BP OIL

ENVIRONMENTAL PROTECTION
97 FEB 18 PM 4:08

February 14, 1997

Ms. Susan Hugo
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Room 250
Oakland, CA 94502-6577

RE: BP OIL FACILITY #11126
1700 Powell Street
Emeryville, California

Dear Ms. Hugo:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED DECEMBER 23, 1996** for the above referenced facility. Plans for the following quarter include additional groundwater monitoring. You will note that Figure 1 is incorrect; please refer to the previous reports for the correct Site Vicinity Map.

If you should have any questions regarding this site, I may be reached at (206) 251-0689.

Respectfully,

Scott T. Hooton
Environmental Resources Management
Corrective Action Manager

STH:sb msword\ERM11126

cc: Mr.Ed So, CRWQCB, San Francisco Bay Region,2101 Webster Street, Suite 500 Oakland CA 94612 (without attachment)

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

TOSCO Northwest, 601 Union Street, Suite 2500, Seattle WA 98101

Mr. Andrew Lehane, Pacific Environmental, 2025 Gateway Pl #440, San Jose Ca 95110

Site File

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11126
1700 Powell Street
Emeryville, California

Project No. 10-061-07-003

Prepared for:

BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington

Prepared by:

Alisto Engineering Group
1575 Treat Boulevard, Suite 201
Walnut Creek, California

December 23, 1996

William Howell
Project Manager

Al Sevilla, P.E.
Principal

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11126
1700 Powell Street
Emeryville, California

Project No. 10-061-07-003

December 23, 1996

INTRODUCTION

This report presents the results and findings of the November 4 and 5, 1996 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11126, 1700 Powell Street, Emeryville, 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.

FREE PRODUCT MONITORING AND RECOVERY

A passive product recovery canister has been installed in Monitoring Well MW-9 to recover liquid-phase product. Product thicknesses for this and previous monitoring events are presented in Table 1. The volume of free product recovered from the well is presented in Table 2.

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. 11126
1700 POWELL STREET, EMERYVILLE, CALIFORNIA

ALISTO PROJECT NO. 10-061

WELL ID		DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	(a)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (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)		TOG (ug/l)	HVOC (ug/l)	(c)	DO (ppm)	LAB
MW-1		11/04/92	7.76		4.96	—	2.80		5300	—	1100	480	ND<0.5	1500	—		—	—		—	PACE
MW-1		10/12/93	7.76		5.26	—	2.50		3600	—	970	71	100	550	—		—	—		—	PACE
MW-1		02/15/94	7.76		4.98	—	2.78		17000	—	4200	510	360	1600	—		—	—		3.9	PACE
MW-1		05/11/94	7.76		4.55	—	3.21		5500	—	2900	37	56	64	—		—	—		8.0	PACE
MW-1		08/01/94	7.76		5.51	—	2.25		15000	—	3600	740	510	2800	—		—	—		2.9	PACE
QC-1	(d)	08/01/94	8.56		—	—	—		16000	—	3600	750	510	2800	—		—	—		—	PACE
MW-1		10/18/94	7.76		5.11	—	2.65		16000	—	1800	61	160	890	—		—	—		2.9	PACE
QC-1	(d)	10/18/94	—		—	—	—		16000	—	1900	64	170	950	—		—	—		—	PACE
MW-1		01/13/95	7.76		3.05	—	4.71		220	—	7	ND<0.5	1	23	—		—	—		6.6	ATI
QC-1	(d)	01/13/95	—		—	—	—		590	—	88	0.7	ND<0.5	55	—		—	—		—	ATI
MW-1		04/13/95	7.76		3.84	—	3.92		9300	—	4000	300	200	950	—		—	—		7.7	ATI
MW-1		07/11/95	7.76		3.60	—	4.16		15000	—	2200	84	ND<25	2500	—		—	—		8.8	ATI
MW-1		11/02/95	7.76		4.58	—	3.18		19000	—	920	ND<100	ND<100	430	52000		—	—		7.3	ATI
MW-1		02/05/96	7.76		4.43	—	3.33		4600	—	1400	330	54	247	8700		—	—		3.2	SPL
MW-1		04/24/96	7.76		4.00	—	3.76		2000	—	510	33	61	228	4500		—	—		7.5	SPL
MW-1		07/15/96	7.76		4.30	—	3.46		—	—	—	—	—	—	—		—	—		—	—
MW-1		07/16/96	7.76		—	—	—		12000	—	2800	170	390	1630	64000		—	—		7.9	SPL
QC-1	(d)	07/16/96	—		—	—	—		12000	—	2800	160	390	1610	63000		—	—		—	SPL
MW-1		07/30/96	7.76		4.64	—	3.12		—	—	—	—	—	—	—		—	—		—	—
MW-1		08/12/96	7.76		—	—	—		11000	—	2500	160	ND<10	1740	440000		—	—		7.0	SPL
MW-1		11/04/96	7.76		5.98	—	1.78		—	—	—	—	—	—	—		—	—		—	—
MW-1		11/05/96	7.76		—	—	—		53000	—	1300	43	100	349	42000/190000	(e)	—	—		6.6	SPL
MW-2		11/04/92	8.56		5.88	—	2.68		12000	—	3900	1300	ND<0.5	2300	—		—	—		—	PACE
QC-1	(d)	11/04/92	8.56		5.88	—	2.68		12000	—	3200	980	ND<0.5	1900	—		—	—		—	PACE
MW-2		10/12/93	8.56		6.29	—	2.27		4500	—	3400	180	230	940	—		—	—		—	PACE
MW-2		02/15/94	8.56		5.56	—	3.00		2000	—	430	270	28	390	—		—	—		4.0	PACE
QC-1	(d)	02/15/94	8.56		5.56	—	3.00		1800	—	290	160	14	250	—		—	—		—	PACE
MW-2		05/11/94	8.56		5.17	—	3.39		14000	—	3900	1200	440	1900	—		—	—		8.9	PACE
QC-1	(d)	05/11/94	8.56		—	—	—		15000	—	5600	1500	470	2000	—		—	—		—	PACE
MW-2		08/01/94	8.56		5.43	—	3.13		8200	—	3000	420	230	680	—		—	—		2.6	PACE
MW-2		10/18/94	8.56		5.71	—	2.85		9000	—	2000	140	150	420	—		—	—		7.2	PACE
MW-2		01/13/95	8.56		4.67	—	3.89		7900	—	2200	42	ND<5	770	—		—	—		6.8	ATI
MW-2		04/13/95	8.56		4.37	—	4.19		33000	—	8000	2500	1100	6600	—		—	—		7.5	ATI
QC-1	(d)	04/13/95	8.56		—	—	—		25000	—	6500	1500	110	5300	—		—	—		—	ATI
MW-2		07/11/95	8.56		4.61	—	4.05		19000	—	3300	99	7.5	4600	—		—	—		7.8	ATI
QC-1	(d)	07/11/95	—		—	—	—		28000	—	6800	1000	900	4900	—		—	—		—	ATI
MW-2		11/02/95	8.56		5.55	—	3.01		20000	—	3800	1200	570	2700	15000		—	—		7.3	ATI
QC-1	(d)	11/02/95	—		—	—	—		22000	—	4000	1200	600	2700	19000		—	—		—	ATI
MW-2		02/05/96	8.56		5.10	—	3.46		1200	—	320	220	26	187	99		—	—		2.2	SPL
QC-1	(d)	02/05/96	—		—	—	—		910	—	290	180	19	137	93		—	—		—	SPL
MW-2		04/24/96	8.56		4.95	—	3.61		ND<500	—	70	22	ND<10	61	ND<50		—	—		7.0	SPL
QC-1	(d)	04/24/96	—		—	—	—		ND<500	—	100	30	ND<10	71	ND<100		—	—		—	SPL
MW-2		07/15/96	8.56		5.40	—	3.16		—	—	—	—	—	—	—		—	—		—	—
MW-2		07/16/96	8.56		—	—	—		12000	—	3300	1400	250	2610	1400		—	—		7.8	SPL
MW-2		07/30/96	8.56		5.44	—	3.12		—	—	—	—	—	—	—		—	—		—	—
MW-2		11/04/96	8.56		7.06	—	1.50		—	—	—	—	—	—	—		—	—		—	—
MW-2		11/05/96	8.56		—	—	—		7200	—	1400	230	38	2110	1100		—	—		7.4	SPL
QC-1	(d)	11/05/96	—		—	—	—		9200	—	1300	170	ND<25	2240	1100		—	—		—	SPL

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1700 POWELL STREET, EMERYVILLE, CALIFORNIA

ALISTO PROJECT NO. 10-061

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (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)	HVOC (ug/l) (c)	DO (ppm)	LAB
MW-3	11/04/92	8.25	6.38	---	1.87	200	690	1.6	ND<0.5	ND<0.5	1.1	---	ND<5000	ND	---	PACE
MW-3	10/12/93	8.25	5.84	---	2.41	270	2100	5.0	0.7	ND<0.5	2.6	---	ND<5000	ND	---	PACE
QC-1 (d)	10/12/93	8.25	5.84	---	2.41	150	---	5.6	0.6	ND<0.5	1.6	---	---	---	---	PACE
MW-3	02/15/94	8.25	6.60	---	1.65	140	2.3	5.7	ND<0.5	ND<0.5	ND<0.5	---	90	ND	3.9	PACE
MW-3	05/11/94	8.25	5.86	---	2.39	190	2500	2.7	1.9	ND<0.5	1.9	---	ND<5000	ND	9.2	PACE
MW-3	08/01/94	8.25	6.13	---	2.12	120	1300	1.3	ND<0.5	0.5	1.1	---	ND<5000	ND	2.9	PACE
MW-3	10/18/94	8.25	6.39	---	1.86	100	2200	2.3	ND<0.5	ND<0.5	ND<0.5	---	ND<5000	ND	3.6	PACE
MW-3	01/13/95	8.25	5.47	---	2.78	ND<50	970	0.8	ND<0.5	ND<0.5	ND<1	---	---	ND	7.7	ATI
MW-3	04/13/95	8.25	5.17	---	3.08	530	ND<500	8.7	1.9	ND<0.5	3.9	---	2100	ND	8.4	ATI
MW-3	07/11/95	8.25	5.37	---	2.88	78	2100	0.57	ND<0.50	ND<0.50	ND<1.0	---	1900	ND	8.3	ATI
MW-3	11/02/95	8.25	6.29	---	1.96	250	2000	0.73	ND<0.50	ND<0.50	1.8	270	1400	ND	8.3	ATI
MW-3	02/05/96	8.25	5.80	---	2.45	ND<50	1600	ND<0.5	ND<1	ND<1	2.7	11	9000	ND	3.5	SPL
MW-3	04/24/96	8.25	5.69	---	2.56	ND<50	2800	ND<5	ND<10	ND<10	ND<10	150	6000	ND	8.6	SPL
MW-3	07/15/96	8.25	6.18	---	2.07	ND<250	3700	ND<2.5	ND<5	ND<5	ND<5	ND<50	1000	ND	7.7	SPL
MW-3	07/30/96	8.25	6.04	---	2.21	---	---	---	---	---	---	---	---	---	---	---
MW-3	11/04/96	8.25	7.84	---	0.41	---	---	---	---	---	---	---	---	---	---	---
MW-3	11/05/96	8.25	---	---	---	90	890	ND<0.5	ND<1.0	ND<1.0	ND<1.0	30	2000	ND	6.8	SPL
MW-4	11/04/92	8.12	6.66	---	1.46	340	---	4.5	ND<0.5	4.3	ND<0.5	---	---	---	---	PACE
MW-4	10/12/93	8.12	6.87	---	1.25	160	---	5.8	1.4	0.8	2.7	---	---	---	---	PACE
MW-4	02/15/94	8.12	6.61	---	1.51	110	---	4.4	0.7	ND<0.5	2.5	---	---	---	4.3	PACE
MW-4	05/11/94	8.12	5.89	---	2.23	120	---	0.5	0.8	ND<0.5	ND<0.5	---	---	---	9.3	PACE
MW-4	08/01/94	8.12	6.87	---	1.25	140	---	0.7	2.0	5.2	15	---	---	---	3.3	PACE
MW-4	10/18/94	8.12	6.62	---	1.50	140	---	3.5	ND<0.5	0.5	ND<0.5	---	---	---	3.0	PACE
MW-4	01/13/95	8.12	7.27	---	0.85	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<1	---	---	---	7.9	ATI
MW-4	04/13/95	8.12	6.51	---	1.61	73	---	1.2	ND<0.5	ND<0.5	ND<1	---	---	---	9.9	ATI
MW-4	07/11/95	8.12	6.21	---	1.91	82	---	0.57	ND<0.50	ND<0.50	ND<1.0	---	---	---	7.2	ATI
MW-4	11/02/95	8.12	6.78	---	1.34	71	---	1.4	0.96	0.99	2.8	140	---	---	8.6	ATI
MW-4	02/05/96	8.12	6.41	---	1.71	ND<50	---	ND<5	ND<10	ND<10	ND<10	200	---	---	4.4	SPL
MW-4	04/24/96	8.12	6.18	---	1.94	ND<250	---	ND<2.5	ND<5	ND<5	ND<5	510	---	---	8.3	SPL
MW-4	07/15/96	8.12	6.63	---	1.49	ND<50	---	5.7	ND<1	ND<1	ND<1	550	---	---	7.4	SPL
MW-4	07/30/96	8.12	6.34	---	1.78	---	---	---	---	---	---	---	---	---	---	---
MW-4	11/04/96	8.12	8.27	---	-0.15	---	---	---	---	---	---	---	---	---	---	---
MW-4	11/05/96	8.12	---	---	---	460	---	ND<2.5	11	ND<5.0	ND<5.0	620/610 (e)	---	---	7.3	SPL
MW-5	10/12/93	7.69	6.01	---	1.68	---	---	---	---	---	---	---	---	---	---	---
MW-5	10/13/93	---	---	---	---	2300	---	160	10	ND<0.5	26	---	---	---	---	PACE
MW-5	02/15/94	7.69	5.74	---	1.95	5100	---	710	16	33	35	---	---	---	4.0	PACE
MW-5	05/11/94	7.69	5.28	---	2.41	11000	---	1100	39	110	57	---	---	---	8.0	PACE
MW-5	08/01/94	7.69	5.84	---	1.85	9000	---	730	35	61	41	---	---	---	2.6	PACE
MW-5	10/18/94	7.69	6.01	---	1.68	7800	---	330	30	27	27	---	---	---	5.6	PACE
MW-5	01/13/95	7.69	4.74	---	2.95	ND<500	---	290	6	ND<5	18	---	---	---	6.8	ATI
MW-5	04/13/95	7.69	5.50	---	2.19	9100	---	400	15	52	27	---	---	---	7.4	ATI
MW-5	07/11/95	7.69	5.75	---	1.94	7300	---	390	13	28	23	---	---	---	7.2	ATI
MW-5	11/03/95	7.69	6.65	---	1.04	7200	---	270	15	38	23	200	---	---	8.4	ATI
MW-5	02/05/96	7.69	4.83	---	2.86	4600	---	370	15	53	28	ND<50	---	---	1.9	SPL
MW-5	04/24/96	7.69	6.09	---	1.60	3000	---	180	ND<10	32	14	ND<100	---	---	8.1	SPL
MW-5	07/15/96	7.69	6.57	---	1.12	---	---	---	---	---	---	---	---	---	---	---
MW-5	07/16/96	7.69	---	---	---	ND<50	---	190	ND<10	31	16	ND<100	---	---	8.3	SPL
MW-5	07/30/96	7.69	5.61	---	2.08	---	---	---	---	---	---	---	---	---	---	---
MW-5	08/12/96	7.69	---	---	---	2000	---	150	12	25	18.2	ND<50	---	---	7.6	SPL
MW-5	11/04/96	7.69	8.25	---	-0.56	---	---	---	---	---	---	---	---	---	---	---
MW-5	11/05/96	7.69	---	---	---	5200	---	42	5.5	13	ND<5.0	1700	---	---	7.4	SPL

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11126
1700 POWELL STREET, EMERYVILLE, CALIFORNIA

ALISTO PROJECT NO. 10-061

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (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)	HVOC (ug/l) (c)	DO (ppm)	LAB
MW-6	10/12/93	8.52	6.59	—	1.93	63	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
MW-6	02/15/94	8.52	6.31	—	2.21	68	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	3.1	PACE
MW-6	05/11/94	8.52	6.15	—	2.37	68	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	8.7	PACE
MW-6	08/01/94	8.52	6.46	—	2.06	91	—	ND<0.5	ND<0.5	ND<0.5	0.6	—	—	—	2.4	PACE
MW-6	10/18/94	8.52	6.72	—	1.80	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	6.0	PACE
MW-6	01/13/95	8.52	5.95	—	2.57	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	7.0	ATI
MW-6	04/13/95	8.52	5.44	—	3.08	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	8.5	ATI
MW-6	07/11/95	8.52	5.68	—	2.84	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	8.4	ATI
MW-6	11/02/95	8.52	6.57	—	1.95	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	35	—	—	8.3	ATI
MW-6	02/05/96	8.52	6.27	—	2.25	ND<50	—	ND<5	ND<10	ND<10	ND<10	ND<100	—	—	2.2	SPL
MW-6	04/24/96	8.52	5.95	—	2.57	ND<250	—	ND<2.5	ND<5	ND<5	ND<5	62	—	—	8.0	SPL
MW-6	07/15/96	8.52	6.39	—	2.13	ND<250	—	ND<2.5	ND<5	ND<5	ND<5	ND<50	—	—	8.0	SPL
MW-6	07/30/96	8.52	6.44	—	2.08	—	—	—	—	—	—	—	—	—	—	—
MW-6	11/04/96	8.52	8.05	—	0.47	—	—	—	—	—	—	—	—	—	—	—
MW-6	11/05/96	8.52	—	—	—	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	7.3	SPL
MW-7	10/12/93	7.61	6.14	—	1.47	ND<50	—	ND<0.5	ND<0.5	ND<0.5	0.7	—	—	—	—	PACE
MW-7	02/15/94	7.61	5.88	—	1.73	78	—	ND<0.5	ND<0.5	ND<0.5	0.6	—	—	—	4.0	PACE
MW-7	05/11/94	7.61	5.76	—	1.85	70	—	ND<0.5	ND<0.5	ND<0.5	0.9	—	—	—	9.1	PACE
MW-7	08/01/94	7.61	5.97	—	1.64	77	—	ND<0.5	ND<0.5	ND<0.5	0.5	—	—	—	2.5	PACE
MW-7	10/18/94	7.61	6.24	—	1.37	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	6.3	PACE
MW-7	01/13/95	7.61	5.39	—	2.22	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	8.2	ATI
MW-7	04/13/95	7.61	5.17	—	2.44	63	—	ND<0.5	ND<0.5	ND<0.5	1.4	—	—	—	8.4	ATI
MW-7	07/11/95	7.61	5.25	—	2.36	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	7.9	ATI
MW-7	11/02/95	7.61	6.19	—	1.42	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	55	—	—	8.0	ATI
MW-7	02/05/96	7.61	5.69	—	1.92	ND<50	—	ND<0.5	ND<1	ND<1	ND<1	40	—	—	1.9	SPL
MW-7	04/24/96	7.61	5.59	—	2.02	ND<250	—	ND<2.5	ND<5	ND<5	ND<5	53	—	—	8.2	SPL
MW-7	07/15/96	7.61	6.07	—	1.54	ND<250	—	ND<2.5	ND<5	ND<5	ND<5	ND<50	—	—	7.8	SPL
MW-7	07/30/96	7.61	6.04	—	1.57	—	—	—	—	—	—	—	—	—	—	—
MW-7	11/04/96	7.61	7.76	—	-0.15	—	—	—	—	—	—	—	—	—	—	—
MW-7	11/05/96	7.61	—	—	—	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	7.8	SPL
MW-8	10/12/93	8.60	5.86	—	2.74	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
MW-8	02/15/94	8.60	5.50	—	3.10	380	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	3.3	PACE
MW-8	05/11/94	8.60	5.09	—	3.51	330	—	ND<0.5	1.2	ND<0.5	1.9	—	—	—	8.5	PACE
MW-8	08/01/94	8.60	5.20	—	3.40	260	—	ND<0.5	1.2	2.9	5.8	—	—	—	2.3	PACE
MW-8	10/18/94	8.60	5.70	—	2.90	82	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	6.4	PACE
MW-8	01/13/95	8.60	4.96	—	3.64	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	6.9	ATI
MW-8	04/13/95	8.60	5.40	—	3.20	270	—	ND<0.5	ND<0.5	ND<0.5	4.4	—	—	—	8.4	ATI
MW-8	07/11/95	8.60	6.01	—	2.59	320	—	ND<0.50	ND<0.50	ND<0.50	3.5	—	—	—	8.0	ATI
MW-8	11/02/95	8.60	6.81	—	1.79	100	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	—	—	8.7	ATI
MW-8	02/05/96	8.60	6.12	—	2.48	ND<50	—	ND<5	ND<10	ND<10	ND<10	ND<100	—	—	1.5	SPL
MW-8	04/24/96	8.60	6.23	—	2.37	ND<50	—	ND<5	ND<10	ND<10	ND<10	ND<100	—	—	8.7	SPL
MW-8	07/15/96	8.60	6.70	—	1.90	ND<250	—	ND<2.5	ND<5	ND<5	ND<5	ND<50	—	—	8.4	SPL
MW-8	07/30/96	8.60	6.64	—	1.96	—	—	—	—	—	—	—	—	—	—	—
MW-8	11/04/96	8.60	8.36	—	0.24	—	—	—	—	—	—	—	—	—	—	—
MW-8	11/05/96	8.60	—	—	—	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	7.2	SPL

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11126
1700 POWELL STREET, EMERYVILLE, CALIFORNIA

ALISTO PROJECT NO. 10-061

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (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)	HVOC (ug/l) (c)	DO (ppm)	LAB
MW-9	10/12/93	8.08	5.66	0.08	2.48	—	—	—	—	—	—	—	—	—	—	—
MW-9	02/15/94	8.08	5.32	0.05	2.80	—	—	—	—	—	—	—	—	—	—	—
MW-9	05/11/94	8.08	5.57	—	2.51	—	—	—	—	—	—	—	—	—	—	—
MW-9	08/01/94	8.08	6.25	—	1.83	—	—	—	—	—	—	—	—	—	—	—
MW-9	10/18/94	8.08	5.59	0.13	2.59	—	—	—	—	—	—	—	—	—	—	—
MW-9	01/13/95	8.08	4.42	0.14	3.77	—	—	—	—	—	—	—	—	—	—	—
MW-9	04/13/95	8.08	4.06	0.11	4.10	—	—	—	—	—	—	—	—	—	—	—
MW-9	07/11/95	8.08	4.21	0.08	3.93	—	—	—	—	—	—	—	—	—	—	—
MW-9	11/02/95	8.08	5.22	0.05	2.90	—	—	—	—	—	—	—	—	—	—	—
MW-9	02/05/96	8.08	4.76	0.01	3.33	—	—	—	—	—	—	—	—	—	—	—
MW-9	04/24/96	8.08	4.62	0.09	3.53	—	—	—	—	—	—	—	—	—	—	—
MW-9	07/15/96	8.08	5.11	0.04	3.00	—	—	—	—	—	—	—	—	—	—	—
MW-9	07/30/96	8.08	5.15	—	2.93	—	—	—	—	—	—	—	—	—	—	—
MW-9	11/04/96	8.08	6.75	0.01	1.34	—	—	—	—	—	—	—	—	—	—	—
QC-2 (f)	11/05/92	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	10/12/93	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	02/15/94	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	05/11/94	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	08/01/94	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	10/18/94	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	01/13/95	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	PACE
QC-2 (f)	04/13/95	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	—	ATI
QC-2 (f)	07/11/95	—	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	—	ATI
QC-2 (f)	11/02/95	—	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	ATI
QC-2 (f)	02/05/96	—	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	—	—	—	ATI
QC-2 (f)	04/24/96	—	—	—	—	ND<50	—	ND<0.5	ND<1	ND<1	ND<1	ND<10	—	—	—	SPL
QC-2 (f)	07/16/96	—	—	—	—	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
HVOC	Halogenated volatile organic compounds
DO	Dissolved oxygen
ug/l	Micrograms per liter
ppm	Parts per million
ND	Not detected above reported detection limit
---	Not analyzed/applicable/measurable
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 8.11 feet above mean sea level.

(b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.

(c) Detection limits vary; see laboratory report.

(d) Blind duplicate.

(e) EPA Methods 8020/8260 used.

(f) Travel blank.

F:\0\10-061\061-7-3.WQ2

TABLE 2
PRODUCT REMOVAL STATUS
BP OIL COMPANY SERVICE STATION NO. 11126
1700 POWELL STREET, EMERYVILLE, CALIFORNIA

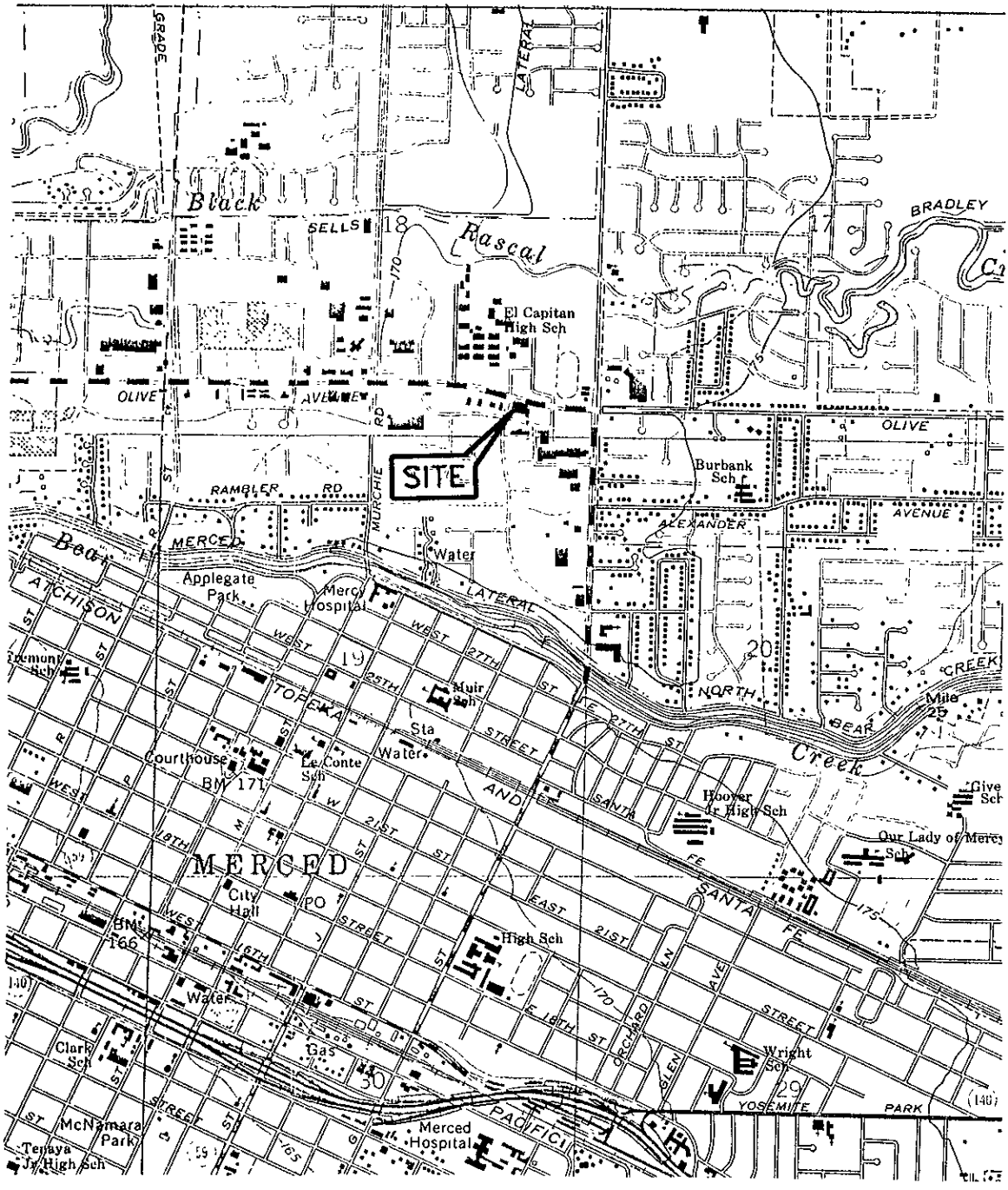
ALISTO PROJECT NO. 10-061

WELL ID	DATE	PRODUCT THICKNESS (Feet)	PRODUCT REMOVED (Gallons)	PRODUCT REMOVED CUMULATIVE (Gallons)
MW-9	12/02/93	4.62	0.15	0.15
MW-9	12/09/93	2.45	0.15	0.30
MW-9	12/30/93	2.39	0.15	0.45
MW-9	01/12/94	2.15	0.02	0.47
MW-9	02/02/94	1.82	Sheen	0.47
MW-9	02/15/94	3.75	0.35	0.82
MW-9	05/11/94	3.00	Sheen	0.82
MW-9	05/27/94	1.50	Sheen	0.82
MW-9	06/25/94	1.32	Sheen	0.82
MW-9	08/01/94	---	Sheen	0.82
MW-9	10/18/94	0.13	---	0.82
MW-9	01/13/95	0.14	---	0.82
MW-9	04/13/95	0.11	---	0.82
MW-9	07/11/95	0.08	0.13	0.95
MW-9	04/24/96	0.09	0.06	1.01
MW-9	07/16/96	0.04	---	1.01
MW-9	07/30/96	---	---	1.01
MW-9	11/05/96	0.01	ND<0.01	1.01

ABBREVIATIONS:

--- Not applicable

E:\0\10-061\PRODUCT.WQ2



SOURCE:
USGS MAP, MERCED QUADRANGLE,
CALIFORNIA, 7.5 MINUTE SERIES. 1961.
PHOTOREVISED 1987.

N

0 1000' 2000'

FIGURE 1

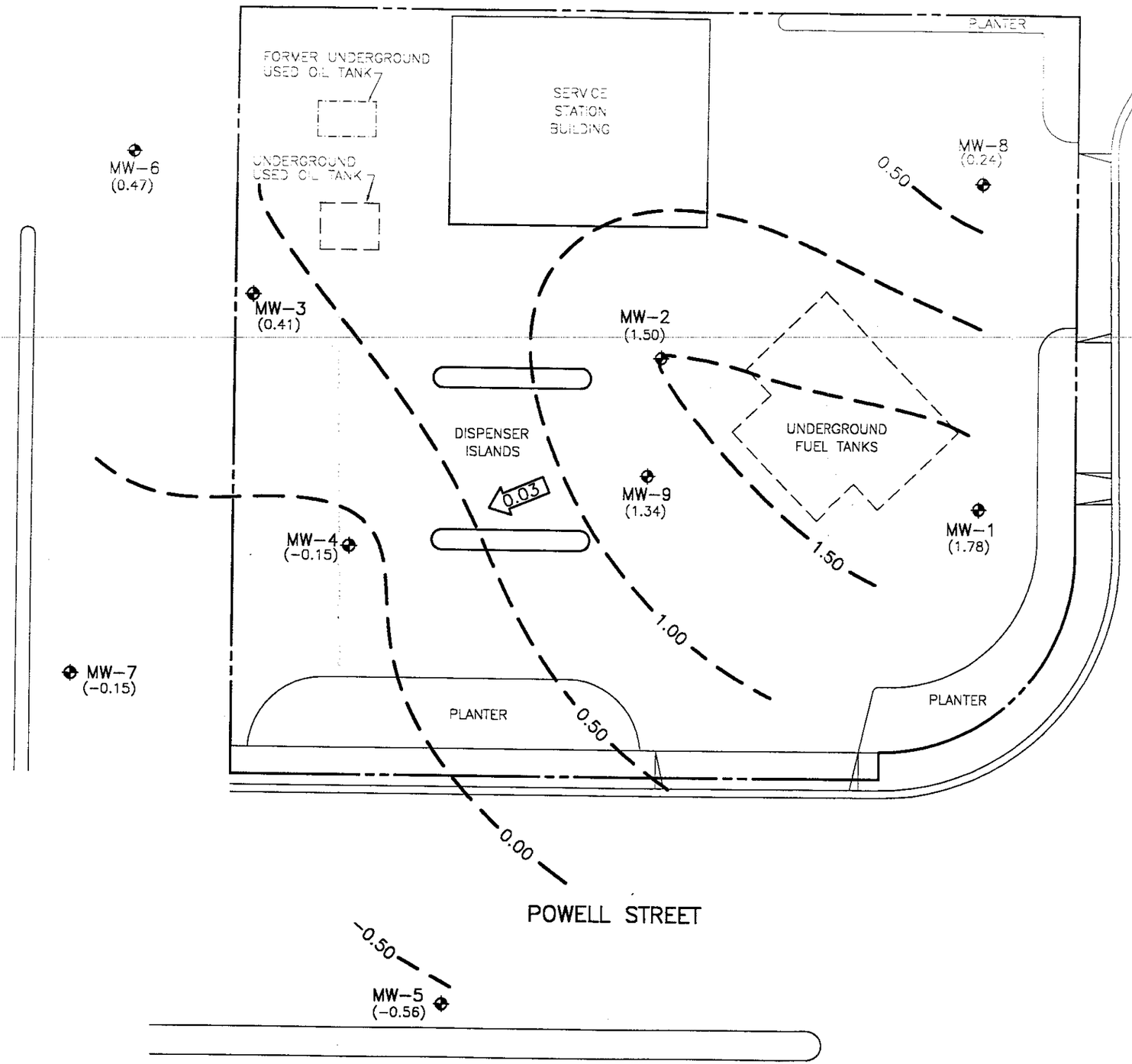
SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11162
190 WEST OLIVE AVENUE
MERCED, CALIFORNIA

PROJECT NO. 10-081

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

100818--.DWG 6-7-93 KH 1=1



N

0 20 40

SCALE IN FEET

LEGEND

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

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

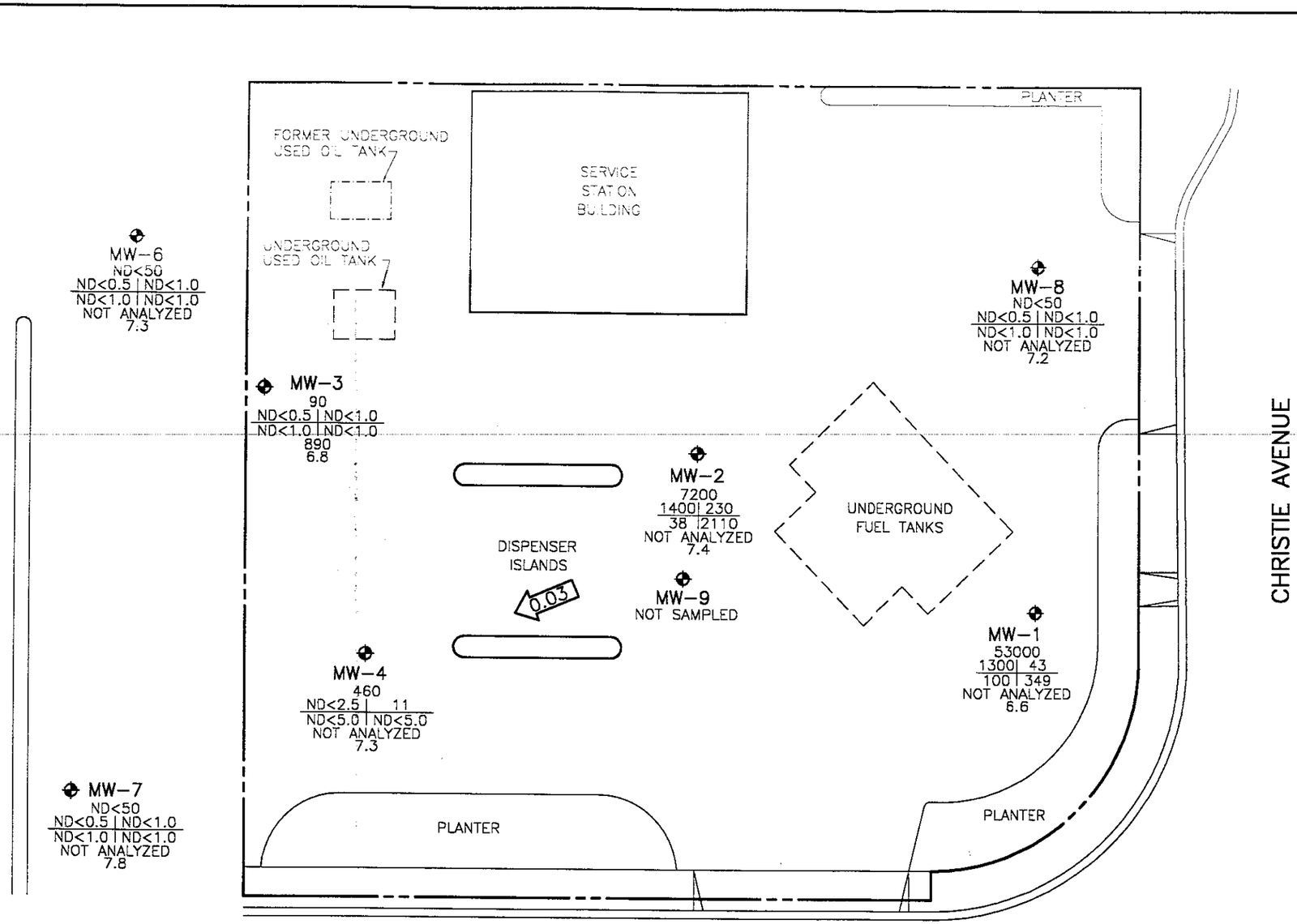
NOVEMBER 4, 1996

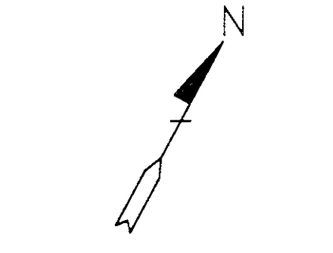
BP OIL SERVICE STATION NO. 11126
1700 POWELL STREET
EMERYVILLE, CALIFORNIA

PROJECT NO. 10–061

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10061D-1.DWG 12-10-96 DSM 1 = 20





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
0.03	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

NOVEMBER 5, 1996

BP OIL SERVICE STATION NO. 11126
1700 POWELL STREET
EMERYVILLE, CALIFORNIA

PROJECT NO. 10-061

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10061E-T.DWG 12-10-96 DSN 1=20

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING
GROUP
1575 TREAT BOULEVARD, SUITE 201

Project No. 10-061-07-003 — Purged Monitored Date: 11/4 – 11/5/96 Sampled
Address 1700 Powell St. — Day: M T W TH F
Contract No. G797467 — City: Emeryville
Station No. BP 11126 — Sampler: LB

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS:
MW-1	S-7	2"	11.62'	5.98	Ø	1133	Additional MTBE 8260
MW-2	S-8	2"	11.91'	7.06	↓	1136	QC-1 (S-9) From this well
MW-3	S-3	2"	12.08'	7.84		1117	
MW-4	S-5	2"	11.06'	8.27		1122	Additional MTBE 8260
MW-5	S-6	2"	13.70'	8.25		1130	
MW-6	S-4	2"	13.25'	8.05		1120	
MW-7	S-1	2"	13.72'	7.76		1110	
MW-8	S-2	2"	13.65'	8.36		1113	
MW-9	NS	4"	13.85'	6.75	.01	1140	DTP = 6.74 Removed 3 gal TF < .008 gal FP

FIELD INSTRUMENT CALIBRATION DATA

pH METER Icm 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED Ⓨ N TIME 1101

D.O. METER Icm ZERO d.O. SOLUTION 0 BAROMETRIC PRESSURE 760 TEMP 63 WEATHER Clear

CONDUCTIVITY METER Icm 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 Dept	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.	
MW-7	7.76	2"	OK	Ø	Y Ⓝ	1	1159	71.2	7.71	3.52 ms	7.4	O EPA 601
Total Depth - Water Level=		x Well Vol. Factor=		x#vol. to Purge	PurgeVol.	2		70.3	7.49	3.46 ms		Ø TPH-G/BTEX HCL
13.72 − 7.76 = 5.96 X .16 = .95 X 3 =					2.85	3	1207	69.6	7.43	3.40 ms	7.8	O TPH Diesel
Purge Method: Ø Surface Pump O Disp.Tube O Winch O Disp. Bailer(s) O Sys Port												O TOG 5520
Comments:												TIME/SAMPLE ID: 1702 11/5

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.	
MW-8	8.36	2"	OK	Ø	Y Ⓝ	1	1307	70.7	7.79	2.07 ms	6.7	O EPA 601
Total Depth - Water Level=		x Well Vol. Factor=		x#vol. to Purge	PurgeVol.	2		70.1	7.52	1.95 ms		Ø TPH-G/BTEX HCL
13.65 − 8.36 = 5.25 X .16 = .85 X 3 =					2.55	3	1317	69.6	7.48	1.90 ms	7.2	O TPH Diesel
Purge Method: Ø Surface Pump O Disp.Tube O Winch O Disp. Bailer(s) O Sys Port												O TOG 5520
Comments:												TIME/SAMPLE ID: 1710 11/5

ALISTO

Field Report / Sampling Data Sheet

Monitored + Purged Sampled

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

Project No. 10-061-07-003 Date: 11/4-11/5/96
Address 1700 Powell St. Day: M T W TH F
Contract No. G797467 City: Emeryville
Station No. BP 11126 Sampler: CB

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-3	7.84	2"	OK	Ø	Y (N)	1	1327	69.9	7.71	4.77ms	6.2
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			2		69.0	7.42	4.63ms	
12.08-7.84=4.24	X.16=.68	X3=	2.04			2.5	1334	68.6	7.34	4.55ms	6.8
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601 HCl
Ø TPH-G/BTEX HCl
Ø TPH Diesel HCl
Ø TOG 5520 HCl
TIME/SAMPLE ID: 1715 1115

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-6	8.05	2"	OK	Ø	Y (N)	1	1345	70.2	7.49	3.92ms	6.5
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			2		69.3	7.17	3.70ms	
13.25-8.05=5.20	X.16=.83	X3=	2.49			2.5	1352	69.0	7.11	3.63ms	7.3
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601
Ø TPH-G/BTEX HCl
O TPH Diesel
O TOG 5520
TIME/SAMPLE ID: 1723 1115

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-4	8.27	2"	OK	Ø	Y (N)	.50	1407	70.3	7.61	4.07ms	7.2
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			1.00		69.4	7.47	3.90ms	
11.06-8.27=2.79	X.16=.45	X3=	1.35			1.50	1415	69.2	7.39	3.83ms	7.3
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601
Ø TPH-G/BTEX HCl
O TPH Diesel
O TOG 5520
TIME/SAMPLE ID: 1730 1115

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-5	8.25	2"	OK	Ø	Y (N)	1	1429	68.2	7.63	3.60ms	6.9
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			2		67.1	7.49	3.50ms	
13.70-8.25=5.45	X.16=.87	X3=	2.61			3	1437	66.8	7.42	3.42ms	7.4
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601
Ø TPH-G/BTEX HCl
O TPH Diesel
O TOG 5520
TIME/SAMPLE ID: 1734 1115

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-1	5.98	2"	OK	Ø	Y (N)	1	1444	67.4	7.83	1.59ms	6.0
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			2		66.8	7.71	1.47ms	
11.62-5.98=5.64	X.16=.90	X3=	2.70			3	1455	66.1	7.64	1.44ms	6.6
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601
Ø TPH-G/BTEX HCl
O TPH Diesel
O TOG 5520
TIME/SAMPLE ID: 1740 1115

ALISTO

Field Report / Sampling Data Sheet

Monitored + Sampled - Purged

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

Project No. 10-061-07-003 Date: 11/4 - 11/5/96
Address 1700 Powell St. Day: (M) T W TH F
Contract No. G797467 City: Emeryville
Station No. BP 11126 Sampler: WB

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-2	7.06	2"	OK	Ø	Y (N)	1	1504	71.3	8.09	1.99ms	7.2
						2		70.4	7.87	1.79ms	
						2.5	1510	69.8	7.79	1.75ms	7.4

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
11.91 - 7.06 = 4.85 X .16 = .78 x 3 = 2.34

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

Comments: QC-1 (5-9) From this well

- EPA 601_____
- (X) TPH-G/BTEX HCl
- TPH Diesel____
- TOG 5520 ___

TIME/SAMPLE ID: 1545 1115

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
					Y N						

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

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

Comments:

- EPA 601_____
- TPH-G/BTEX___
- TPH Diesel____
- TOG 5520 ___

TIME/SAMPLE ID

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: 96-11-501

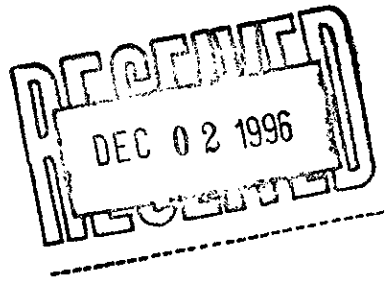
Approved for Release by:

Ed Fry, Project Manager

Date: 11/22/96

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. H9-9611501-01

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-1

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

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	90		
4-Bromofluorobenzene	97		
METHOD 8020***			
Analyzed by: WK			
Date: 11/15/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	103		
CA LUFT - Gasoline			
Analyzed by: WK			
Date: 11/15/96 05:50:00			

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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-02

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

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	90		
4-Bromofluorobenzene	97		
METHOD 8020***			
Analyzed by: WK			
Date: 11/15/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	103		
CA LUFT - Gasoline			
Analyzed by: WK			
Date: 11/15/96 06:19:00			

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.
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SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-03

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	30	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	97		
METHOD 8020***			
Analyzed by: WK			
Date: 11/15/96			
Total Petroleum Hydrocarbons-Gasoline	0.090	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	90		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/12/96 03:45:00			
Total Petroleum Hydrocarbons-Diesel	0.89	0.1 P	mg/L

(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.

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SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-03

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Surrogate	**% Recovery**		
o-Terphenyl	95		
2-Fluorobiphenyl	73		
Mod. 8015 - Diesel			
Analyzed by: RR			
Date: 11/15/96 09:28:00			
Liquid-liquid extraction	11/12/96		
Method 3510B ***			
Analyzed by: PC			
Date: 11/12/96 11:00:00			
Outside Lab Compound List	ENCLOSURE		
METHOD: See Enclosure			
Analyzed by: AEN			
Date: 11/15/96			
Hydrocarbons by Gravimetry	2	0.5	mg/L
Method 5520 B & F **			
Analyzed by: AM			
Date: 11/18/96 08:00:00			

ENCLOSURE - Defined in attachment.

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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SPL, Inc., - Project Manager

SPL, INC.

SAMPLE ID: 9611501-03C
AEN LAB NO: 9611181-01
AEN WORK ORDER: 9611181
CLIENT PROJ. ID: 9611501

DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/14/96
REPORT DATE: 11/18/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Purgeable Halocarbons	EPA 601				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	11/15/96
Bromoform	75-25-2	ND	0.5	ug/L	11/15/96
Bromomethane	74-83-9	ND	2	ug/L	11/15/96
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	11/15/96
Chlorobenzene	108-90-7	ND	0.5	ug/L	11/15/96
Chloroethane	75-00-3	ND	2	ug/L	11/15/96
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	11/15/96
Chloroform	67-66-3	ND	0.5	ug/L	11/15/96
Chloromethane	74-87-3	ND	2	ug/L	11/15/96
Dibromochloromethane	124-48-1	ND	0.5	ug/L	11/15/96
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	11/15/96
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	11/15/96
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	11/15/96
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	11/15/96
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	11/15/96
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	11/15/96
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	11/15/96
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	11/15/96
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	11/15/96
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	11/15/96
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	11/15/96
Methylene Chloride	75-09-2	ND	2	ug/L	11/15/96
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	11/15/96
Tetrachloroethene	127-18-4	ND	0.5	ug/L	11/15/96
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	11/15/96
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	11/15/96
Trichloroethene	79-01-6	ND	0.5	ug/L	11/15/96
Trichlorofluoromethane	75-69-4	ND	2	ug/L	11/15/96
Vinyl Chloride	75-01-4	ND	2	ug/L	11/15/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

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

Certificate of Analysis No. H9-9611501-04

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-4

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

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	93		
4-Bromofluorobenzene	103		
METHOD 8020***			
Analyzed by: VHZ			
Date: 11/12/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	130		
4-Bromofluorobenzene	87		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/12/96 04:12:00			

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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-05

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-5

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	620	50 P	µg/L
Benzene	ND	2.5 P	µg/L
Toluene	11	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	100		
METHOD 8020***			
Analyzed by: WK			
Date: 11/15/96			
Total Petroleum Hydrocarbons-Gasoline	0.46	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	127		
4-Bromofluorobenzene	87		
CA LUFT - Gasoline			
Analyzed by: VHZ			
Date: 11/12/96 05:33:00			

(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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-05

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

P.O.# G797467 , COC#078139
11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-5

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Methyl t-butyl ether	610	50	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: GT DATE/TIME: 11/11/96 14:56:00
METHOD: 8260 Water, Volatile Organics
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-06

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-6

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	1700	50 P	µg/L
Benzene	42	2.5 P	µg/L
Toluene	5.5	5.0 P	µg/L
Ethylbenzene	13	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: WK			
Date: 11/15/96			
Total Petroleum Hydrocarbons-Gasoline	5.2	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	80		
4-Bromofluorobenzene	87		
CA LUFT - Gasoline			
Analyzed by: WK			
Date: 11/15/96 06:47:00			

(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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-07

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-7

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	42000	10000 P	µg/L
Benzene	1300	12 P	µg/L
Toluene	43	25 P	µg/L
Ethylbenzene	100	25 P	µg/L
Total Xylene	349	25 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	83		
4-Bromofluorobenzene	90		
METHOD 8020***			
Analyzed by: AA			
Date: 11/17/96			
Total Petroleum Hydrocarbons-Gasoline	53	1.2 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	100		
CA LUFT - Gasoline			
Analyzed by: WK			
Date: 11/15/96 07:15:00			

(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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SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-07

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

P.O.# G797467 , COC#078139
11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-7

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Methyl t-butyl ether	190000	10000	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	96	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: GT DATE/TIME: 11/11/96 17:20:00
METHOD: 8260 Water, Volatile Organics
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-08

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-8

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	1100	250 P	µg/L
Benzene	1400	12 P	µg/L
Toluene	230	25 P	µg/L
Ethylbenzene	38	25 P	µg/L
Total Xylene	2110	25 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	92		
4-Bromofluorobenzene	88		
METHOD 8020***			
Analyzed by: AA			
Date: 11/17/96			
Total Petroleum Hydrocarbons-Gasoline	7.2	1.2 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	93		
4-Bromofluorobenzene	103		
CA LUFT - Gasoline			
Analyzed by: WK			
Date: 11/15/96 07:44:00			

(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

SPL, Inc., - Project Manager

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

Certificate of Analysis No. H9-9611501-09

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

P.O.# G797467 , COC#078139
DATE: 11/19/96

PROJECT: BP Oil #11126
SITE: Emeryville, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-9

PROJECT NO: 10-061-7-3
MATRIX: WATER
DATE SAMPLED: 11/05/96
DATE RECEIVED: 11/09/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	1100	250 P	µg/L
Benzene	1300	12 P	µg/L
Toluene	170	25 P	µg/L
Ethylbenzene	ND	25 P	µg/L
Total Xylene	2240	25 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	100		
METHOD 8020***			
Analyzed by: WK			
Date: 11/15/96			
Total Petroleum Hydrocarbons-Gasoline	9.2	1.2 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	97		
4-Bromofluorobenzene	101		
CA LUFT - Gasoline			
Analyzed by: WK			
Date: 11/15/96 08:12:00			

(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

SPL, Inc., - Project Manager

QUALITY CONTROL

DOCUMENTATION

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

Mod. 8015 - Diesel **BATCH#:**HPTT961115105500
WORK ORDER: 9611501-03B **CLIENT SAMPLE ID:**S-3

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
o-Terphenyl	100	95	95	-
2-Fluorobiphenyl	100	73	73	20- 146

Mod. 8015 - Diesel **BATCH#:**HPTT961115105500
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

o-Terphenyl		120	115	-
2-Fluorobiphenyl	100	100	104	20- 146

Mod. 8015 - Diesel **BATCH#:**HPTT961115105500
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611442-04B

O-TERPHENYL	100	32.0000	32	-
2-FLUOROBIPHENYL	100	5.2000	5 «	20- 146

Mod. 8015 - Diesel **BATCH#:**HPTT961115105500
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611442-04B

O-TERPHENYL	100	34.0000	34	-
2-FLUOROBIPHENYL	100	4.8000	5 «	20- 146

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: 9611501-01A **CLIENT SAMPLE ID:**S-1

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	31	103	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: 9611501-02A **CLIENT SAMPLE ID:**S-2

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	31	103	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: 9611501-06A **CLIENT SAMPLE ID:**S-6

1,4-Difluorobenzene	30	24.0000	80	50- 150
4-Bromofluorobenzene	30	26.0000	87	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: 9611501-07A **CLIENT SAMPLE ID:**S-7

1,4-Difluorobenzene	30	30.0000	100	50- 150

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

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: 9611501-08A **CLIENT SAMPLE ID:**S-8

1,4-Difluorobenzene	30	28.0000	93	50- 150
4-Bromofluorobenzene	30	30.8000	103	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: 9611501-09A **CLIENT SAMPLE ID:**S-9

1,4-Difluorobenzene	30	29.2000	97	50- 150
4-Bromofluorobenzene	30	30.4000	101	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

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

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611498-03A

1,4-Difluorobenzene	30	28	93	50- 150
4-Bromofluorobenzene	30	29	97	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961114022300
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611498-03A

1,4-Difluorobenzene	30	28	93	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

METHOD 8020*** **BATCH#:**HP_N961114052700
WORK ORDER: 9611501-01A **CLIENT SAMPLE ID:**S-1

1,4-Difluorobenzene	30	27	90	70- 131
4-Bromofluorobenzene	30	29	97	43- 135

METHOD 8020*** **BATCH#:**HP_N961114052700
WORK ORDER: 9611501-02A **CLIENT SAMPLE ID:**S-2

1,4-Difluorobenzene	30	27	90	70- 131
4-Bromofluorobenzene	30	29	97	43- 135

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS

METHOD 8020* BATCH#:HP_N961114052700**
WORK ORDER: 9611501-03A **CLIENT SAMPLE ID:** S-3

1,4-Difluorobenzene	30	28	93	70- 131
4-Bromofluorobenzene	30	29	97	43- 135

METHOD 8020* BATCH#:HP_N961114052700**
WORK ORDER: 9611501-05A **CLIENT SAMPLE ID:** S-5

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

METHOD 8020* BATCH#:HP_N961114052700**
WORK ORDER: 9611501-06A **CLIENT SAMPLE ID:** S-6

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

METHOD 8020* BATCH#:HP_N961114052700**
WORK ORDER: 9611501-07A **CLIENT SAMPLE ID:** S-7

1,4-Difluorobenzene	30	29.6000	99	70- 131
4-Bromofluorobenzene	30	29.2000	97	43- 135

METHOD 8020* BATCH#:HP_N961114052700**
WORK ORDER: 9611501-09A **CLIENT SAMPLE ID:** S-9

1,4-Difluorobenzene	30	32.0000	107	70- 131
4-Bromofluorobenzene	30	30.0000	100	43- 135

METHOD 8020A * BATCH#:HP_N961114052700**
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	28		74- 131
4-Bromofluorobenzene	30	29		43- 135

METHOD 8020A * BATCH#:HP_N961114052700**
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:** 9611719-01A

1,4-DIFLUOROBENZENE	30	27	90	70- 131
4-BROMOFLUOROBENZENE	30	29	97	43- 135

METHOD 8020A * BATCH#:HP_N961114052700**
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:** 9611719-01A

1,4-Difluorobenzene	30	26	87	70- 131

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
4-Bromofluorobenzene	30	29	97	43- 135

CA LUFT - Gasoline **BATCH#:**HP_N961116052600
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	28	93	50- 150
4-Bromofluorobenzene	30	29	97	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961116052600
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611687-02A

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	32	107	50- 150

CA LUFT - Gasoline **BATCH#:**HP_N961116052600
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611687-02A

1,4-Difluorobenzene	30	27	90	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

METHOD 8020* ** **BATCH#:**HP_N961116075000
WORK ORDER: 9611501-07A **CLIENT SAMPLE ID:**S-7

1,4-Difluorobenzene	30	25.0000	83	70- 131
4-Bromofluorobenzene	30	27.0000	90	43- 135

METHOD 8020* ** **BATCH#:**HP_N961116075000
WORK ORDER: 9611501-08A **CLIENT SAMPLE ID:**S-8

1,4-Difluorobenzene	30	27.6000	92	70- 131
4-Bromofluorobenzene	30	26.4000	88	43- 135

METHOD 8020A * ** **BATCH#:**HP_N961116075000
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	25	83	74- 131
4-Bromofluorobenzene	30	28	93	43- 135

METHOD 8020A * ** **BATCH#:**HP_N961116075000
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611687-04A

1,4-DIFLUOROBENZENE	30	26	87	70- 131
4-BROMOFLUOROBENZENE	30	28	93	43- 135

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	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
METHOD 8020A ***			**BATCH#:** HP_N961116075000	
WORK ORDER: Matrix Spike Dup.		**CLIENT SAMPLE ID:** 9611687-04A		
1,4-Difluorobenzene	30	26	87	70- 131
4-Bromofluorobenzene	30	29	97	43- 135
CA LUFT - Gasoline			**BATCH#:** HP_R961111100100	
WORK ORDER: 9611501-03A		**CLIENT SAMPLE ID:** S-3		
1,4-Difluorobenzene	30	36	120	50- 150
4-Bromofluorobenzene	30	27	90	50- 150
CA LUFT - Gasoline			**BATCH#:** HP_R961111100100	
WORK ORDER: 9611501-04A		**CLIENT SAMPLE ID:** S-4		
1,4-Difluorobenzene	30	39	130	50- 150
4-Bromofluorobenzene	30	26	87	50- 150
CA LUFT - Gasoline			**BATCH#:** HP_R961111100100	
WORK ORDER: 9611501-05A		**CLIENT SAMPLE ID:** S-5		
1,4-Difluorobenzene	30	38.0000	127	50- 150
4-Bromofluorobenzene	30	26.0000	87	50- 150
Modified 8015 - Gasoline			**BATCH#:** HP_R961111100100	
WORK ORDER: Method Blank		**CLIENT SAMPLE ID:**		
4-Bromofluorobenzene	30	25	25.1	52- 152
1,4-Difluorobenzene	30	39	39.3	54- 137
Modified 8015 - Gasoline			**BATCH#:** HP_R961111100100	
WORK ORDER: Matrix Spike		**CLIENT SAMPLE ID:** 9611400-03C		
4-Bromofluorobenzene	30	32	107	52- 152
1,4-Difluorobenzene	30	710	2370 «	54- 137
Modified 8015 - Gasoline			**BATCH#:** HP_R961111100100	
WORK ORDER: Matrix Spike Dup.		**CLIENT SAMPLE ID:** 9611400-03C		
4-Bromofluorobenzene	30	31	103	52- 152
1,4-Difluorobenzene	30	790	2630 «	54- 137
METHOD 8020***			**BATCH#:** HP_R961111121500	
WORK ORDER: 9611501-04A		**CLIENT SAMPLE ID:** S-4		
1,4-Difluorobenzene	30	28	93	70- 131

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

METHOD 8020A *** **BATCH#:**HP_R961111121500
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,4-Difluorobenzene	30	29	28.9	74- 131
4-Bromofluorobenzene	30	30	29.8	43- 135

METHOD 8020A *** **BATCH#:**HP_R961111121500
WORK ORDER: Matrix Spike **CLIENT SAMPLE ID:**9611398-04A

1,4-DIFLUOROBENZENE	30	31	103	70- 131
4-BROMOFLUOROBENZENE	30	34	113	43- 135

METHOD 8020A *** **BATCH#:**HP_R961111121500
WORK ORDER: Matrix Spike Dup. **CLIENT SAMPLE ID:**9611398-04A

1,4-Difluorobenzene	30	31	103	70- 131
4-Bromofluorobenzene	30	36	120	43- 135

METHOD 8260*** **BATCH#:**M961111113701
WORK ORDER: 9611501-05B **CLIENT SAMPLE ID:**S-5

1,2-Dichloroethane-d4	10	9.4000	94	76- 114
Toluene-d8	10	10.0000	100	88- 110
Bromofluorobenzene	10	10.2000	102	86- 115

METHOD 8260*** **BATCH#:**M961111113701
WORK ORDER: 9611501-07B **CLIENT SAMPLE ID:**S-7

1,2-Dichloroethane-d4	0	10.2000	96	76- 114
Toluene-d8	0	10.2000	100	88- 110
Bromofluorobenzene	0	10.2000	102	86- 115

METHOD 8240*** **BATCH#:**M961111113701
WORK ORDER: Method Blank **CLIENT SAMPLE ID:**

1,2-Dichloroethane-d4	50	47	94	76- 114
Toluene-d8	50	49	99	88- 110
Bromofluorobenzene	50	51	102	86- 115

METHOD 8240*** **BATCH#:**M961111113701
WORK ORDER: LCS **CLIENT SAMPLE ID:**

1,2-Dichloroethane-d4	50	49	98	76- 114
Toluene-d8	50	50	100	88- 110
Bromofluorobenzene	50	50	99	86- 115

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METHOD 8260*** BATCH#:M961111113701
WORK ORDER: Matrix Spike CLIENT SAMPLE ID:9611528-02A

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
1,2-Dichloroethane-d4	50	46	92	76- 114
Toluene-d8	50	50	101	88- 110
Bromofluorobenzene	50	53	106	86- 115

METHOD 8260*** BATCH#:M961111113701
WORK ORDER: Matrix Spike Dup. CLIENT SAMPLE ID:9611528-02A

	AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
1,2-Dichloroethane-d4	50	49	98	76- 114
Toluene-d8	50	49	98	88- 110
Bromofluorobenzene	50	52	103	86- 115

« = 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

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL Contract:

Lab Code: Case No.: 9611528 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 002 SWP

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	54	108	61-145
Trichloroethene	50	0	50	100	71-120
Benzene	50	5	53	96	76-127
Toluene	50	13	64	102	76-125
Chlorobenzene	50	0	48	96	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50	55	110	2	14	61-145
Trichloroethene	50	50	100	0	14	71-120
Benzene	50	54	98	2	11	76-127
Toluene	50	63	100	2	13	76-125
Chlorobenzene	50	48	96	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

SPL Labs

RECOVERY REPORT

Client Name:
Client SDG: m961111
Sample Matrix: LIQUID
Fraction: VOA
Lab Smp Id: LCS
Level: LOW
Operator: GT
Data Type: MS DATA
SampleType: METHSPIKE
SpikeList File: 8240water.spk
Quant Type: ISTD
Method File: /chem/m.i/m961111.b/m8240bwq.m
Misc Info: M316W1//M316CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
7 1,1-Dichloroethene	50	51	102.32	61-145
25 Trichloroethene	50	51	101.33	71-120
21 Benzene	50	50	100.27	76-127
32 Toluene	50	51	102.51	76-125
38 Chlorobenzene	50	49	97.65	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 18 1,2-Dichloroethane	50	49	97.66	76-114
$ 31 Toluene-d8	50	50	100.37	88-110
$ 46 Bromofluorobenzene	50	50	99.09	86-115

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SPL Blank QC Report

Matrix: Aqueous
Sample ID: VBLK
Batch: M961111113701

Reported on: 11/13/96 17:03
Analyzed on: 11/11/96 11:44
Analyst: GT

METHOD 8240/8260 M316B01

Compound	Result	Detection Limit	Units
Methyl t-butyl ether	ND	10	ug/L

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	94	76-114	% Recovery
Toluene-d8	99	88-110	% Recovery
Bromofluorobenzene	102	86-115	% Recovery

Samples in Batch 9611501-05 9611501-07

Notes

ND - Not detected.

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_N961114052700

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	47	94.0	63 - 120
Benzene	ND	50	41	82.0	62 - 121
Toluene	ND	50	42	84.0	66 - 136
EthylBenzene	ND	50	43	86.0	70 - 136
O Xylene	ND	50	44	88.0	74 - 134
M & P Xylene	ND	100	88	88.0	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	ND	20	19	95.0	18	90.0	5.41	20	39 - 150
BENZENE	ND	20	18	90.0	18	90.0	0	25	39 - 150
TOLUENE	ND	20	19	95.0	19	95.0	0	26	56 - 134
ETHYLBENZENE	ND	20	19	95.0	18	90.0	5.41	38	61 - 128
O XYLENE	ND	20	18	90.0	18	90.0	0	29	40 - 130
M & P XYLENE	ND	40	36	90.0	37	92.5	2.74	20	43 - 152

Analyst: WK
Sequence Date: 11/14/96
SPL ID of sample spiked: 9611719-01A
Sample File ID: N_K6793.TX0
Method Blank File ID:
Blank Spike File ID: N_K6785.TX0
Matrix Spike File ID: N_K6786.TX0
Matrix Spike Duplicate File ID: N_K6787.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):

9611428-05A 9611719-01A 9611498-02A 9611498-04A
9611498-05A 9611719-03A 9611719-02A 9611501-03A
9611501-05A 9611501-01A 9611501-02A 9611501-06A
9611501-07A 9611501-09A 9611428-03A 9611719-04A

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_N961116075000

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	41	82.0	62 - 121
Toluene	ND	50	42	84.0	66 - 136
EthylBenzene	ND	50	44	88.0	70 - 136
O Xylene	ND	50	45	90.0	74 - 134
M & P Xylene	ND	100	86	86.0	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	ND	20	19	95.0	19	95.0	0	20	39 - 150
BENZENE	ND	20	19	95.0	19	95.0	0	25	39 - 150
TOLUENE	ND	20	19	95.0	19	95.0	0	26	56 - 134
ETHYLBENZENE	ND	20	19	95.0	19	95.0	0	38	61 - 128
O XYLENE	ND	20	19	95.0	18	90.0	5.41	29	40 - 130
M & P XYLENE	ND	40	37	92.5	36	90.0	2.74	20	43 - 152

Analyst: AA
Sequence Date: 11/16/96
SPL ID of sample spiked: 9611687-04A
Sample File ID: N_K6862.TX0
Method Blank File ID:
Blank Spike File ID: N_K6856.TX0
Matrix Spike File ID: N_K6859.TX0
Matrix Spike Duplicate File ID: N_K6860.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):

9611687-08A 9611687-01A 9611687-09A 9611687-12A
9611687-11A 9611829-01A 9611829-02A 9611428-02A
9611501-08A 9611829-03A 9611501-07A 9611687-04A
9611687-02A 9611687-03A

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_R961111121500

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	42	84.0	63 - 120
Benzene	ND	50	44	88.0	62 - 121
Toluene	ND	50	50	100	66 - 136
EthylBenzene	ND	50	50	100	70 - 136
O Xylene	ND	50	47	94.0	74 - 134
M & P Xylene	ND	100	97	97.0	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	37	20	48	55.0	49	60.0	8.70	20	39 - 150
BENZENE	130	20	130	NC	120	NC	NC	25	39 - 150
TOLUENE	1.5	20	21	97.5	20	92.5	5.26	26	56 - 134
ETHYLBENZENE	2.6	20	22	97.0	21	92.0	5.29	38	61 - 128
O XYLENE	6.9	20	23	80.5	23	80.5	0	29	40 - 130
M & P XYLENE	25	40	57	80.0	59	85.0	6.06	20	43 - 152

Analyst: VHZ
Sequence Date: 11/11/96
SPL ID of sample spiked: 9611398-04A
Sample File ID: R_K6409.TX0
Method Blank File ID:
Blank Spike File ID: R_K6402.TX0
Matrix Spike File ID: R_K6404.TX0
Matrix Spike Duplicate File ID: R_K6405.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): 9611398-04A 9611400-03C 9611415-04A 9611442-04A 9611442-03A 9611442-02A 9611442-01A 9611501-04A

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

** SPL BATCH QUALITY CONTROL REPORT **
CA LUFT

Matrix: Aqueous
Units: mg/L

Batch Id: HP_N961114022300

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	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	0.86	86.0	50 - 150

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
PETROLEUM HYDROCARBONS-GAS	0.81	0.9	1.4	65.6	1.4	65.6	0	50	50 - 150

Analyst: WK
Sequence Date: 11/14/96
SPL ID of sample spiked: 9611498-03A
Sample File ID: NNK6794.TX0
Method Blank File ID:
Blank Spike File ID: NNK6781.TX0
Matrix Spike File ID: NNK6788.TX0
Matrix Spike Duplicate File ID: NNK6789.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: Temporary Limits
(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID):

9611719-04A 9611428-05A 9611719-01A 9611498-03A
9611498-01A 9611498-02A 9611498-04A 9611498-05A
9611719-03A 9611719-02A 9611501-01A 9611501-02A
9611501-06A 9611501-07A 9611501-08A 9611501-09A
9611428-03A

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** SPL BATCH QUALITY CONTROL REPORT **

Mod. 8015 - Diesel

Matrix: Aqueous

Batch Id: HPTT961115105500

Units: mg/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
Diesel Petr. Hydrocarbons	ND	5.0	3.49	69.8	20 - 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
DIESEL PETR. HYDROCARBONS	2.83	5	8.31	110	7.48	93.0	16.7	43	20 - 177

Analyst: RR

Sequence Date: 11/15/96

SPL ID of sample spiked: 9611442-04B

Sample File ID: T_K6473.TX0

Method Blank File ID:

Blank Spike File ID: TTJ6487.TX0

Matrix Spike File ID: T_K6471.TX0

Matrix Spike Duplicate File ID: T_K6472.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 (2nd Q '94)

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

SAMPLES IN BATCH(SPL ID):

9611442-05B 9611442-06B 9611442-02B 9611442-03B
9611442-07B 9611442-04B 9611458-02B 9611458-01B
9611428-02B 9611428-01B 9611501-03B 9611442-01B

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

Matrix: Aqueous
Units: mg/L

Batch Id: HP_R961111100100

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	0.80	80.0	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	0.57	0.9	1.12	61.1	1.14	63.3	3.54	22	37 - 169

Analyst: VHZ
Sequence Date: 11/11/96
SPL ID of sample spiked: 9611400-03C
Sample File ID: RRK6410.TX0
Method Blank File ID:
Blank Spike File ID: RRK6403.TX0
Matrix Spike File ID: RRK6406.TX0
Matrix Spike Duplicate File ID: RRK6407.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):

9611400-03C 9611415-04A 9611442-04A 9611442-03A
9611442-02A 9611442-01A 9611442-07A 9611442-08A
9611501-03A 9611501-04A 9611497-02A 9611497-03A
9611501-05A 9611497-01A 9611442-06A 9611442-05A

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** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/18/96
Analyzed on: 11/18/96
Analyst: AM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Hydrocarbons by Gravimetry
Method 5520 B & F **

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
BLANK	ND	ND	4.0	3.8	95.0	4.0	100	5.1	9.8	82.3 -112

961118AM -9611735

Samples in batch:

9611501-03D

COMMENTS:

QUALITY CONTROL DATA

METHOD: EPA 601

AEN JOB NO: 9611181
INSTRUMENT: I
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery: Bromochloro-methane	Percent Recovery: 1-Bromo-3-chloro-propane
11/15/96	9611501-03C	01	103	98
QC Limits:			70-130	70-130

DATE ANALYZED: 11/14/96
SAMPLE SPIKED: 9611104-01
INSTRUMENT: I

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits: Percent Recovery	QC Limits: RPD
1,1-Dichloroethene	50	92	4	37-156	20
Trichloroethene	50	96	4	54-122	20
Chlorobenzene	50	92	1	54-141	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

9611501 11/9/96

CHAIN OF CUSTODY

No. 078139 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: 11126	BP CORNER ADDRESS/CITY: Emeryville		CONSULTANT PROJECT NUMBER: 10-061-7-3	
CONSULTANT PROJECT MANAGER: Brady Nagle	PHONE NUMBER: (510)295-1650	FAX NUMBER: 295-1823	CONSULTANT CONTRACT NUMBER: 6797467	
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 Buenavida	SAMPLED BY (Signature): [signature]	SHIPMENT DATE: 11/08/96	SHIPMENT METHOD: Fed Ex	

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

ANALYSIS REQUIRED

AIRBILL NUMBER: 9404779134

SAMPLE DESCRIPTION	COLLECTION DATE / COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-G/BTXE	MTBE	TPH-D	LOI/TVOC	TOC 5520	MTBE 8260					COMMENTS
S-1	11/5/96	W	3	HCL		X	X									
S-2	↓	↓	↓	↓		↓	↓									
S-3	↓	↓	10	↓		↓	↓	X	X	X						
S-4	↓	↓	3	↓		↓	↓									
S-5	↓	↓	6	↓		↓	↓				X					
S-6	↓	↓	6	↓		↓	↓									
S-7	↓	↓	6	↓		↓	↓				X					
S-8	↓	↓	3	↓		↓	↓				~~X~~					No MTBE 8260
S-9	↓	↓	↓	↓		↓	↓									

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	ADDITIONAL COMMENTS
[signature]	11/7/96		Jeffrey Hamalik	11/08/96	3:15	
Jeffrey Hamalik	11/08/96	3:15	[signature]	11/09/96	1000	3°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: 11/9/96	Time: 1000

SPL Sample ID: 9611501

			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:		3° C	
10	Method of sample delivery to SPL:	**SPL Delivery**		
		Client Delivery		
		FedEx Delivery (airbill #)	940479134	
		Other:		
11	Method of sample disposal:	SPL Disposal	✓	
		HOLD		
		Return to Client		

Name: S. West	Date: 11/9/96

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

BP Site Number: 11126
ERM Contact: G797467
Sampling Date: 11/5/96
Matrix Desription: groundwater
Date Final Report Received: 12/2/96
Laboratory & Location: SPL-TX

	Yes	No	NA
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 (ie. trip or equipment)?			X
6. Are duplicate water samples within 30%?		X (1)	
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/Comments: Duplicate exceeded primary result for ethylbenzene. See attached table

Data Validation Completed by (print): B. H. Howell
(signature): Bill Howell
Date: 12/19/96

Calculation of RPD
for BP Oil QA/QC Program
BP Oil Station 11126 11/05/96 Event

Analytical Data	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
Primary Sample	7,200	1,400	230	38	2,110	1,100
QC-1 Duplicate	9,200	1,300	170	ND<25	2,240	1,100
Sample Mean	8,200	1,350	200	19	2,175	1,100
RPD	-24.39%	7.41%	30.00%	200.00%	-5.98%	0.00%
Significant Result?	NO	NO	NO	YES	NO	NO

Notes:

(1) Significance is defined as an RPD greater than 30% (or less than -30)

(2) "A negative" RPD will result if the value of the Primary Sample Result is smaller than QC-1
The determination of Significant Result is not affected by sign of RPD