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A MACTEC COMPANY

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Project 53087.1

Mr. Jeff Christoff
Blue Print Service Company
149 Second Street
San Francisco, California 94105

Quarterly Groundwater Remediation and Monitoring Report
April 5 through June 30, 2001
BPS Reprographic Services Facility
1700 Jefferson Street
Oakland, California

Dear Mr. Christoff:

Harding ESE, Inc, (Harding) presents this quarterly status letter-report on the groundwater monitoring and remedial activities at the BPS Reprographic Services (BPS) facility located at 1700 Jefferson Street in Oakland, California (see Plate 1). This letter-report covers the period from April 5 through June 30, 2001, 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^{TM}). ORC^{TM} is manufactured and distributed by Regenesis, 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^{TM} calculation sheet and a Groundwater Monitoring Plan, dated September 23, 1999.

Harding implemented the *in situ* remediation technique by placing ORC^{TM} in treatment wells: MW-1A, MW-3, MW-4, and MW-5 on September 29, 1999. The ORC^{TM} 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).

SECOND QUARTER OF 2001 GROUNDWATER SAMPLING AND ANALYSIS

In accordance with the Groundwater Monitoring Plan, Harding removed the ORC^{TM} socks two weeks before the scheduled sampling event from Wells MW-3 and MW-5 on June 1, 2001. The dissolved oxygen was measured in-situ in wells MW-3, MW-5, MW-1 and MW-6. The DO measurements are presented in Table 1.

On June 28, 2001, 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 displayed on Plate 2 and tabulated 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 Sequoia Analytical Laboratory (Sequoia), 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 analytical results are displayed on Plates 3 and 4. The laboratory reports are presented in the Appendix.

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

DISCUSSION

As shown in Table 2 and Plate 5, the groundwater surface elevation increased an average of 0.04 feet across the site as compared to last quarter's measurements. Using the groundwater elevations from MW-1, MW-3, MW-5, and MW-6 as measured on June 28, 2001, groundwater contours were created and are shown on Plate 2. Based on these contours, the groundwater gradient was at 0.005 ft/ft to the southwest. 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 west to southwest 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 3, concentrations of TPH-g, BTEX constituents and MTBE remained within the range of historical values for well MW-1 and MW-3. Second quarter sample results indicated that concentrations of BTEX constituents in well MW-5 were the lowest monitored to date. Second quarter TPH-g, MTBE concentrations from well MW-5 remained within the range of historical values. The groundwater sample from MW-6 did not contain any detectable concentrations of TPH-g, benzene or ethylbenzene.

The groundwater sample from MW-6 did contain detectable concentrations of MTBE, toluene and total xylenes at the following concentrations: 17, 2.9 and 2.7 micrograms per liter (µg/L) respectively. Harding will continue to sample well MW-6 during the third quarter 2001 groundwater monitoring event. If the presence of these or any of the constituents of concern are indicated, Harding will provide an evaluation of the laboratory analytical result in the third quarter 2001 report. It should be noted that 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 well MW-3 immediately following the removal of the ORC^{TM} socks was 0.24 mg/L indicating that the ORC^{TM} socks had been depleted and were ready to be replaced. The DO content in MW-5 significantly declined in the two week period following removal of the ORC^{TM} socks (from 6.62 to 0.5 mg/L), which would be expected if a healthy population of hydrocarbon reducing microbes were present.

RECOMMENDATIONS

Harding recommends continued quarterly monitoring utilizing the procedures outlined in our Groundwater Monitoring Plan. ORC^{TM} 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^{TM} 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 (415) 884-3199.

Sincerely,

HARDING LAWSON ASSOCIATES

David S. Nanstad
Project Engineer

Luis A. Fraticelli, R.G.
Associate Geologist

DSN Novmain:/Cityblue/1q01

4 copies submitted

Attachments: Table 1 – Groundwater Parameters
Table 2 – Groundwater Elevation Data
Table 3 – Historical Groundwater Monitoring Analytical Results - Using Purge Method
Table 4 – Groundwater Monitoring Analytical Results – Non-Purge Method
Plate 1 – Site Map
Plate 2 – Groundwater Contours, June 28, 2001
Plate 3 – TPHg, BTEX and MTBE Concentrations in Groundwater, June 28, 2001
Plate 4 – BTEX and DO Results

Plate 5 – Groundwater Elevation Data
Appendix A – Laboratory Reports
Appendix B – Groundwater Sampling Forms
Table B1. Sample Location/Sample Description Cross-Reference

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
9/29/99	2.9	1.7	0.4	1.8
11/5/99	4.0	10.3	4.0	2.8
11/22/99	1.8	2.4	2.0	3.2
1/28/00	2.9	8.4	3.6	2.2
2/11/00	2.5	2.3	1.8	3.5
5/12/00	2.0	7.4	2.4	1.7
5/30/00	1.9	2.6	1.8	3.2
9/1/00	2.9	3.4	2.3	2.7
9/15/00	2.0	1.8	2.2	3.8
11/9/00	--	5.0	5.3	--
11/17/00	3.1	4.2	3.4	6.0
3/15/01	2.0	7.0	1.4	2.1
4/2/01	1.0	0.8	2.0	1.0
6/1/01	0.2	0.2	6.6	0.3
6/28/01	0.3	0.6	0.5	0.7
REDOX (mvolts)				
5/30/00	-322	197	-128	203
9/15/00	-269	3	-89	206
11/17/00	64	178	296	230
4/2/01	-194	26	-36	102
6/28/01	-310	-283	-360	107
Temperature (deg F)				
9/29/99	67.0	72.6	67.7	73.8
11/22/99	66.4	62.9	65.0	69.8
2/11/00	61.3	63.2	62.0	68.5
5/30/00	77.7	74.8	76.3	76.2
9/15/00	64.4	64.3	64.7	67.0
11/17/00	54.5	58.1	68.1	65.9
4/2/01	63.5	64.9	66.2	66.4
6/28/01	73.0	71.2	74.7	74.3
pH				
9/29/99	8.39	8.53	8.43	8.44
11/22/99	6.86	8.42	6.84	6.79
2/11/00	6.80	6.94	6.83	6.72
5/30/00	7.02	7.35	7.54	7.56
9/15/00	7.06	7.54	6.76	6.62
11/17/00	7.37	7.69	7.12	7.34
4/2/01	6.98	6.61	7.07	6.96
6/28/01	6.90	6.74	6.78	6.83
Specific Conductance (µS/cm)				
9/29/99	976	880	1,577	966
11/22/99	1,004	1,500	1,352	1,038
2/11/00	992	1,327	1,275	1,149
5/30/00	845	1,020	758	924
9/15/00	800	917	989	1,009
11/17/00	785	970	742	886
4/2/01	725	365	839	821
6/28/01	1080	704	876	1021

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 = micro-ohms 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 Change
	TOC Elev.	32.36	TOC Elev.	31.77	TOC Elev.	30.56	TOC Elev.	31.26	
Date Sampled	Water Level	Water Elevation	Water Level	Water Elevation	Water Level	Water Elevation	Water Level	Water Elevation	Since Preceding Quarter
3/6/96	NM	--	24.79	6.98	23.53	7.03	NA	--	
6/11/96	FP	--	25.60	6.17	23.78	6.78	25.16	6.10	-0.53
9/19/96	FP	--	26.09	5.68	24.48	6.08	25.76	5.50	-0.60
12/23/96	FP	--	FP	--	24.83	5.73	25.88	5.38	-0.23
3/27/97	FP	--	FP	--	23.82	6.74	24.78	6.48	1.06
6/4/97	26.41	5.95	25.11	6.66	23.92	6.64	24.60	6.66	0.04
9/26/97	26.80	5.56	25.41	6.36	24.29	6.27	24.80	6.46	-0.32
12/22/97	26.00	6.36	24.91	6.86	24.02	6.54	24.71	6.55	0.42
3/31/98	26.06	6.30	24.05	7.72	22.78	7.78	23.75	7.51	0.75
6/18/98	25.60	6.76	23.71	8.06	22.51	8.05	23.22	8.04	0.40
8/28/98	25.45	6.91	23.70	8.07	22.74	7.82	22.23	9.03	0.23
12/2/98	24.92	7.44	23.60	8.17	23.16	7.40	23.72	7.54	-0.32
3/10/99	24.90	7.46	22.65	9.12	22.82	7.74	23.54	7.72	0.37
6/30/99	25.53	6.83	23.07	8.70	22.41	8.15	23.04	8.22	-0.04
9/29/99	24.23	8.13	23.03	8.74	22.81	7.75	23.42	7.84	0.14
11/22/99	24.33	8.03	23.68	8.09	22.88	7.68	23.64	7.62	-0.26
2/11/00	24.38	7.98	23.74	8.03	22.74	7.82	23.67	7.59	0.00
5/30/00	23.57	8.79	22.97	8.80	21.73	8.83	22.82	8.44	0.86
9/15/00	23.85	8.51	23.12	8.65	22.14	8.42	23.10	8.16	-0.28
11/16/00	24.14	8.22	23.40	8.37	22.39	8.17	23.41	7.85	-0.28
4/2/01	23.40	8.96	23.40	8.37	22.07	8.49	23.33	7.93	0.29
6/28/01	23.58	8.78	23.17	8.60	22.15	8.41	23.15	8.11	0.04

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)	8/1/91	9/30/92	3/30/93	1/13/94	4/13/94	6/29/94	12/8/94	4/3/95	6/27/95	9/19/95	12/13/95	3/6/96	6/11/96	9/19/96	12/23/96	3/27/97	6/4/97	9/26/97	12/23/97	3/31/98	6/18/98	8/28/98	12/2/98	3/10/99	6/30/99	9/29/99
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	68	59	41	44	32	26	26	26	18	21
MW-1A	350	FP	FP	FP	170	95	190	67	53	52	62	200	140	100	FP	FP	66	73	66	51	50	15	41	10	18	NA
MW-3	74	FP	FP	FP	FP	39	4,600	51	20	6.2	19	7	16	6	FP	FP	85	47	32	32	16	17	3.2	9.6	7.9	5.0
MW-4	86	FP	FP	FP	58	16	92	35	13	14	11	110	260	95	FP	37	24	41	48	NA	25	48	10	11	8.8	NA
MW-5	120	51	74	80	63	64	59	51	41	50	45	51	48	48	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)	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	FP	FP	2,200	6,000	6,800	8,300	1,100	8,600	9,200	8,200	7,000	9,200
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	FP	12,000	11,000	10,000	10,000	9,100	11,000	1,100	8,500	2,300	6,400	NA
MW-3	1,600	FP	FP	FP	FP	3,200	1,500	1,100	270	70	220	120	170	45	FP	FP	8,500	610	640	690	180	84	39	86	31	120
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	FP	2,600	2,600	2,900	6,000	NA	2,000	9,700	1,700	2,300	1,800	NA
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	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(0.5)	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	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	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	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	FP	15,000	12,000	16,000	16,000	11,000	15,000	830	11,000	1,900	7,800	NA
MW-3	4,600	FP	FP	FP	FP	2,900	4,200	2,300	550	140	480	170	270	30	FP	FP	13,000	6,000	5,300	3,800	1,500	1,100	85	540	330	340
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	FP	6,900	3,200	5,000	11,000	NA	460	11,000	610	2,100	3,000	NA
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	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(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)
Ethylbenzene (µg/l)																										
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	1,500	1,600	1,400	1,100	550	730	820	870	950	1,200
MW-1A	3,000	FP	FP	FP	2,100	1,500	1,400	910	500	710	790	2,700	2,800	2,100	FP	1,400	1,000	1,400	1,400	1,100	870	31	720	1,600	660	NA
MW-3	670	FP	FP	FP	FP	580	6,000	580	190	68	140	49	68	15	FP	FP	2,400	930	800	870	490	430	25	250	200	230
MW-4	1,000	FP	FP	FP	520	51	310	280	77	110	14	780	3,700	2,000	FP	540	140	350	580	NA	ND(15)	890	ND(15)	88	150	NA
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	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)	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	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	11,000	8,600	6,600	4,300	3,000	2,100	2,800	3,500	2,500	5,500
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	FP	100	7,200	8,500	12,000	6,800	5,800	3,000	6,700	2,300	4,100	NA
MW-3	4,300	FP	FP	FP	FP	4,300	95,000	4,800	1,700	500	1,700	440	1,500	300	FP	FP	16,000	5,900	5,900	5,200	3,700	3,800	360	2,300	1,800	1,300
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	FP	5,500	3,500	4,800	8,200	NA	6,400	5,000	2,300	1,600	2,700	NA
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	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(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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	ND(500)	ND(500)	300	420	ND(50)	ND(50)	ND(50)	ND(50)	ND(25)	ND(250)
MW-1A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800	ND(500)	ND(500)	1,900	300	ND(50)	ND(50)	ND(50)	ND(50)	ND(25)	NA
MW-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	ND(500)	ND(100)	ND(300)	350	ND(25)	ND(50)	ND(50)	ND(25)	ND(25)	10
MW-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400	ND(300)	ND(500)	270	NA	ND(50)	ND(50)	ND(50)	ND(25)	ND(25)	NA
MW-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	600	300	ND(100)	ND(500)	ND(1000)	350	ND(10)	ND(50)	ND(50)	ND(25)	ND(25)	ND(100)
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	NA	NA	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

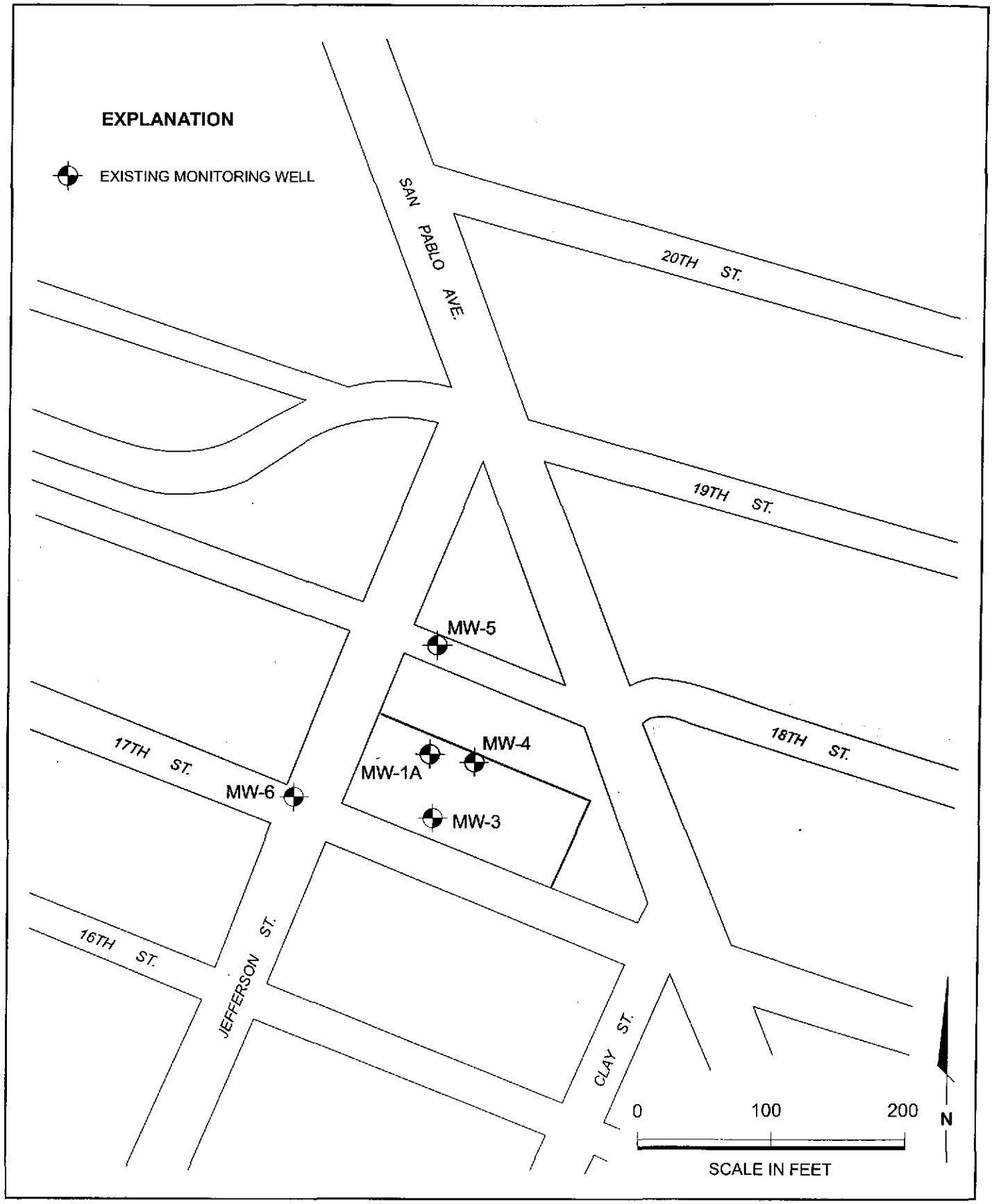
TPHg = total petroleum hydrocarbons as gasoline
MTBE = methyl t-butyl ether
(mg/l) milligrams per liter
(µg/l) micrograms per liter

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)		9/29/99	11/22/99	2/11/00	5/30/00	9/15/00	11/16/00	4/2/01	6/28/01
	MW-1	14	24	19	19	20	18	19	39
	MW-3	4.1	3.1	0.54	0.49	1.5	1.3	0.17	4.9
	MW-5	10	30	23	19	24	1.8	15	3.6
	MW-6	ND<0.5	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	6,200	4,900	4,100	5,700	4,100	3,500	4,700	5,200
	MW-3	180	6.5	8.3	11	28	20	9	150
	MW-5	14,000	11,000	12,000	9,900	3,800	470	7,400	300
	MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.30	ND<0.50
Toluene (µg/l)									
	MW-1	5,900	5,000	4,800	8,400	5,700	4,300	5,200	4,200
	MW-3	340	33	20	5.6	14	34	6.2	240
	MW-5	470	3,400	4,500	6,900	3,000	220	3,000	11
	MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.30	2.9
Ethylbenzene (µg/l)									
	MW-1	620	730	530	730	540	640	570	660
	MW-3	130	27	2.4	0.45	2.6	25	1.4	38
	MW-5	1,100	1,500	1,200	1,200	460	39	1000	16
	MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.30	ND<0.50
Xylenes (µg/l)									
	MW-1	3,500	3,500	2,800	3,500	2,700	3,200	2,600	3900
	MW-3	580	260	28	17	160	28	8.1	160
	MW-5	600	2,500	1,300	2,600	1,200	100	2,200	15
	MW-6	ND<0.6	ND<0.6	ND<0.6	ND<0.6	ND<0.6	ND<0.60	ND<0.30	2.7
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]	50 [1]	8.5 [1]
	MW-3	14	ND<1.0	31	ND<5.0[1]	ND<5 [1]	ND<5 [1]	77 [1]	ND<2 [1]
	MW-5	ND<100	ND<100	6.6	ND<200	ND<10 [1,2]	ND<5 [1]	ND<50[1]	4.4 [1]
	MW-6	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	5 [1,3]	17 [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.
3 Detection limit = 5 ug/L, Backup sample analyzed after hold time had a result of ND<5 µg/l.

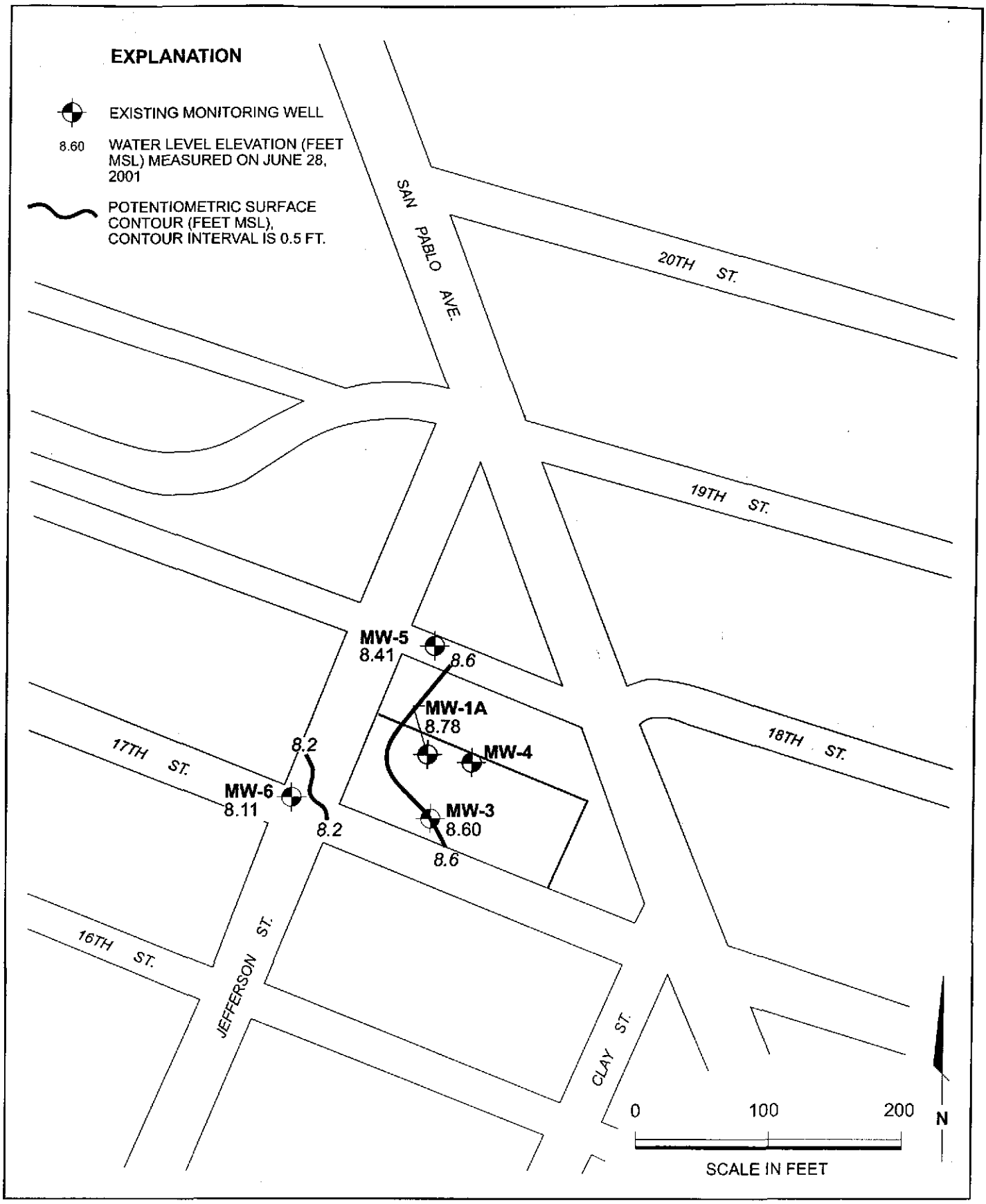


Harding ESE
A MACTEC COMPANY

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

PLATE
1

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
CN	53087 001		7/01	

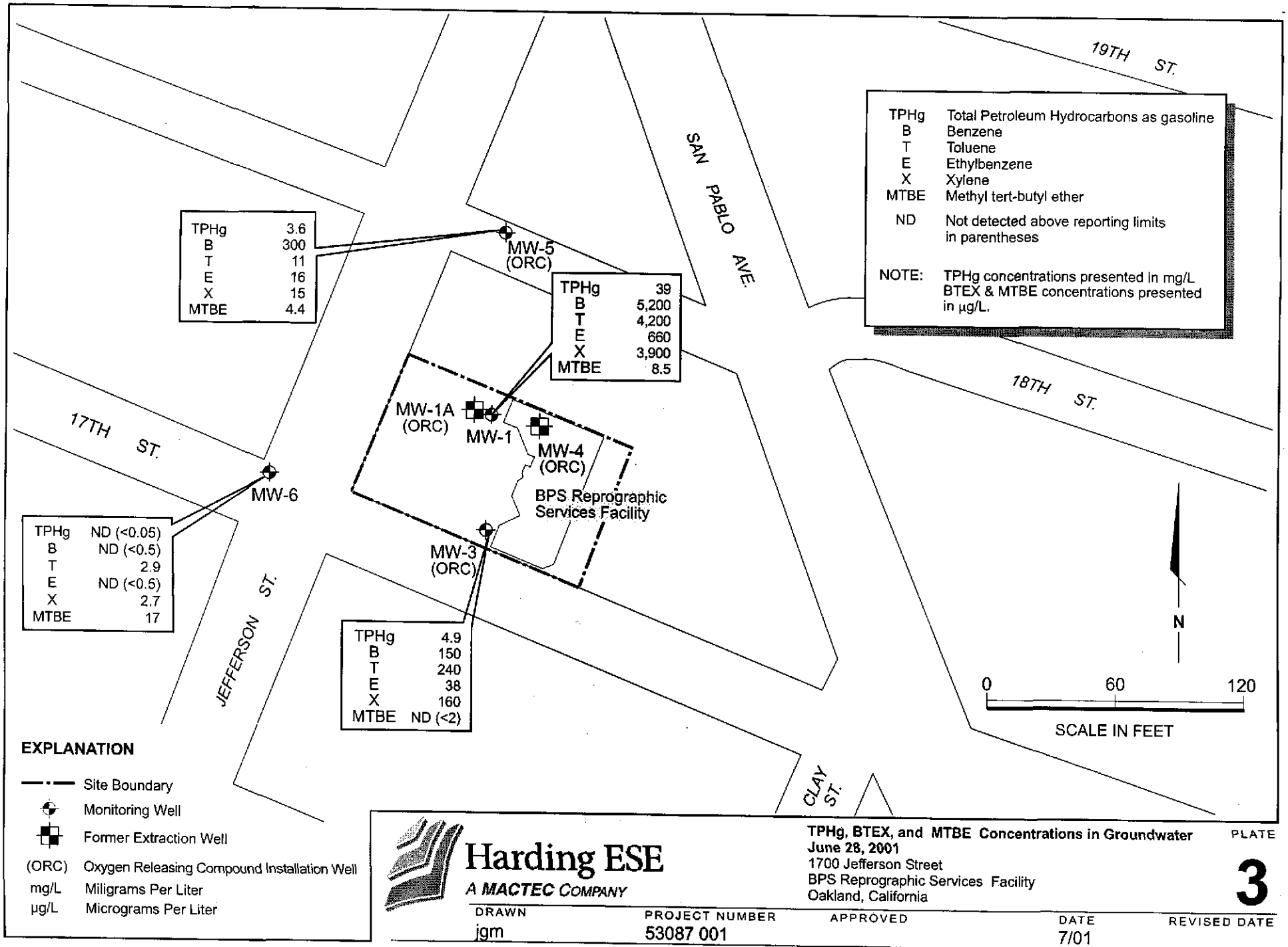


Harding ESE
A MACTEC COMPANY

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

PLATE
2

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
CN	53087 001		7/01	



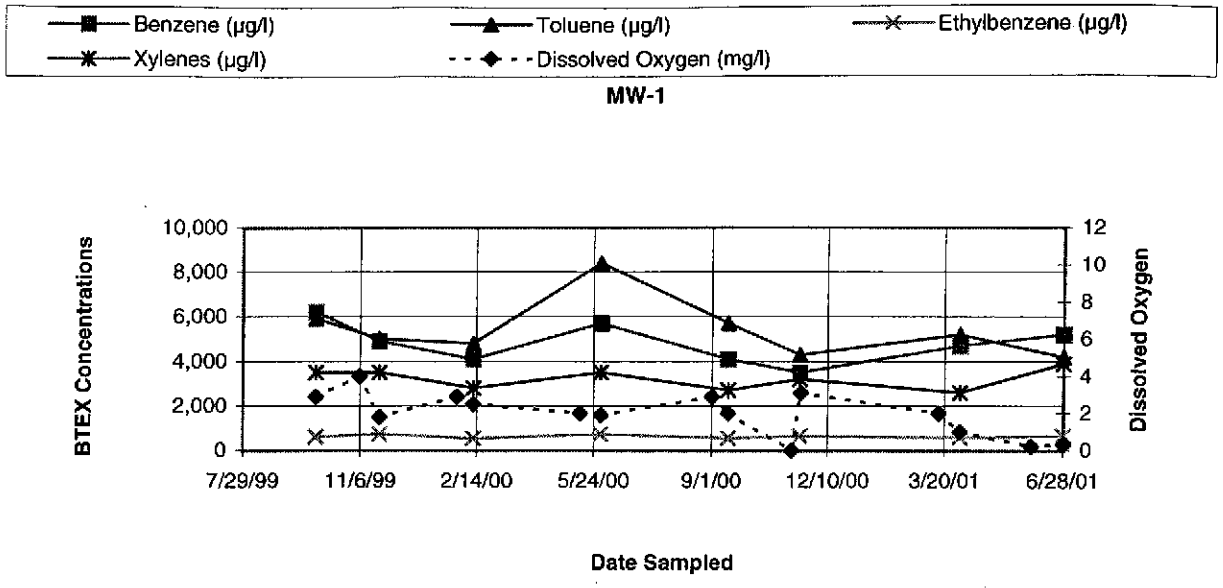
Harding ESE
A MACTEC COMPANY

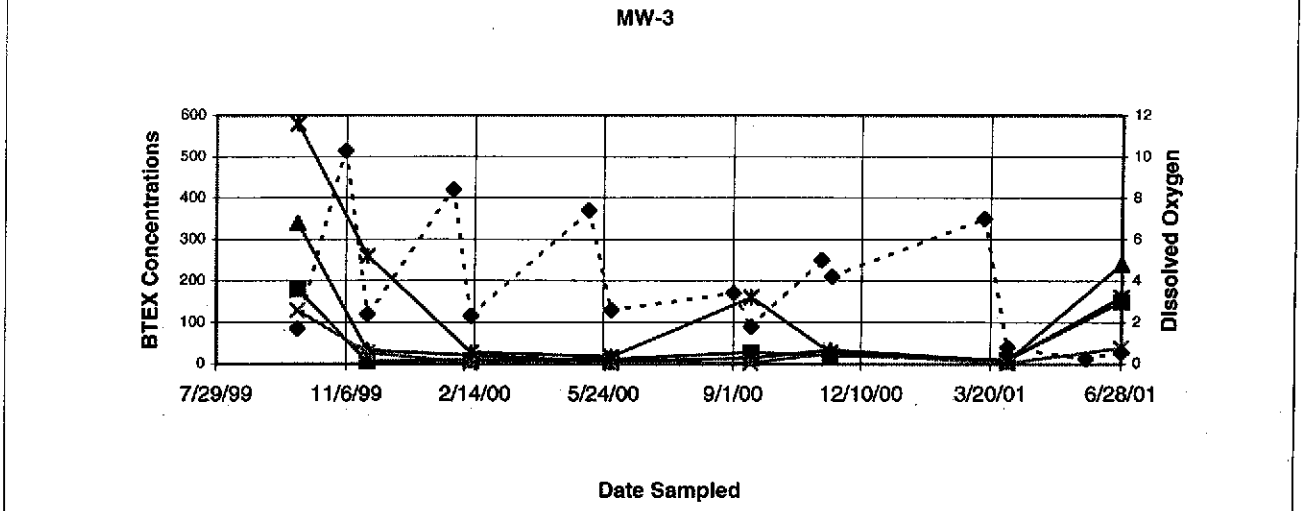
TPHg, BTEX, and MTBE Concentrations in Groundwater
June 28, 2001
1700 Jefferson Street
BPS Reprographic Services Facility
Oakland, California

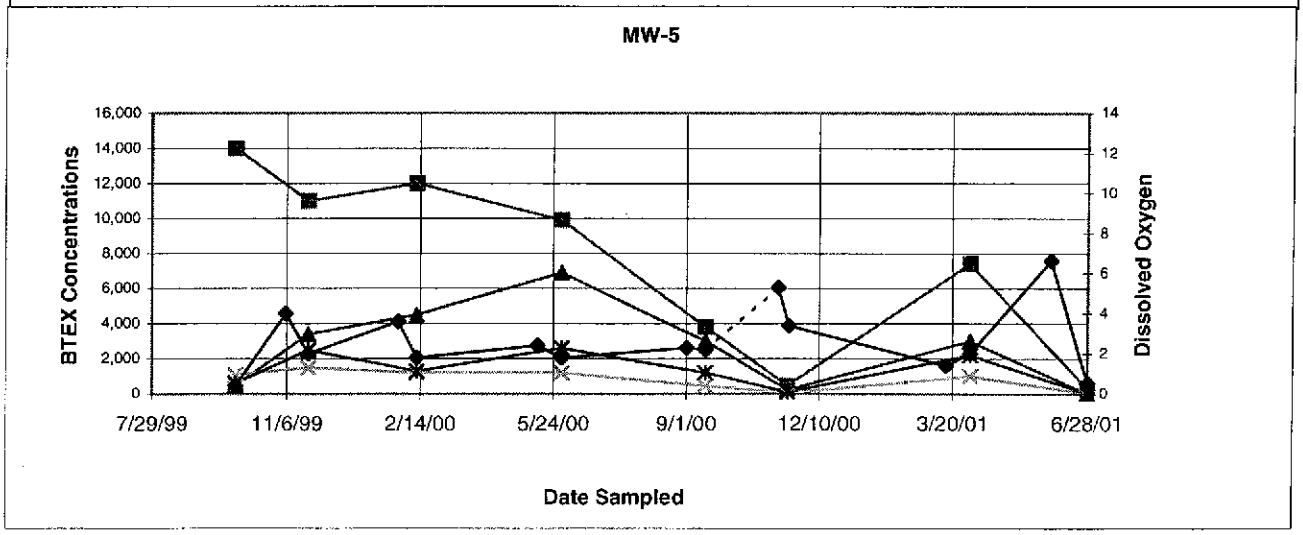
PLATE **3**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	53087 001		7/01	

P:\City\Blue1\alqb_00.fh5





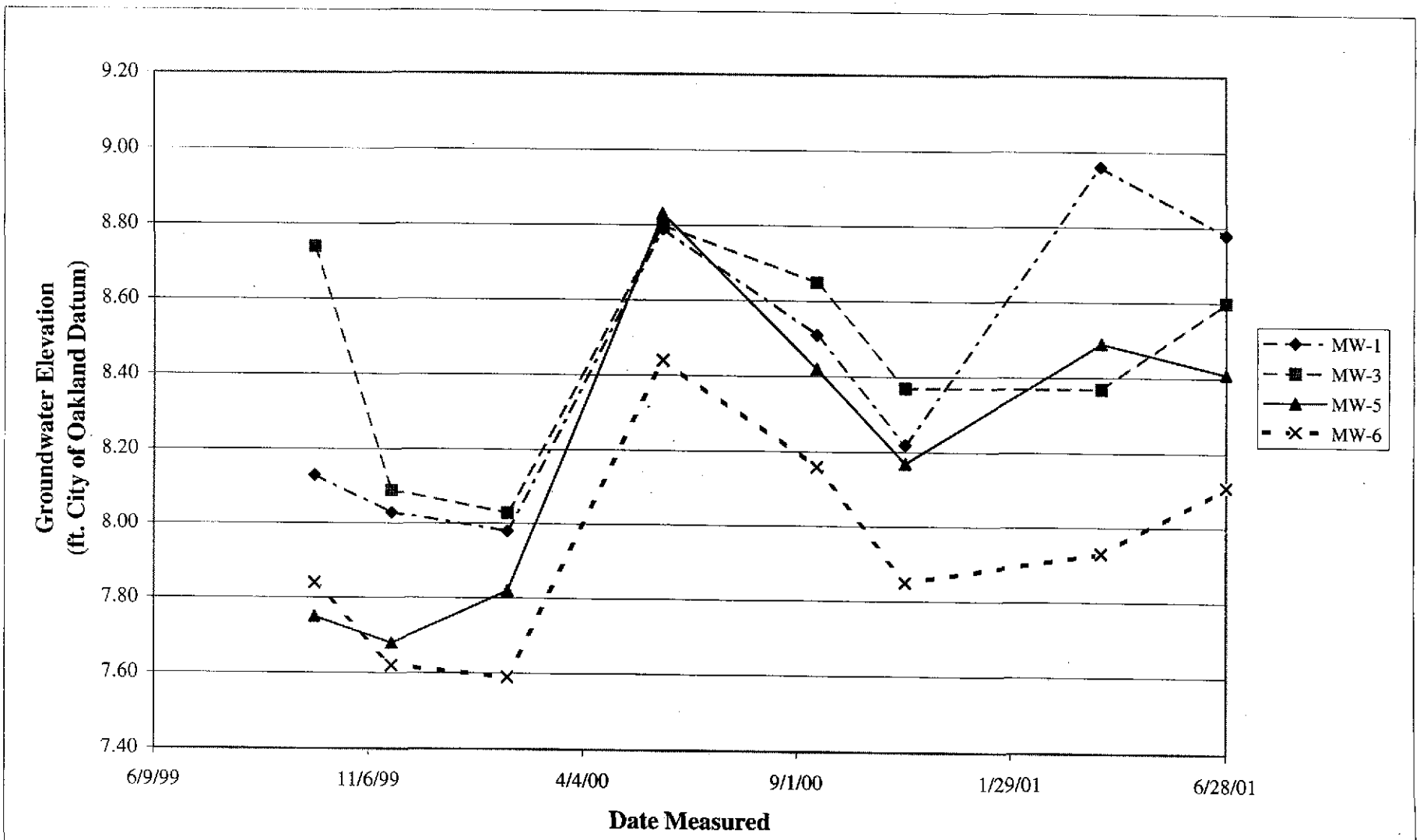


Harding ESE
A MACTEC COMPANY

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
dsn	53087.001		7/11/01	



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
dsn	53087.001		7/11/01	

APPENDIX A

LABORATORY REPORTS

Sequoia Analytical

1455 McDowell Blvd. North, Ste. D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

July 11 , 2001

David Nanstad
Harding ESE
90 Digital Drive
Novato, CA 94948
RE: General Commercial / P106542

Enclosed are the results of analyses for samples received by the laboratory on 06/28/01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Michelle M. Portis
Project Manager

CA ELAP Certificate Number 2374

Sequoia Analytical

1455 McDowell Blvd. North, Ste. D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94948	Project Manager: David Nanstad	07/11/01 12:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
53087-6	P106542-01	Water	06/28/01 09:40	06/28/01 18:15
53087-3	P106542-02	Water	06/28/01 11:15	06/28/01 18:15
53087-5	P106542-03	Water	06/28/01 12:20	06/28/01 18:15
53087-1	P106542-04	Water	06/28/01 13:10	06/28/01 18:15

Sequoia Analytical

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Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94948	Project Manager: David Nanstad	07/11/01 12:23

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
53087-6 (P106542-01) Water Sampled: 06/28/01 09:40 Received: 06/28/01 18:15									
Gasoline	ND	50	ug/l	1	1070063	07/03/01	07/03/01	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	**2.9**	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	**2.7**	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	**14**	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*106 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.7 %*	*65-135*		"	"	"	"	
53087-3 (P106542-02) Water Sampled: 06/28/01 11:15 Received: 06/28/01 18:15									
Gasoline	**4900**	250	ug/l	5	1070063	07/03/01	07/03/01	EPA 8015M/8020M	
Benzene	**150**	2.5	"	"	"	"	"	"	
Toluene	**240**	2.5	"	"	"	"	"	"	
Ethylbenzene	**38**	2.5	"	"	"	"	"	"	
Xylenes (total)	**160**	2.5	"	"	"	"	"	"	
Methyl tert-butyl ether	**27**	12	"	"	"	"	"	"	QR-04
Surrogate: a,a,a-Trifluorotoluene		*104 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.3 %*	*65-135*		"	"	"	"	
53087-5 (P106542-03) Water Sampled: 06/28/01 12:20 Received: 06/28/01 18:15									
Gasoline	**3600**	100	ug/l	2	1070063	07/03/01	07/03/01	EPA 8015M/8020M	
Benzene	**300**	1.0	"	"	"	"	"	"	
Toluene	**11**	1.0	"	"	"	"	"	"	
Ethylbenzene	**16**	1.0	"	"	"	"	"	"	
Xylenes (total)	**15**	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**19**	5.0	"	"	"	"	"	"	QR-04
Surrogate: a,a,a-Trifluorotoluene		*97.3 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.0 %*	*65-135*		"	"	"	"	

Sequoia Analytical

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www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94948	Project Manager: David Nanstad	07/11/01 12:23

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
53087-1 (P106542-04) Water Sampled: 06/28/01 13:10 Received: 06/28/01 18:15									
Gasoline	**39000**	1000	ug/l	20	1070063	07/03/01	07/03/01	EPA 8015M/8020M	
Benzene	**5200**	10	"	"	"	"	"	"	
Toluene	**4200**	10	"	"	"	"	"	"	
Ethylbenzene	**660**	10	"	"	"	"	"	"	
Xylenes (total)	**3900**	10	"	"	"	"	"	"	
Methyl tert-butyl ether	**99**	50	"	"	"	"	"	"	QR-04
Surrogate: a,a,a-Trifluorotoluene		*108 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.7 %*	*65-135*		"	"	"	"	

Sequoia Analytical

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www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94948	Project Manager: David Nanstad	07/11/01 12:23

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control
Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1070063 - EPA 5030, waters										
Blank (1070063-BLK1)				Prepared & Analyzed: 07/03/01						
Gasoline	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	*327*		"	*300*		*109*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*287*		"	*300*		*95.7*	*65-135*			
LCS (1070063-BS1)				Prepared & Analyzed: 07/03/01						
Gasoline	**2650**	**50**	**ug/l**	**2750**		**96.4**	**65-135**			
Benzene	**42.8**	**0.50**	"	**32.0**		**134**	**65-135**			
Toluene	**190**	**0.50**	"	**193**		**98.4**	**65-135**			
Ethylbenzene	**49.3**	**0.50**	"	**46.0**		**107**	**65-135**			
Xylenes (total)	**234**	**0.50**	"	**231**		**101**	**65-135**			
Methyl tert-butyl ether	**63.2**	**2.5**	"	**52.0**		**122**	**65-135**			
Surrogate: a,a,a-Trifluorotoluene	*356*		"	*300*		*119*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*308*		"	*300*		*103*	*65-135*			
Matrix Spike (1070063-MS1)		Source: P106528-01		Prepared & Analyzed: 07/03/01						
Gasoline	2810	50	ug/l	2750	ND	102	65-135			
Benzene	39.3	0.50	"	32.0	ND	123	65-135			
Toluene	193	0.50	"	193	ND	100	65-135			
Ethylbenzene	52.5	0.50	"	46.0	ND	114	65-135			
Xylenes (total)	245	0.50	"	231	ND	106	65-135			
Methyl tert-butyl ether	68.9	2.5	"	52.0	ND	128	65-135			
Surrogate: a,a,a-Trifluorotoluene	*360*		"	*300*		*120*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*315*		"	*300*		*105*	*65-135*			

Sequoia Analytical

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(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94948	Project Manager: David Nanstad	07/11/01 12:23

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1070063 - EPA 5030, waters										
Matrix Spike Dup (1070063-MSD1)	**Source: P106528-01**			Prepared & Analyzed: 07/03/01						
Gasoline	2810	50	ug/l	2750	ND	102	65-135	0.00	20	
Benzene	38.6	0.50	"	32.0	ND	121	65-135	1.80	20	
Toluene	196	0.50	"	193	ND	102	65-135	1.54	20	
Ethylbenzene	53.3	0.50	"	46.0	ND	116	65-135	1.51	20	
Xylenes (total)	249	0.50	"	231	ND	108	65-135	1.62	20	
Methyl tert-butyl ether	67.6	2.5	"	52.0	ND	125	65-135	1.90	20	
Surrogate: a,a,a-Trifluorotoluene	*368*		"	*300*		*123*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*317*		"	*300*		*106*	*65-135*			

Sequoia Analytical

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Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94948	Project Manager: David Nanstad	07/11/01 12:23

Notes and Definitions

QR-04	The results between the primary and confirmation columns varied by greater than 40% RPD. The results may still be useful for their intended purpose.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Harding Lawson Associates
90 Digital Drive
Novato, CA 94949
(415) 883-0112

CHAIN OF CUSTODY FORM

Seq. No.: Nº 1111
Lab: ~~Calif. Lab. Services~~ Sequoia

Samplers: David Browne

Job Number: 53087.001
Name/Location: City Blue Oakland
Project Manager: David Nanstad
Recorder: David Browne (Signature Required)

MATRIX: Water	Soil	Air		#CONTAINERS & PRESERV.: Unpres	H2SO4	HNO3	HCL		SAMPLE NUMBER YR	SEQ	DATE YR	MO	DAY	TIME	STATION DESCRIPTION	DEPTH	Gasoline Range Organics 8015B	Diesel Range Organics 8015B	BTEX plus MTBE (8020)	CCR Title 22 Metals (17)	EPA 8021B	EPA 8260B	EPA 8270C	TPH Gas (8015)
X							3		53	087-6	01	06	28	0940	P166542-1				X					X
X							3		53	087-3	01	06	28	1115	-2				X					X
X							3		53	087-5	01	06	28	1220	-3				X					X
X							3		53	087-1	01	06	28	1310	-4				X					X

ADDITIONAL INFORMATION

SAMPLE NUMBER YR	SEQ	TURNAROUND TIME/REMARKS
		STANDARD TAT

COOLER CUSTODY SEALS INTACT ☐

NOT INTACT ☐

COOLER TEMPERATURE 4.1 °C

CHAIN OF CUSTODY RECORD

	(signature)	(Print Name)	(Company)	Date/Time
Relinquished By:	David Browne	David Browne	Harding ESE	6/28/01 1815
Received By:	Gail Herman	GAIL HERMANN	SEQUOIA	6/28/01 1815
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				
Received By:				

Method of Shipment:

Laboratory Copy *White* | Project Office Copy *Yellow* | Field or Office Copy *Pink*

00291 1

Sequoia Analytical

1455 McDowell Blvd. North, Ste. D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

July 16, 2001

David Nanstad
Harding ESE
90 Digital Drive
Novato, CA 94949

RE: General Commercial / P106542

Dear David Nanstad

Enclosed are the results of MTBE confirmation by EPA 8260B for sample(s) received by the laboratory on June 28, 2001. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Michelle M. Portis
Project Manager

CA ELAP Certificate Number 2374

Sequoia Analytical

1455 McDowell Blvd. North, Ste. D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94949	Project Manager: David Nanstad	07/16/01 15:59

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
53087-6	P106542-01	Water	06/28/01 09:40	06/28/01 18:15
53087-3	P106542-02	Water	06/28/01 11:15	06/28/01 18:15
53087-5	P106542-03	Water	06/28/01 12:20	06/28/01 18:15
53087-1	P106542-04	Water	06/28/01 13:10	06/28/01 18:15

Sequoia Analytical

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(707) 792-1865
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www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94949	Project Manager: David Nanstad	07/16/01 15:59

MTBE by EPA Method 8260B

Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
53087-6 (P106542-01) Water Sampled: 06/28/01 09:40 Received: 06/28/01 18:15									
Methyl tert-butyl ether	17	2.0	ug/l	1	1070051	07/12/01	07/12/01	EPA 8260B	
Surrogate: 1,2-Dichloroethane-d4		*97.6 %*	*76-114*		"	"	"	"	
53087-3 (P106542-02) Water Sampled: 06/28/01 11:15 Received: 06/28/01 18:15									
Methyl tert-butyl ether	ND	2.0	ug/l	1	1070051	07/12/01	07/12/01	EPA 8260B	
Surrogate: 1,2-Dichloroethane-d4		*96.2 %*	*76-114*		"	"	"	"	
53087-5 (P106542-03) Water Sampled: 06/28/01 12:20 Received: 06/28/01 18:15									
Methyl tert-butyl ether	4.4	2.0	ug/l	1	1070051	07/12/01	07/12/01	EPA 8260B	A-01
Surrogate: 1,2-Dichloroethane-d4		*95.8 %*	*76-114*		"	"	"	"	
53087-1 (P106542-04) Water Sampled: 06/28/01 13:10 Received: 06/28/01 18:15									
Methyl tert-butyl ether	8.5	2.0	ug/l	1	1070051	07/12/01	07/12/01	EPA 8260B	A-01
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*76-114*		"	"	"	"	

Sequoia Analytical

1455 McDowell Blvd. North, Ste. D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94949	Project Manager: David Nanstad	07/16/01 15:59

MTBE by EPA Method 8260B - Quality Control

Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1070051 - EPA 5030B [P/T]										
Blank (1070051-BLK3)				Prepared & Analyzed: 07/12/01						
Methyl tert-butyl ether	ND	2.0	ug/l							
Surrogate: 1,2-Dichloroethane-d4	*52.6*		"	*50.0*		*105*	*76-114*			
Blank (1070051-BLK4)				Prepared & Analyzed: 07/13/01						
Methyl tert-butyl ether	ND	2.0	ug/l							
Surrogate: 1,2-Dichloroethane-d4	*46.1*		"	*50.0*		*92.2*	*76-114*			
LCS (1070051-BS3)				Prepared & Analyzed: 07/12/01						
Methyl tert-butyl ether	53.5	2.0	ug/l	50.0		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	*51.4*		"	*50.0*		*103*	*76-114*			
LCS (1070051-BS4)				Prepared & Analyzed: 07/13/01						
Methyl tert-butyl ether	48.3	2.0	ug/l	50.0		96.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	*45.4*		"	*50.0*		*90.8*	*76-114*			
Matrix Spike (1070051-MS1)		**Source: L107104-01**		Prepared & Analyzed: 07/13/01						
Methyl tert-butyl ether	45.4	2.0	ug/l	50.0	ND	90.8	60-140			
Surrogate: 1,2-Dichloroethane-d4	*46.9*		"	*50.0*		*93.8*	*76-114*			
Matrix Spike Dup (1070051-MSD1)		**Source: L107104-01**		Prepared & Analyzed: 07/13/01						
Methyl tert-butyl ether	46.0	2.0	ug/l	50.0	ND	92.0	60-140	1.31	25	
Surrogate: 1,2-Dichloroethane-d4	*47.0*		"	*50.0*		*94.0*	*76-114*			

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Harding ESE	Project: General Commercial	
90 Digital Drive	Project Number: City Blue- Oakland-53087.001	**Reported:**
Novato CA, 94949	Project Manager: David Nanstad	07/16/01 15:59

Notes and Definitions

A-01	MTBE has 3-methyl pentane coelution.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

APPENDIX B

GROUNDWATER SAMPLING FORMS

Harding ESE
A MACTEC COMPANY

GROUNDWATER SAMPLING FORM

Well Number: MW-5

Well Type: ☐ Monitor ☐ Extraction ☐ Other ____
☐ PVC ☐ St. Steel ☐ Other ____

Job Name: City Blue

Job Number: 53087.001

Date: 6/28/01

Recorded By: David Brown (Signature)

Sampled By: DSB (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): ____
Total Depth of Casing (TD in ft BTOC): ____
Water Level Depth (WL in ft BTOC): ____
No. of Well Volumes to be purged (# V): ____

PURGE VOLUME CALCULATION

(____ - ____) X ____ ^{2} X 3 X 0.0408 = ____ gals

TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PURGE METHOD

☐ Bailer - Type: ____
☐ Submersible - Type: ____
☑ Other - Type: Micro purge Peristaltic

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top
☐ Other ____
Depth in feet (BTOC): ____
Screen Interval in feet (BTOC): from ____ to ____

Field Parameter Measurements

Gallons or Minutes	pH	Conductivity (µS)	☒ °C ☐ °F Temp.	Turbidity (NTU)
Initial	6.78	876 uS	23.7	6.95
Meter S/N	DB02	DO953	DO953	9092

PURGE TIME

Purge Start: ____
Purge Stop: ____
Elapsed: ____

PURGE RATE

GPM: ____
GPM: ____

PURGE VOLUME

Volume: ____ gallons

Observations During Purging (Well Condition, Color, Odor):
cloudy gray - slight hydrocarbon odor

D.O. initial 0.53 mg/lt Redox initial ____
D.O. final @ 19.2° Redox final -360 mV

Discharge Water Disposal:
☐ Storm Sewer ☐ Other ____

WELL SAMPLING

☐ Bailer - Type: ____ Sample Time: 1220

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
53087-5	3 VOAs	TPH g, BTEX, MTBE	HCl	SEQUOIA	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding ESE
A MACTEC COMPANY

GROUNDWATER SAMPLING FORM

Well Number: MW-6

Well Type: [X] Monitor [ ] Extraction [ ] Other
[X] PVC [ ] St. Steel [ ] Other

Job Name: City Blue

Job Number: 53087.001

Date: 6/28/01

Recorded By: David Boone (Signature)

Sampled By: DSB (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
Total Depth of Casing (TD in ft BTOC):
Water Level Depth (WL in ft BTOC):
No. of Well Volumes to be purged (# V):

PURGE METHOD

[ ] Bailer - Type:
[ ] Submersible - Type:
[X] Other - Type: Micro purge parastaltic

PUMP INTAKE SETTING

[ ] Near Bottom [ ] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ____ to ____

PURGE VOLUME CALCULATION

(_____ - _____) X ____ X 3 X 0.0408 = _____ gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Gallons or Minutes	pH	Conductivity (µS)	[X] °C [ ] °F Temp.	Turbidity (NTU)
Initial	6.83	1021.45	23.5	13.3
Meter S/N	DB02	DO953	DO953	9092

PURGE TIME

Purge Start:
Purge Stop:
Elapsed:

PURGE RATE

GPM:
GPM:

PURGE VOLUME

Volume: _____ gallons

Observations During Purging (Well Condition, Color, Odor):

D.O. Initial 0.71 @ 27.2°C Redox Initial 106.6 mV
D.O. final _____ mg/L Redox final _____

Discharge Water Disposal:
[ ] Storm Sewer [ ] Other _____

WELL SAMPLING

[X] Bailer - Type: Grab Sample Time: 0940

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
53087-6	3 VOAs	TPHGas, BTEX, MTBE	HCl	CLS SEQUOIA	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

GROUNDWATER SAMPLING FORM

Harding ESE
A MACTEC Company

Well Number: MW-3

Well Type: [X] Monitor [ ] Extraction [ ] Other
[X] PVC [ ] St. Steel [ ] Other

Job Name: City Blue

Job Number: 53087.001

Date: 6/28/01

Recorded By: David Brown (Signature)

Sampled By: DSB (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
Total Depth of Casing (TD in ft BTOC):
Water Level Depth (WL in ft BTOC):
No. of Well Volumes to be purged (# V):

PURGE METHOD

[ ] Bailer - Type:
[ ] Submersible - Type:
[X] Other - Type: Micro purge

PUMP INTAKE SETTING

[ ] Near Bottom [X] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from ____ to ____

PURGE VOLUME CALCULATION

(_____ - _____) X ____ ² X 3 X 0.0408 = _____ gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Gallons or Minutes	pH	Conductivity (µS)	Temp. [X] °C [ ] °F	Turbidity (NTU)
Initial	6.75	704 uS	21.8	42.8
Meter S/N	DB02	DO953	DO953	9092

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: _____ gallons

Observations During Purging (Well Condition, Color, Odor): Slight hydro. odor
Black, cloudy gray - 0
D.O. Initial 0.56 @ 19.8°C Redox initial _____
D.O. final _____ mg/l Redox final -282.9 mv

Discharge Water Disposal:
[ ] Storm Sewer [ ] Other _____

WELL SAMPLING

[ ] Bailer - Type:

Sample Time: 1115

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
53087-3	3 VOAs	TPH G, BTEX, MTBE	HCl	STL Seattle	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

GROUNDWATER SAMPLING FORM

Harding ESE
A MACTEC Company

Well Number: MW-1

Well Type: [x] Monitor [ ] Extraction [ ] Other
[x] PVC [ ] St. Steel [ ] Other

Job Name: City Blue

Job Number: 53087.001

Date: 6/28/01

Recorded By: David Brown (Signature)

Sampled By: DSB (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
Total Depth of Casing (TD in ft BTOC):
Water Level Depth (WL in ft BTOC):
No. of Well Volumes to be purged (# V):

PURGE METHOD

[ ] Bailer - Type:
[ ] Submersible - Type:
[x] Other - Type: Micropurge, Parastaltic

PURGE VOLUME CALCULATION

(_____ - _____) X ____ ² X 3 X 0.0408 = _____ gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PUMP INTAKE SETTING

[ ] Near Bottom [x] Near Top
[ ] Other
Depth in feet (BTOC):
Screen Interval in feet (BTOC): from _____ to _____

Field Parameter Measurement

Gallons or Minutes	pH	Conductivity (µS)	Temp. [x] °C [ ] °F	Turbidity (NTU)
Initial	6.90	1080	22.8	16.9
Meter S/N	DB02	DO953	DO953	9092

PURGE TIME

Purge Start:
Purge Stop:
Elapsed:

PURGE RATE

GPM:
GPM:

PURGE VOLUME

Volume: _____ gallons

Observations During Purging (Well Condition, Color, Odor):
cloudy dark gray Slight hydrocarbon odor

D.O. Initial 0.37 @ 17.8 °C
D.O. final not yet

Redox Initial 309.8 mV
Redox final _____

Discharge Water Disposal:
[ ] Storm Sewer [ ] Other _____

WELL SAMPLING

[ ] Bailer - Type:

Sample Time: 1310

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
53087-1	3 VOAs	TPHg BTEX, MTBE	HCl	STL Seattle	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Table B1. Sample Location/Sample Description Cross-Reference
BPS Reprographic Services Facility
1700 Jefferson Street
Oakland, California

Well/Sample Number	Client Sample ID
MW-1	53087-1
MW-3	53087-3
MW-5	53087-5
MW-6	53087-6