GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11107
18501 Hesperian Boulevard
San Lorenzo, California

Project No. 10-060-06-002

Prepared for:

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April 10, 1997

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INTRODUCTION

This report presents the results of the March 11, 1997 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11107, 18501 Hesperian Boulevard, San Lorenzo, 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 in reference to mean sea level. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Before sample collection, each well was purged of 3 casing volumes, while recording field readings of pH, temperature, 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 collected during 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 laboratory 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. 11107
18501 HESPERIAN BOULEVARD, SAN LORENZO, CALIFORNIA

ALISTO PROJECT NO. 10-060

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)	TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
MW-1	11/04/92	41.07	20.78	20.29	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	2.8	ND	---	PACE
QC-1 (c)	11/04/92	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	---	---	—	---	PACE
MW-1	02/24/94	41.07	20.70	20.37	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ND<5000	1.5	0.9	---	PACE
MW-1	05/12/94	41.07	18.12	22.95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ND<5000	1.0	ND<0.5	7.0	PACE
MW-1	09/09/94	41.07	21.74	19.33	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	ND<0.5	ND<0.5	2.3	PACE
MW-1	11/03/94	41.07	20.01	21.06	ND<50	50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	ND<5000	ND<0.5	ND<0.5	4.3	PACE
MW-1	03/01/95	41.07	17.44	23.63	ND<50	ND<500	ND<50	ND<0.50	ND<0.50	ND<1.0	---	420	0.54	0.3	2.3	ATI
MW-1	06/06/95	41.07	17.55	23.52	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	09/01/95	41.07	18.19	22.88	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	60	—	---	8.8	ATI
MW-1	11/29/95	41.07	18.84	22.23	---	---	---	---	---	---	---	---	---	---	---	---
MW-1	03/23/96	41.07	16.97	24.10	ND<50	---	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	---	---	9.6	SPL
MW-1	09/05/96	41.07	17.74	23.33	110	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	---	3.6	SPL
MW-1	03/11/97	41.07	17.62	23.45	ND<50	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	---	5.2	SPL
MW-2	11/04/92	40.56	20.16	20.40	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	---	---	---	---	PACE
MW-2	02/24/94	40.56	20.12	20.44	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
MW-2	05/12/94	40.56	17.49	23.07	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	—	---	---	7.4	PACE
MW-2	09/09/94	40.56	21.12	19.44	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	2.1	PACE
MW-2	11/03/94	40.56	19.36	21.20	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	4.2	PACE
MW-2	03/01/95	40.56	16.83	23.73	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	---	2.2	ATI
MW-2	06/06/95	40.56	16.96	23.60	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	09/01/95	40.56	17.54	23.02	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	---	---	7.9	ATI
MW-2	11/29/95	40.56	18.19	22.37	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	03/23/96	40.56	16.35	24.21	ND<50	---	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	---	---	8.5	SPL
MW-2	09/05/96	40.56	17.55	23.01	ND<50	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	---	3.2	SPL
MW-2	03/11/97	40.56	16.95	23.61	ND<50	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	---	2.9	SPL
MW-3	11/04/92	40.45	20.23	20.22	760	---	3.7	15	1.9	57	---	---	---	---	---	PACE
MW-3	02/24/94	40.45	20.24	20.21	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
MW-3	05/12/94	40.45	17.61	22.84	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	7.3	PACE
MW-3	09/09/94	40.45	21.22	19.23	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	2.0	PACE
MW-3	11/03/94	40.45	19.48	20.97	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	3.6	PACE
MW-3	03/01/95	40.45	17.08	23.37	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	---	1.9	ATI
MW-3	06/06/95	40.45	17.21	23.24	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	09/01/95	40.45	17.69	22.76	200	---	2.7	33	7.2	43	ND<5.0	---	---	---	7.8	ATI
MW-3	09/01/95	40.45	18.29	22.16	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	03/23/96	40.45	16.59	23.86	ND<50	---	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	---	---	7.3	SPL
MW-3	09/05/96	40.45	17.71	22.74	ND<50	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	---	3.2	SPL
MW-3	03/11/97	40.45	17.17	23.28	ND<50	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	---	1.5	SPL

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ALISTO PROJECT NO. 10-060

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)	TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
MW-4	11/04/92	39.24	19.18	20.06	900	---	150	4.1	0.8	53	---	---	---	---	---	PACE
MW-4	02/24/94	39.24	19.22	20.02	240	---	110	3.8	1.8	11	---	---	---	---	---	PACE
QC-1 (c)	02/24/94	---	---	---	310	---	95	5.3	2.2	17	---	---	---	---	---	PACE
MW-4	05/12/94	39.24	16.62	22.62	ND<50	---	2.2	1.0	ND<0.5	ND<0.5	---	---	---	---	7.3	PACE
QC-1 (c)	05/12/94	---	---	---	430	---	2.6	1.3	ND<0.5	ND<0.5	---	---	---	---	---	PACE
MW-4	09/09/94	39.24	20.27	18.97	240	---	9.1	1.3	0.6	2.5	---	---	---	---	2.2	PACE
QC-1 (c)	09/09/94	---	---	---	57	---	1.7	ND<0.5	ND<0.5	0.5	---	---	---	---	---	PACE
MW-4	11/03/94	39.24	18.46	20.78	250	---	3.1	2.8	1.0	3.3	---	---	---	---	3.2	PACE
QC-1 (c)	11/03/94	---	---	---	110	---	2.4	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
MW-4	03/01/95	39.24	16.15	23.09	8900	---	1800	26	450	400	---	---	---	---	2.0	ATI
QC-1 (c)	03/01/95	---	---	---	7600	---	1700	25	410	370	---	---	---	---	---	ATI
MW-4	06/06/95	39.24	16.28	22.96	3100	---	530	25	170	85	---	---	---	---	---	ATI
QC-1 (c)	06/06/95	---	---	---	3000	---	530	27	170	92	---	---	---	---	---	ATI
MW-4 (d)	09/01/95	39.24	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	11/29/95	39.24	17.31	21.93	ND<50	---	1.8	ND<0.50	ND<0.50	ND<1.0	440	---	---	---	3.2	ATI
QC-1 (c)	11/29/95	---	---	---	ND<50	---	1.5	ND<0.50	ND<0.50	ND<1.0	490	---	---	---	---	ATI
MW-4	03/23/96	39.24	15.74	23.50	2700	---	480	ND<25	180	176	13000	---	---	---	7.8	SPL
MW-4	09/05/96	39.24	16.75	22.49	1100	---	ND<12	ND<25	ND<25	ND<25	3200	---	---	---	4.0	SPL
MW-4	03/11/97	39.24	16.10	23.14	2400	---	46	ND<10	66	106	3400	---	---	---	4.0	SPL
MW-5	06/06/95	39.07	16.16	22.91	1100	---	42	ND<2.5	15	4.0	---	---	---	---	---	ATI
MW-5	09/01/95	39.07	16.63	22.44	1600	---	55	ND<2.5	15	8.0	1200	---	---	---	7.4	ATI
QC-1 (c)	09/01/95	---	---	---	1200	---	64	ND<2.5	14	3.1	---	---	---	---	---	ATI
MW-5	11/29/95	39.07	17.19	21.88	2300	---	140	4.0	36	11	1500	---	---	---	4.1	ATI
MW-5	03/23/96	39.07	15.54	23.53	90	---	2.8	ND<1	ND<1	ND<1	1500	---	---	---	7.5	SPL
MW-5	09/05/96	39.07	16.72	22.35	2300	---	5.1	ND<1.0	ND<1.0	ND<1.0	3300	---	---	---	3.2	SPL
QC-1 (c)	09/05/96	---	---	---	2000	---	4.9	ND<1.0	ND<1.0	ND<1.0	2900	---	---	---	---	SPL
MW-5	03/11/97	39.07	16.12	22.95	470	---	ND<5.0	ND<5.0	ND<5.0	ND<5.0	580	---	---	---	3.0	SPL
QC-1 (c)	03/11/97	---	---	---	460	---	ND<5.0	ND<5.0	ND<5.0	ND<5.0	540	---	---	---	---	SPL
MW-6	03/01/95	38.46	15.66	22.80	270	---	11	ND<0.50	ND<0.50	ND<1.0	---	---	---	---	1.6	ATI
MW-6	06/06/95	38.46	15.82	22.64	220	---	2.3	ND<0.50	ND<0.50	ND<1.0	---	---	---	---	---	ATI
MW-6	09/01/95	38.46	16.25	22.21	780	---	ND<2.5	ND<2.5	ND<2.5	ND<5.0	2500	---	---	---	7.5	ATI
MW-6	11/29/95	38.46	16.80	21.66	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	1100	---	---	---	3.9	ATI
MW-6	03/23/96	38.46	15.27	23.19	50	---	ND<0.5	ND<1	ND<1	ND<1	910	---	---	---	8.0	SPL
MW-6	09/05/96	38.46	16.30	22.16	4400	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	7400	---	---	---	3.0	SPL
MW-6	03/11/97	38.46	15.75	22.71	1100	---	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2000	---	---	---	3.1	SPL

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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)	TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
MW-7	03/01/95	39.50	16.21	23.29	1400	---	14	ND<1.0	14	27	---	---	---	---	1.8	ATI
MW-7	06/06/95	39.50	16.34	23.16	540	---	5.5	ND<0.50	15	1.1	---	---	---	---	---	ATI
MW-7	09/01/95	39.50	16.74	22.76	190	---	2.8	ND<0.50	5.0	ND<1.0	10	---	---	---	7.5	ATI
MW-7	11/29/95	39.50	17.33	22.17	230	---	31	ND<0.50	3.8	1.9	ND<5.0	---	---	---	4.6	ATI
MW-7	03/23/96	39.50	15.86	23.64	ND<50	---	5.0	ND<1	ND<1	ND<1	330	---	---	---	7.2	SPL
QC-1 (c)	03/23/96	---	---	---	60	---	7.6	ND<1	ND<1	ND<1	360	---	---	---	---	SPL
MW-7	09/05/96	39.50	16.80	22.70	200	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	430	---	---	---	3.1	SPL
MW-7	03/11/97	39.50	18.32	21.18	120	---	ND<0.5	ND<1.0	ND<1.0	ND<1.0	140	---	---	---	4.7	SPL
QC-2 (e)	11/04/92	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
QC-2 (e)	11/04/92	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
QC-2 (e)	03/01/95	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<1.0	---	---	---	---	---	PACE
QC-2 (e)	05/12/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
QC-2 (e)	09/09/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
QC-2 (e)	11/03/94	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	PACE
QC-2 (e)	06/06/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	---	---	ATI
QC-2 (e)	09/01/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	---	---	---	ATI
QC-2 (e)	11/29/95	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	---	---	---	ATI
QC-2 (e)	03/23/96	---	---	---	ND<50	---	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	---	---	---	SPL

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
TOG	Total oil and grease
1,1,1-TCA	1,1,1-Trichloroethane
PCE	Tetrachloroethene
DO	Dissolved oxygen
ug/l	Micrograms per liter
ppm	Parts per million
ND	Not detected above reported detection limit
---	Not measured/analyzed/applicable
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.
SPL	Southern Petroleum Laboratories

NOTES:

(a) Top of casing elevations surveyed relative to an established benchmark with an elevation of 39.95 feet above mean sea level.

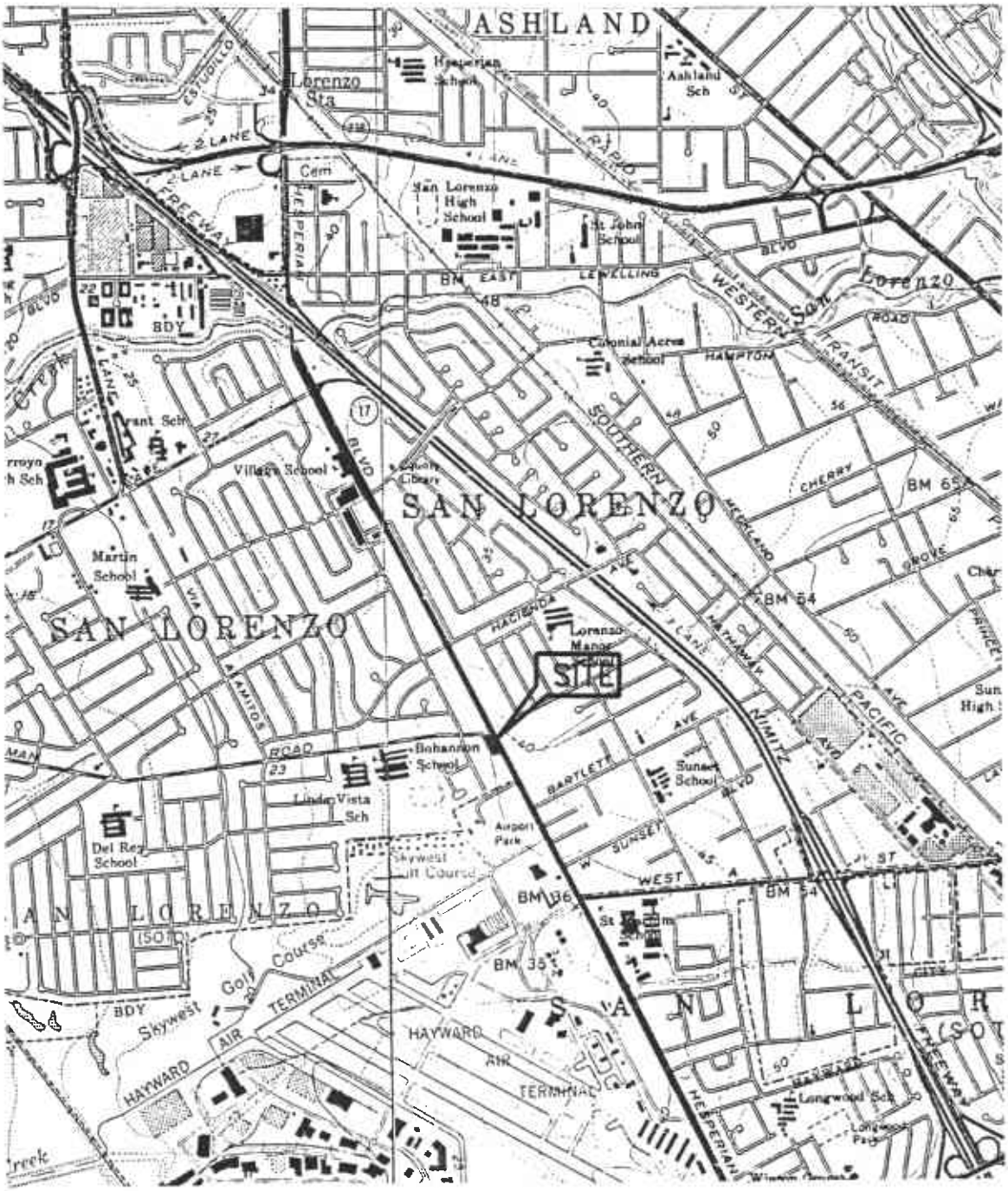
(b) Groundwater elevations in feet above mean sea level.

(c) Blind duplicate.

(d) Well inaccessible.

(e) Travel blank.

F:\10-060\060-6-2.WQ2



SOURCE:
USGS MAP, HAYWARD & SAN LEANDRO QUADRANGLES,
7.5 MINUTE SERIES. 1959.
PHOTOREVISED 1980.

N

0 1000' 2000'

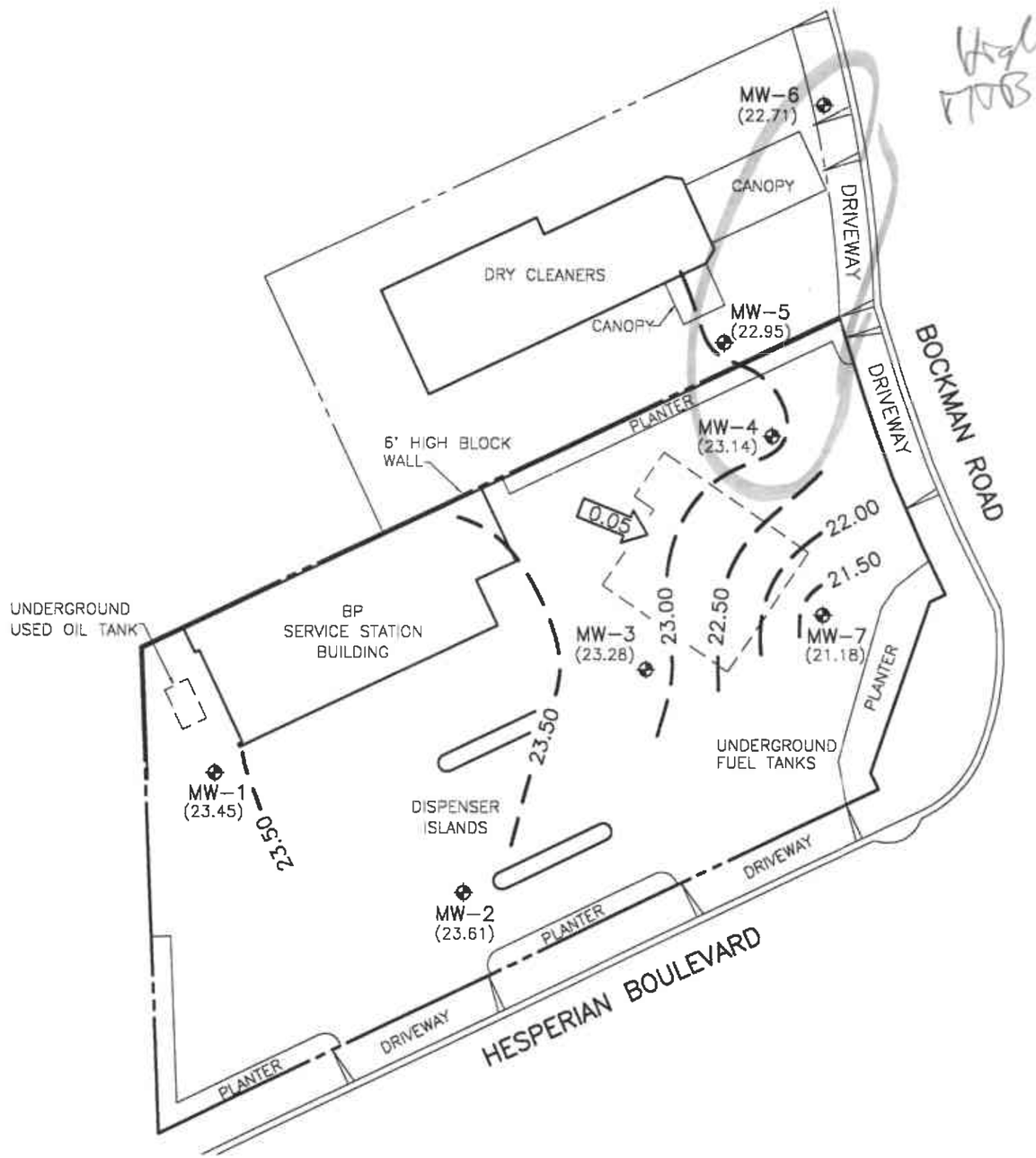
FIGURE 1

VICINITY MAP

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10-060

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA



N

0 30 60

SCALE IN FEET

LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (23.28) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 23.50 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–0.50 FOOT)
- 0.05 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

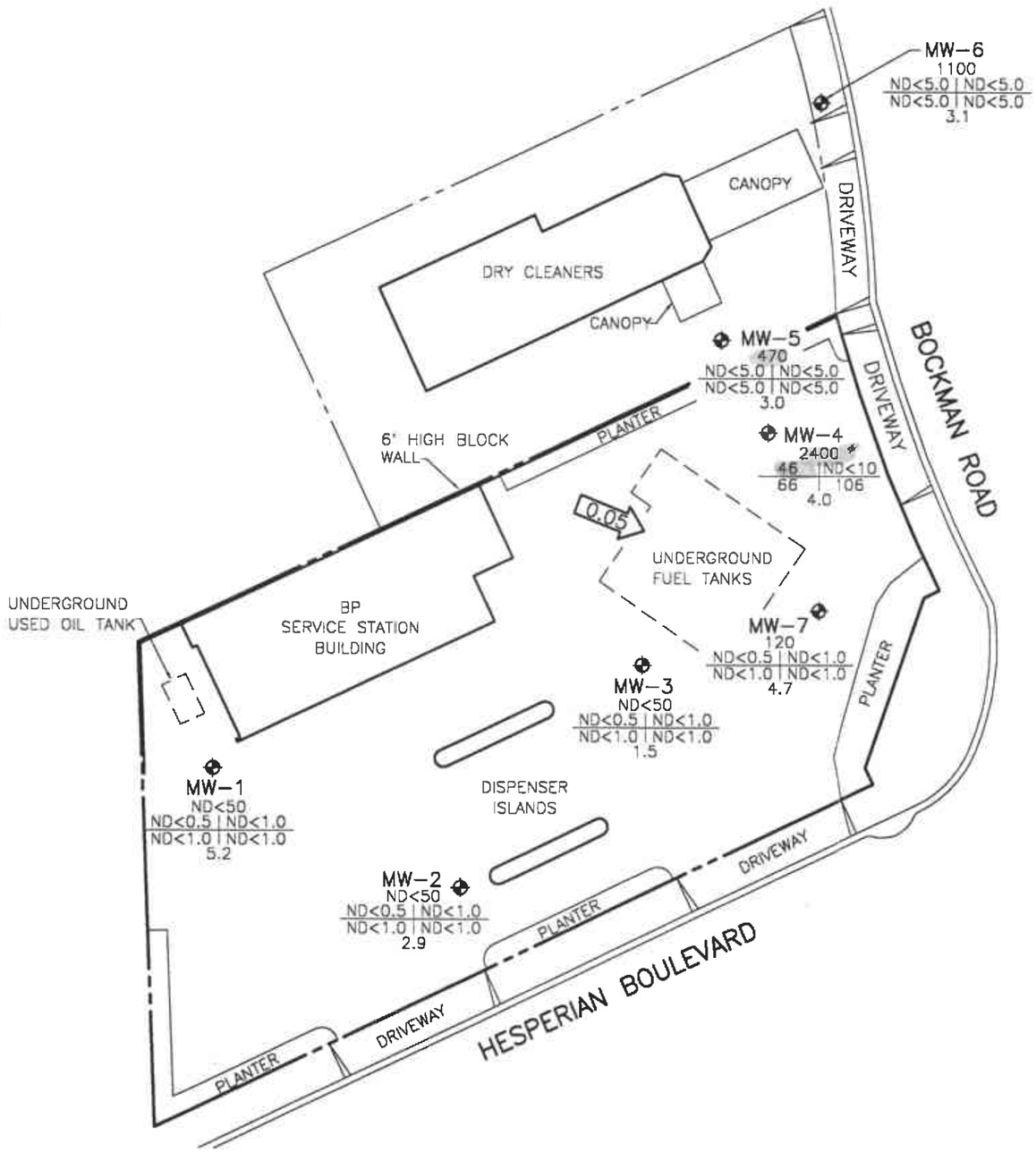
MARCH 11, 1997

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10–060

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10060D-LTMG 3-28-97 DDM 1=30



N

0 30 60

SCALE IN FEET

LEGEND

◆	GROUNDWATER MONITORING WELL
TPH-G / B | T / E | X / 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
DO	DISSOLVED OXYGEN
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
0.05	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

MARCH 11, 1997

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10-060

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10060C-3.DWG 3-28-97 DDM 1=30

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

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. 10-060-06-002 Date: 3-11-97
Address 18501 Hesperian Blvd Day: M T W TH F
Contract No. G797439 City: San Lorenzo
Station No. BP 11107 Sampler: KDB

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS:
MW-1	S-1	2	30.7	17.62		0710	Semi-Feb/Aug
MW-2	S-2	2	25	16.95		0713	Semi-Feb/Aug
MW-3	S-4	2	25	17.17		0720	Semi-Feb/Aug
MW-4	S-5	2	26	16.10		0722	Semi-Feb/Aug
MW-5	S-7,S-8	2	26	16.12		0730	Semi-Feb/Aug
MW-6	S-6	2	20	15.75		0726	Semi-Feb/Aug
MW-7	S-3	2	26	18.32		0717	Semi-Feb/Aug

FIELD INSTRUMENT CALIBRATION DATA

pH METER HORIBA 4.00 ✓ 7.00 ✓ 10.00 ✓ TEMPERATURE COMPENSATED Y N TIME 0702 WEATHER _____

D.O. METER _____ ZERO d.O. SOLUTION yes BAROMETRIC PRESSURE _____ TEMP _____

CONDUCTIVITY METER _____ 10,000 Apt TURBIDITY METER _____ 5.0 NTU _____ OTHER _____

Well ID	Depth to Wate	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-1	17.62	2	dk/M		Y (N)	7	0738	16 C	6.4	1.5	5.8
						4	0740	17	6.4	1.80	5.1
						7	0742	17	6.4	.91	5.2

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge Purge Vol.
30.7 - 17.62 = 13 x .16 x 3 = 6.5

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

Comments:

O EPA 601 ___ O TPH-G/BTEX Hd O TPH Diesel ___ O TOG 5520 ___

TIME/SAMPLE ID: S-1 / 0742

Well ID	Depth to Wate	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-2	16.95	2	dk/MW		Y (N)	1	0751	14	6.5	1.0	2.7
						2	0752	18	6.4	1.1	2.6
						4	0753	18	6.2	1.1	2.9

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge Purge Vol.
25 - 16.95 = 8 4

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

Comments: MW Well

O EPA 601 ___ O TPH-G/BTEX Hd O TPH Diesel ___ O TOG 5520 ___

TIME/SAMPLE ID: S-2 / 0753

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. 10-060-06-002 | Date: 3-11-97
Address 18501 Hesperian Blvd | Day: M T W TH F
Contract No. G797439 | City: San Lorenzo
Station No. BP 11107 | Sampler: [illegible]

MW-7 | Depth to Water 18.32 | Diam 2 | Cap/Lock [illegible] | Product Dept | Iridescence Y N

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
26 - 18.32 = 7.6 x .16 x 3 = 4

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

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
1	0801	18	6.5	1.0	5.1
2	0802	18	6.6	1.1	4.9
4	0803	17	6.2	1.2	4.7

EPA 601___ TPH-G/BTEX HCl TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 0803 / 5-3

MW3 | Depth to Water 17.17 | Diam 2 | Cap/Lock [illegible] | Product Dept | Iridescence Y N

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
25 - 17.17 = 7.8 x .16 x 3 = 4

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

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
1	0815	19	6.5	[illegible].83	0.9
2	0817	18	6.2	1.83	1.6
4	0819	19	6.3	1.82	1.5

EPA 601___ TPH-G/BTEX HCl TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 0819 / 5-4

MW 4 | Depth to Water 16.10 | Diam 2 | Cap/Lock | Product Dept | Iridescence Y N

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
26 - 16.10 = 10 x = 5

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

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
2	0836	19	6.5	1.0	4.2
4	0839	18	6.6	1.3	4.1
5	0840	17	6.6	1.2	4.0

EPA 601___ TPH-G/BTEX HCl TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 0840 / 5-5

MW 6 | Depth to Water 15.75 | Diam 2 | Cap/Lock | Product Dept | Iridescence Y N

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
26 - 15.75 = 11 x .16 x 3 = 6

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

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
2	0847	20	6.5	1.0	3.3
4	0848	19	6.7	1.1	3.2
6	0849	19	6.3	1.1	3.1

EPA 601___ TPH-G/BTEX___ TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 0849 / 5-6

MW 5 | Depth to Water 16.12 | Diam 2 | Cap/Lock | Product Dept | Iridescence Y N

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
26 - 16.12 = [illegible] 5

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

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
2	0904	19	6.5	1.0	3.0
4	0905	14	6.4	1.0	3.0
5	0906	14	6.2	1.0	3.0

EPA 601___ TPH-G/BTEX HCl TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 0906, 0911 / 5-7, 5-8

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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

March 21, 1997

Mr. Scott Hooton
BP OIL COMPANY
295 SW 41st St., Bldg 13, Suite N
Renton, WA 98055

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on March 12, 1997. The samples were assigned to Certificate of Analysis No. 9703540 and analyzed for all parameters as listed on the chain of custody.

There were no analytical problems encountered with this group of samples and all quality control data was within acceptance limits.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

Ed Fry
Project Manager

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

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 97-03-540

Approved for Release by:

Ed Fry, Project Manager

Date: 3/21/97

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. H9-9703540-01

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-1

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 07:42:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	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	100		
4-Bromofluorobenzene	97		
Method 8020A***			
Analyzed by: WK			
Date: 03/16/97			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	100		
California LUFT Manual			
Analyzed by: WK			
Date: 03/16/97 02:26:00			

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. H9-9703540-02

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 07:53:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	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	100
4-Bromofluorobenzene	100

Method 8020A***
Analyzed by: WK
Date: 03/16/97

Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L

Surrogate	% Recovery
1,4-Difluorobenzene	90
4-Bromofluorobenzene	97

California LUFT Manual
Analyzed by: WK
Date: 03/16/97 02:55:00

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

Certificate of Analysis No. H9-9703540-03

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 08:03:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	140	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	97		
4-Bromofluorobenzene	97		
Method 8020A***			
Analyzed by: WK			
Date: 03/16/97			
Total Petroleum Hydrocarbons-Gasoline	0.12	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	93		
California LUFT Manual			
Analyzed by: WK			
Date: 03/16/97 03:24:00			

(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. H9-9703540-04

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-4

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 08:19:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	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	100		
4-Bromofluorobenzene	93		
Method 8020A***			
Analyzed by: WK			
Date: 03/16/97			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	100		
California LUFT Manual			
Analyzed by: WK			
Date: 03/16/97 03:52:00			

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. H9-9703540-05

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-5

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 08:40:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	3400	10 P	µg/L
Benzene	46	10 P	µg/L
Toluene	ND	10 P	µg/L
Ethylbenzene	66	10 P	µg/L
Total Xylene	106	10 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	93		
Method 8020A***			
Analyzed by: JN			
Date: 03/18/97			
Total Petroleum Hydrocarbons-Gasoline	2.4	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	90		
4-Bromofluorobenzene	93		
California LUFT Manual			
Analyzed by: WK			
Date: 03/16/97 04:21:00			

(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. H9-9703540-06

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-6

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 08:49:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	2000	5.0 P	µg/L
Benzene	ND	5.0 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	100		
4-Bromofluorobenzene	93		
Method 8020A***			
Analyzed by: JN			
Date: 03/17/97			
Total Petroleum Hydrocarbons-Gasoline	1.1	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	93		
California LUFT Manual			
Analyzed by: WK			
Date: 03/16/97 04:49:00			

(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. H9-9703540-07

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-7

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 09:00:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	580	5.0 P	µg/L
Benzene	ND	5.0 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	100
4-Bromofluorobenzene	93

Method 8020A***
Analyzed by: JN
Date: 03/17/97

Total Petroleum Hydrocarbons-Gasoline	0.47	0.05 P	mg/L

Surrogate	% Recovery
1,4-Difluorobenzene	87
4-Bromofluorobenzene	100

California LUFT Manual
Analyzed by: WK
Date: 03/16/97 05:18:00

(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. H9-9703540-08

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

P.O.# G797439 , COC#077233
DATE: 03/21/97

PROJECT: BP Oil #11107
SITE: 18501 Hesperian Blvd
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-8

PROJECT NO: 10-60-6-2
MATRIX: WATER
DATE SAMPLED: 03/11/97 09:11:00
DATE RECEIVED: 03/12/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	540	5.0 P	µg/L
Benzene	ND	5.0 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 8020A***			
Analyzed by: JN			
Date: 03/17/97			
Total Petroleum Hydrocarbons-Gasoline	0.46	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	90		
4-Bromofluorobenzene	97		
California LUFT Manual			
Analyzed by: WK			
Date: 03/16/97 05:46:00			

(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

QUALITY CONTROL

DOCUMENTATION

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

California LUFT Manual
WORK ORDER: 9703540-01A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-1

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
1,4-Difluorobenzene	30	26	87	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

California LUFT Manual
WORK ORDER: 9703540-02A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-2

1,4-Difluorobenzene	30	27	90	50- 150
4-Bromofluorobenzene	30	29	97	50- 150

California LUFT Manual
WORK ORDER: 9703540-03A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-3

1,4-Difluorobenzene	30	26	87	50- 150
4-Bromofluorobenzene	30	28	93	50- 150

California LUFT Manual
WORK ORDER: 9703540-04A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-4

1,4-Difluorobenzene	30	26	87	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

California LUFT Manual
WORK ORDER: 9703540-05A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-5

1,4-Difluorobenzene	30	27	90	50- 150
4-Bromofluorobenzene	30	28	93	50- 150

California LUFT Manual
WORK ORDER: 9703540-06A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-6

1,4-Difluorobenzene	30	26	87	50- 150
4-Bromofluorobenzene	30	28	93	50- 150

California LUFT Manual
WORK ORDER: 9703540-07A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-7

1,4-Difluorobenzene	30	26	87	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

California LUFT Manual
WORK ORDER: 9703540-08A
BATCH#:HP_N970316012900
CLIENT SAMPLE ID:S-8

1,4-Difluorobenzene	30	27	90	50- 150

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

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
4-Bromofluorobenzene	30	29	97	50- 150

California LUFT Manual **BATCH#:**HP_N970316012900
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	26	26.4	50- 150
4-Bromofluorobenzene	30	28	27.7	50- 150

California LUFT Manual **BATCH#:**HP_N970316012900
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9703631-05A

1,4-Difluorobenzene	30	39	130	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

California LUFT Manual **BATCH#:**HP_N970316012900
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9703631-05A

1,4-Difluorobenzene	30	40	133	50- 150
4-Bromofluorobenzene	30	29	97	50- 150

Method 8020A* ** **BATCH#:**HP_N970316084900
WORK ORDER: 9703540-01A **CLIENT SAMPLE ID:**S-1

1,4-Difluorobenzene	30	30	100	70- 131
4-Bromofluorobenzene	30	29	97	43- 135

Method 8020A* ** **BATCH#:**HP_N970316084900
WORK ORDER: 9703540-02A **CLIENT SAMPLE ID:**S-2

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

Method 8020A* ** **BATCH#:**HP_N970316084900
WORK ORDER: 9703540-03A **CLIENT SAMPLE ID:**S-3

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

Method 8020A* ** **BATCH#:**HP_N970316084900
WORK ORDER: 9703540-04A **CLIENT SAMPLE ID:**S-4

1,4-Difluorobenzene	30	30	100	70- 131
4-Bromofluorobenzene	30	28	93	43- 135

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PHONE (713) 660-0901

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS

Method 8020A* BATCH#:HP_N970316084900**
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	30	29.9	70- 131
4-Bromofluorobenzene	30	28	28.5	43- 135

Method 8020A* BATCH#:HP_N970316084900**
WORK ORDER: LCS **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	31	103	70- 131
4-Bromofluorobenzene	30	30	100	43- 135

Method 8020A* BATCH#:HP_N970316084900**
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9703631-04A

1,4-DIFLUOROBENZENE	30	30	100	70- 131
4-BROMOFLUOROBENZENE	30	29	97	43- 135

Method 8020A* BATCH#:HP_N970316084900**
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9703631-04A

1,4-Difluorobenzene	30	30	100	70- 131
4-Bromofluorobenzene	30	28	93	43- 135

Method 8020A * BATCH#:HP_N970317102700**
WORK ORDER: 9703540-06A **CLIENT SAMPLE ID:**S-6

1,4-Difluorobenzene	30	30.0000	100	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

Method 8020A * BATCH#:HP_N970317102700**
WORK ORDER: 9703540-07A **CLIENT SAMPLE ID:**S-7

1,4-Difluorobenzene	30	30.0000	100	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

Method 8020A * BATCH#:HP_N970317102700**
WORK ORDER: 9703540-08A **CLIENT SAMPLE ID:**S-8

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

Method 8020A * BATCH#:HP_N970317102700**
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	29	29.5	74- 131

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
4-Bromofluorobenzene	30	28	27.8	43- 135

Method 8020A * BATCH#:HP_N970317102700**
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9703619-06A

1,4-DIFLUOROBENZENE	30	31	103	70- 131
4-BROMOFLUOROBENZENE	30	29	97	43- 135

Method 8020A * BATCH#:HP_N970317102700**
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9703619-06A

1,4-Difluorobenzene	30	31	103	70- 131
4-Bromofluorobenzene	30	28	93	43- 135

Method 8020A * BATCH#:HP_N970318105300**
WORK ORDER: 9703540-05A **CLIENT SAMPLE ID:**S-5

1,4-Difluorobenzene	30	30.0000	100	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

Method 8020A * BATCH#:HP_N970318105300**
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	29	28.9	74- 131
4-Bromofluorobenzene	30	29	28.9	43- 135

Method 8020A * BATCH#:HP_N970318105300**
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9703801-02A

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

Method 8020A * BATCH#:HP_N970318105300**
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9703801-02A

1,4-Difluorobenzene	30	31	103	70- 131
4-Bromofluorobenzene	30	28	93	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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SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020***

Batch Id: HP_N970316084900

Matrix: Aqueous
Units: µg/L

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	46	92.0	20 - 110
Benzene	ND	50	46	92.0	62 - 121
Toluene	ND	50	44	88.0	66 - 136
EthylBenzene	ND	50	51	102	70 - 136
O Xylene	ND	50	51	102	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	28	140	27	135	3.64	20	39 - 150
BENZENE	ND	20	21	105	21	105	0	25	39 - 150
TOLUENE	ND	20	18	90.0	17	85.0	5.71	26	56 - 134
ETHYLBENZENE	ND	20	20	100	20	100	0	38	61 - 128
O XYLENE	ND	20	21	105	20	100	4.88	29	40 - 130
M & P XYLENE	ND	40	43	108	43	108	0	20	43 - 152

Analyst: WK
Sequence Date: 03/16/97
SPL ID of sample spiked: 9703631-04A
Sample File ID: N_C7538.TX0
Method Blank File ID:
Blank Spike File ID: N_C7531.TX0
Matrix Spike File ID: N_C7533.TX0
Matrix Spike Duplicate File ID: N_C7534.TX0

* = Values Outside QC Range. « = Data outside Method Specification limits.
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 (4th Q '95)
(***) = Source: SPL-Houston Historical Data (3rd Q '96)

SAMPLES IN BATCH(SPL ID):

9703540-03A 9703540-04A 9703622-01A 9703622-02A
9703622-03A 9703631-01A 9703631-02A 9703631-03A
9703663-06A 9703663-05A 9703733-04A 9703631-04A
9703631-05A 9703540-01A 9703540-02A

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_N970318105300

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	43	86.0	63 - 120
Benzene	ND	50	44	88.0	62 - 121
Toluene	ND	50	43	86.0	66 - 136
EthylBenzene	ND	50	47	94.0	70 - 136
O Xylene	ND	50	48	96.0	74 - 134
M & P Xylene	ND	100	96	96.0	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	270	20	280	NC	280	NC	NC	20	39 - 150
BENZENE	ND	20	20	100	20	100	0	25	39 - 150
TOLUENE	ND	20	16	80.0	16	80.0	0	26	56 - 134
ETHYLBENZENE	ND	20	19	95.0	19	95.0	0	38	61 - 128
O XYLENE	ND	20	20	100	19	95.0	5.13	29	40 - 130
M & P XYLENE	ND	40	41	102	39	97.5	4.51	20	43 - 152

Analyst: JN
Sequence Date: 03/18/97
SPL ID of sample spiked: 9703801-02A
Sample File ID: N_C7617.TX0
Method Blank File ID:
Blank Spike File ID: N_C7613.TX0
Matrix Spike File ID: N_C7614.TX0
Matrix Spike Duplicate File ID: N_C7615.TX0

* = Values Outside QC Range. « = Data outside Method Specification limits.
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):

9703540-05A 9703619-08A 9703619-09A 9703619-10A
9703915-01A 9703915-02A 9703915-03A 9703915-04A
9703915-05A 9703801-04A 9703619-15A 9703619-17A
9703801-02A 9703619-18A 9703619-20A 9703619-21A
9703619-22A

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

Batch Id: HP_N970317102700

Matrix: Aqueous
Units: µg/L

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	48	96.0	63 - 120
Benzene	ND	50	45	90.0	62 - 121
Toluene	ND	50	44	88.0	66 - 136
EthylBenzene	ND	50	47	94.0	70 - 136
O Xylene	ND	50	49	98.0	74 - 134
M & P Xylene	ND	100	98	98.0	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	1.7	20	25	116	25	116	0	20	39 - 150
BENZENE	ND	20	23	115	22	110	4.44	25	39 - 150
TOLUENE	ND	20	20	100	19	95.0	5.13	26	56 - 134
ETHYLBENZENE	ND	20	23	115	21	105	9.09	38	61 - 128
O XYLENE	ND	20	23	115	22	110	4.44	29	40 - 130
M & P XYLENE	ND	40	48	120	46	115	4.26	20	43 - 152

Analyst: JN
Sequence Date: 03/17/97
SPL ID of sample spiked: 9703619-06A
Sample File ID: N_C7584.TX0
Method Blank File ID:
Blank Spike File ID: N_C7583.TX0
Matrix Spike File ID: N_C7585.TX0
Matrix Spike Duplicate File ID: N_C7586.TX0

* = Values Outside QC Range. « = Data outside Method Specification limits.
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): 9703663-06A 9703619-07A 9703619-11A 9703619-12A 9703619-13A 9703619-14A 9703619-19A 9703619-06A 9703540-06A 9703540-07A 9703540-08A 9703655-02A

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** SPL BATCH QUALITY CONTROL REPORT **

CA LUFT

Matrix: Aqueous
Units: mg/L

Batch Id: HP_N970316012900

L A B O R A T O R Y C O N T R O L S A M P L E

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Petroleum Hydrocarbons-Gas	ND	1.0	0.84	84.0	50 - 150

M A T R I X 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
PETROLEUM HYDROCARBONS-GAS	ND	0.9	0.96	107	0.98	109	1.85	50	50 - 150

Analyst: WK
Sequence Date: 03/16/97
SPL ID of sample spiked: 9703631-05A
Sample File ID: NNC7539.TX0
Method Blank File ID:
Blank Spike File ID: NNC7532.TX0
Matrix Spike File ID: NNC7535.TX0
Matrix Spike Duplicate File ID: NNC7536.TX0

* = Values Outside QC Range. « = Data outside Method Specification limits.
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: Temporary Limits
(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID):

9703540-03A 9703540-04A 9703540-05A 9703540-06A
9703540-07A 9703540-08A 9703631-04A 9703631-05A
9703540-01A 9703540-02A

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

9703540

CHAIN OF CUSTODY

No. 077233 Page 1 of 1

CONSULTANT'S NAME: ALISTO	ADDRESS: 1515 TREAT BLVD	CITY: WALNUT CREEK	STATE: CA	ZIP CODE: 94598
BP SITE NUMBER: BP11107	BP CORNER ADDRESS/CITY: 18501 Hesperian Blvd San Lorenzo			CONSULTANT PROJECT NUMBER: 10-60-6-2
CONSULTANT PROJECT MANAGER: B.N	PHONE NUMBER:	FAX NUMBER:		CONSULTANT CONTRACT NUMBER: 6797439
BP CONTACT: S.H	BP ADDRESS:	PHONE NUMBER:		FAX NO.:
LAB CONTACT: DJB	LABORATORY ADDRESS:	PHONE NUMBER:		FAX NO.:
SAMPLED BY (Please Print Name): DJB	SAMPLED BY (Signature):	SHIPMENT DATE: 3/11/97		SHIPMENT METHOD: FedEx

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

AIRBILL NUMBER:

ANALYSIS REQUIRED: All TPH GBTEX MTBE

SAMPLE DESCRIPTION	COLLECTION DATE / TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	COMMENTS
S-1 0742	3/11/97	G.W	3	VOA		
S-2 0753						
S-3 0803						
S-4 0819						
S-5 0840						
S-6 0849						
S-7 0906						
S-8 0919						

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	3/11/97		S. West	3/12/97	1100

ADDITIONAL COMMENTS: 4°C

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: 3/12/97	Time: 11:00

SPL Sample ID: 9703540

			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:		4° C	
10	Method of sample delivery to SPL:	SPL Delivery	✓	
		Client Delivery		
		FedEx Delivery (airbill #)	940477986	
		Other:		
11	Method of sample disposal:	SPL Disposal	✓	
		HOLD		
		Return to Client		

Name: Victor Brown	Date: 3/12/97

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

BP Site Number:	11107
ERM Contact:	G797439
Sampling Date:	03/11/97
Matrix Description:	Water
Date Final Report Received:	03/27/97
Laboratory & Location:	SPL, Houston, Texas

		Yes	No	N/A
1.	Is BP contract release number consistent with analytical report?	✓		
2.	Was report submitted within the specified timeframe?	✓		
3.	Does report agree with the COC?	✓		
4.	Are units consistent with the given matrix?	✓		
5.	Were any target analytes/compounds detected in blanks (i.e., trip or equipment)?			X
6.	Are duplicate water samples within 30%?	✓		
7.	Are holding times met?	✓		
8.	Are surrogates within limits using laboratory criteria?	✓		
9.	Are MS/MSD acceptable using laboratory criteria?	✓		
10.	Are LCS results acceptable using laboratory criteria?	✓		

Notes: _____

Data Validation Completed by: William Howell

(signature): William Howell

Date: 4/2/97