Harding ESE
A MACTEC COMPANY

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January 15, 2001

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Mr. Jeff Christoff
BPS Reprographic Services
2748 Willow Pass Road
Concord, California 94519

Quarterly Groundwater Remediation and Monitoring Report
October 1, through December 31, 2000
BPS Reprographic Services Facility
1700 Jefferson Street
Oakland, California

Dear Mr. Christoff:

Harding ESE, Inc, (Harding), formerly Harding Lawson Associates, presents this quarterly status report on the groundwater monitoring and remedial action activities at the BPS Reprographic Services (BPS) facility located at 1700 Jefferson Street in Oakland, California (see Plate 1). This report covers the period from October 1, through December 31, 2000, and was prepared to satisfy the quarterly groundwater monitoring requirements of the Alameda County Department of Environmental Health Services (County).

BACKGROUND

Three underground gasoline storage tanks were removed from the property in 1987 and a preliminary soil and groundwater investigation indicated that a release of fuel into the subsurface had occurred. Three groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed on the property to evaluate the distribution of petroleum hydrocarbons in the groundwater and to determine the direction of groundwater flow. Free phase gasoline was found in MW-1. Groundwater level measurements indicated that the local groundwater gradient was in a north to northwest direction.

In November 1987, monitoring well MW-2 was abandoned to facilitate the construction of the present BPS facility and, in January 1988, two additional wells, MW-1A and MW-4, were installed as groundwater extraction wells. Harding also installed one offsite monitoring well, MW-5, in August 1988 and a second offsite well, MW-6, in April 1996. The monitoring well locations are shown on Plate 1.

In 1992, a groundwater extraction system was constructed at the site to remove free phase product from the groundwater surface. Groundwater was extracted from MW-1A and MW-4 and passed through an oil-water separator that removed the free phase gasoline. The water was then drawn into a 3,000-gallon bioreactor tank for treatment by hydrocarbon reducing microbes. Air and nutrients were supplied to the water within the bioreactor to facilitate microbial growth. The treated water from the bioreactor was pumped in batches of approximately 500 gallons through three granular activated carbon vessels before discharge under a wastewater discharge permit from the East Bay Utility District to the sanitary sewer. The treatment system processed approximately 1,385,490 gallons of groundwater and an estimated 5,062 pounds of free-phase gasoline were recovered.

By 1999, the oil-water separator was no longer recovering product and free phase product was no longer present in any of the groundwater monitoring wells. Dissolved hydrocarbon concentrations were decreasing and Harding requested approval from The County to terminate groundwater extraction and to modify the remediation technique to insitu-bioremediation using an oxygen-releasing compound (ORC™). ORC™ is manufactured and distributed by Regenisis, Inc.; its purpose is to increase the concentration of dissolved oxygen (DO) in the groundwater and to augment the ability of naturally occurring microbial organisms in the groundwater to biodegrade the dissolved petroleum hydrocarbons. The County approved this plan in a letter dated September 28, 1999, following the submittal of an ORC™ calculation sheet and a Groundwater Monitoring Plan, dated September 23, 1999.

Harding implemented the *in situ* remediation technique by placing ORC™ in treatment wells: MW-1A, MW-3, MW-4, and MW-5 on September 29, 1999. The ORC™ is contained in fabric "socks" which release oxygen over time until the compound's oxygen releasing potential is depleted. Harding installed five socks in each treatment well at the approximate depth of the well's screened interval. The Groundwater Monitoring Plan outlined procedures for groundwater sampling using a non-purge method approved by the Regional Water Quality Control Board in a letter dated January 31, 1997. The first quarter that the new Groundwater Monitoring Plan was implemented, sampling included duplicate sampling using both the purge and non-purge methods (see Harding's quarterly report, dated October 25, 1999).

FOURTH QUARTER OF 2000 GROUNDWATER SAMPLING AND ANALYSIS

In accordance with the Groundwater Monitoring Plan, Harding removed the ORC™ socks from MW-3 and MW-5 on November 2, 2000, approximately two weeks before sampling. On November 9, 2000, Harding measured the dissolved oxygen (DO) concentrations in monitoring wells MW-3 and MW-5. The DO measurements are presented in Table 1.

On November 16 and 17, 2000, Harding conducted the quarterly groundwater sampling of wells MW-1, MW-3, MW-5, and MW-6 using the non-purge method outlined in the Groundwater Monitoring Plan.

Prior to sampling, Harding measured the distance from the top of each well's casing to the groundwater using an electric water level indicator. These measurements are presented in Table 2. To collect the groundwater samples, Harding raised dedicated Teflon tubing contained in each well until the end of the tubing was 2 to 4 feet below the groundwater surface and connected the tubing to a peristaltic pump with silicon tubing. New silicon tubing was used to sample each well. After removing the approximate volume of groundwater equal to the volume capacity of the Teflon tubing, Harding measured the groundwater's conductivity, pH, DO, oxidation reduction potential, and temperature and collected a sample in laboratory provided 40-milliliter vials. The groundwater parameter measurements are also presented in Table 1.

Immediately after sample collection, Harding labeled and stored the samples in a cooler with ice. The groundwater samples were kept chilled until submitted to California Laboratory Services (CLS), a California state-certified laboratory, under chain-of-custody protocol for the following analyses:

- Total petroleum hydrocarbons as gasoline (TPHg) in accordance with EPA Method 8015 modified;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) in accordance with EPA Method 8020.
- Methyl tertiary butyl ether (MTBE) in accordance with EPA Method 8020 with confirmation of detections by EPA Method 8260.

The laboratory reports are presented in the Appendix.

Upon completion of the groundwater sampling, Harding removed the socks from MW-1A and MW-4 and replaced them with a set of 5 new socks. Harding returned the ORC™ socks to treatment wells MW-3 and MW-5 where they will remain until the next quarterly monitoring event. Presently, the ORC™ socks are replaced in the treatment wells on six-month intervals.

DISCUSSION

As shown in Table 2 and Plate 5, the groundwater surface elevation decreased an average of 0.28 feet across the site as compared to last quarter's measurements. Harding used Surfer™, a contouring computer program, to generate groundwater surface contours presented on Plate 2. Using the groundwater elevations from MW-3, MW-5, and MW-6 as measured on September 15th, groundwater contours were generated by the computer program using triangulation. Based on this model, the groundwater gradient was at 0.044 ft/ft to the west. At the time MW-5 was constructed, the groundwater flow direction was reportedly north to northwest, and MW-5 was considered a downgradient well. However, presumably because of the construction of new buildings in the immediate vicinity, which extend below the groundwater surface, recent groundwater monitoring has indicated the groundwater flow has been in a westerly direction.

Table 3 contains the compilation of historical groundwater sample results using the purge method of sampling and Table 4 provides the historical groundwater sample results since instituting *in situ* bioremediation using the non-purge sampling method. Plate 3 and Plate 4 present the sample results from this quarter's sampling event.

As shown on Plate 4, there was a reduction in all BTEX constituents in MW-5 and a reduction in benzene, ethylbenzene and toluene concentrations in MW-1 from last quarter's results. There was a reduction in benzene and xylenes in MW-3 since last quarters sampling. The TPHg results have remained relatively constant in all wells except MW-5, where they have decreased, since the initiation of the non-purge sampling method. The groundwater sample from MW-6 did not contain any detectable concentrations of TPHg, BTEX, or MTBE.

As stated above, the groundwater sample from MW-6 did not contain any detectable concentrations MTBE above the reporting limits. The samples from MW-1, MW-3, and MW-5 tested positive for MTBE using EPA Test Method 8020, however analysis by EPA Test Method 8260 indicated no MTBE above their respective detection limits. The reporting limit for MTBE on the sample from MW-1 was elevated due to the high levels of BTEX constituents. Fingerprint analyses of a product sample from the site in 1998 indicated the product recovered by the treatment system did not contain MTBE.

The DO content in MW-3 and MW-5 declined in the one week following removal of the ORC™ socks, which would be expected if a healthy population of hydrocarbon reducing microbes was present.

RECOMMENDATIONS

Harding recommends continued quarterly monitoring utilizing the procedures outlined in our Groundwater Monitoring Plan. ORC™ socks will continue to be replaced on six-month intervals to promote continued biodegradation of the residual petroleum hydrocarbons. Based on this interval, Harding will replace the ORC™ socks in MW-3 and MW-5 next quarter.

Harding recommends that Blue Print Services send a copy of this report to the following address:

Mr. Don Hwang
Alameda County
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California, 94502-6577

While under contract to BPS, Harding will continue to provide quarterly groundwater monitoring and reporting as required by The County.

If you have any questions, please contact the undersigned at (510) 451-1001.

Sincerely,

HARDING ESE, INC.

Valerie J. Harris
Project Engineer

Luis A. Fraticelli, R.G.
Associate Geologist

REGISTERED GEOLOGIST
LUIS A. FRATICELLI
No. 6521
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4 copies submitted

Attachments:
Table 1 – Groundwater Parameters
Table 2 – Groundwater Elevation Data
Table 3 – Groundwater Monitoring Analytical Results - Using Purge Method
Table 4 – Groundwater Monitoring Analytical Results – Non-Purge Method
Plate 1 – Site Map
Plate 2 –Groundwater Contours, November 16, 2000
Plate 3 – TPHg, BTEX and MTBE Concentrations, November 2000
Plate 4 – BTEX and DO Results
Plate 5 – Groundwater Elevation Data
Appendix – Laboratory Reports

Table 1. Groundwater Parameters
BPS Reprographic Services Facility
1700 Jefferson Street
Oakland, California

Dissolved Oxygen (mg/l)	MW-1	MW-3	MW-5	MW-6
9/29/1999	2.9	1.7	0.4	1.8
11/5/1999	4.0	10.3	4.0	2.8
11/22/1999	1.8	2.4	2.0	3.2
1/28/2000	2.9	8.4	3.6	2.2
2/11/2000	2.5	2.3	1.8	3.5
5/12/2000	2.0	7.4	2.4	1.7
5/30/2000	1.9	2.6	1.8	3.2
9/1/2000	2.9	3.4	2.3	2.7
9/15/2000	2.0	1.8	2.2	3.8
11/9/2000	--	5.0	5.3	--
11/16/2000	3.1	4.2	3.4	6.0
REDOX (mvolts)				
5/30/2000	-322	197	-128	203
9/15/2000	-269	3	-89	206
11/16/2000	64	178	296	230
Temperature (deg F)				
9/29/1999	67.0	72.6	67.7	73.8
11/22/1999	66.4	62.9	65.0	69.8
2/11/2000	61.3	63.2	62.0	68.5
5/30/2000	77.7	74.8	76.3	76.2
9/15/2000	64.4	64.3	64.7	67.0
11/16/2000	54.5	58.1	68.1	65.9
pH				
9/29/1999	8.39	8.53	8.43	8.44
11/22/1999	6.86	8.42	6.84	6.79
2/11/2000	6.80	6.94	6.83	6.72
5/30/2000	7.02	7.35	7.54	7.56
9/15/2000	7.06	7.54	6.76	6.62
11/16/2000	7.37	7.69	7.12	7.34
Specific Conductance (µS/cm)				
9/29/1999	976	880	1,577	966
11/22/1999	1,004	1,500	1,352	1,038
2/11/2000	992	1,327	1,275	1,149
5/30/2000	845	1,020	758	924
9/15/2000	800	917	989	1,009
11/16/2000	785	970	742	886

Note:
Baseline dissolved oxygen measurement taken on 09/29/99, prior to initial installation of oxygen releasing compound

mg/l = milligrams per liter
mvolts = millivolts
deg F = degrees Fahrenheit
µS/cm = micromho per centimeter

Table 2. Groundwater Elevation Data
BPS Reprographic Services Facility
1700 Jefferson Street
Oakland, California

	MW-1		MW-3		MW-5		MW-6		Average
	TOC Elev.	32.36	TOC Elev.	31.77	TOC Elev.	30.56	TOC Elev.	31.26	Change
Date Sampled	Water Level	Water Elevation	Water Level	Water Elevation	Water Level	Water Elevation	Water Level	Water Elevation	Since Preceding Quarter
3/6/1996	NM	--	24.79	6.98	23.53	7.03	NA	--	
6/11/1996	FP	--	25.60	6.17	23.78	6.78	25.16	6.10	-0.53
9/19/1996	FP	--	26.09	5.68	24.48	6.08	25.76	5.50	-0.60
12/23/1996	FP	--	FP	--	24.83	5.73	25.88	5.38	-0.23
3/27/1997	FP	--	FP	--	23.82	6.74	24.78	6.48	1.06
6/4/1997	26.41	5.95	25.11	6.66	23.92	6.64	24.60	6.66	0.04
9/26/1997	26.80	5.56	25.41	6.36	24.29	6.27	24.80	6.46	-0.32
12/22/1997	26.00	6.36	24.91	6.86	24.02	6.54	24.71	6.55	0.42
3/31/1998	26.06	6.30	24.05	7.72	22.78	7.78	23.75	7.51	0.75
6/18/1998	25.60	6.76	23.71	8.06	22.51	8.05	23.22	8.04	0.40
8/28/1998	25.45	6.91	23.70	8.07	22.74	7.82	22.23	9.03	0.23
12/2/1998	24.92	7.44	23.60	8.17	23.16	7.40	23.72	7.54	-0.32
3/10/1999	24.90	7.46	22.65	9.12	22.82	7.74	23.54	7.72	0.37
6/30/1999	25.53	6.83	23.07	8.70	22.41	8.15	23.04	8.22	-0.04
9/29/1999	24.23	8.13	23.03	8.74	22.81	7.75	23.42	7.84	0.14
11/22/1999	24.33	8.03	23.68	8.09	22.88	7.68	23.64	7.62	-0.26
2/11/2000	24.38	7.98	23.74	8.03	22.74	7.82	23.67	7.59	0.00
5/30/2000	23.57	8.79	22.97	8.80	21.73	8.83	22.82	8.44	0.86
9/15/2000	23.85	8.51	23.12	8.65	22.14	8.42	23.10	8.16	-0.28
11/16/2000	24.14	8.22	23.40	8.37	22.39	8.17	23.41	7.85	-0.28

TOC Elev. = top of well casing elevation based on City of Oakland Datum
NM = not measured
FP = free product
-- = no data
NA = not applicable (MW-6 was installed in April 1996)

Table 3. Historical Groundwater Monitoring Analytical Results - Using Purge Method

BPS Reprographic Services Facility

1700 Jefferson Street

Oakland, California

	Date Sampled													
TPHg (mg/l)	8/1/1991	9/30/1992	3/30/1993	1/13/1994	4/13/1994	6/29/1994	12/8/1994	4/3/1995	6/27/1995	9/19/1995	12/13/1995	3/6/1996	6/11/1996	9/19/1996
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP
MW-1A	350	FP	FP	FP	170	95	190	67	53	52	62	200	140	100
MW-3	74	FP	FP	FP	FP	39	4,600	51	20	6.2	19	7	16	6
MW-4	86	FP	FP	FP	58	16	92	35	13	14	11	110	260	95
MW-5	120	51	74	80	63	64	59	51	41	50	45	51	48	48
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.05)	ND(0.05)
Benzene (µg/l)														
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP
MW-1A	17,000	FP	FP	FP	17,000	16,000	13,000	11,000	11,000	8,900	9,900	14,000	18,000	16,000
MW-3	1,600	FP	FP	FP	FP	3,200	1,500	1,100	270	70	220	120	170	45
MW-4	1,500	FP	FP	FP	1,500	1,300	1,700	1,200	1,300	2,200	630	2,600	6,600	9,900
MW-5	20,000	13,000	16,000	19,000	14,000	29,000	13,000	15,000	12,000	1,600	13,000	15,000	12,000	12,000
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)
Toluene (µg/l)														
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP
MW-1A	31,000	FP	FP	FP	31,000	21,000	21,000	13,000	9,900	9,200	11,000	22,000	28,000	22,000
MW-3	4,600	FP	FP	FP	FP	2,900	4,200	2,300	550	140	480	170	270	30
MW-4	6,200	FP	FP	FP	2,500	790	4,100	3,400	1,600	2,100	470	3,600	19,000	19,000
MW-5	14,000	5,900	5,000	8,200	3,500	5,400	3,800	2,200	2,100	2,700	2,100	2,800	2,900	4,500
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)
Ethylbenzene (µg/l)														
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP
MW-1A	3,000	FP	FP	FP	2,100	1,500	1,400	910	500	710	790	2,700	2,800	2,100
MW-3	670	FP	FP	FP	FP	580	6,000	580	190	68	140	49	68	15
MW-4	1,000	FP	FP	FP	520	51	310	280	77	110	14	780	3,700	2,000
MW-5	1,900	1,400	1,800	1,400	1,500	2,800	1,800	2,800	1,400	2,000	16,000	2,000	2,000	2,300
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)
Xylenes (µg/l)														
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP
MW-1A	22,000	FP	FP	FP	14,000	12,000	11,000	9,800	6,300	6,800	5,300	22,000	19,000	14,000
MW-3	4,300	FP	FP	FP	FP	4,300	95,000	4,800	1,700	500	1,700	440	1,500	300
MW-4	7,300	FP	FP	FP	3,200	3,400	5,400	5,800	1,800	2,100	1,800	10,000	28,000	13,000
MW-5	4,900	2,600	2,700	2,700	2,100	4,500	2,900	4,500	1,600	2,100	1,900	2,400	2,700	4,000
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(2)	ND(2)
MTBE (µg/l)														
MW-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-1A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	NA	NA

TPHg = total petroleum hydrocarbons as gasoline
MTBE = methyl t-butyl ether
(mg/l) milligrams per liter
(µg/l) micrograms per liter

ND = Not detected above the reporting limit in parenthesis
NA = Not analyzed
FP = Free Product - well not sampled
-- = Well did not exist at date indicated

Table 3. Historical Groundwater Monitoring Analytical Results - Using Purge Method

BPS Reprographic Services Facility

1700 Jefferson Street

Oakland, California

	Date Sampled											
TPHg (mg/l)	12/23/1996	3/27/1997	6/4/1997	9/26/1997	12/23/1997	3/31/1998	6/18/1998	8/28/1998	12/2/1998	3/10/1999	6/30/1999	9/29/1999
MW-1	FP	FP	68	59	41	44	32	26	26	26	18	21
MW-1A	FP	66	54	73	66	51	50	15	41	10	18	NA
MW-3	FP	FP	85	47	32	32	16	17	3.2	9.6	7.9	5.0
MW-4	FP	37	24	41	48	NA	25	48	10	11	8.8	NA
MW-5	45	44	35	36	39	48	17	16	15	23	7.7	11
MW-6	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Benzene (µg/l)												
MW-1	FP	FP	2,200	6,000	6,800	8,300	1,100	8,600	9,200	8,200	7,000	9,200
MW-1A	FP	12,000	11,000	10,000	10,000	9,100	11,000	1,100	8,500	2,300	6,400	NA
MW-3	FP	FP	8,500	610	640	690	180	84	39	86	31	120
MW-4	FP	2,600	2,600	2,900	6,000	NA	2,000	9,700	1,700	2,300	1,800	NA
MW-5	12,000	11,000	8,900	7,900	13,000	10,000	9,500	5,400	8,400	14,000	5,200	9,600
MW-6	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)
Toluene (µg/l)												
MW-1	FP	14,000	4,500	3,000	3,000	3,700	3,800	2,300	4,300	5,900	5,800	10,000
MW-1A	FP	15,000	12,000	16,000	16,000	11,000	15,000	830	11,000	1,900	7,800	NA
MW-3	FP	FP	13,000	6,000	5,300	3,800	1,500	1,100	85	540	330	340
MW-4	FP	6,900	3,200	5,000	11,000	NA	460	11,000	610	2,100	3,000	NA
MW-5	2,200	1,100	560	270	500	400	310	160	120	300	270	710
MW-6	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)
Ethylbenzene (												
MW-1	FP	FP	1,500	1,600	1,400	1,100	550	730	820	870	950	1,200
MW-1A	FP	1,400	1,000	1,400	1,400	1,100	870	31	720	1,600	660	NA
MW-3	FP	FP	2,400	930	800	870	490	430	25	250	200	230
MW-4	FP	540	140	350	580	NA	ND(15)	890	ND(15)	88	150	NA
MW-5	2,700	1,900	1,500	1,500	1,900	2,000	420	1,100	1,500	1,800	1,100	1,100
MW-6	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.5	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)
Xylenes (µg/l)												
MW-1	FP	FP	11,000	8,600	6,600	4,300	3,000	2,100	2,800	3,500	2,500	5,500
MW-1A	FP	100	7,200	8,500	12,000	6,800	5,800	3,000	6,700	2,300	4,100	NA
MW-3	FP	FP	16,000	5,900	5,900	5,200	3,700	3,800	360	2,300	1,800	1,300
MW-4	FP	5,500	3,500	4,800	8,200	NA	6,400	5,000	2,300	1,600	2,700	NA
MW-5	6,500	2,800	1,700	1,300	1,700	2,200	850	900	840	1,100	690	1,100
MW-6	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(0.60)	ND(0.60)	ND(0.60)	ND(0.60)	ND(0.60)	ND(0.60)
MTBE (µg/l)												
MW-1	FP	FP	ND(500)	ND(500)	300	420	ND(50)	ND(50)	ND(50)	ND(50)	ND(25)	ND(250)
MW-1A	NA	1,800	ND(500)	ND(500)	1,900	300	ND(50)	ND(50)	ND(50)	ND(50)	ND(25)	NA
MW-3	FP	FP	ND(500)	ND(100)	ND(300)	350	ND(25)	ND(50)	ND(50)	ND(25)	ND(25)	10
MW-4	NA	1,400	ND(300)	ND(500)	270	NA	ND(50)	ND(50)	ND(50)	ND(25)	ND(25)	NA
MW-5	600	300	ND(100)	ND(500)	ND(1000)	350	ND(10)	ND(50)	ND(50)	ND(50)	ND(25)	ND(100)
MW-6	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)

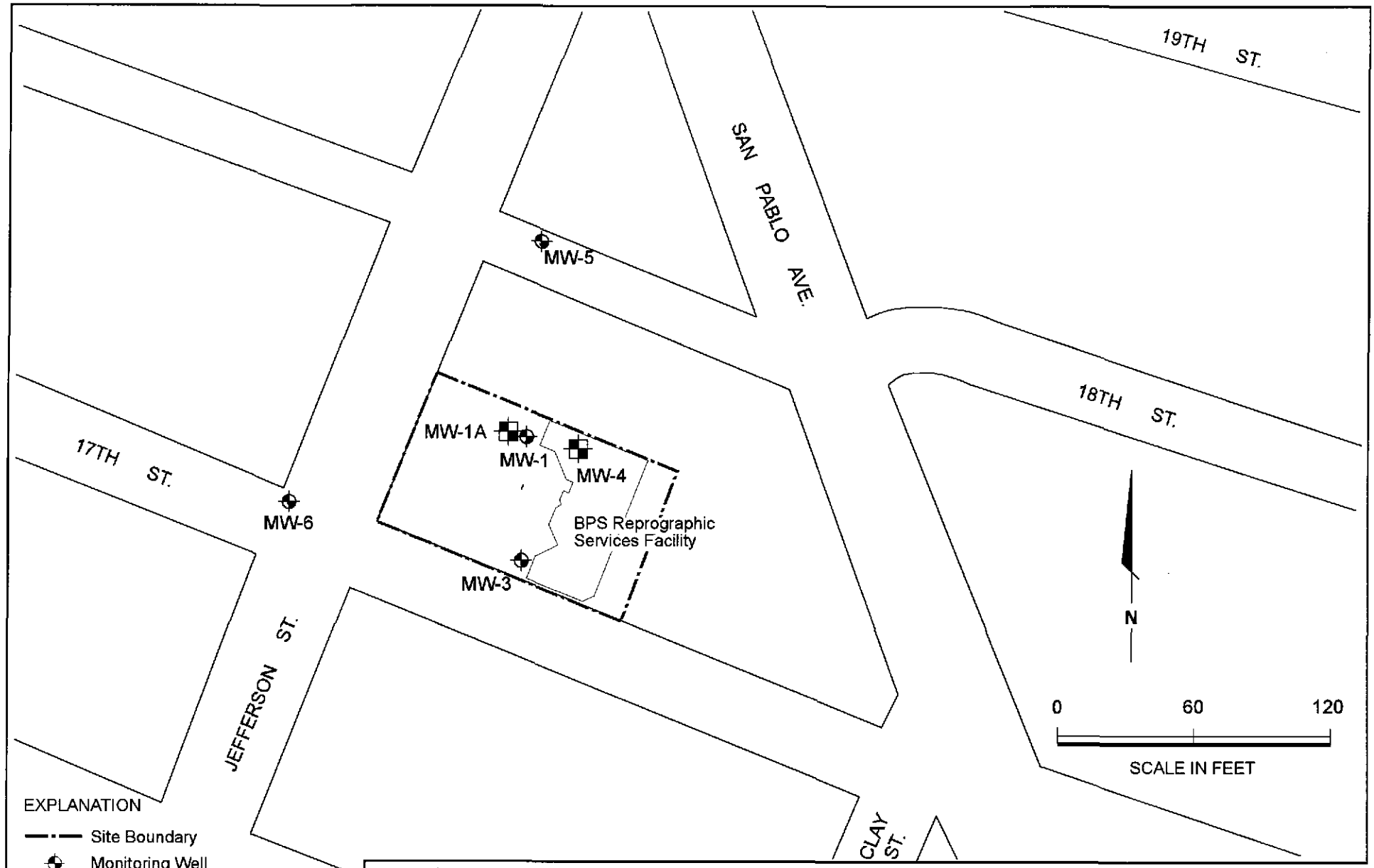
TPHg = total petroleum hydrocarbons as gasoline
MTBE = methyl t-butyl ether
(mg/l) milligrams per liter
(µg/l) micrograms per liter

ND = Not detected above the reporting limit in parenthesis
NA = Not analyzed
FP = Free Product - well not sampled
– = Well did not exist at date indicated

Table 4. Groundwater Monitoring Analytical Results – Non-Purge Method
BPS Reprographic Services Facility
1700 Jefferson Street
Oakland, California

TPHg (mg/l)	9/29/1999	11/22/1999	2/11/2000	5/30/2000	9/15/2000	11/16/2000
MW-1	14	24	19	19	20	18
MW-3	4.1	3.1	0.54	0.49	1.5	1.3
MW-5	10	30	23	19	24	1.8
MW-6	ND<0.5	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05
Benzene (µg/l)						
MW-1	6,200	4,900	4,100	5,700	4,100	3,500
MW-3	180	6.5	8.3	11	28	20
MW-5	14,000	11,000	12,000	9,900	3,800	470
MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30
Toluene (µg/l)						
MW-1	5,900	5,000	4,800	8,400	5,700	4,300
MW-3	340	33	20	5.6	14	34
MW-5	470	3,400	4,500	6,900	3,000	220
MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30
Ethylbenzene (µg/l)						
MW-1	620	730	530	730	540	640
MW-3	130	27	2.4	0.45	2.6	25
MW-5	1,100	1,500	1,200	1,200	460	39
MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30
Xylenes (µg/l)						
MW-1	3,500	3,500	2,800	3,500	2,700	3,200
MW-3	580	260	28	17	160	28
MW-5	600	2,500	1,300	2,600	1,200	100
MW-6	ND<0.6	ND<0.6	ND<0.6	ND<0.6	ND<0.6	ND<0.60
MTBE (µg/l) (EPA Method 8020)						
MW-1	ND<250	ND<100	6.6	ND<5.0[1]	ND<12 [1,2]	ND<40[1,2]
MW-3	14	ND<1.0	31	ND<5.0[1]	ND<5 [1]	ND<5 [1]
MW-5	ND<100	ND<100	6.6	ND<200	ND<10 [1,2]	ND<5 [1]
MW-6	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1

mg/l = milligrams per liter
µg/l = micrograms per liter
ND = Not detected above the reporting limit following the less than sign
MTBE = methyl t-butyl ether
1 Result of MTBE confirmation by EPA Method 8260.
2 Reporting limits have been elevated due to matrix interference.



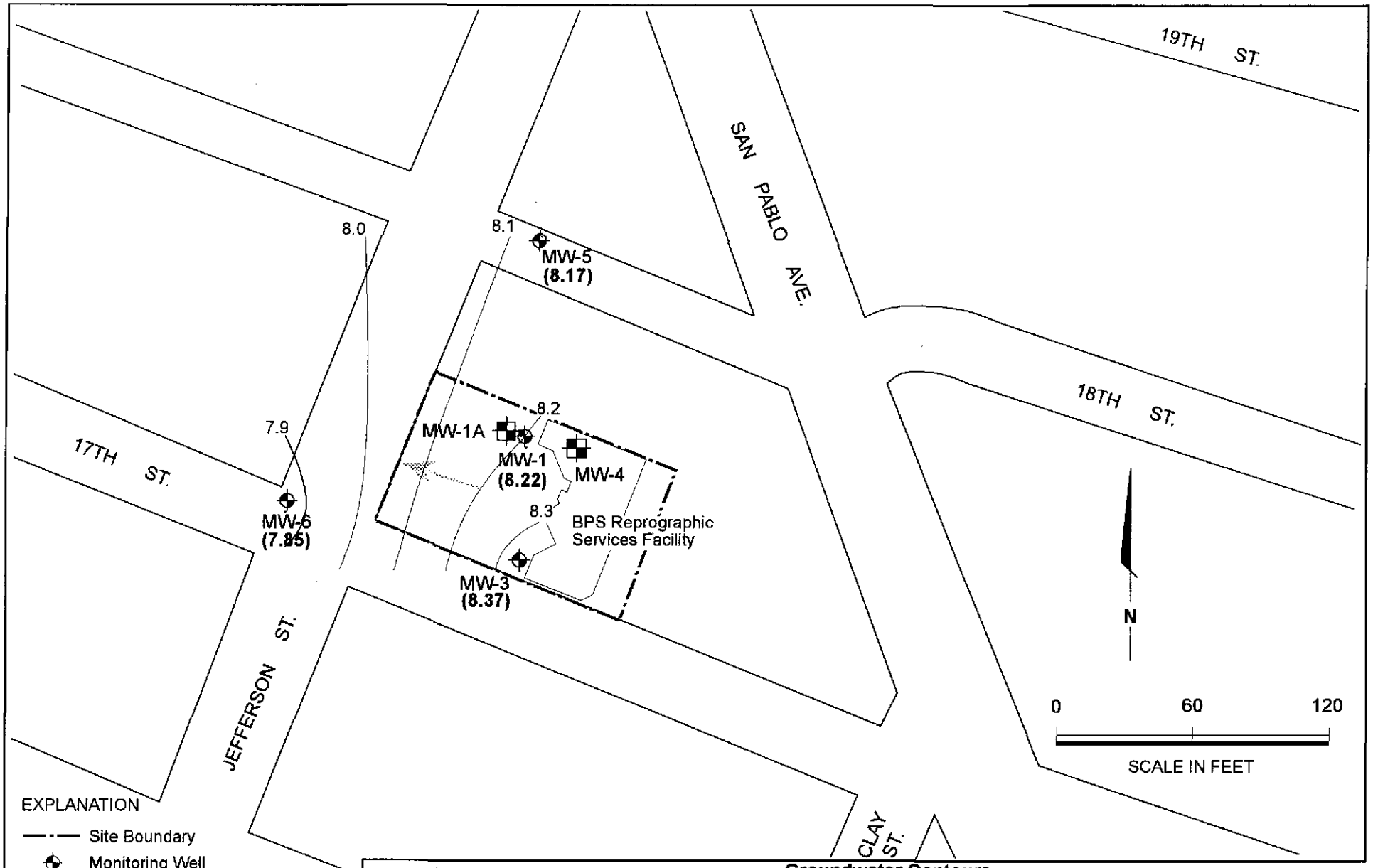
Harding ESE
A MACTEC COMPANY

Site Map
1700 Jefferson Street
BPS Reprographic Services Facility
Oakland, California

PLATE
1

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	49560.1		1/10/2001	

P:\City\Blue\1\sktr_00.fh5



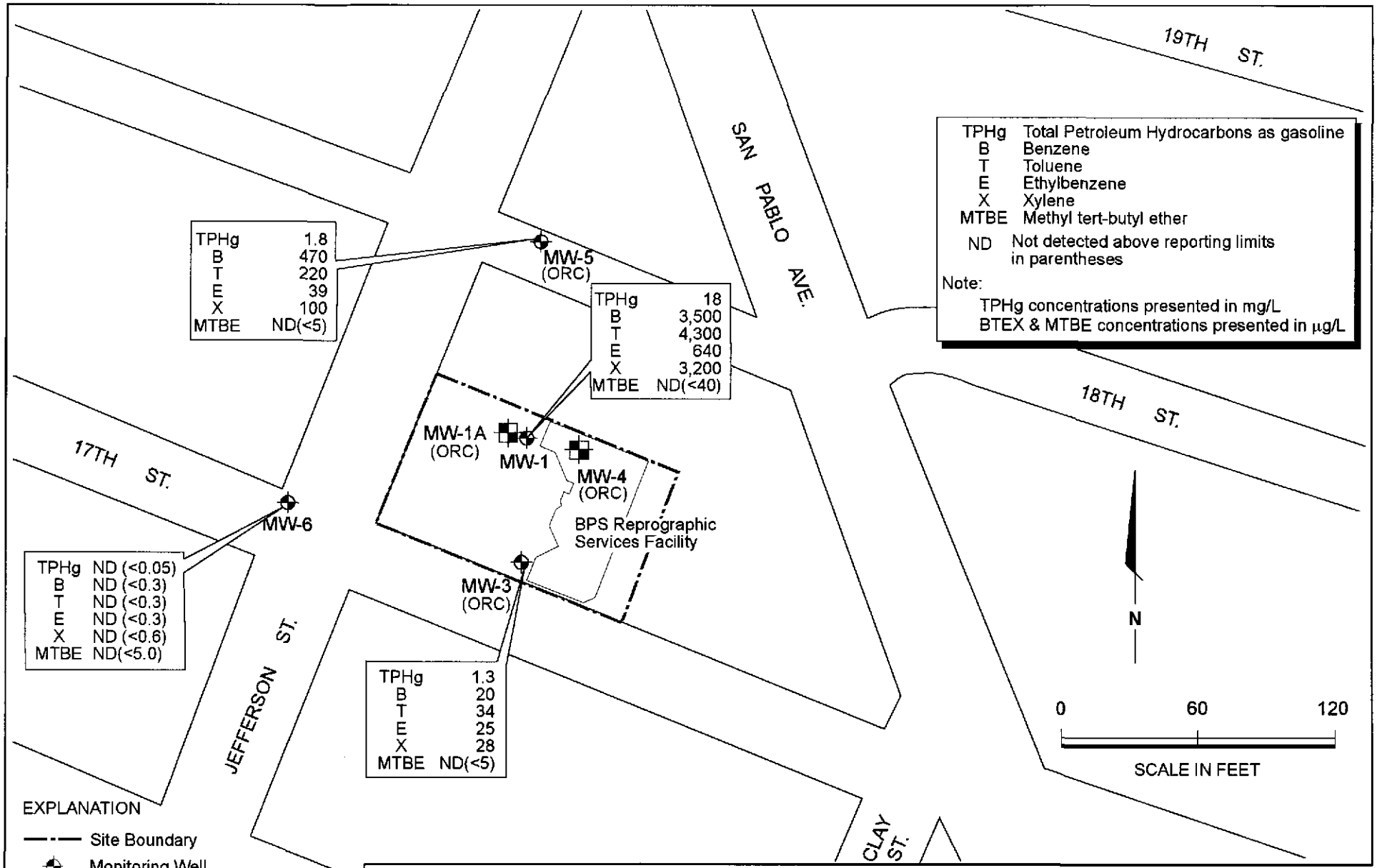
Harding ESE
A MACTEC COMPANY

Groundwater Contours
November 16, 2000
1700 Jefferson Street
BPS Reprographic Services Facility
Oakland, California

PLATE
2

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	49560.1		1/10/2001	

P:\CityBlue\1stqtr_00.fh5



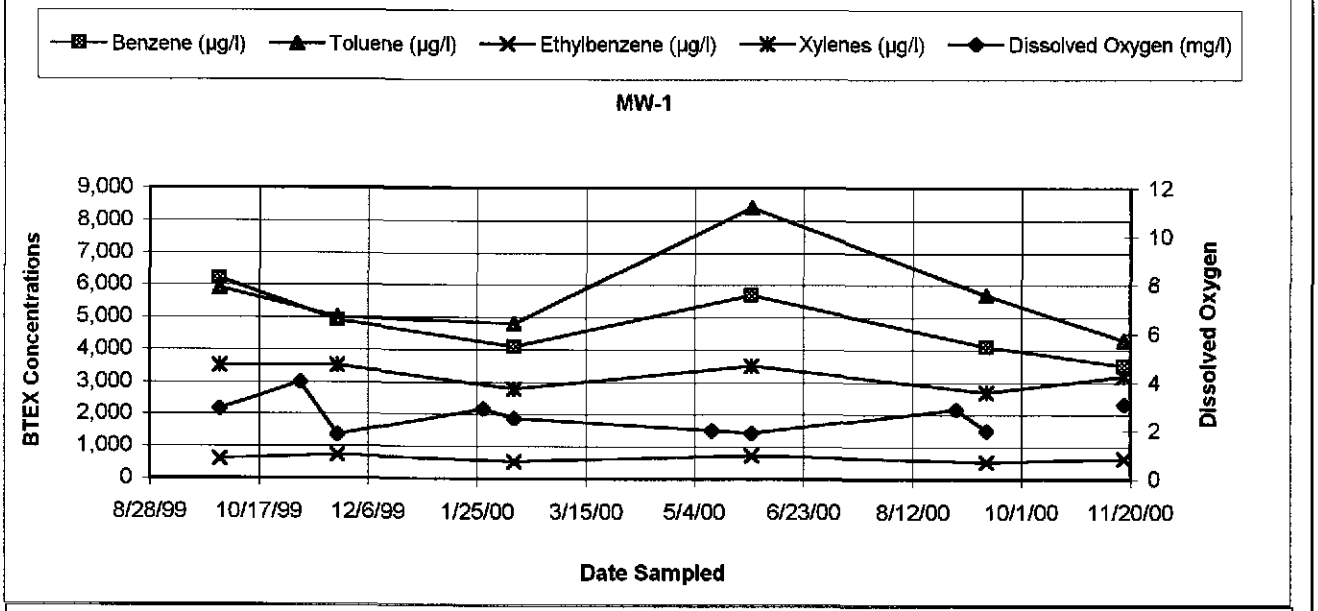
Harding ESE
A MACTEC COMPANY

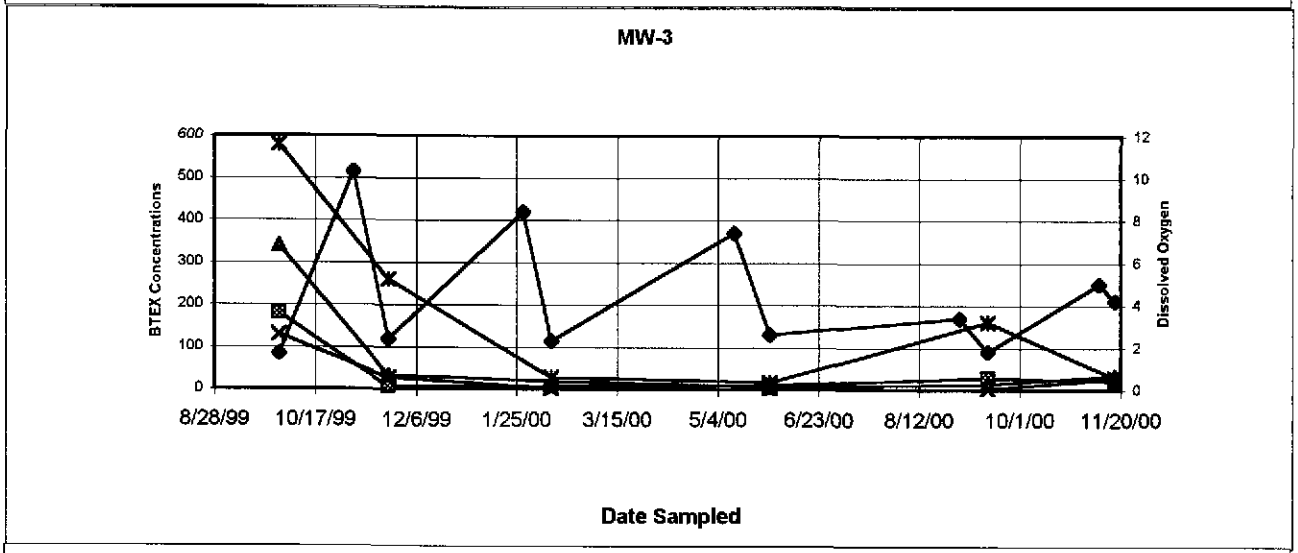
TPHg, BTEX, and MTBE Concentrations in Groundwater
November 2000
1700 Jefferson Street
BPS Reprographic Services Facility
Oakland, California

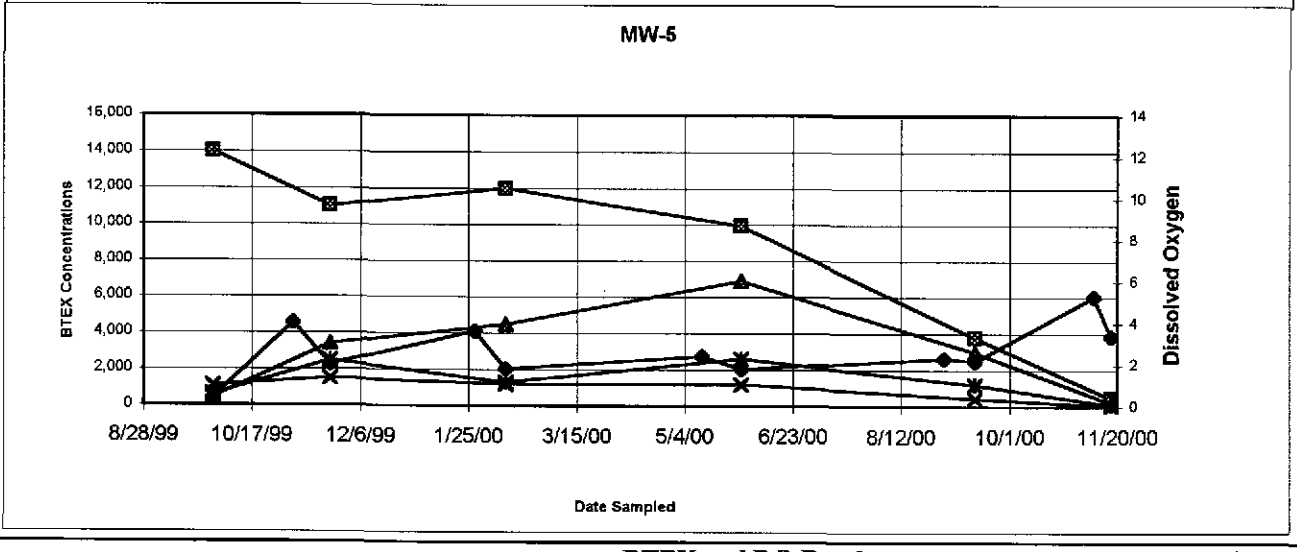
PLATE **3**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	49560.1		1/10/2001	

P:\CityBlue\1stqtr_00.fh5





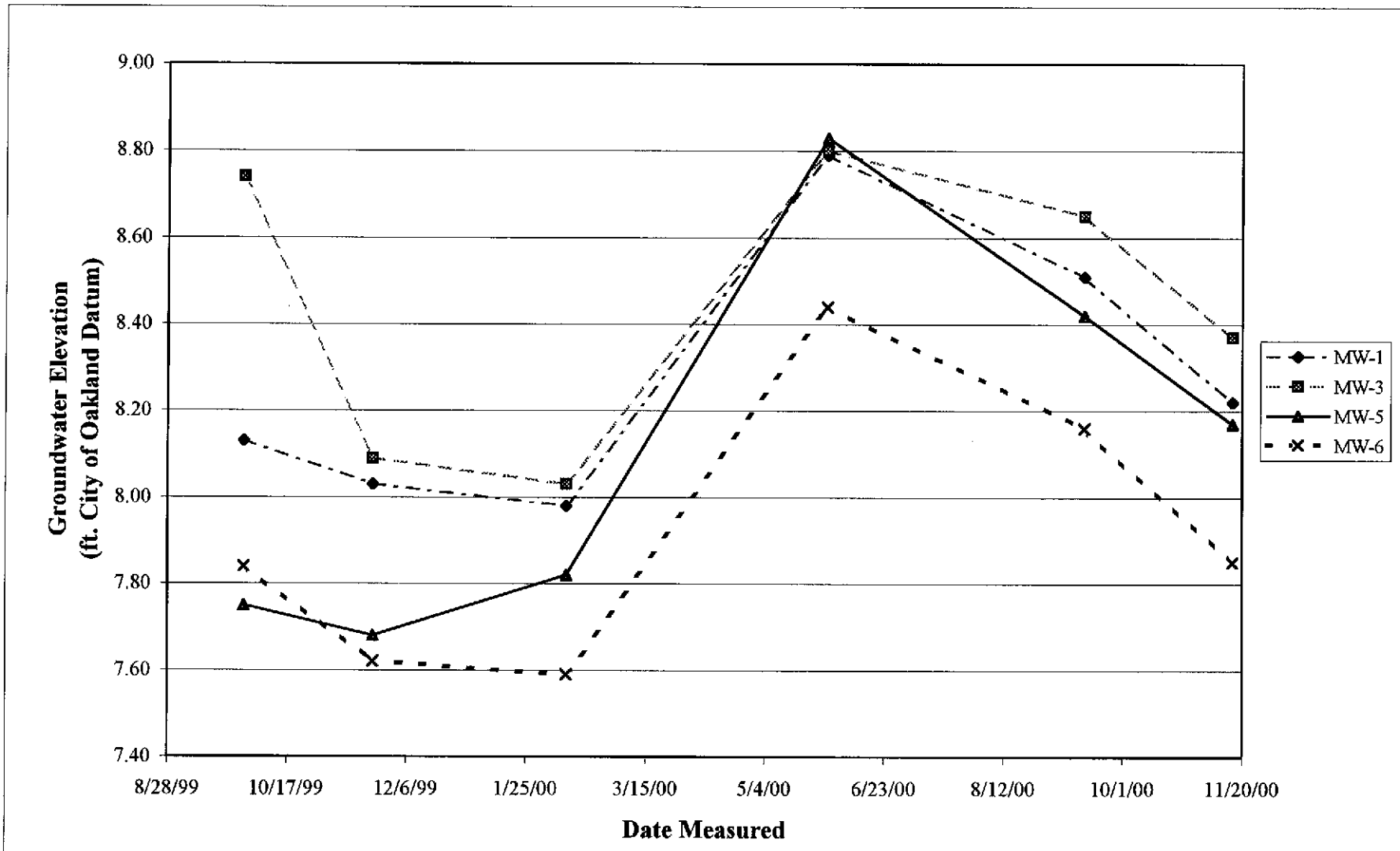


Harding ESE
A MACTEC COMPANY

BTEX and DO Results
Quarterly Groundwater Monitoring Report
BPS Reprographic Services Facility
1700 Jefferson Steet
Oakland, California

Plate
4

Drawn by	JOB NUMBER	APPROVED	DATE	REVISED DATE
vjh	49560.1		1/10/01	



Harding ESE
A MACTEC COMPANY

Groundwater Elevation Data
Quarterly Groundwater Monitoring Report
BPS Reprographic Services Facility
1700 Jefferson Steet
Oakland, California

FIGURE
5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
vjh	49560.1		1/10/01	

APPENDIX
LABORATORY REPORT

CLS Labs

Harding Lawson Associates
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

11/30/2000

Attention: **Valerie Harris**

Reference: **Analytical Results**

Project Name: **City Blue**
Project No.: **49560.1**
Date Received: **11/20/2000**
Chain Of Custody: **2610**

CLS ID No.: **S4336**
CLS Job No.: **834336**

The following analyses were performed on the above referenced project:

No. of Samples	*Turnaround Time*	*Analysis Description*
4	10 Days	**TPH as Gasoline, BTEX and MTBE**
4	10 Days	***MTBE by EPA Method 8260 Modified***

These samples were received by CLS Labs in a chilled, intact state and accompanied by a valid chain of custody document.

Calibrations for analytical testing have been performed in accordance to and pass the EPA's criteria for acceptability.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

3249 Fitzgerald Road Rancho Cordova, CA 95742 (916) 638-7301 Fax (916) 638-4510

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-5**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-1A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	0.200	98

MW-5

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	1.8	0.50	10

ND = Not detected at or above indicated Reporting Limit

CA DOHS ELAP Accreditation/Registration Number 1233

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-3**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-2A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	0.0200	89

MW-3

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	1.3	0.050	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-1**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-3A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	0.500	100

MW-1

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	18	1.3	25

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/17/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-6**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-4A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	0.0200	108

MW-6

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	ND	0.050	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	MB Surrogate Recovery (percent)
o-Chlorotoluene	95498	0.0200	104

METHOD BLANK

Analyte	CAS No.	Results (mg/L)	Reporting Limit (mg/L)
TPH as Gasoline	N/A	ND	0.050

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-5**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-1A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	200	100

MW-5

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	27	10	10
Benzene	71432	470	30	100
Toluene	108883	220	3.0	10
Ethylbenzene	100414	39	3.0	10
Xylenes, total	1330207	100	6.0	10

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-3**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-2A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	20.0	94

MW-3

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	20	1.0	1.0
Benzene	71432	20	0.30	1.0
Toluene	108883	34	0.30	1.0
Ethylbenzene	100414	25	0.30	1.0
Xylenes, total	1330207	28	0.60	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-1**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-3A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	500	95

MW-1

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	81	25	25
Benzene	71432	3500	150	500
Toluene	108883	4300	150	500
Ethylbenzene	100414	640	7.5	25
Xylenes, total	1330207	3200	15	25

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/17/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**
Client ID No.: **MW-6**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-4A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95498	20.0	105

MW-6

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	ND	1.0	1.0
Benzene	71432	ND	0.30	1.0
Toluene	108883	ND	0.30	1.0
Ethylbenzene	100414	ND	0.30	1.0
Xylenes, total	1330207	ND	0.60	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	MB Surrogate Recovery (percent)
o-Chlorotoluene	95498	20.0	107

METHOD BLANK

Analyte	CAS No.	Results (ug/L)	Reporting Limit (ug/L)
Methyl t-butyl ether	1634044	ND	1.0
Benzene	71432	ND	0.30
Toluene	108883	ND	0.30
Ethylbenzene	100414	ND	0.30
Xylenes, total	1330207	ND	0.60

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

MS SURROGATE

Analyte	CAS No.	MS Surr. Conc. (ug/L)	MS Surrogate Recovery (percent)
o-Chlorotoluene	95498	20.0	102

MATRIX SPIKE

Analyte	CAS No.	MS Conc. (ug/L)	MS Recovery (percent)
Benzene	71432	20.0	105
Toluene	108883	20.0	109
Ethylbenzene	100414	20.0	106
Xylenes, total	1330207	60.0	106

MSD SURROGATE

Analyte	CAS No.	Surr. Conc. (ug/L)	MSD Surrogate Recovery (percent)
o-Chlorotoluene	95498	20.0	99

MATRIX SPIKE DUPLICATE

Analyte	CAS No.	MSD Conc. (ug/L)	MSD Recovery (percent)
Benzene	71432	20.0	101
Toluene	108883	20.0	104
Ethylbenzene	100414	20.0	101
Xylenes, total	1330207	60.0	101

RELATIVE % DIFFERENCE

Analyte	CAS No.	Relative Percent Difference (percent)

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

RELATIVE % DIFFERENCE(cont.)

Analyte	CAS No.	Relative Percent Difference (percent)
Benzene	71432	4
Toluene	108883	5
Ethylbenzene	100414	5
Xylenes, total	1330207	5

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/22/2000**
Date Reported: **11/28/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30400**
Instrument ID: **GC018**
Analyst ID: **LEVIF**
Matrix: **WATER**

LCS SURROGATE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Surrogate Recovery (percent)
o-Chlorotoluene	95498	20.0	99

LAB CONTROL SAMPLE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Recovery (percent)
Benzene	71432	20.0	101
Toluene	108883	20.0	102
Ethylbenzene	100414	20.0	103
Xylenes, total	1330207	60.0	102

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**
Client ID No.: **MW-5**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-1A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
Toluene-d8	N/A	10.0	123

MW-5

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	ND	5.0	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**
Client ID No.: **MW-3**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-2A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
Toluene-d8	N/A	10.0	123

MW-3

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	ND	5.0	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/16/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**
Client ID No.: **MW-1**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-3A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
Toluene-d8	N/A	800	114

MW-1

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	ND	40 (SI)	80

SI = Reporting limit was elevated due to matrix interference.

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **11/17/2000**
Date Received: **11/20/2000**
Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**
Client ID No.: **MW-6**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336-4A**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
Toluene-d8	N/A	10.0	103

MW-6

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634044	ND	5.0	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	MB Surrogate Recovery (percent)
Toluene-d8	N/A	10.0	124

METHOD BLANK

Analyte	CAS No.	Results (ug/L)	Reporting Limit (ug/L)
Methyl t-butyl ether	1634044	ND	5.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

MATRIX SPIKE

Analyte	CAS No.	MS Conc. (ug/L)	MS Recovery (percent)
Methyl t-butyl ether	1634044	100	101

MATRIX SPIKE DUPLICATE

Analyte	CAS No.	MSD Conc. (ug/L)	MSD Recovery (percent)
Methyl t-butyl ether	1634044	100	95

RELATIVE % DIFFERENCE

Analyte	CAS No.	Relative Percent Difference (percent)
Methyl t-butyl ether	1634044	6

CLS Labs

Analysis Report: **Volatile Organics (Oxygenates) by Capillary GC/MS, EPA Method 8260MOD**

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **N/A**
Date Analyzed: **11/21/2000**
Date Reported: **11/29/2000**

Project No.: **49560.1**
Contact: **Valerie Harris**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **S4336**
Job No.: **834336**
COC Log No.: **2610**
Batch No.: **30390**
Instrument ID: **MS05**
Analyst ID: **MINH**
Matrix: **WATER**

LAB CONTROL SAMPLE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Recovery (percent)
Methyl t-butyl ether	1634044	10.0	98

Harding Lawson Associates
383 Fourth Street, Third Floor
Oakland, California 94607
(510) 451-1001 - Phone
(510) 451-3165 - Fax

CHAIN OF CUSTODY FORM

Nº 2610

Lab: CLS 54336

Samplers: VALERIE HARRIS

Job Number: 49560 .1

Name/Location: CITY BLUE

Project Manager: VALERIE HARRIS

Recorder: _____ (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	# CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCL	Ice	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Day	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 8010	EPA 8020	EPA 8260	EPA 8270	METALS	EPA 8015M/TPHG	EPA 8020/BTEX/MTBE*	EPA 8015M/TPHd,o
	X							3		MW-5			00	11	16	1430						X	X	
	X							3		MW-3			00	11	16	1600						X	X	
	X							3		MW-1			00	11	16	1632						X	X	
	X							3		MW-6			00	11	17	0925						X	X	

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						STANDARD TURN AROUND TIME
						*CONFIRM MTBE HITS BY EPA 8260.

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature) CONRAD	DATE/TIME 11/20/00 1130
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME 11/20/00 1600
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

METHOD OF SHIPMENT

SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink