Harding Lawson Associates

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October 6, 1995

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Mr. Jeff Christoff
Blue Print Service Company
1057 Shary Circle
Concord, California 94518

Quarterly Report
July 4, 1995 through September 30, 1995
Groundwater Remediation and Monitoring
Blue Print Service Facility
1700 Jefferson Street
Oakland, California

Dear Mr. Christoff:

This letter presents quarterly sampling results from the groundwater treatment system, groundwater monitoring and groundwater extraction wells at the Blue Print Service facility at 1700 Jefferson Street, Oakland, California. This report is for the period of July 4, 1995 through September 30, 1995. This report is intended to satisfy quarterly groundwater monitoring and reporting required by the Alameda County Health Care Services Agency as well as quarterly monitoring and semiannual reporting required by the East Bay Municipal Utilities District (EBMUD).

BACKGROUND

Three underground gasoline storage tanks (USTs) were removed from the property in 1987 (Plate 1). Three groundwater monitoring wells were installed on the property to evaluate the distribution of petroleum hydrocarbons in the soil and groundwater and determine the direction of groundwater flow.

Gasoline was found floating on the surface of the groundwater in Monitoring Well MW-1. In January 1988, two additional monitoring wells (MW-1A and MW-4) were installed by HLA at the facility (Plate 1). One downgradient offsite monitoring well (MW-5) was installed by HLA in August 1988. Monitoring well MW-2 was destroyed during construction of the present facility.

The existing biodegradation groundwater treatment system began operation in June 1992. Groundwater is extracted from MW-1A and MW-4 for treatment in a 3,000-gallon bioreactor tank. The treated water from the bioreactor passes through two carbon adsorption vessels before being discharged to the sanitary sewer.

TREATMENT SYSTEM STATUS

During this reporting period the groundwater treatment system has treated and discharged approximately 92,000 gallons of water to the sanitary sewer. Over this period the average daily discharge flow rates have ranged from 0 gallons per day (gpd) to 1,800 gpd, for an average of approximately 1,020 gpd.

Because separate-phase gasoline has not been detected or recovered from the extraction wells since December, 1994, HLA has taken the oil/water separator out of service. Groundwater extracted from MW-1A and MW-4 is now being pumped directly to the bioreactor. The oil/water separator was taken out of service on July 27, 1995. This modification has greatly simplified the groundwater treatment system operation and resulted in less down-time and lower maintenance costs.

A Blue Print Service Company technician performs routine maintenance twice a week and an HLA engineer visits the site on a weekly basis to monitor the system performance, collect samples if necessary, and perform other maintenance functions as needed.

TREATMENT SYSTEM SAMPLING AND ANALYSIS

In accordance with the East Bay Municipal Utilities District (EBMUD) Wastewater Discharge Permit (Account No. 500-68191), HLA has sampled the treatment system effluent on a quarterly basis. The treatment system water samples were collected on September 7, 1995 from the bioreactor effluent before carbon adsorption, the effluent side of the first carbon vessel (CB-1), and the effluent side of the second carbon vessel (CB-2), before discharge to the sanitary sewer. The sampling locations are shown on Plate 2, Process Flow and Sampling Locations, and the analytical results are summarized in Table 1. The laboratory reports are presented in Appendix A.

HLA collects water samples from brass sampling ports into 40-milliliter volatile organic analysis (VOA) vials. The water samples are placed in ice-chilled coolers and submitted to American Environmental Network Laboratory in Pleasant Hill, California under chain-of-custody protocol for analysis. The samples are analyzed by EPA Test Method 8015 for TPHg and EPA Test Method 8020 for BTEX.

The treatment system effluent was last sampled by an EBMUD representative on June 21, 1995.

SYSTEM DISCHARGE

HLA received the analytical results from the September 7, 1995 samples on September 19, 1995. The analytical results for the sample of the effluent to the sanitary sewer (sample number 95090706) contained benzene, toluene, and xylenes that exceeded the discharge limits for these compounds. The detected concentrations were 15 micrograms per liter (μg/l), 9 μg/l, and 9 μg/l for benzene, toluene, and xylenes, respectively. The discharge limit for each of these compounds is 5 μg/l.

In response to the effluent concentrations, HLA stopped all discharge from the treatment system on September 19, 1995 and immediately notified EBMUD. Replacement carbon vessels were ordered that day.

HLA has determined that the cause of the higher than anticipated effluent concentrations was saturation of the carbon vessels. The carbon vessels reached saturation sooner than predicted because of an increase in the groundwater extraction rate. The extraction rate had increased because of a rise in the local groundwater elevation, presumably caused by the above average rainfall totals for the Bay area in 1994/1995. HLA replaced carbon vessel CB-1 with CB-2 and replaced CB-2 with a new carbon vessel on September 23, 1995. CB-1 was replaced with a new carbon vessel on October 2, 1995.

To reduce the potential for discharges that exceed the established limits in the future, HLA will monitor the carbon vessel influent and effluent more frequently. HLA will collect and analyze influent and effluent samples at a minimum frequency of once every 60 days or 80,000 gallons discharged, whichever comes first.

We have estimated that breakthrough of the first carbon vessel (CB-1) should occur approximately 105 days (equivalent to 157,500 gallons) after installation based on an average flow rate of 1,500 gallons per day, and the following average BTEX concentrations.

- Benzene 175 μg/l
- Toluene 376 μg/l
- Ethylbenzene 12 μg/l
- Xylenes 350 μg/l

However, the most recent breakthrough occurred after approximately 137,000 gallons had been treated by CB-1. The revised sampling frequency discussed above (every 60 days or 80,000 gallons) should provide adequate monitoring of the carbon vessels for breakthrough and saturation.

GROUNDWATER SAMPLING AND ANALYSIS

HLA sampled Wells MW-1A, MW-3, MW-4, and MW-5 on September 19, 1995. During construction of the present BPS facility, well MW-2 was damaged and abandoned. Monitoring wells MW-3 and MW-5 were sampled after checking for separate-phase gasoline, measuring the water levels, purging at least three well volumes from each, and measuring the pH, conductivity, and temperature of the purge water. Three 40-milliliter VOA vials of water were collected from each well with a Teflon bailer. Purge water from MW-3 contained a visible hydrocarbon sheen.

The two extraction wells, MW-1A and MW-4, were sampled from brass sampling ports in the flow line from the wells to the treatment system (Plate 2). Three 40-milliliter VOA vials were collected from each port.

All of the water samples were placed in ice-chilled coolers and submitted to American Environmental Network Laboratory in Pleasant Hill, California under chain-of-custody protocol for analysis. The samples were analyzed by EPA Test Method 8015 for TPHg and EPA Test Method 8020 for BTEX. The analytical results are summarized in Table 2 along with past results. The laboratory report for the September 19, 1995 samples is presented in Appendix B.

DISCUSSION

HLA expects to continue quarterly groundwater monitoring and reporting as required by Alameda County and treatment system discharge monitoring as discussed above with semiannual reporting as required by EBMUD. Groundwater sampling will be performed for the last quarter of 1995 in December, and system effluent monitoring will be performed on or before November 23, 1995.

If you have any questions, please contact David Scrivner at (510) 687-9660.

Yours very truly,

HARDING LAWSON ASSOCIATES

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Civil Engineer

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Associate Geologist

DFS/DRK/mlw L/035190M

Attachments: Table 1 - Groundwater Treatment System Analytical Results
Table 2 - Groundwater Analytical Results
Table 3 - Flow Totalizer Readings
Plate 1 - Site Plan
Plate 2 - Process Flow and Sampling Locations
Appendix A - Treatment System Sample Laboratory Reports
Appendix B - Groundwater Sample Laboratory Reports

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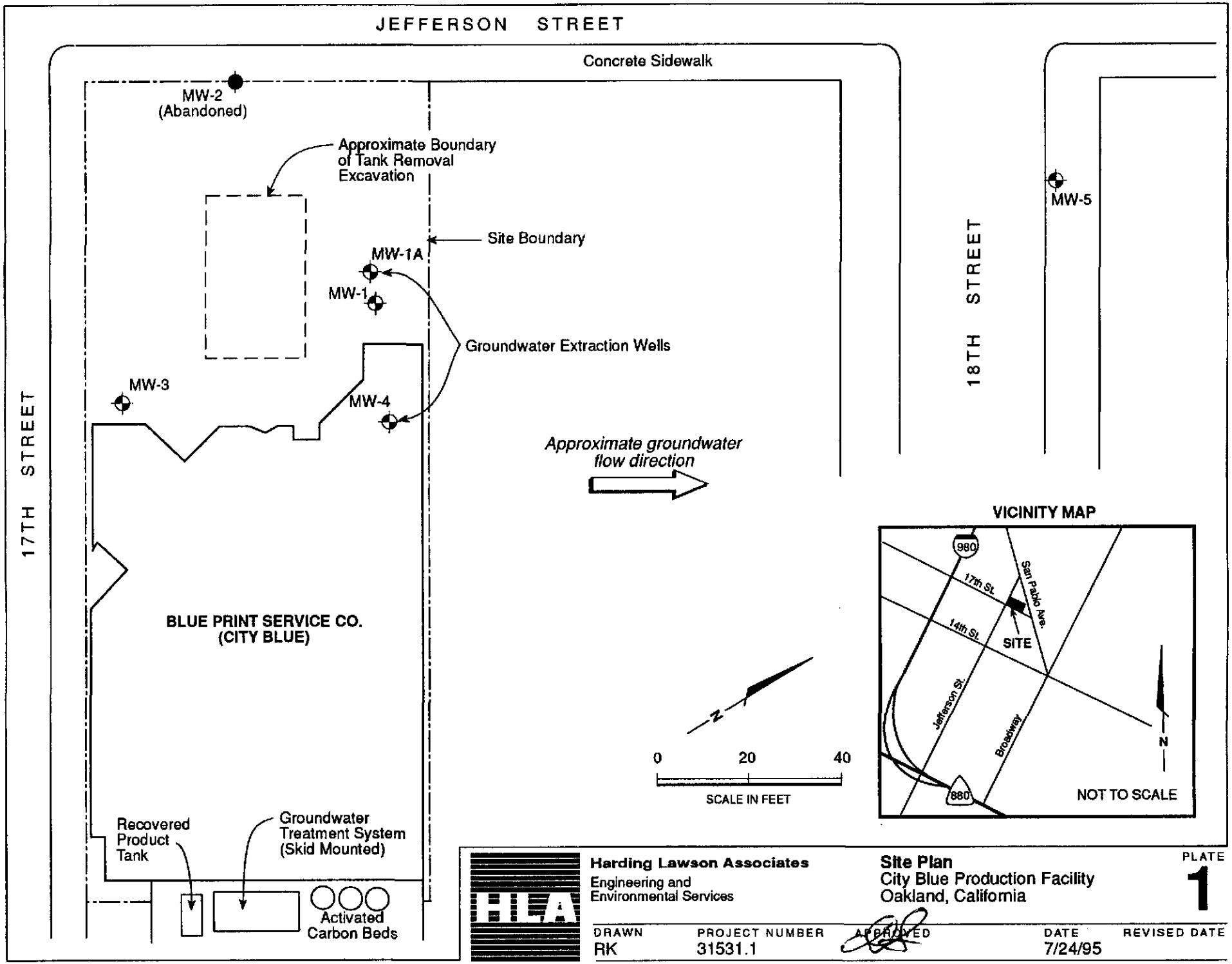
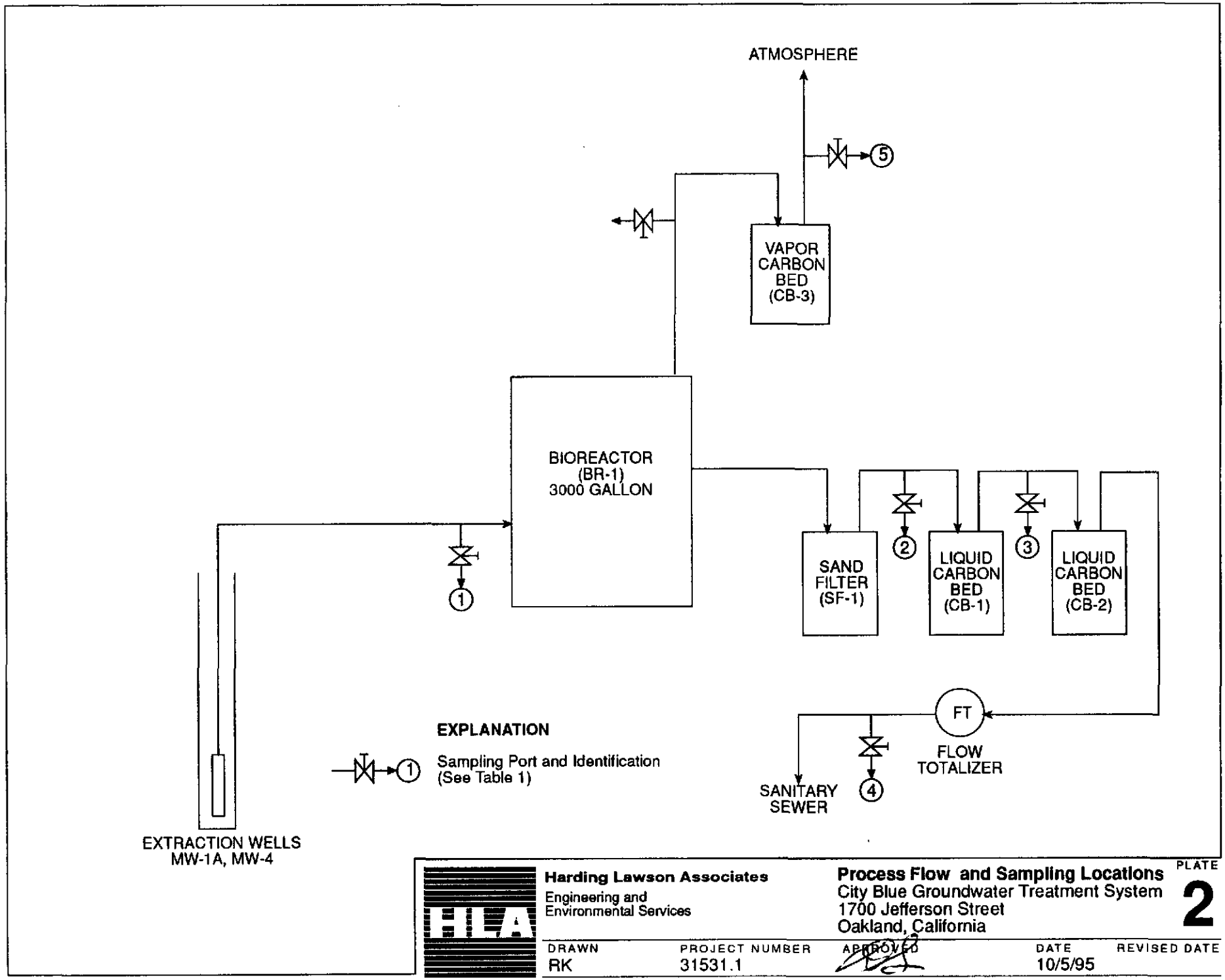


Harding Lawson Associates
Engineering and
Environmental Services

Site Plan
City Blue Production Facility
Oakland, California

PLATE
1

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
RK	31531.1		7/24/95	



Harding Lawson Associates
Engineering and Environmental Services

Process Flow and Sampling Locations
City Blue Groundwater Treatment System
1700 Jefferson Street
Oakland, California

PLATE **2**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
RK	31531.1		10/5/95	

Table 1. Groundwater Treatment System Analytical Results
1700 Jefferson Street
Oakland, California

Date/ Analytes	Bioreactor Influent (1)	Bioreactor Effluent (2)	First Carbon Bed Effluent (3)	Sanitary Sewer Influent (4)	Vapor Phase Carbon Effluent (Air) (5)
June 16, 1992					
TPHg	NA	3.3	ND <.05	NA	ND <30
Benzene	NA	220	ND <0.3	NA	ND <85
Toluene	NA	460	ND <0.3	NA	ND <250
Ethylbenzene	NA	35	ND <0.3	NA	ND <65
Xylene	NA	290	ND <0.3	NA	ND <250
June 19, 1992					
TPHg	180	1.6	ND <.05	NA	ND
Benzene	18,000	1.6	ND <0.3	NA	ND
Toluene	31,000	5.0	ND <0.3	NA	ND
Ethylbenzene	2,200	ND <0.3	ND <0.3	NA	ND
Xylene	16,000	150	ND <0.3	NA	ND
July 2, 1992					
TPHg	160	0.210	ND <.05	NA	ND <30
Benzene	14,000	1.4	ND <0.3	NA	ND <85
Toluene	27,000	ND <0.3	ND <0.3	NA	ND <250
Ethylbenzene	1,700	ND <0.3	ND <0.3	NA	ND <65
Xylene	1,300	1.0	ND <0.3	NA	ND <250
August 20, 1992					
TPHg	190	6.4	0.073	NA	ND <30
Benzene	14,000	31	ND <0.3	NA	ND <85
Toluene	24,000	14	ND <0.3	NA	ND <250
Ethylbenzene	2,000	ND <6	ND <0.3	NA	ND <65
Xylene	13,000	150	ND <0.3	NA	ND <250
September 15, 1992					
TPHg	230	23	0.054	NA	ND <30
Benzene	17,000	1,100	0.4	NA	ND <85
Toluene	29,000	3,600	0.8	NA	ND <250
Ethylbenzene	2,200	59	ND <0.3	NA	ND <65
Xylene	15,000	1,100	0.6	NA	ND <250

Table 1. (Continued)

Date/ Analytes	Bioreactor Influent (1)	Bioreactor Effluent (2)	First Carbon Bed Effluent (3)	Sanitary Sewer Influent (4)	Vapor Phase Carbon Effluent (Air) (5)
March 3, 1994					
TPHg	80	3.9	NA	ND <.05	NA
Benzene	1,500	270	NA	ND <0.5	NA
Toluene	9,200	370	NA	ND <0.5	NA
Ethylbenzene	1,000	32	NA	ND <0.5	NA
Xylene	14,000	840	NA	ND <0.5	NA
April 7, 1994					
TPHg	79	0.28	ND <.05	NA	NA
Benzene	8,300	16	3.7	NA	NA
Toluene	19,000	4.2	ND <0.5	NA	NA
Ethylbenzene	990	ND <0.5	ND <0.5	NA	NA
Xylene	9,300	1.9	ND <0.5	NA	NA
May 13, 1994					
TPHg	220	0.61	ND <.05	NA	NA
Benzene	12,000	45	ND <0.5	NA	NA
Toluene	23,000	7.1	ND <0.5	NA	NA
Ethylbenzene	1,700	0.8	ND <0.5	NA	NA
Xylene	17,000	11	ND <0.5	NA	NA
September 29, 1994					
TPHg	96	0.76	NA	ND <.05	NA
Benzene	8,000	4.9	NA	ND <0.5	NA
Toluene	16,000	7.8	NA	ND <0.5	NA
Ethylbenzene	ND <250	ND <2.5	NA	ND <0.5	NA
Xylene	9,000	8.7	NA	ND <0.5	NA
December 19, 1994					
TPHg	NA	5.5	0.59	ND <.05	NA
Benzene	NA	140	60	1.0	NA
Toluene	NA	100	14	0.5	NA
Ethylbenzene	NA	ND<5	ND<0.5	ND <0.5	NA
Xylene	NA	1,600	100	ND <0.5	NA
January 5, 1995					
TPHg	NA	NA	0.20	ND <.05	NA
Benzene	NA	NA	17	0.7	NA
Toluene	NA	NA	3	ND<0.5	NA
Ethylbenzene	NA	NA	ND<0.5	ND<0.5	NA
Xylene	NA	NA	3	ND<0.5	NA

Table 1. (Continued)

Date/ Analytes	Bioreactor Influent (1)	Bioreactor Effluent (2)	First Carbon Bed Effluent (3)	Sanitary Sewer Influent (4)	Vapor Phase Carbon Effluent (Air) (5)
April 14, 1995					
TPHg	NA	2.3	0.90	NA	NA
Benzene	NA	36	22	NA	NA
Toluene	NA	6	3	NA	NA
Ethylbenzene	NA	3	0.6	NA	NA
Xylene	NA	58	13	NA	NA
May 18, 1995					
TPHg	41	0.740	0.100	ND <.05	NA
Benzene	4,400	22	2	ND<0.5	NA
Toluene	5,700	9.4	ND<0.5	ND<0.5	NA
Ethylbenzene	430	ND<0.5	ND<0.5	ND<0.5	NA
Xylene	8,200	16	ND<0.5	ND<2	NA
September 7, 1995					
TPHg	NA	3.6	1.1	0.2	NA
Benzene	NA	400	120	15	NA
Toluene	NA	300	75	9	NA
Ethylbenzene	NA	12	2	ND<0.5	NA
Xylene	NA	320	82	9	NA

(1) = Sample Location Identification Number (see Plate 2)
TPHg = total petroleum hydrocarbons as gasoline
TPHg concentrations presented in milligrams per liter (mg/l)
Benzene, Toluene, Ethylbenzene, and Xylenes concentrations presented in micrograms per liter ($\mu g/l$)
ND = Not detected above the reporting limit
NA = Not analyzed

Table 2. Groundwater Analytical Results
Groundwater Monitoring Wells
1700 Jefferson Street
Oakland, California

Date/ Analytes	MW-1A	MW-3	MW-4	MW-5
August 1, 1991				
TPHg	350	74	86	120
Benzene	17,000	1,600	1,500	20,000
Toluene	31,000	4,600	6,200	14,000
Ethylbenzene	3,000	670	1,000	1,900
Xylenes	22,000	4,300	7,300	4,900
September 30, 1992				
TPHg	NA	NA	NA	51
Benzene	NA	NA	NA	13,000
Toluene	NA	NA	NA	5,900
Ethylbenzene	NA	NA	NA	1,400
Xylene	NA	NA	NA	2,600
March 30, 1993				
TPHg	NA	NA	NA	74
Benzene	NA	NA	NA	16,000
Toluene	NA	NA	NA	5,000
Ethylbenzene	NA	NA	NA	1,800
Xylene	NA	NA	NA	2,700
January 13, 1994				
TPHg	NA	NA	NA	80
Benzene	NA	NA	NA	19,000
Toluene	NA	NA	NA	8,200
Ethylbenzene	NA	NA	NA	1,400
Xylene	NA	NA	NA	2,700
April 13, 1994				
TPHg	170	NA	58	63
Benzene	17,000	NA	1,500	14,000
Toluene	31,000	NA	2,500	3,500
Ethylbenzene	2,100	NA	520	1,500
Xylene	14,000	NA	3,200	2,100

Table 2. (Continued)

Date/ Analytes	MW-1A	MW-3	MW-4	MW-5
June 29, 1994				
TPHg	95	39	16	64
Benzene	16,000	3,200	1,300	29,000
Toluene	21,000	2,900	790	5,400
Ethylbenzene	1,500	580	51	2,800
Xylenes	12,000	4,300	3,400	4,500
December 8, 1994				
TPHg	190	4,600 *	92	59
Benzene	13,000	1,500	1,700	13,000
Toluene	21,000	4,200	4,100	3,800
Ethylbenzene	1,400	6,000	310	1,800
Xylenes	11,000	95,000	5,400	2,900
April 3, 1995				
TPHg	67	51	35	51
Benzene	11,000	1,100	1,200	15,000
Toluene	13,000	2,300	3,400	2,200
Ethylbenzene	910	580	280	2,800
Xylenes	9,800	4,800	5,800	4,500
June 27, 1995				
TPHg	53	20	13	41
Benzene	11,000	270	1,300	12,000
Toluene	9,900	550	1,600	2,100
Ethylbenzene	500	190	77	1,400
Xylenes	6,300	1,700	1,800	1,600
September 19, 1995				
TPHg	52	6.2	14	50
Benzene	8,900	70	2,200	16,000
Toluene	9,200	140	2,100	2,700
Ethylbenzene	710	68	110	2,000
Xylenes	6,800	500	2,100	2,100

TPHg concentrations presented in milligrams per liter (mg/l)
Benzene, Toluene, Ethylbenzene, and Xylenes concentrations presented in micrograms per liter (μg/l)
* = This sample contained a visible amount of separate-phase gasoline.
TPHg = Total petroleum hydrocarbons as gasoline
NA = Not analyzed

Table 3. Flow Totalizer Readings
Discharge to Sanitary Sewer
1700 Jefferson Street
Oakland, California

Date	Flow Total to Sanitary Sewer (gallons)
06/16/92	1,000
06/17/92	2,957
07/02/92	13,040
07/10/92	14,470
07/24/92	19,450
09/15/92	51,190
10/15/92	70,370
10/23/92	75,470
03/04/94	77,866
03/15/94	89,800
03/30/94	104,690
04/13/94	118,760
05/11/94	123,180
05/23/94	133,280
06/07/94	149,640
06/29/94	166,670
07/11/94	178,500
07/27/94	187,940
08/24/94	196,180
09/23/94	196,698
10/13/94	217,782
10/30/94	227,996
11/15/94	236,789
12/08/94	260,048
12/27/94	267,350
01/03/95	274,770
01/16/95	277,003
02/11/95	291,743
04/05/95	295,710
04/28/95	327,941

Table 3. (continued)

Date	Flow Total to Sanitary Sewer (gallons)
05/08/95	341,575
05/25/95	363,638
06/21/95	386,700
07/02/95	401,378
07/28/95	413,898
08/16/95	443,508
09/07/95	469,528
09/26/95	488,090