Harding Lawson Associates

ENVIRONMENTAL PROTECTION
98 MAY -4 PM 1:02

April 29, 1998

40910 1

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

Quarterly Report
January 1, 1998 through March 31, 1998
Groundwater Remediation and Monitoring
Blue Print Service Facility
1700 Jefferson Street
Oakland, California

Dear Mr. Christoff:

Harding Lawson Associates (HLA) presents this quarterly monitoring report of the groundwater monitoring wells and treatment system at the Blue Print Service facility at 1700 Jefferson Street, Oakland, California. This report covers the period of January 1, 1998, through March 31, 1998. It was prepared to satisfy quarterly groundwater monitoring (first Quarter 1998) requirements of the Alameda County Health Care Services Agency (Alameda County). The report also satisfies the reporting requirements of the East Bay Municipal Utilities District (EBMUD) for treatment system discharge.

BACKGROUND

Three underground gasoline storage tanks were removed from the property in 1987. Preliminary investigation indicated that there had been a release of fuel into the soil and groundwater. 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 soil and groundwater and to determine the direction of groundwater flow. Monitoring of these wells revealed free phase gasoline floating on the surface of the groundwater in monitoring well MW-1. Initial groundwater level measurements indicated that groundwater flows in a north to northwest direction at the site.

In November 1987, monitoring well MW-2 was abandoned to facilitate the construction of the present structures, reducing the ability to accurately calculate the groundwater gradient and flow direction. In January 1988 two additional wells, MW-1A and MW-4, were installed at the facility to be used as groundwater extraction wells. One downgradient monitoring well, MW-5, was installed offsite in

August 1988 and in April 1996, monitoring well MW-6 was installed offsite in an upgradient location to improve understanding of groundwater flow at the site. The locations of the monitoring wells 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 is extracted from MW-1A and MW-4 and passes through an oil-water separator which removes the free phase gasoline. The water is then drawn into a 3,000-gallon bioreactor tank for treatment by hydrocarbon reducing microbes. Air and nutrient are supplied to the groundwater within the bioreactor to facilitate microbial growth. The treated water from the bioreactor is pumped in batches of approximately 500 gallons through three granular carbon adsorption (GAC) vessels before being discharged to the sanitary sewer. Approximately 5,037 pounds of gasoline have been removed and 1,127,600 gallons of groundwater treated and discharged to the sanitary sewer by the groundwater extraction system since operation began in 1992.

TREATMENT SYSTEM STATUS

During the first quarter of 1998, approximately 86,800 gallons of water were treated and discharged to the sanitary sewer. The average daily discharge flow rate for the treatment system was approximately 1,113 gallons per day (gpd). Average combined extraction rate for the two extraction wells was 0.77 gallons per minute (gpm). Approximately 26 gallons or 150 pounds of free phase gasoline were recovered from the groundwater by the oil water separator This does not include dissolved concentrations treated by the bioreactor. Flow totalizer readings and system maintenance activities are summarized in Table 1.

TREATMENT SYSTEM SAMPLING AND ANALYSIS

During this reporting period, HLA has collected a sample of the system effluent for every 40,000 gallons of water discharged to the sanitary sewer. These water samples consist of 40-milliliter volatile analysis vials (VOAs) collected from the system sampling port downstream of the final GAC vessel. 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 total petroleum hydrocarbons as gasoline (TPHg) and EPA Test Method 8020 for benzene, toluene, ethylbenzene and xylene (BTEX). Following treatment, the groundwater from the system is discharged to the sanitary sewer under the East Bay Municipal Utility District (EBMUD) Wastewater Discharge Permit (Account No. 500-68191). HLA forwards the results of chemical analyses of the system effluent to EBMUD within 24 hour of receipt.

The treatment system effluent was sampled by an HLA representative on February 9, 1998 and on March 24, 1998. Results of the chemical analyses of these samples indicate that treatment system effluent concentrations were below the EBMUD discharge limitations of 5 micrograms per liter (μg/l) for each individual BTEX components.

On April 31, 1998, the separator effluent was sampled by collecting a grab sample with a Teflon bailer directly from the downstream end of the oil-water separator. A bioreactor effluent sample was also collected from a sampling port upstream of the GAC vessels. Three 40-milliliter VOAs of water were collected from each sample location. 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. The samples were analyzed by EPA Test Method 8015 (modified) for TPHg and EPA Test Method 8020 for BTEX and methyl t-butyl ether (MTBE).

HLA's treatment system sampling results are presented in Table 2. The laboratory reports are presented in the Appendix A.

GROUNDWATER SAMPLING AND ANALYSIS

On March 31, 1998, HLA measured the water levels in wells MW-1, MW-3, MW-5 and MW-6. Groundwater surface elevations are presented on Plate 1. The monitoring wells were sampled after purging at least three well volumes from each and allowing the water level to recover to at least 80 percent of the pre-purge level. HLA monitored the pH, conductivity, and temperature of the groundwater removed during purging. Sampling was not performed until these parameters had stabilized. Three 40-milliliter VOAs of water were collected from each well with a disposable Teflon bailer. Purge water was discharged to the treatment system.

HLA collected samples from the MW-1A and MW-4 at individual sampling ports upstream of the oil-water separator.

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. The samples were analyzed by EPA Test Method 8015 (modified) for TPHg and EPA Test Method 8020 for BTEX. The groundwater samples from MW-1, MW-4, MW-5 and MW-6 were analyzed for MTBE. The historical analytical results are summarized in Table 3. Plate 2 presents the TPHg and BTEX results for this reporting period. The laboratory reports are presented in the Appendix A.

DISCUSSION

The treatment system continues to be effective in removing and treating TPHg and BTEX in the groundwater as evidenced by product collected in the oil/water separator and the 99 percent reduction of the petroleum hydrocarbons concentration in the bio-reactor. The results of effluent sampling by HLA during this quarter indicate compliance with EBMUD's permit discharge limitations.

The groundwater elevations on Plate 1 show a depression in the groundwater surface elevation at the site of the two extraction wells. The groundwater gradient direction is toward the west at 0.0016 ft/ft. The groundwater gradient direction is normally toward the north to northwest. Water levels in the wells may not have stabilized and therefore not truly reflect the groundwater surface due to heavy

rainfall prior to the sample event. It is also possible that the water level at MW-3 is being effected by the two extraction wells. Water levels were approximately one foot higher than measured during the last sample event.

Comparison of this quarter's sample results with historical data indicates similar concentrations to recent monitoring results. The monitoring wells located onsite, MW-1 and MW-3, still contain dissolved concentrations of petroleum hydrocarbons, though no floating free phase product has been observed in these monitoring wells since December 1996. The groundwater sample from MW-6, the offsite upgradient well did not contain any detectable concentrations of TPHg or BTEX. MW-5, the offsite downgradient well contained TPHg and BTEX concentrations similar to last quarter's results. Extraction well MW-1A also had concentrations similar to last quarter. Data for MW-4 is not included in this report because the laboratory did not test the sample within the required two week holding time. MW-4 will be resampled next quarter.

Blue Print Services will to continue quarterly groundwater monitoring and reporting as required by Alameda County, and treatment system discharge monitoring reporting as required by EBMUD. The next groundwater sampling will be performed during the second quarter of 1998 and monitoring of the system effluent will continue to be performed as required by the EBMUD permit.

If you have any questions, please contact James McCarty at (510) 628-3220.

Yours very truly,

HARDING LAWSON ASSOCIATES

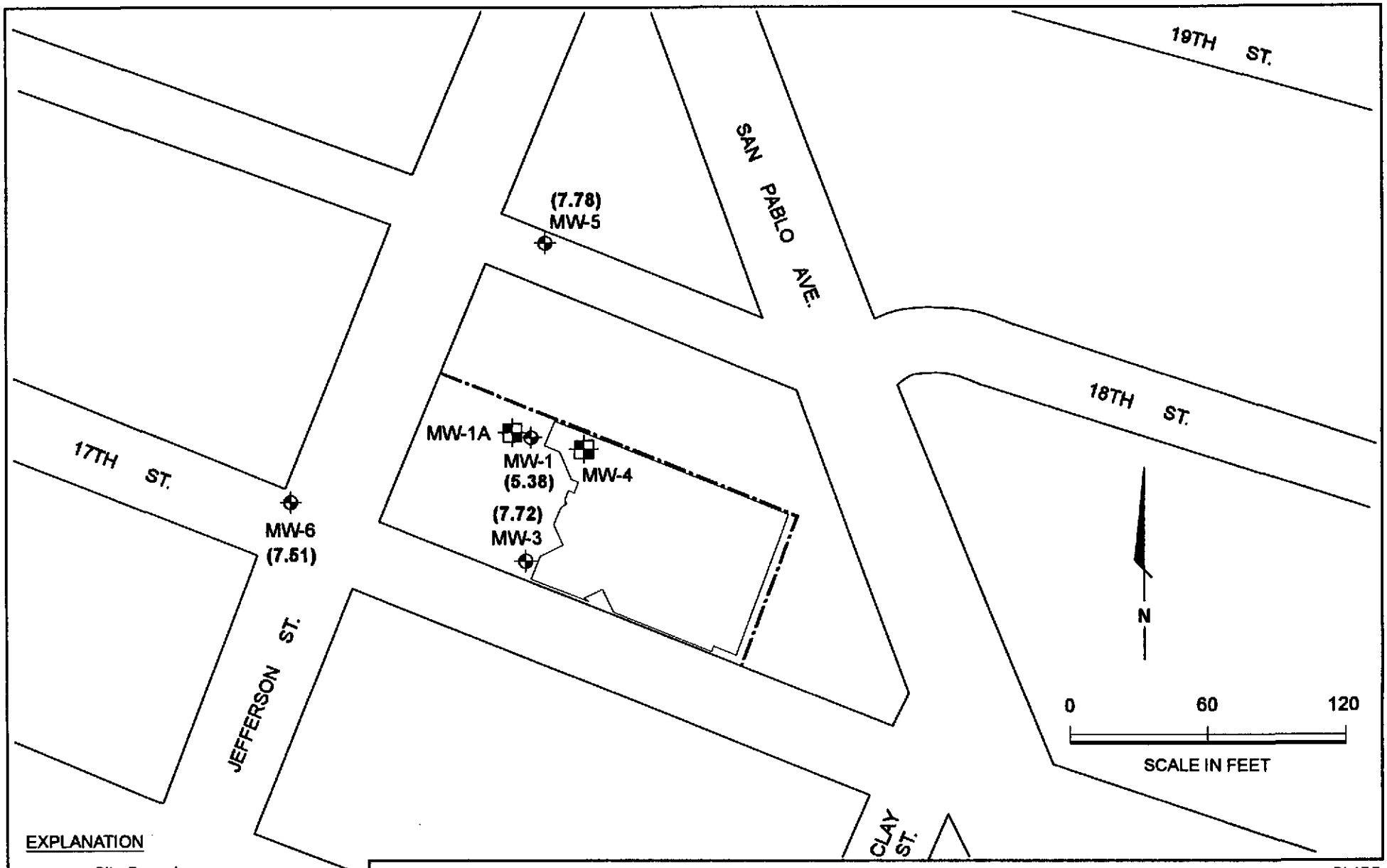
James G. McCarty
Project Engineer

Stephen J. Osborne
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
STEPHEN J. OSBORNE
No. GE 656
Exp. 3/31/99
GEOTECHNICAL
STATE OF CALIFORNIA

JGM/SJO/mlw 40910\0398

Attachments: Table 1 - City Blue Groundwater Treatment System Maintenance Log
Table 2 - Groundwater Treatment System Analytical Results
Table 3 - Groundwater Monitoring Analytical Results
Plate 1 - Groundwater Surface Elevations, March 31, 1998
Plate 2 - Groundwater Surface Elevations, March 31, 1998
Appendix A- Laboratory Reports



EXPLANATION

- Site Boundary
- Monitoring Well
- Extraction Well
- (5.03) Groundwater Elevation (in feet based on City of Oakland datum)

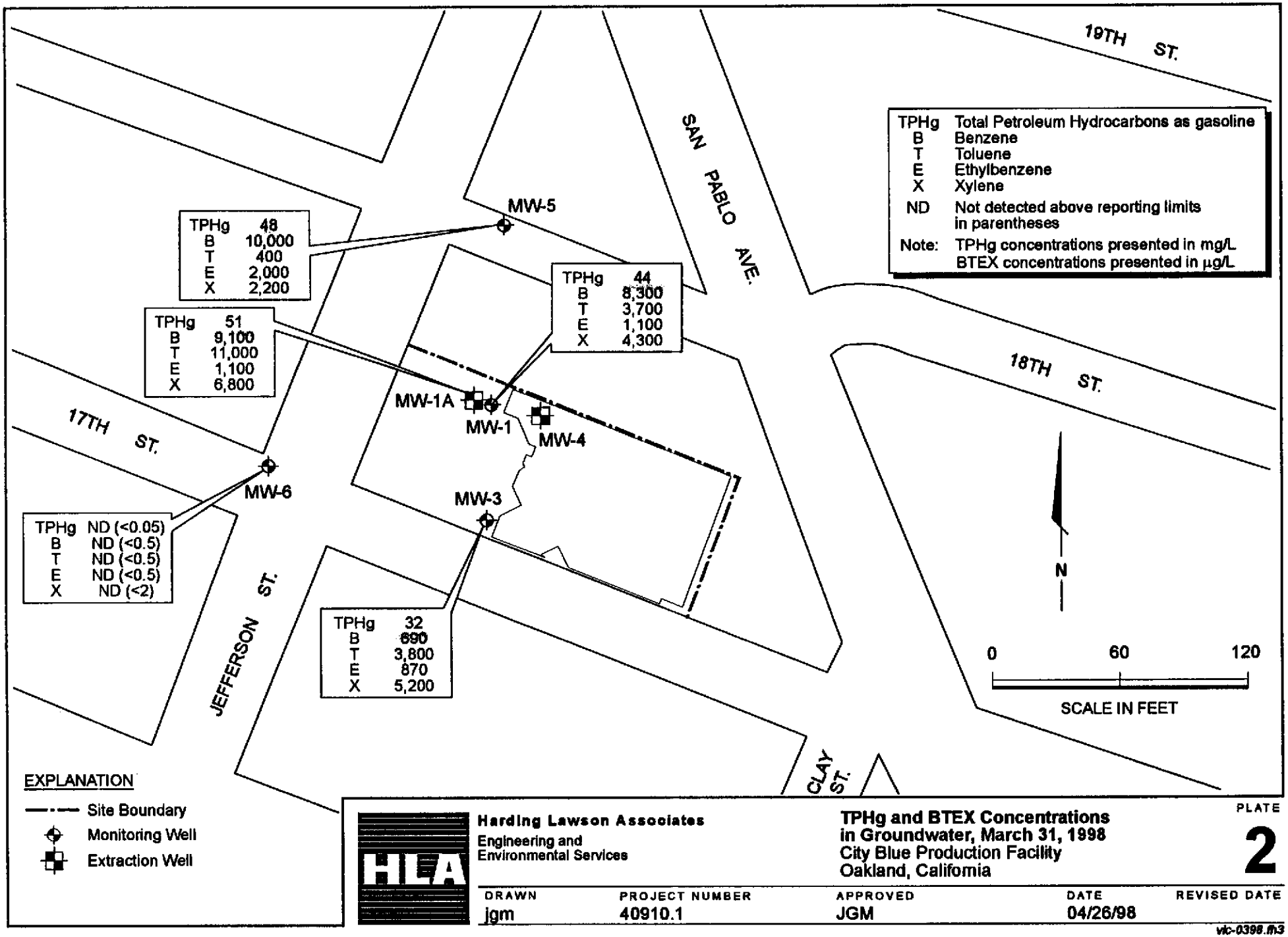
Harding Lawson Associates
Engineering and Environmental Services

Groundwater Surface Elevations
March 31, 1998
City Blue Production Facility
Oakland, California

PLATE **1**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	40910.1	JGM	04/26/98	

vic-0398.fh3



Harding Lawson Associates
Engineering and Environmental Services

TPHg and BTEX Concentrations in Groundwater, March 31, 1998
City Blue Production Facility
Oakland, California

PLATE **2**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	40910.1	JGM	04/26/98	

vic-0398.fh3

APPENDIX A

LABORATORY REPORTS

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

HARDING ASSOC.

FEB 1 7 1998

HARDING LAWSON ASSOCIATES
383 FOURTH ST., STE. 300
OAKLAND, CA 94607

ATTN: JAMES McCARTY
CLIENT PROJ. ID: 11295-012
CLIENT PROJ. NAME: CITY BLUE, OAK
C.O.C. NUMBER: 1677

REPORT DATE: 02/13/98

DATE(S) SAMPLED: 02/09/98

DATE RECEIVED: 02/09/98

AEN WORK ORDER: 9802091

PROJECT SUMMARY:

On February 9, 1998, this laboratory received 1 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

HARDING LAWSON ASSOCIATES

SAMPLE ID: 9807C301
AEN LAB NO: 9802091-01
AEN WORK ORDER: 9802091
CLIENT PROJ. ID: 11295-012

DATE SAMPLED: 02/09/98
DATE RECEIVED: 02/09/98
REPORT DATE: 02/13/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	02/10/98
Toluene	108-88-3	ND	0.5	ug/L	02/10/98
Ethylbenzene	100-41-4	ND	0.5	ug/L	02/10/98
Xylenes, Total	1330-20-7	ND	2	ug/L	02/10/98
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	02/10/98

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

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9802091
CLIENT PROJECT ID: 11295-012

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9802091
INSTRUMENT: H
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
02/10/98	9807C301	01	101
QC Limits:			70-130

DATE ANALYZED: 02/10/98
SAMPLE SPIKED: LCS
INSTRUMENT: H

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	200	91	12	70-130	20
Toluene	200	92	12	70-130	20
Ethylbenzene	200	99	11	70-130	20
Total Xylenes	600	101	12	70-130	20

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

*** END OF REPORT ***

Harding Lawson Associates
1855 Gateway Boulevard, Suite 500
Concord, California 94520
(510) 687-9660

CHAIN OF CUSTODY FORM

9802091

Lab: AEN No 1677

Samplers: James McCarty

Job Number: 11295-012

Name/Location: City Blue, Oakland

Project Manager: James McCarty

Recorder: James McCarty (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
	X							3	X	98	07	C301	98	02	09	0710	System Effluent-01A totalizer = 1077705gal

ANALYSIS REQUESTED	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	METALS	EPA 8015M/TPHg	EPA 8020/BTEX	EPA 8015M/TPHd,o	X TPHg + BTEX
									X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Std TAT

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) James McCarty	RECEIVED BY: (Signature) Rich Gilmore	DATE/TIME 2-9-98 10:24 AM
RELINQUISHED BY: (Signature) Rich Gilmore	RECEIVED BY: (Signature)	DATE/TIME
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) Lynn Gillespie	DATE/TIME 2/9/98 1145

METHOD OF SHIPMENT

SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY

Laboratory Copy (White) — Project Office Copy — Field or Office Copy (P...)

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

HARDING ASSOC.

APR 1 0 1998

HARDING LAWSON ASSOCIATES
383 FOURTH ST., STE. 300
OAKLAND, CA 94607

ATTN: JAMES McCARTY
CLIENT PROJ. ID: 11295-012
CLIENT PROJ. NAME: CITY BLUE/OAK.
C.O.C. NUMBER: 1685

REPORT DATE: 04/02/98

DATE(S) SAMPLED: 03/24/98

DATE RECEIVED: 03/25/98

AEN WORK ORDER: 9803305

PROJECT SUMMARY:

On March 25, 1998, this laboratory received 1 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Reviewed by:

William Ludwig

HARDING LAWSON ASSOCIATES

SAMPLE ID: CD-3
AEN LAB NO: 9803305-01
AEN WORK ORDER: 9803305
CLIENT PROJ. ID: 11295-012

DATE SAMPLED: 03/24/98
DATE RECEIVED: 03/25/98
REPORT DATE: 04/02/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	ND	0.5	ug/L	04/01/98
Toluene	108-88-3	ND	0.5	ug/L	04/01/98
Ethylbenzene	100-41-4	ND	0.5	ug/L	04/01/98
Xylenes, Total	1330-20-7	ND	2	ug/L	04/01/98
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	04/01/98

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

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9803305
CLIENT PROJECT ID: 11295-012

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9803305
INSTRUMENT: F
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
04/01/98	CD-3	01	85
QC Limits:			70-130

DATE ANALYZED: 04/01/98
SAMPLE SPIKED: LCS
INSTRUMENT: F

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	200	99	3	70-130	20
Toluene	200	104	1	70-130	20
Ethylbenzene	200	106	<1	70-130	20
Total Xylenes	600	111	2	70-130	20

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

*** END OF REPORT ***

R-3,5-3 9803305

Harding Lawson Associates
1855 Gateway Boulevard, Suite 500
Concord, California 94520
(510) 687-9660
(510) 451-1001
383 4th St Suite 300 Oakland CA 94607

CHAIN OF CUSTODY FORM

Lab: AEN No 1685

Samplers: James M'Carty

Job Number: 11295-012

Name/Location: City Blue, Oakland

Project Manager: James M'Carty

Recorder: James M'Carty (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 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	METALS	EPA 8015M/TPHg	EPA 8020/BTEX	EPA 8015M/TPHd,o	TPHg, BTEX	LAB NO
	3							3	X	CD	-3		98	03	24	17	46	System Effluent totalizer = 1120660 Sq ft								X	01ABC

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Std - TAT
						FAX # 510 451-3165

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) James M'Carty	RECEIVED BY: (Signature) Rich Gilmore	DATE/TIME 3-25-98 11:35
RELINQUISHED BY: (Signature) Rich Gilmore	RECEIVED BY: (Signature) Ronald C. Jensen	DATE/TIME 3/25/98 12:50
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 — Field or Office Copy Pink

American Environmental Network
Certificate of Analysis
DOHS Certification: 1172 AIHA Accreditation: 11134

HARDING LAWSON ASSOCIATES
383 FOURTH ST., STE. 300
OAKLAND, CA 94607

ATTN: JAMES McCARTY
CLIENT PROJ. ID: 40910-1
CLIENT PROJ. NAME: CITY BLUE/OAKL
C.O.C. NUMBER: 1670

REPORT DATE: 04/27/98
DATE(S) SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
AEN WORK ORDER: 9804049

PROJECT SUMMARY:

On April 3, 1998, this laboratory received 8 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Reviewed by:

HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-1
AEN LAB NO: 9804049-01
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	8,300 *	30	ug/L	04/13/98
Toluene	108-88-3	3,700 *	30	ug/L	04/13/98
Ethylbenzene	100-41-4	1,100 *	30	ug/L	04/13/98
Xylenes, Total	1330-20-7	4,300 *	100	ug/L	04/13/98
Purgeable HCs as Gasoline	5030/GCFID	44 *	3	mg/L	04/13/98
Methyl t-Butyl Ether	1634-04-4	400 *	300	ug/L	04/13/98

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-1A
AEN LAB NO: 9804049-02
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	9,100 *	30	ug/L	04/13/98
Toluene	108-88-3	12,000 *	30	ug/L	04/13/98
Ethylbenzene	100-41-4	1,100 *	30	ug/L	04/13/98
Xylenes, Total	1330-20-7	6,800 *	100	ug/L	04/13/98
Purgeable HCs as Gasoline	5030/GCFID	51 *	3	mg/L	04/13/98
Methyl t-Butyl Ether	1634-04-4	300 *	300	ug/L	04/13/98

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-3
AEN LAB NO: 9804049-03
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	690 *	30	ug/L	04/13/98
Toluene	108-88-3	3,800 *	30	ug/L	04/13/98
Ethylbenzene	100-41-4	870 *	30	ug/L	04/13/98
Xylenes, Total	1330-20-7	5,200 *	100	ug/L	04/13/98
Purgeable HCs as Gasoline	5030/GCFID	32 *	3	mg/L	04/13/98
Methyl t-Butyl Ether	1634-04-4	350 *	300	ug/L	04/13/98

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-4
AEN LAB NO: 9804049-04
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	8,100 *	50	ug/L	04/16/98
Toluene	108-88-3	24,000 *	50	ug/L	04/16/98
Ethylbenzene	100-41-4	6,300 *	50	ug/L	04/16/98
Xylenes, Total	1330-20-7	44,000 *	200	ug/L	04/16/98
Purgeable HCs as Gasoline	5030/GCFID	880 *	5	mg/L	04/16/98
Methyl t-Butyl Ether	1634-04-4	6,600 *	500	ug/L	04/16/98

Reporting limits elevated due to high levels of target compounds. Sample run at dilution. Sample analyzed out of hold time. Estimated concentrations.

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-5
AEN LAB NO: 9804049-05
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	10,000 *	30	ug/L	04/13/98
Toluene	108-88-3	400 *	30	ug/L	04/13/98
Ethylbenzene	100-41-4	2,000 *	30	ug/L	04/13/98
Xylenes, Total	1330-20-7	2,200 *	100	ug/L	04/13/98
Purgeable HCs as Gasoline	5030/GCFID	48 *	3	mg/L	04/13/98
Methyl t-Butyl Ether	1634-04-4	400 *	300	ug/L	04/13/98

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-6
AEN LAB NO: 9804049-06
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	04/14/98
Toluene	108-88-3	ND	0.5	ug/L	04/14/98
Ethylbenzene	100-41-4	ND	0.5	ug/L	04/14/98
Xylenes, Total	1330-20-7	ND	2	ug/L	04/14/98
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	04/14/98
Methyl t-Butyl Ether	1634-04-4	ND	5	ug/L	04/14/98

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: BIO-EFF
AEN LAB NO: 9804049-07
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	18 *	0.5	ug/L	04/13/98
Toluene	108-88-3	11 *	0.5	ug/L	04/13/98
Ethylbenzene	100-41-4	ND	0.5	ug/L	04/13/98
Xylenes, Total	1330-20-7	6 *	2	ug/L	04/13/98
Purgeable HCs as Gasoline	5030/GCFID	0.44 *	0.05	mg/L	04/13/98
Methyl t-Butyl Ether	1634-04-4	ND	5	ug/L	04/13/98

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

HARDING LAWSON ASSOCIATES

SAMPLE ID: SEP-EFF
AEN LAB NO: 9804049-08
AEN WORK ORDER: 9804049
CLIENT PROJ. ID: 40910-1

DATE SAMPLED: 03/31/98
DATE RECEIVED: 04/03/98
REPORT DATE: 04/27/98

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	5,900 *	50	ug/L	04/13/98
Toluene	108-88-3	9,300 *	50	ug/L	04/13/98
Ethylbenzene	100-41-4	700 *	50	ug/L	04/13/98
Xylenes, Total	1330-20-7	9,000 *	200	ug/L	04/13/98
Purgeable HCs as Gasoline	5030/GCFID	51 *	5	mg/L	04/13/98
Methyl t-Butyl Ether	1634-04-4	ND	500	ug/L	04/13/98

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

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

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9804049
CLIENT PROJECT ID: 40910-1

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9804049
INSTRUMENT: E
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
04/13/98	MW-1	01	99
04/13/98	MW-1A	02	96
04/13/98	MW-3	03	98
04/16/98	MW-4	04	88
04/13/98	MW-5	05	94
04/14/98	MW-6	06	100
04/13/98	BIO-EFF	07	93
04/13/98	SEP-EFF	08	99
QC Limits:			70-130

DATE ANALYZED: 04/13/98
SAMPLE SPIKED: LCS
INSTRUMENT: E

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	200	95	1	70-130	20
Toluene	200	93	1	70-130	20
Ethylbenzene	200	94	2	70-130	20
Total Xylenes	600	89	2	70-130	20

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

*** END OF REPORT ***

9804049

Harding Lawson Associates
1855 Gateway Boulevard, Suite 500
Concord, California 94520
(510) 687-9660

CHAIN OF CUSTODY FORM

Lab: AEN No. 1670

Samplers: James McCarty

Job Number: 40910-1

Name/Location: City Blue Oakland

Project Manager: James McCarty

Recorder: James McCarty (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
										MW	-	1	98	03	31	1317	01A-C
										MW	-	1A				1400	02A-C
										MW	-	3				1338	03A-C
										MW	-	4				1405	04A-C
										MW	-	5				1225	05A-C
										MW	-	6				1200	06A-C
										Bio	-	Eff				1348	07A-C
										Sep	-	Eff				1355	08A-C

ANALYSIS REQUESTED	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	METALS	EPA 8015M/TPHg	EPA 8020/BTEX	EPA 8015M/TPHd,o	TPHg, BTEX, MTBE
01A-C									X
02A-C									X
03A-C									X
04A-C									X
05A-C									X
06A-C									X
07A-C									X
08A-C									X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						5 Id TAT

CHAIN OF CUSTODY RECORD

	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
1	James McCarty		4/1/98 1205
2		W. Sullivan	4/1/98 12:10
3	W. Sullivan 4/2/98	Rick Dilmore	4-3-98 10:11
4	Rick Dilmore 4-3-98		4/3/98 14:00

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 Pink | Field or Office Copy Pink