GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-170-04-002

Prepared for:

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December 26, 1996

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INTRODUCTION

This report presents the results and findings of the October 31, 1996 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 on Figure 1.

FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Alameda County Health Care Services Agency and the California Regional Water Quality Control Board, San Francisco Bay Region.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well relative to an arbitrary datum. 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, electrical conductivity, and dissolved oxygen. 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 on Figure 2. The results of groundwater analysis are shown on 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) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	DO (ppm)	LAB
MW-1 (c)	10/27/92	328.96	8.19	320.77	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	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-1	11/22/93	328.96	7.38	321.58	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-1	03/07/94	328.96	5.89	323.07	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	4.3	PACE
MW-1	06/09/94	328.96	6.42	322.54	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	8.8	PACE
MW-1	09/12/94	328.96	7.33	321.63	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	7.8	PACE
MW-1	12/20/94	328.96	6.34	322.62	---	---	---	---	---	---	---	---	---
MW-1	03/16/95	328.96	4.37	324.59	ND<50	ND<500	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	5.6	ATI
MW-1	06/28/95	328.96	5.35	323.61	---	---	---	---	---	---	---	---	---
MW-1	09/06/95	328.96	6.44	322.52	ND<50	340	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	7.4	ATI
MW-1	12/22/95	328.96	6.04	322.92	---	---	---	---	---	---	---	---	---
MW-1	08/20/96	328.96	5.65	323.31	---	---	---	---	---	---	---	---	---
MW-1	08/21/96	328.96	---	---	ND<50	160	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	6.8	SPL
MW-1	10/31/96	328.96	5.99	322.97	---	---	---	---	---	---	---	---	---
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-2	11/22/93	328.50	7.12	321.38	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	03/07/94	328.50	5.60	322.90	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	4.3	PACE
MW-2	06/09/94	328.50	5.91	322.59	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	8.2	PACE
MW-2	09/12/94	328.50	6.87	321.63	ND<50	160	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	7.5	PACE
MW-2	12/20/94	328.50	5.86	322.64	---	---	---	---	---	---	---	---	---
MW-2	03/16/95	328.50	3.77	324.73	ND<50	ND<500	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	6.6	ATI
MW-2	03/16/95	328.50	3.77	324.73	ND<50	ND<500	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	6.6	ATI
MW-2	06/28/95	328.50	4.33	324.17	---	---	---	---	---	---	---	---	---
MW-2	09/06/95	328.50	5.85	322.65	ND<50	210	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	7.0	ATI
MW-2	12/22/95	328.50	5.50	323.00	---	---	---	---	---	---	---	---	---
MW-2	08/20/96	328.50	5.07	323.43	---	---	---	---	---	---	---	---	---
MW-2	08/21/96	328.50	---	---	ND<50	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	7.0	SPL
MW-2	10/31/96	328.50	5.44	323.06	---	---	---	---	---	---	---	---	---

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) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	DO (ppm)	LAB
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	2000	440	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-3	11/22/93	329.36	7.60	321.76	1800	360	ND<2.5	ND<2.5	ND<2.5	ND<2.5	---	---	PACE
MW-3	03/07/94	329.36	6.08	323.28	1300	5000	22	4.0	2.2	3.8	---	3.7	PACE
MW-3	06/09/94	329.36	6.51	322.85	8500	2600	25	8.3	0.5	15	---	7.2	PACE
QC-1 (d)	06/09/94	---	---	---	8800	---	23	6.3	0.5	10	---	---	PACE
MW-3	09/12/94	329.36	7.63	321.73	2100	3200	ND<5.0	ND<5.0	8.8	20	---	7.3	PACE
QC-1 (d)	09/12/94	---	---	---	1800	---	ND<5.0	ND<5.0	8.0	10	---	---	PACE
MW-3	12/20/94	329.36	6.41	322.95	18000	9600	79	28	89	9.3	---	7.3	PACE
QC-1 (d)	12/20/94	---	---	---	17000	---	79	33	80	ND<2.5	---	---	PACE
MW-3	03/16/95	329.36	4.39	324.97	6300	7000	470	ND<5.0	210	9.9	---	5.5	ATI
QC-1 (d)	03/16/95	---	---	---	6300	---	500	ND<5.0	230	13	---	---	ATI
MW-3	06/28/95	329.36	5.50	323.86	9000	3000	ND<10	ND<10	ND<10	ND<20	---	7.4	ATI
QC-1 (d)	06/28/95	---	---	---	8800	---	ND<10	ND<10	ND<10	ND<20	---	---	ATI
MW-3	09/06/95	329.36	6.66	322.70	10000	2800	ND<50	ND<50	ND<50	ND<100	37000	7.1	ATI
QC-1 (d)	09/06/95	---	---	---	9700	---	ND<50	ND<50	ND<50	ND<100	36000	---	ATI
MW-3	12/22/95	329.36	6.31	323.05	9200	2500	ND<50	ND<50	ND<50	ND<100	29000	6.7	ATI
MW-3	08/20/96	329.36	5.87	323.49	---	---	---	---	---	---	---	---	---
MW-3	08/21/96	329.36	---	---	3700	1900	ND<25	ND<50	ND<50	ND<50	4100	6.8	SPL
QC-1 (d)	08/21/96	---	---	---	3500	---	ND<25	ND<50	ND<50	ND<50	4000	---	SPL
MW-3	10/31/96	329.36	6.20	323.16	ND<250	ND<500	ND<2.5	ND<5.0	ND<5.0	ND<5.0	ND<50	6.8	SPL
QC-1 (d)	10/31/96	---	---	---	ND<250	---	ND<2.5	ND<5.0	ND<5.0	ND<5.0	ND<50	---	SPL
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	1600	500	78	3.5	68	1.0	---	---	PACE
MW-4	08/25/88	329.45	7.32	322.13	1800	380	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-1 (d)	08/25/93	---	---	---	1600	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-4	11/22/93	329.45	7.83	321.62	610	260	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-1 (d)	11/22/93	---	---	---	1700	---	ND<2.5	ND<2.5	ND<2.5	ND<2.5	---	---	PACE
MW-4	03/07/94	329.45	6.29	323.16	710	1400	0.5	0.8	ND<0.5	ND<0.5	---	3.8	PACE
QC-1 (d)	03/07/94	---	---	---	1600	---	ND<0.5	ND<0.5	1.4	0.6	---	---	PACE
MW-4	06/09/94	329.45	6.76	322.69	6400	1800	ND<10	ND<10	ND<10	ND<10	---	7.5	PACE
MW-4	09/12/94	329.45	7.83	321.62	2000	2700	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	7.2	PACE
MW-4	12/20/94	329.45	6.68	322.77	9200	2400	ND<5.0	ND<5.0	ND<5.0	ND<5.0	---	6.1	PACE
MW-4	03/16/95	329.45	4.66	324.79	1400	960	140	ND<2.5	58	14	---	5.5	ATI
MW-4	06/28/95	329.45	5.93	323.52	5000	5400	240	ND<5.0	220	ND<10	---	7.4	ATI
MW-4	09/06/95	329.45	6.83	322.62	4400	4500	ND<13	ND<13	ND<13	ND<25	12000	7.6	ATI
MW-4	12/22/95	329.45	6.42	323.03	3800	4700	15	ND<13	ND<13	ND<25	9200	7.1	ATI
QC-1 (d)	12/22/95	---	---	---	3900	---	16	ND<13	ND<13	ND<25	8600	---	ATI
MW-4	08/20/96	329.45	6.01	323.44	---	---	---	---	---	---	---	---	---
MW-4	08/21/96	329.45	---	---	ND<250	470	ND<12	ND<25	ND<25	ND<25	ND<250	7.7	SPL
MW-4	10/31/96	329.45	6.37	323.08	ND<250	1600	ND<2.5	ND<5.0	ND<5.0	ND<5.0	ND<50	7.1	SPL

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ALISTO PROJECT NO. 10-170

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet) (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet) (b)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	DO (ppm)	LAB
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-5	11/22/93	329.60	7.82	321.78	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-5	03/07/94	329.60	6.27	323.33	ND<50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	5.7	PACE
MW-5	06/09/94	329.60	6.73	322.87	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	7.7	PACE
MW-5	09/12/94	329.60	7.78	321.82	ND<50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	7.2	PACE
MW-5	12/20/94	329.60	6.63	322.97	---	---	---	---	---	---	---	---	---
MW-5	03/16/95	329.60	4.65	324.95	ND<50	ND<500	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	4.9	ATI
MW-5	06/28/95	329.60	5.69	323.91	---	---	---	---	---	---	---	---	---
MW-5	09/06/95	329.60	6.82	322.78	ND<50	200	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	7.3	ATI
MW-5	12/22/95	329.60	6.40	323.20	---	---	---	---	---	---	---	---	---
MW-5	08/20/96	329.60	5.98	323.62	---	---	---	---	---	---	---	---	---
MW-5	08/21/96	329.60	---	---	ND<50	ND<50	ND<0.50	ND<1.0	ND<1.0	ND<1.0	ND<10	6.9	SPL
MW-5	10/31/96	329.60	6.29	323.31	---	---	---	---	---	---	---	---	---
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	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	11/22/93	329.55	7.93	321.62	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	03/07/94	329.55	6.25	323.30	ND<50	90	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	4.2	PACE
MW-6	06/09/94	329.55	6.85	322.70	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	7.0	PACE
MW-6	09/12/94	329.55	7.91	321.64	ND<50	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	6.7	PACE
MW-6	12/20/94	329.55	6.82	322.73	---	---	---	---	---	---	---	---	---
MW-6	03/16/95	329.55	4.78	324.77	ND<50	ND<500	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	6.1	ATI
MW-6	06/28/95	329.55	5.97	323.58	---	---	---	---	---	---	---	---	---
MW-6	09/06/95	329.55	6.94	322.61	ND<50	340	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	7.2	ATI
MW-6	12/22/95	329.55	6.53	323.02	---	---	---	---	---	---	---	---	---
MW-6	08/20/96	329.55	6.18	323.37	---	---	---	---	---	---	---	---	---
MW-6	08/21/96	329.55	---	---	ND<50	120	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	SPL
MW-6	10/31/96	329.55	6.52	323.03	---	---	---	---	---	---	---	---	---
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
MW-7	11/22/93	329.49	7.92	321.57	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-7	03/07/94	329.49	6.20	323.29	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	3.7	PACE
MW-7	06/09/94	329.49	6.89	322.60	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	6.8	PACE
MW-7	09/12/94	329.49	7.87	321.62	ND<50	50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	6.8	PACE
MW-7	12/20/94	329.49	6.77	322.72	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	6.5	PACE
MW-7	03/16/95	329.49	4.77	324.72	ND<50	ND<500	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	5.9	ATI
MW-7	06/28/95	329.49	5.94	323.55	ND<50	320	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	7.8	ATI
MW-7	09/06/95	329.49	6.98	322.51	ND<50	240	ND<0.50	ND<0.50	ND<0.50	ND<1.0	8.5	7.5	ATI
MW-7	12/22/95	329.49	6.65	322.84	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	7.2	6.9	ATI
MW-7	08/20/96	329.49	6.22	323.27	---	---	---	---	---	---	---	---	---
MW-7	08/21/96	329.49	---	---	ND<50	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	SPL
MW-7	10/31/96	329.49	6.56	322.93	ND<50	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<1.0	86	6.8	SPL

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6400 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-170

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	DO (ppm)	LAB
QC-2 (e)	08/25/93	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (e)	11/22/93	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (e)	03/07/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (e)	06/09/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (e)	09/12/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (e)	12/20/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (e)	03/16/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	ATI
QC-2 (e)	06/28/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	ATI
QC-2 (e)	09/06/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	ATI
QC-2 (e)	12/22/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	ATI

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
MTBE	Methyl tert butyl ether
DO	Dissolved oxygen
ug/l	Micrograms per liter
ppm	Parts per million
ND	Not detected above reported detection limit
---	Not analyzed/applicable/measured
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.
SPL	Southern Petroleum Laboratories

NOTES:

(a) Top of casing elevations surveyed to an arbitrary datum.

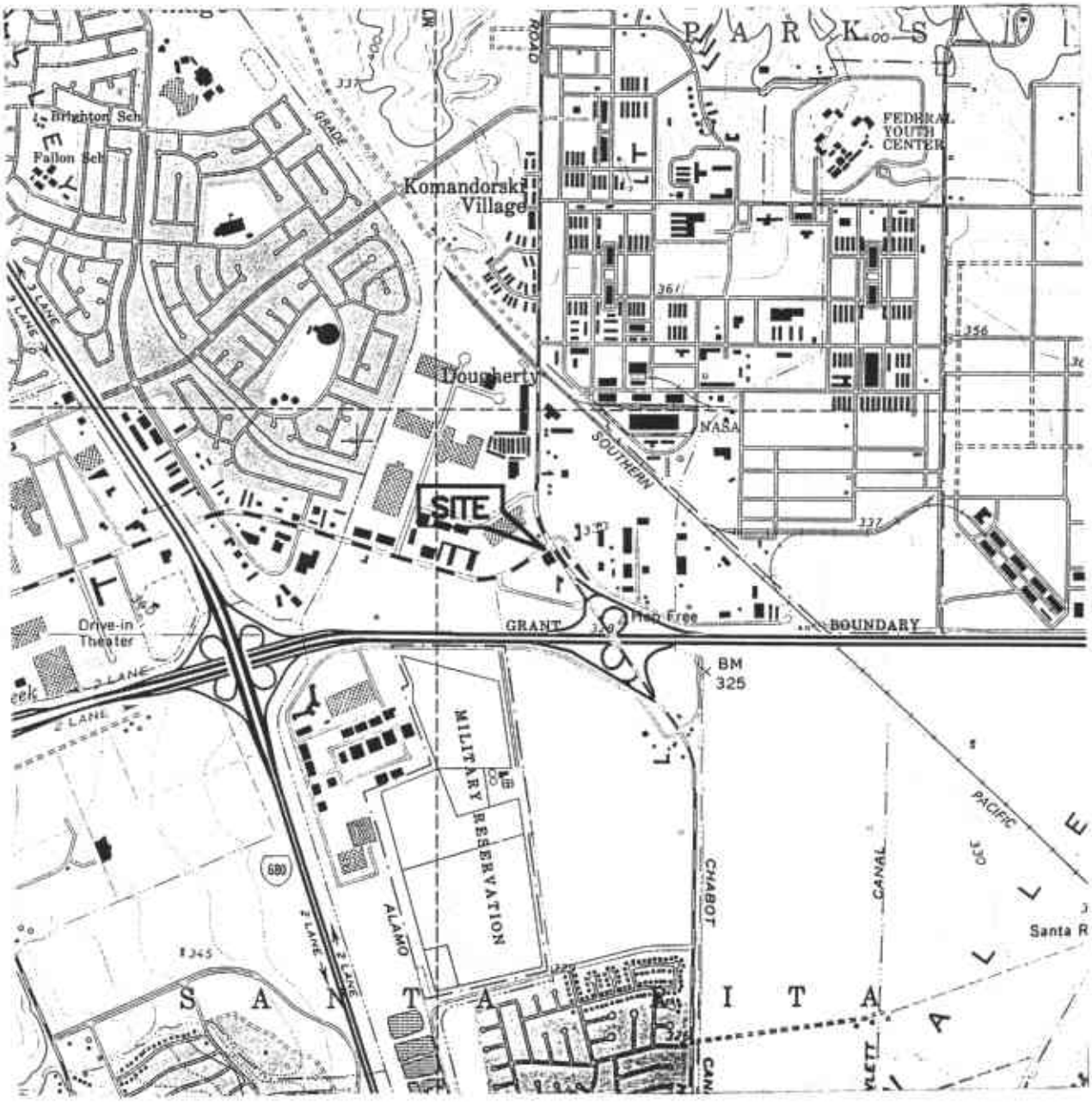
(b) Groundwater elevations relative to an arbitrary datum.

(c) Analysis did not detect total oil and grease and halogenated volatile organic compounds above reported detection limits.

(d) Blind duplicate.

(e) Travel blank.

F:\01\10-170\170-4-2.WQ2



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

N

0 1000' 2000'

FIGURE 1

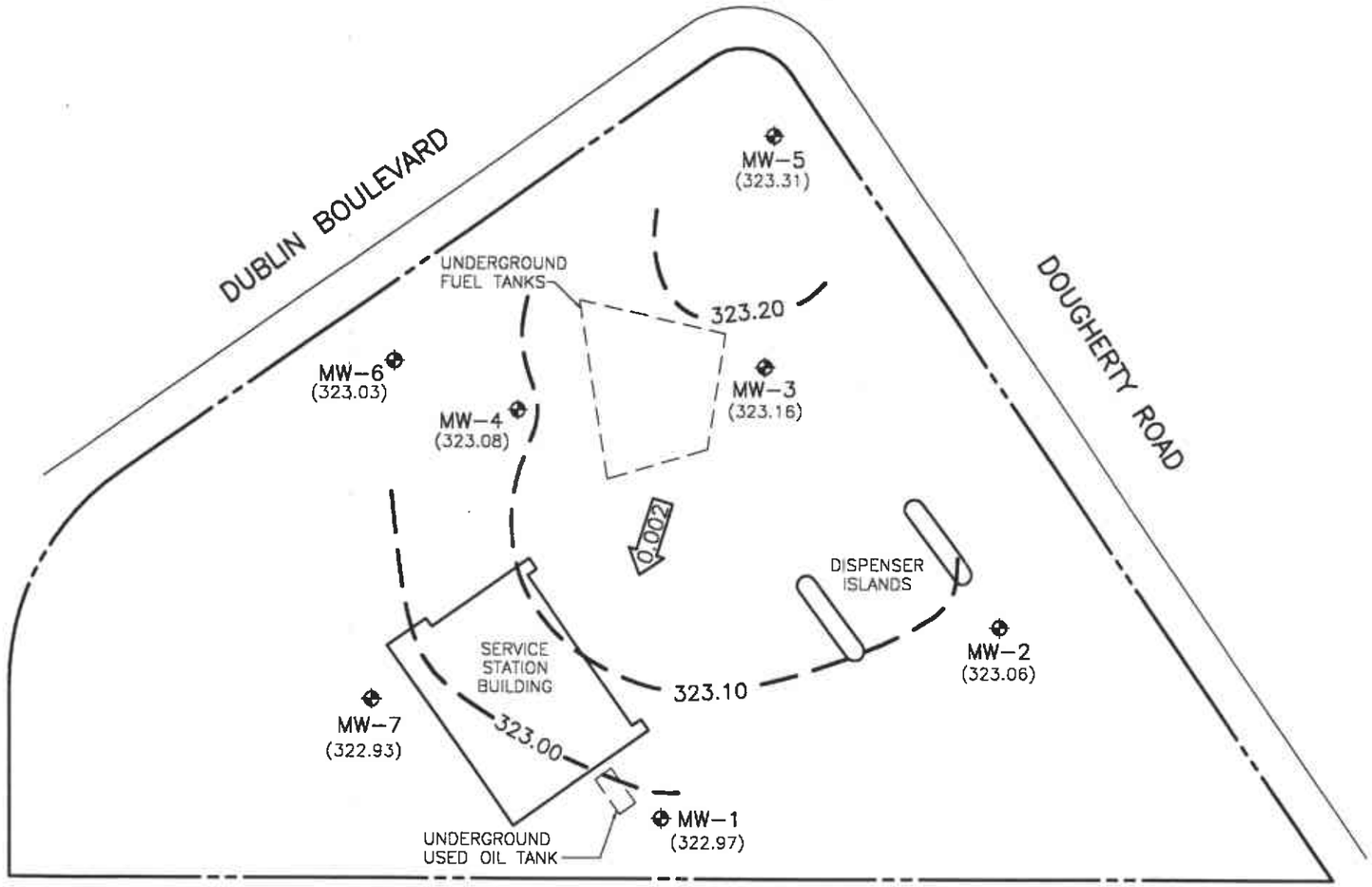
SITE VICINITY MAP

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

PROJECT NO. 10-170

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10170—.DWG 10-8-93 hhm 1=1



N

0 30 60

SCALE IN FEET

LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (322.93) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 323.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–0.10 FOOT)
- 0.002 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

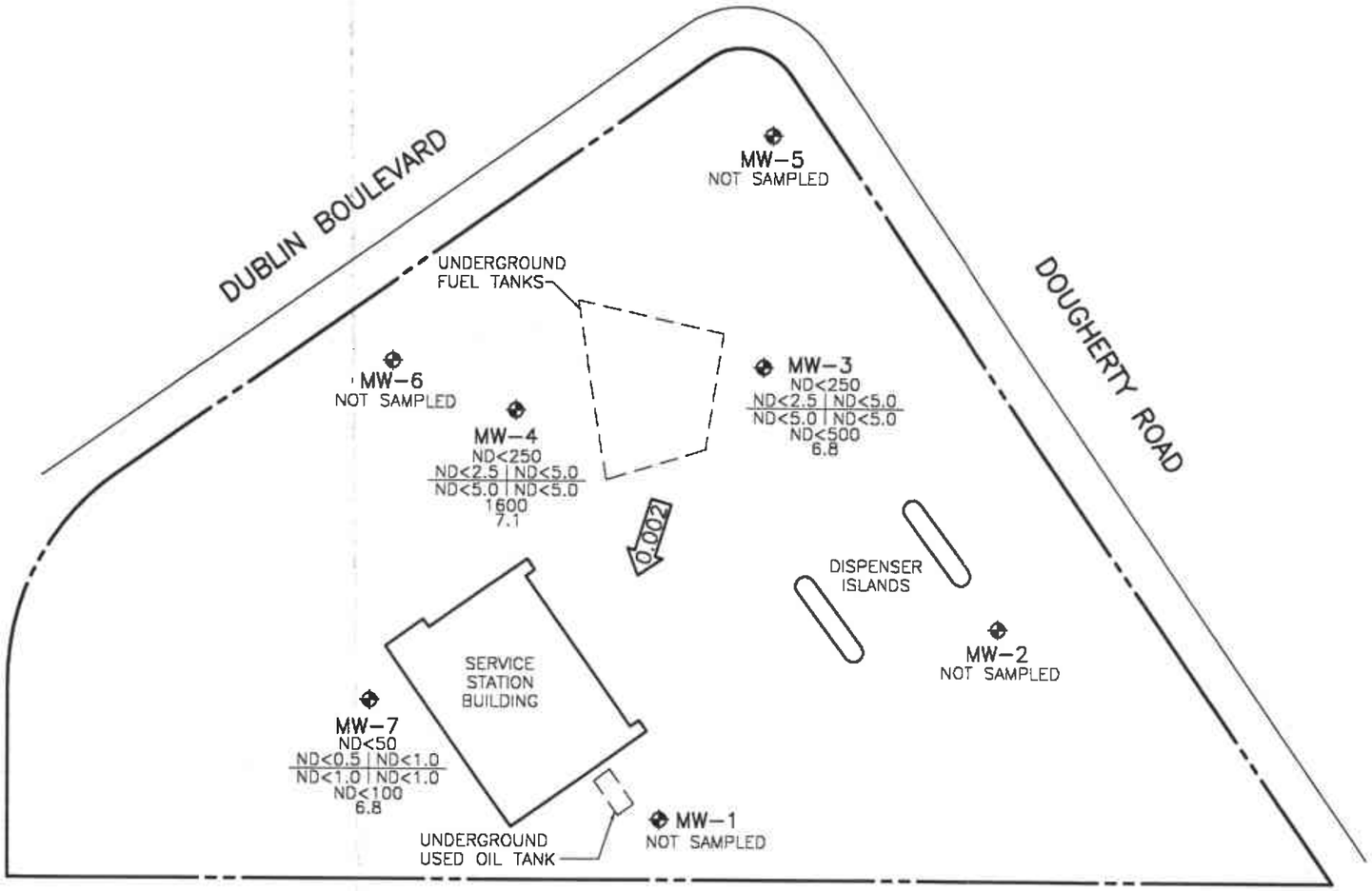
OCTOBER 31, 1996

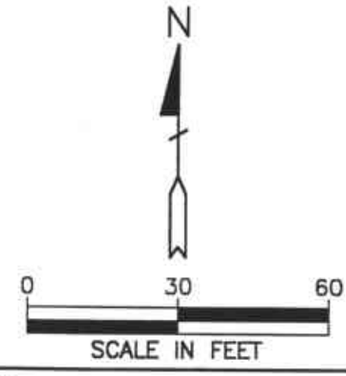
BP OIL SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA

PROJECT NO. 10–170

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10170D-T.DWG 12-10-96 DDM 1=30





LEGEND

◆	GROUNDWATER MONITORING WELL
TPH-G / B | T / E | X / TPH-D / DO	CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
TPH-D	TOTAL PETROLEUM HYDROCARBONS AS DIESEL
DO	DISSOLVED OXYGEN
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

OCTOBER 31, 1996

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

PROJECT NO. 10-170

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10170E-7.DWG 12-10-96 DDM 1=30

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

ALISTO ENGINEERING GROUP

1575 TREAT BOULEVARD, SUITE 201
WALNUT CREEK CA 94598 (510) 295-1650 FAX 295-1823

Field Report / Sampling Data Sheet

Project No. 10-170-04-00D Date: 10/31/96
Address I-580 & Dougherty Day: M T W (TH) F
Contract No. G797391 City: Dublin
Station No. BP 11120 Sampler: LB

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS: Semi=March/Sept
MW-1	N/S	2"	18.20	5.99	Ø	1001	
MW-2	N/S	2"	18.25	5.44		1003	
X MW-3	S-3	2"	20.00	6.20		1014	QC-1 (S-4) From this well
X MW-4	S-2	2"	20.00	6.37		1013	
MW-5	N/S	2"	21.35	6.29		1007	
MW-6	N/S	4"	19.25	6.52		1011	
X MW-7	S-1	2"	20.25	6.56		1012	

FIELD INSTRUMENT CALIBRATION DATA

pH METER Ion 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED (Y) N TIME 0945 WEATHER Cloudy
D.O. METER Ion ZERO d.O. SOLUTION 0 BAROMETRIC PRESSURE 760 TEMP
CONDUCTIVITY METER Ion 10,000 TURBIDITY METER 5.0 NTU OTHER X
LEAK DETECTOR : ALARM MODE X NON ALARM MODE

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-7	6.56	2"	OIL	Ø	Y (N)	2	1022	70.0	7.53	2.11ms	6.3
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			4		69.3	7.32	1.92ms	
20.25-6.56=13.69	X.16=2.19	X3=	6.57			7	1030	68.7	7.30	1.87ms	6.8

Purge Method: (X)Surface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

O EPA 601___
(X) TPH-G/BTEX HCl
O TPH Diesel___
O TOG 5520 ___
TIME/SAMPLE ID: 1033

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-4	6.37	2"	OIL	Ø	Y (N)	2	1040	70.7	7.71	1.44ms	6.9
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			4		69.9	7.60	1.30ms	
20.00-6.37=13.63	X.16=2.18	X3=	6.54			7	1048	69.6	7.53	1.24ms	7.1

Purge Method: (X)Surface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

O EPA 601___
(X) TPH-G/BTEX HCl
O TPH Diesel___
O TOG 5520 ___
TIME/SAMPLE ID: 1050

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING
GROUP
1575 TREAT BOULEVARD, SUITE 201
WALNUT CREEK CA 94598 (510) 295-1650 FAX 295-1823

Project No. 10-170-04-00[illegible] Date: 10/31/96
Address I-580 & Dougherty Day: M T W (TH) F
Contract No. G797391 City: Dublin
Station No. BP 11120 Sampler: [illegible]

Well ID	Depth to Water	Diam	Cap (Lock)	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-3	6.20	2"	Replaced	∅	Y (N)	2	1101	71.2	7.82	1.77ms	6.0
						4		70.5	7.61	1.49ms	
						7	1111	70.0	7.58	1.42ms	6.8

Total Depth - Water Level= x Well Vol. Factor= x# Vol. to Purge = Purge Vol.
20.00 − 6.20 = 13.80 x .16 = 2.20 x 3 = 6.60

Purge Method: (X) Surface Pump O Disp. Tube O Winch O Disp. Bailer(s) ___ O Sys Port

Comments: QC-1 (S-4) From this well

- O EPA 601 ____
- (X) TPH-G/BTEX HCl
- O TPH Diesel ____
- O TOG 5520 ___

TIME/SAMPLE ID: 1113

PAGE_____ OF_____

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

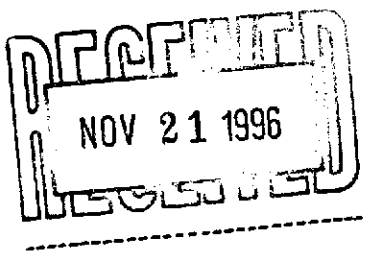
Certificate of Analysis Number: 96-11-106

Approved for Release by:

Ed Fry, Project Manager — Date: 11/15/96

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-03

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Liquid-liquid extraction Method 3510B *** Analyzed by: PC Date: 11/07/96 08:00:00	11/07/96		

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-03

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	50 P	µg/L
Benzene	ND	2.5 P	µg/L
Toluene	ND	5.0 P	µg/L
Ethylbenzene	ND	5.0 P	µg/L
Total Xylene	ND	5.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	93		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: HS			
Date: 11/12/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	100		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/06/96 05:48:00			
Total Petroleum Hydrocarbons-Diesel	ND	0.5 P	mg/L
Surrogate	**% Recovery**		
o-Terphenyl	110		
2-Fluorobiphenyl	70		
Mod. 8015 - Diesel			
Analyzed by: RR			
Date: 11/11/96 03:19:00			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-02

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Liquid-liquid extraction	11/07/96		
Method 3510B ***			
Analyzed by: PC			
Date: 11/07/96 08:00:00			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-02

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	50 P	µg/L
Benzene	ND	2.5 P	µg/L
Toluene	ND	5.0 P	µg/L
Ethylbenzene	ND	5.0 P	µg/L
Total Xylene	ND	5.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: HS			
Date: 11/12/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	100		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/06/96 05:25:00			
Total Petroleum Hydrocarbons-Diesel	1.6	0.5 P	mg/L
Surrogate	**% Recovery**		
o-Terphenyl	105		
2-Fluorobiphenyl	60		
Mod. 8015 - Diesel			
Analyzed by: RR			
Date: 11/11/96 02:34:00			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-01

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-1

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Liquid-liquid extraction Method 3510B ***	11/07/96		
Analyzed by: PC			
Date: 11/07/96 08:00:00			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-01

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-1

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	86	10 P	µg/L
Benzene	ND	0.5 P	µg/L
Toluene	ND	1.0 P	µg/L
Ethylbenzene	ND	1.0 P	µg/L
Total Xylene	ND	1.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	93		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: HS			
Date: 11/13/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	100		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/06/96 05:02:00			
Total Petroleum Hydrocarbons-Diesel	ND	0.1 P	mg/L
Surrogate	**% Recovery**		
o-Terphenyl	100		
2-Fluorobiphenyl	95		
Mod. 8015 - Diesel			
Analyzed by: RR			
Date: 11/08/96 09:03:00			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9611106-04

BP Oil Company
295 SW 41st St, Bldg 13,Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.# G797391 , COC#071212
DATE: 11/14/96

PROJECT: BP Oil #11120
SITE: Dublin, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-4

PROJECT NO: 10-170-4-1
MATRIX: WATER
DATE SAMPLED: 10/31/96
DATE RECEIVED: 11/02/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	50 P	µg/L
Benzene	ND	2.5 P	µg/L
Toluene	ND	5.0 P	µg/L
Ethylbenzene	ND	5.0 P	µg/L
Total Xylene	ND	5.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	93		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: HS			
Date: 11/13/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	100		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/06/96 06:10:00			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
SPL California License # 1903

QUALITY CONTROL

DOCUMENTATION

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL BATCH QUALITY CONTROL REPORT **
Modified 8015 - Gasoline

Matrix: Aqueous
Units: mg/L

Batch Id: HP_J961105142100

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Gasoline Petr. Hydrocarbon	ND	1.0	0.87	87.0	56 - 130

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
GASOLINE PETR. HYDROCARBON	ND	0.9	0.87	96.7	0.90	100	3.36	22	37 - 169

Analyst: VHZ
Sequence Date: 11/05/96
SPL ID of sample spiked: 9611094-01B
Sample File ID: JJK6231.TX0
Method Blank File ID:
Blank Spike File ID: JJK6201.TX0
Matrix Spike File ID: JJK6236.TX0
Matrix Spike Duplicate File ID: JJK6237.TX0

* = Values Outside QC Range
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [(<1> - <2>) / <3>] x 100
LCS % Recovery = (<1> / <3>) x 100
Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100
(**) = Source: SPL-Houston Historical data (3rd Q '95)
(***) = Source: SPL-Houston Historical Data (3rd Q '95)

SAMPLES IN BATCH(SPL ID):

9610H39-03A 9610H39-04A 9610H39-05A 9611140-02A
9611106-01A 9611106-02A 9611106-03A 9611106-04A
9610G82-10A 9610G82-02A 9610G82-01A

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

Matrix: Aqueous
Units: µg/L

Batch Id: VARE961112102400

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
MTBE	ND	50	44	88.0	63 - 120
Benzene	ND	50	45	90.0	62 - 121
Toluene	ND	50	48	96.0	66 - 136
EthylBenzene	ND	50	48	96.0	70 - 136
O Xylene	ND	50	49	98.0	74 - 134
M & P Xylene	ND	100	100	100	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
MTBE	530	20	760	NC	790	NC	NC	20	39 - 150
BENZENE	14	20	33	95.0	34	100	5.13	25	39 - 150
TOLUENE	4.7	20	22	86.5	21	81.5	5.95	26	56 - 134
ETHYLBENZENE	1.5	20	19	87.5	16	72.5	18.8	38	61 - 128
O XYLENE	7.6	20	27	97.0	27	97.0	0	29	40 - 130
M & P XYLENE	2.7	40	43	101	40	93.2	8.03	20	43 - 152

Analyst: HS
Sequence Date: 11/12/96
SPL ID of sample spiked: 9611546-01A
Sample File ID: E_K6320.TX0
Method Blank File ID:
Blank Spike File ID: E_K6316.TX0
Matrix Spike File ID: E_K6318.TX0
Matrix Spike Duplicate File ID: E_K6319.TX0

* = Values Outside QC Range
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [(<1> - <2>) / <3>] x 100
LCS % Recovery = (<1> / <3>) x 100
Relative Percent Difference = |(<4> - <5>)| / [(<4> + <5>) x 0.5] x 100
(**) = Source: SPL-Houston Historical Data (3rd Q '95)
(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9611106-02A 9611106-03A 9611106-04A 9611549-01A
9611093-06A 9611438-02A 9611441-15A 9611441-09A
9611441-10A 9611447-04A 9611546-01A 9611548-01A
9611549-03A 9611549-04A

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PHONE (713) 660-0901

** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

Matrix: Aqueous
Units: µg/L

Batch Id: VARE961113101800

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
MTBE	ND	50	45	90.0	63 - 120
Benzene	ND	50	46	92.0	62 - 121
Toluene	ND	50	48	96.0	66 - 136
EthylBenzene	ND	50	51	102	70 - 136
O Xylene	ND	50	50	100	74 - 134
M & P Xylene	ND	100	100	100	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
MTBE	ND	20	14	70.0	13	65.0	7.41	20	39 - 150
BENZENE	ND	20	14	70.0	14	70.0	0	25	39 - 150
TOLUENE	ND	20	15	75.0	14	70.0	6.90	26	56 - 134
ETHYLBENZENE	ND	20	18	90.0	17	85.0	5.71	38	61 - 128
O XYLENE	ND	20	16	80.0	15	75.0	6.45	29	40 - 130
M & P XYLENE	ND	40	33	82.5	33	82.5	0	20	43 - 152

Analyst: HS
Sequence Date: 11/13/96
SPL ID of sample spiked: 9611441-12A
Sample File ID: E_K6350.TX0
Method Blank File ID:
Blank Spike File ID: E_K6346.TX0
Matrix Spike File ID: E_K6347.TX0
Matrix Spike Duplicate File ID: E_K6348.TX0

* = Values Outside QC Range
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [(<1> - <2>) / <3>] x 100
LCS % Recovery = (<1> / <3>) x 100
Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100
(**) = Source: SPL-Houston Historical Data (3rd Q '95)
(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9611197-01A 9611438-01A 9611654-01A 9611654-02A
9611654-03A 9611654-04A 9611654-05A 9611442-08A
9611442-07A 9611497-02A 9611442-06A 9611654-06A
9611441-12A 9611549-02A 9611546-05A 9611106-01A

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
4-Bromofluorobenzene	30	31	103	43- 135

« = Recovery outside of control limits
* = Methods for Chemical Analysis of Water & Wastes,1983,EPA
** = Standard Methods for Examination of Water & Wastewater,17th
*** = Test Methods for Evaluating Solid Waste,EPA SW846,3rd

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS

METHOD 8020A *** **BATCH#:**VARE961112102400
WORK ORDER: LCS **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	34	113	70- 131
4-Bromofluorobenzene	30	31	103	43- 135

METHOD 8020A *** **BATCH#:**VARE961112102400
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611546-01A

1,4-DIFLUOROBENZENE	30	35	117	70- 131
4-BROMOFLUOROBENZENE	30	30	100	43- 135

METHOD 8020A *** **BATCH#:**VARE961112102400
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611546-01A

1,4-Difluorobenzene	30	35	117	70- 131
4-Bromofluorobenzene	30	31	103	43- 135

METHOD 8020*** **BATCH#:**VARE961113101800
WORK ORDER: 9611106-01A **CLIENT SAMPLE ID:**S-1

1,4-Difluorobenzene	30	28	93	70- 131
4-Bromofluorobenzene	30	28	93	43- 135

METHOD 8020A *** **BATCH#:**VARE961113101800
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	28	27.5	74- 131
4-Bromofluorobenzene	30	28	28.2	43- 135

METHOD 8020A *** **BATCH#:**VARE961113101800
WORK ORDER: LCS **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	35	117	70- 131
4-Bromofluorobenzene	30	30	100	43- 135

METHOD 8020A *** **BATCH#:**VARE961113101800
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611441-12A

1,4-DIFLUOROBENZENE	30	31	103	70- 131
4-BROMOFLUOROBENZENE	30	30	100	43- 135

METHOD 8020A *** **BATCH#:**VARE961113101800
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611441-12A

1,4-Difluorobenzene	30	33	110	70- 131

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
4-Bromofluorobenzene	30	30.0000	100	50- 150

Modified 8015 - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

4-Bromofluorobenzene	30	32	31.6	52- 152
1,4-Difluorobenzene	30	31	30.8	54- 137

Modified 8015 - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611094-01B

4-Bromofluorobenzene	50	31	62	52- 152
1,4-Difluorobenzene	50	27	54	54- 137

Modified 8015 - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611094-01B

4-Bromofluorobenzene	50	31	62	52- 152
1,4-Difluorobenzene	50	28	56	54- 137

METHOD 8020* ** **BATCH#:**VARE961112102400
WORK ORDER: 9611106-02A **CLIENT SAMPLE ID:**S-2

1,4-Difluorobenzene	30	26.0000	87	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

METHOD 8020* ** **BATCH#:**VARE961112102400
WORK ORDER: 9611106-03A **CLIENT SAMPLE ID:**S-3

1,4-Difluorobenzene	30	28.0000	93	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

METHOD 8020* ** **BATCH#:**VARE961112102400
WORK ORDER: 9611106-04A **CLIENT SAMPLE ID:**S-4

1,4-Difluorobenzene	30	28.0000	93	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

METHOD 8020A * ** **BATCH#:**VARE961112102400
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	28	28.4	74- 131
4-Bromofluorobenzene	30	27	27.4	43- 135

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: 9611106-04A **CLIENT SAMPLE ID:**S-4

1,4-Difluorobenzene	30	24.0000	80	70- 131
4-Bromofluorobenzene	30	32.0000	107	43- 135

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	24	80	70- 131
4-Bromofluorobenzene	30	31	103	43- 135

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611094-01B

1,4-DIFLUOROBENZENE	30	22	73	70- 131
4-BROMOFLUOROBENZENE	30	30	100	43- 135

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611094-01B

1,4-Difluorobenzene	30	22	73	70- 131
4-Bromofluorobenzene	30	29	97	43- 135

CA LUFT - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: 9611106-01A **CLIENT SAMPLE ID:**S-1

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

CA LUFT - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: 9611106-02A **CLIENT SAMPLE ID:**S-2

1,4-Difluorobenzene	30	30.0000	100	50- 150
4-Bromofluorobenzene	30	30.0000	100	50- 150

CA LUFT - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: 9611106-03A **CLIENT SAMPLE ID:**S-3

1,4-Difluorobenzene	30	30.0000	100	50- 150
4-Bromofluorobenzene	30	30.0000	100	50- 150

CA LUFT - Gasoline **BATCH#:**HP_J961105142100
WORK ORDER: 9611106-04A **CLIENT SAMPLE ID:**S-4

1,4-Difluorobenzene	30	30.0000	100	50- 150

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Mod. 8015 - Diesel **BATCH#:**HPTT961108043300
WORK ORDER: 9611106-01B **CLIENT SAMPLE ID:**S-1

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
o-Terphenyl	100	100	100	-
2-Fluorobiphenyl	100	95	95	20- 146

Mod. 8015 - Diesel **BATCH#:**HPTT961108043300
WORK ORDER: 9611106-02B **CLIENT SAMPLE ID:**S-2

o-Terphenyl	20	21.0000	105	-
2-Fluorobiphenyl	20	12.0000	60	-

Mod. 8015 - Diesel **BATCH#:**HPTT961108043300
WORK ORDER: 9611106-03B **CLIENT SAMPLE ID:**S-3

o-Terphenyl	20	22.0000	110	-
2-Fluorobiphenyl	20	14.0000	70	20- 146

Mod. 8015 - Diesel **BATCH#:**HPTT961108043300
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**961105SFBS

2-Fluorobiphenyl	100	23	23	20- 146

Mod. 8015 - Diesel **BATCH#:**HPTT961108043300
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

o-Terphenyl		110	110	-
2-Fluorobiphenyl	100	110	106	20- 146

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: 9611106-01A **CLIENT SAMPLE ID:**S-1

1,4-Difluorobenzene	30	24	80	70- 131
4-Bromofluorobenzene	30	30	100	43- 135

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: 9611106-02A **CLIENT SAMPLE ID:**S-2

1,4-Difluorobenzene	30	24.0000	80	70- 131
4-Bromofluorobenzene	30	32.0000	107	43- 135

METHOD 8020A *** **BATCH#:**HP_J961105124500
WORK ORDER: 9611106-03A **CLIENT SAMPLE ID:**S-3

1,4-Difluorobenzene	30	24.0000	80	70- 131
4-Bromofluorobenzene	30	32.0000	107	43- 135

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** SPL BATCH QUALITY CONTROL REPORT ** PAGE

Mod. 8015 - Diesel

Matrix: Aqueous Batch Id: HPTT961108043300

Units: mg/L

B L A N K S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(**) (Advisory) RPD Max.	QC Limits(**) (Advisory) Recovery Range
DIESEL PETR. HYDROCARBONS	ND	5.0	5.10	101	5.43	108	6.70	43	20 - 130

Analyst: RR

Sequence Date: 11/08/96

Method Blank File ID:

Sample File ID:

Blank Spike File ID: T_J6355.TX0

Matrix Spike File ID:

Matrix Spike Duplicate File ID:

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100

(**) = Source: SPL-Houston Historical Data

SAMPLES IN BATCH(SPL ID): 9611244-03B 9611214-01B 9611214-02B 9611244-04B 9611106-01B 9611106-02B 9611106-03B 9611244-01B 9611244-02B

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

96-11-106

CHAIN OF CUSTODY

No. 071212 Page 1 of 1

CONSULTANT'S NAME: Alisto Engineering	ADDRESS: 1575 Treat Blvd #201	CITY: W.C.	STATE: Ca	ZIP CODE: 94598
BP SITE NUMBER: 11120	BP CORNER ADDRESS/CITY: Dublin, Ca			CONSULTANT PROJECT NUMBER: 10-170-4-1
CONSULTANT PROJECT MANAGER: Sandy Nagle	PHONE NUMBER: (510) 295-1650	FAX NUMBER: 215-1823		CONSULTANT CONTRACT NUMBER: 6797391
BP CONTACT: Scott Hooton	BP ADDRESS: Renton, WA	PHONE NUMBER:		FAX NO.:
LAB CONTACT: SPL	LABORATORY ADDRESS: Texas	PHONE NUMBER:		FAX NO.:
SAMPLED BY (Please Print Name): Larry Buenvenida	SAMPLED BY (Signature):	SHIPMENT DATE: 10/31/96		SHIPMENT METHOD: FedEx
TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks		ANALYSIS REQUIRED		AIRBILL NUMBER: 9404779090

SAMPLE DESCRIPTION	COLLECTION DATE / TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE / LAB SAMPLE #	TPH-D	COMMENTS
S-1	10/31/96	W	5	HCL		X	
S-2	↓	↓	↓	↓		X	
S-3	↓	↓	↓	↓		X	
S-4	↓	↓	3	↓			

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	10/31/96			10/31/96	3:15
	10/31/96	3:16		11/2/96	0950

ADDITIONAL COMMENTS

CLV-16722
PKG/50

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

SPL Houston Environmental Laboratory

Sample Login Checklist

Date:	Time:
11-2-96	1410

SPL Sample ID:
96-11-106

			Yes	No
1	Chain-of-Custody (COC) form is present.		✓	
2	COC is properly completed.		✓	
3	If no, Non-Conformance Worksheet has been completed.			
4	Custody seals are present on the shipping container.		✓	
5	If yes, custody seals are intact.		✓	
6	All samples are tagged or labeled.		✓	
7	If no, Non-Conformance Worksheet has been completed.			
8	Sample containers arrived intact		✓	
9	Temperature of samples upon arrival:		5° C	
10	Method of sample delivery to SPL:	SPL Delivery		
		Client Delivery		
		FedEx Delivery (airbill #)	940477 9096	
		Other:		
11	Method of sample disposal:	SPL Disposal	✓	
		HOLD		
		Return to Client		

Name:	Date:
Don Cater	11-2-96

BP EXPLORATION & OIL, INC.
ENVIRONMENTAL REMEDIATION MANAGEMENT
DATA REVIEW CHECKLIST

BP Site Number: 11126
ERM Contact: Scott Haskin
Sampling Date: 10-31-96
Matrix Desription: Water
Date Final Report Received: 11-21-96
Laboratory & Location: SPL - Houston

	Yes	No	NA
1. Is BP contract release number consistent with analytical report?	X		
2. Was report submitted within the specified timeframe?	X		
3. Does report agree with the COC?	X		
4. Are units consistent with the given matrix?	X		
5. Were any target analytes/compounds detected in blanks (ie. trip or equipment)?			X
6. Are duplicate water samples within __%?	X		
7. Are holding times met?	X		
8. Are surrogates within limits using laboratory criteria?	X		
9. Are MS/MSD acceptable using laboratory criteria?	X		
10. Are LCS results acceptable using laboratory criteria?	X		

Notes/Comments: _____

Data Validation Completed by (print): Dale Swan
(signature): Dale Swan
Date: 12/23/96