solution pH 7.00 7 at 59 °F
Solution pH 4.00 4 at 59 °F
Solution pH 10.00 10 at 59 °F
Water Level Meter#: 10337

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock) 1315

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
3	1310	65.4	6.65	6.60
6	1313	64.7	6.73	6.84
10	1315	65.8	6.66	8.75

	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

GROUNDWATER SAMPLING FORM

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

Well Number: MW-3

Project Number: 10-017
Station Number: BP11116
Date: 2/10/93

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 25.44 Initial Water Level: 7.16

Total Volume Purged: 9 Time Elapsed: 10

PURGE METHOD:
⊗Honda Pump
⊗Disposable PolyTubing(29 ft)
OSpeed Winch
ODisposable PVC Bailer(s)(___)
OOther_____

Calculated Purge Volume:

25.44 (Total Depth) - 7.16 (Water Level) = 18.28 x .16 (Well Vol. Fac.) = 2.92 x 3 (#of vol. to Purge) = 8.7 (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: 1115

Solution pH 7.00 7 at 59 °F
Solution pH 4.00 4 at 58 °F
Solution pH 10.00 10 at 59 °F
Water Level Meter#: 10337

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock): 1239

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
3	1230	66.8	6.37	5.94
6	1236	67.2	6.41	7.94
9	1239	67.7	6.43	7.97

Analysis Required	No. of	Container Type	Preservatives
X EPA 601	3	VOA's	
X TPH-G/BTEX	3	VOA's	HCl
X TPH- Diesel	1	Amber Liter	
X TOG 5520 BF	1	Amber Liter	H_2SO_4

Birch Technical Services

GROUNDWATER SAMPLING FORM

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

Project Number: 10-017
Station Number: BP11116
Date: 2/10/93

Well Number: AW-4
Sample Type: XGroundwater OTrip Blank ODuplicate of _____
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:_____

Calculated Purge Volume:

PURGE METHOD:
OHeada Pump
ODisposable PolyTubing(____ft)
OSpeed Winch
ODisposable PVC Bailer(s)(____)
OOther_____

_____ - _____ = _____ 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: Well could not be located. It apparently was dislodged in the process of plowing the field adjacent to the site

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock): NOT

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

Birch Technical Services

GROUNDWATER SAMPLING FORM

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

Project Number: 10-017
Station Number: BP11116
Date: 2/10/93

Well Number: AW-5

Sample Type: ☒Groundwater OTrip Blank ODuplicate of _____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) Volume Factors:

O 2"	O3"	☒4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well 33.14 Initial Water Level: 7.29

Total Volume Purged: 50.5 Time Elapsed: _____

PURGE METHOD:
☒ ~~Honda Pump~~
☒ ~~ODisposable PolyTubing~~(35 ft)
OSpeed Winch
ODisposable PVC Bailer(s)(____)
OOther _____

Calculated Purge Volume:

33.14 (Total Depth) - 7.29 (Water Level) = 25.85 x .65 (Well Vol. Fac.) = 16.8 x 3 (#of vol. to Purge) = 50.4 (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: 1115
Solution pH 7.00 7 at 59 °F
Solution pH 4.00 4 at 59 °F
Solution pH 10.00 10 at 59 °F
Water Level Meter#: 10337

SAMPLING METHOD

☒ ~~OPVC~~ Disposable Bailer
OTeflon Bailer
OOther: _____

Time Sampled (24 hour clock) 1459

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
10	1443	65.4	6.97	1.91
30	1447	68.3	6.99	2.03
40	1450	68.9	6.98	2.42
50.5	1459	68.9	6.99	2.41

	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

Well Number: ~~MW-6~~ AW-6

Project Number: 10-017

Station Number: BP11116

Date: 2/10/93

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

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

O 2"	O3"	X4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well 16.81 Initial Water Level: 7.13

Total Volume Purged: _____ Time Elapsed: _____

PURGE METHOD:

~~X~~ Honda Pump
~~X~~ O Disposable PolyTubing(20 ft)
O Speed Winch
O Disposable PVC Bailer(s)(____)
O Other _____

Calculated Purge Volume:

16.81 (Total Depth) - 7.13 (Water Level) = 9.68 x .65 (Well Vol. Fac.) = 6.3 x 3 (#of vol. to Purge) = 18.9 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN O Yes ~~X~~ No Depth to Product _____ (ft) Product Thickness _____ (ft)

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1115

Solution pH 7.00 7 at 59 °F
Solution pH 4.00 4 at 59 °F
Solution pH 10.00 10 at 59 °F

Water Level Meter#: 10337

COMMENTS:

Duplicate sample QC-1 was collected from AW-6

SAMPLING METHOD

~~X~~ PVC Disposable Bailer
O Teflon Bailer
O Other: _____

Time Sampled (24 hour clock) 1417

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
10	1410	65.6	6.95	1.03
15	1413	65.4	6.95	1.03
20	1417	65.0	6.96	1.04

	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

Well Number: QC-1

Project Number: 10-017
Station Number: BP11116
Date: 2/10/93

Sample Type: OGroundwater OTrip Blank XDuplicate of AW-6

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:_____

Calculated Purge Volume:

_____ - _____ = _____ x _____ = _____ x _____ = _____ (gallons)
Total Depth | Water Level | Well Vol. Fac. | #of vol. to Purge | Calculated Purge Volume

PURGE METHOD:
O Honda Pump
ODisposable Poly Tubing(____ft)
OSpeed Winch
ODisposable PVC Bailer(s)(____)
OOther_____

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 from AW-6

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock) 1419

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

Well Number: QC-2

Project Number: 10-017

Station Number: BP1116

Date: 10/1 - 1 / 2 10 93

Sample Type: OGroundwater X OTrip Blank ODuplicate of _____

Sampled by: Dan Burel

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:_____

Calculated Purge Volume:

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

_____ - _____ = _____ 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:

TRIP BLANK WAS Supplied by PACE.

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hour clock) 1510

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	2	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2SO_4

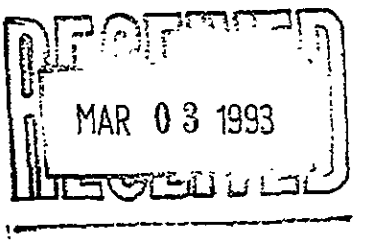
APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

10-017/004

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS



February 24, 1993

Mr. Brady Nagle
Alisto Engineering Group
1000 Burnett Ave., Ste. 420
Concord, CA 94520

RE: PACE Project No. 430211.510
Client Reference: BP Station # 11116

Dear Mr. Nagle:

Enclosed is the report of laboratory analyses for samples received February 11, 1993.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephanie Matzo

Stephanie Matzo
Project Manager

Enclosures

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

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Alisto Engineering Group
1000 Burnett Ave., Ste. 420
Concord, CA 94520

February 24, 1993
PACE Project Number: 430211510

Attn: Mr. Brady Nagle

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008476	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			MW-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/15/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	02/15/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/15/93
Benzene	ug/L	0.5	ND	02/15/93
Toluene	ug/L	0.5	ND	02/15/93
Ethylbenzene	ug/L	0.5	ND	02/15/93
Xylenes, Total	ug/L	0.5	ND	02/15/93
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dichlorodifluoromethane	ug/L	2.0	ND	02/23/93
Chloromethane	ug/L	2.0	ND	02/23/93
Vinyl Chloride	ug/L	2.0	ND	02/23/93
Bromomethane	ug/L	2.0	ND	02/23/93
Chloroethane	ug/L	2.0	ND	02/23/93
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	02/23/93
1,1-Dichloroethene	ug/L	0.5	ND	02/23/93
Methylene Chloride	ug/L	2.0	ND	02/23/93
trans-1,2-Dichloroethene	ug/L	0.5	ND	02/23/93
cis-1,2-Dichloroethene	ug/L	0.5	ND	02/23/93
1,1-Dichloroethane	ug/L	0.5	ND	02/23/93
Chloroform	ug/L	0.5	ND	02/23/93
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	02/23/93
Carbon Tetrachloride	ug/L	0.5	ND	02/23/93
1,2-Dichloroethane (EDC)	ug/L	0.5	ND	02/23/93
Trichloroethene (TCE)	ug/L	0.5	ND	02/23/93
1,2-Dichloropropane	ug/L	0.5	ND	02/23/93
Bromodichloromethane	ug/L	0.5	ND	02/23/93
2-Chloroethylvinyl ether	ug/L	0.5	ND	02/23/93
cis-1,3-Dichloropropene	ug/L	0.5	ND	02/23/93

REPORT OF LABORATORY ANALYSIS

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0008476	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			MW-1	
ORGANIC ANALYSIS				
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
trans-1,3-Dichloropropene	ug/L	0.5	ND	02/23/93
1,1,2-Trichloroethane	ug/L	0.5	ND	02/23/93
Tetrachloroethene	ug/L	0.5	ND	02/23/93
Dibromochloromethane	ug/L	0.5	ND	02/23/93
Chlorobenzene	ug/L	0.5	ND	02/23/93
Bromoform	ug/L	0.5	ND	02/23/93
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	02/23/93
1,3-Dichlorobenzene	ug/L	0.5	ND	02/23/93
1,4-Dichlorobenzene	ug/L	0.5	ND	02/23/93
1,2-Dichlorobenzene	ug/L	0.5	ND	02/23/93
Bromochloromethane (Surrogate Recovery)			100%	02/23/93
1,4-Dichlorobutane (Surrogate Recovery)			108%	02/23/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	02/15/93
Date Extracted			02/12/93	
OIL AND GREASE, SILICA GEL (LUFT)				
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	ND	02/15/93
Date Extracted			02/13/93	

Mr. Brady Nagle
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February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008484	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			MW-3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/15/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	02/15/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/15/93
Benzene	ug/L	0.5	ND	02/15/93
Toluene	ug/L	0.5	ND	02/15/93
Ethylbenzene	ug/L	0.5	ND	02/15/93
Xylenes, Total	ug/L	0.5	ND	02/15/93
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dichlorodifluoromethane	ug/L	2.0	ND	02/23/93
Chloromethane	ug/L	2.0	ND	02/23/93
Vinyl Chloride	ug/L	2.0	ND	02/23/93
Bromomethane	ug/L	2.0	ND	02/23/93
Chloroethane	ug/L	2.0	ND	02/23/93
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	02/23/93
1,1-Dichloroethene	ug/L	0.5	ND	02/23/93
Methylene Chloride	ug/L	2.0	ND	02/23/93
trans-1,2-Dichloroethene	ug/L	0.5	ND	02/23/93
cis-1,2-Dichloroethene	ug/L	0.5	ND	02/23/93
1,1-Dichloroethane	ug/L	0.5	ND	02/23/93
Chloroform	ug/L	0.5	ND	02/23/93
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	02/23/93
Carbon Tetrachloride	ug/L	0.5	ND	02/23/93
1,2-Dichloroethane (EDC)	ug/L	0.5	ND	02/23/93
Trichloroethene (TCE)	ug/L	0.5	ND	02/23/93
1,2-Dichloropropane	ug/L	0.5	ND	02/23/93
Bromodichloromethane	ug/L	0.5	ND	02/23/93
2-Chloroethylvinyl ether	ug/L	0.5	ND	02/23/93
cis-1,3-Dichloropropene	ug/L	0.5	ND	02/23/93
trans-1,3-Dichloropropene	ug/L	0.5	ND	02/23/93
1,1,2-Trichloroethane	ug/L	0.5	ND	02/23/93
Tetrachloroethene	ug/L	0.5	ND	02/23/93

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February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0008484	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			MW-3	
ORGANIC ANALYSIS				
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dibromochloromethane	ug/L	0.5	ND	02/23/93
Chlorobenzene	ug/L	0.5	ND	02/23/93
Bromoform	ug/L	0.5	ND	02/23/93
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	02/23/93
1,3-Dichlorobenzene	ug/L	0.5	ND	02/23/93
1,4-Dichlorobenzene	ug/L	0.5	ND	02/23/93
1,2-Dichlorobenzene	ug/L	0.5	ND	02/23/93
Bromochloromethane (Surrogate Recovery)			101%	02/23/93
1,4-Dichlorobutane (Surrogate Recovery)			107%	02/23/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	02/15/93
Date Extracted			02/12/93	
OIL AND GREASE, SILICA GEL (LUFT)				
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	ND	02/15/93
Date Extracted			02/13/93	

REPORT OF LABORATORY ANALYSIS

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008492	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			MW-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/15/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	02/15/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/15/93
Benzene	ug/L	0.5	ND	02/15/93
Toluene	ug/L	0.5	ND	02/15/93
Ethylbenzene	ug/L	0.5	ND	02/15/93
Xylenes, Total	ug/L	0.5	ND	02/15/93

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REPORT OF LABORATORY ANALYSIS

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008506	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			AW-5	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/15/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	82	02/15/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/15/93
Benzene	ug/L	0.5	ND (MT)	02/15/93
Toluene	ug/L	0.5	ND	02/15/93
Ethylbenzene	ug/L	0.5	ND	02/15/93
Xylenes, Total	ug/L	0.5	ND	02/15/93

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REPORT OF LABORATORY ANALYSIS

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008514	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			AW-6	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/16/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	500	14000	02/16/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/16/93
Benzene	ug/L	5.0	610 (MT)	02/16/93
Toluene	ug/L	5.0	17	02/16/93
Ethylbenzene	ug/L	5.0	15	02/16/93
Xylenes, Total	ug/L	5.0	720	02/16/93

Mr. Brady Nagle
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February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008522	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			QC-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/16/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	250	12000	02/16/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/16/93
Benzene	ug/L	2.5	520 (MT)	02/16/93
Toluene	ug/L	2.5	15	02/16/93
Ethylbenzene	ug/L	2.5	13	02/16/93
Xylenes, Total	ug/L	2.5	610	02/16/93

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REPORT OF LABORATORY ANALYSIS

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PACE Sample Number:			70 0008530	
Date Collected:			02/10/93	
Date Received:			02/11/93	
Client Sample ID:			QC-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	02/15/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	02/15/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	02/15/93
Benzene	ug/L	0.5	ND	02/15/93
Toluene	ug/L	0.5	ND	02/15/93
Ethylbenzene	ug/L	0.5	ND	02/15/93
Xylenes, Total	ug/L	0.5	ND	02/15/93

These data have been reviewed and are approved for release.

Darrell Cain

Darrell C. Cain
Regional Director

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

Client Reference: BP Station # 11116

MDL Method Detection Limit
ND Not detected at or above the MDL.
(MT) A peak eluting earlier than Benzene and suspected to be methyl tert butyl ether was present in samples AW-5, AW-6, and QC-1 at approximately 140 ppb, 14000 ppb, and 17000 ppb respectively.

Mr. Brady Nagle
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QUALITY CONTROL DATA

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

EXTRACTABLE FUELS EPA 3510/8015
Batch: 70 18767
Samples: 70 0008476, 70 0008484

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	69%	61%	12%

Mr. Brady Nagle
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QUALITY CONTROL DATA

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

OIL AND GREASE, SILICA GEL (LUFT)
Batch: 70 18772
Samples: 70 0008476, 70 0008484

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	20.0	85%	80%	6%

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QUALITY CONTROL DATA

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PURGEABLE FUELS AND AROMATICS
Batch: 70 18765
Samples: 70 0008514, 70 0008522

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	99%	105%	5%
Benzene	ug/L	0.5	40.0	97%	99%	2%
Toluene	ug/L	0.5	40.0	96%	98%	2%
Ethylbenzene	ug/L	0.5	40.0	97%	99%	2%
Xylenes, Total	ug/L	0.5	120	96%	98%	2%

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QUALITY CONTROL DATA

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

PURGEABLE FUELS AND AROMATICS
Batch: 70 18784
Samples: 70 0008476, 70 0008484, 70 0008492, 70 0008506, 70 0008530

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	105%	103%	1%
Benzene	ug/L	0.5	40.0	110%	109%	0%
Toluene	ug/L	0.5	40.0	109%	108%	0%
Ethylbenzene	ug/L	0.5	40.0	110%	110%	0%
Xylenes, Total	ug/L	0.5	120	119%	119%	0%

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QUALITY CONTROL DATA

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

VOLATILE HALOCARBONS AND AROMATICS
Batch: 70 18948
Samples: 70 0008476, 70 0008484

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
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)			103%

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Mr. Brady Nagle
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QUALITY CONTROL DATA

February 24, 1993
PACE Project Number: 430211510

Client Reference: BP Station # 11116

VOLATILE HALOCARBONS AND AROMATICS
Batch: 70 18948
Samples: 70 0008476, 70 0008484

METHOD BLANK:

Parameter	Units	MDL	Method Blank
1,4-Dichlorobutane (Surrogate Recovery)			98%
VOLATILE AROMATICS BY EPA 8020			-
Benzene	ug/L	0.3	ND
Toluene	ug/L	0.3	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND
Fluorobenzene (Surrogate Recovery)			104%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
1,1-Dichloroethane	ug/L	0.5	10.00	74%	81%	9%
Trichloroethene (TCE)	ug/L	0.5	10.00	77%	76%	1%
trans-1,3-Dichloropropene	ug/L	0.5	3.8	84%	83%	1%
Tetrachloroethene	ug/L	0.5	10.00	93%	93%	0%
Benzene	ug/L	0.3	10.00	67%	70%	4%
Toluene	ug/L	0.3	10.00	74%	76%	2%
Xylenes, Total	ug/L	0.5	20.00	96%	95%	1%

Client Reference: BP Station # 11116

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

58339

pace INCORPORATED
THE ASSURANCE OF QUALITY

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: ALISTO ENGINEERING
Address: 1000 BURNETT AVE 420
CONCORD CA
Phone: 510 798 4070

Report To: BRADY NAGLE
Bill To: BP OIL
P.O. # / Billing Reference: 10-017
Project Name / No.: BP11116 Dublin

Pace Client No.
Pace Project Manager
Pace Project No.: 43021.510
*Requested Due Date:

Sampled By (PRINT): DAN BIRCH
Sampler Signature: DJBirch
Date Sampled: 2-10-93

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST: TPH8BTEX	TPH-Diesel	EPA 601	TDGSS2DBE	REMARKS
1	MW-1	1343	W	847.6	8					X	X	X	X	
2	MW-2	1315		49.2	3					X				
3	MW-3	1239		48.4	8					X	X	X	X	
4	AW-5	1459		50.6	3					X				
5	AW-6	1417		51.4						X				
6	QC-1	1419		52.2						X				
7	QC-2	1510		53.0	2					X				
8														

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT / DATE	SHIPMENT METHOD RETURNED / DATE
5/1, G/1			

Additional Comments:

VOAs PRESERVED PER CLIENT - cc 2/11

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	DJBirch BTS	Ed Mott Alisto	2/11	924
	Ed Mott Alisto	Ed Mott Alisto	2/11	1330
	Ed Mott Alisto	Gianna Lake	2/11	1600

ORIGINAL

SEE REVERSE SIDE FOR INSTRUCTIONS