A Report Prepared for

California Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6000
Oakland, California 94607

6/16/88

REPORT OF SYSTEM MONITORING: MAY 1988
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA

HLA Job No. 9382,018.02 EBMUD

Submitted on behalf of:

City of Oakland Redevelopment Agency
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I INTRODUCTION

This report discusses the operation and monitoring of the dewatering effluent treatment system at 10th and Webster streets, Oakland, California, between May 1 and May 31, 1988. The system is treating water produced during ground-water dewatering of the block bounded by 10th, 11th, and Webster, and Franklin streets in conjunction with excavation and construction in progress at the site. It is designed to remove petroleum hydrocarbons from dewatering effluent before the effluent is discharged to the storm drain.

This report has been prepared by Harding Lawson Associates (HLA) and is submitted in compliance with a letter dated April 25, 1988 from Roger James, Executive Director of the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, to Randall A. Lum of the City of Oakland in response to a NPDES Permit Application submitted by the City of Oakland Redevelopment Agency (Agency) to the RWQCB and dated February 1, 1988.

As noted in the letter, treatment system discharge limits shall not exceed 5 parts per billion (ppb) for any constituent identifiable by EPA Test Methods 601 and 602, and 50 ppb for total petroleum hydrocarbons, as measured by EPA Test Method 8015.

II TREATMENT SYSTEM OPERATION

The dewatering effluent treatment system was installed March 8, 1988, and has been in continuous operation since March 14. Water is treated by pumping it through four carbon contactors arranged in pairs. Organic compounds in the influent are adsorbed on the carbon. Each pair of contactors is arranged in parallel, and together constitute a module; the two modules are arranged in series. The system is configured so that water from the dewatering wells may be pumped through either module first. The system also comprises a holding tank, pumps, filters, piping, and instrumentation. Four water sampling ports - one influent, two intermediate, and one effluent - enable water samples to be collected at significant stages of the treatment process. The intermediate ports are located between the two modules so the effectiveness of the first pair of contactors in reducing influent concentrations can be monitored. Depending on the configuration of modules, only one of these ports is intermediate in the system at any one time.

As of May 2, treated effluent is being discharged to the storm drain, and is no longer being discharged to the EBMUD sanitary sewer system.

From May 1 to June 1, total discharge of the system was 831,400 gallons, based on readings of the flow totalizing meter located in the discharge line. Average flow for this period was 18.6 gallons per minute (gpm), with daily average flows ranging from 9 to 33 gpm.

The system was backwashed on May 13, May 17, May 20, May 23, May 27, May 28, May 29 and May 30. The frequency of backwashing was increased during the last half of May because of an increase in the amount of suspended silt and clay in the influent to the system.

On May 12 and 13, minor leaking of carbon vessels C-1 and C-3 was observed. No spillage flowed away from the area immediately beneath the treatment plant trailer.

No carbon changeouts were conducted during the month of May.

III TREATMENT SYSTEM MONITORING

A. Sample Collection and Analysis

Samples of treatment system water were collected weekly during this reporting period from the influent, intermediate, and effluent sampling ports. Quality Assurance/Quality Control samples consisting of weekly trip blanks.

All treatment system samples collected during this period were analyzed by WESCO Laboratories, Novato, California, a California certified laboratory, for total petroleum hydrocarbons (TPH) as gasoline by EPA Test Method 8015, for volatile organic compounds by EPA Test Method 602, and for halogenated hydrocarbons by EPA Test Method 601.

Results of analyses of influent, intermediate, effluent and blank water samples collected April 27 through May 27 are summarized in Tables 1 through 4.

Laboratory reports for treatment system samples collected May 5, May 11, May 18, and May 27 are presented in the Appendix.

B. Discharge Limit Exceedences

There were no exceedences of permitted effluent discharge limits for Test Method 601, 602, and 8015 compounds during this reporting period.

IV RESULTS

Results of influent, intermediate, and effluent sample analyses for TPH, and for EPA Test Method 601 and 602 compounds, indicate that on all days the treatment system removed most individual constituents to detection levels. 1,2 dichloroethane was detected in effluent samples on May 1, 5, and 11 at concentrations from 0.8 to 1.8 μg/l (micrograms per liter, equivalent to ppb). Toluene was detected on May 11 at 0.9 μg/l.

Dissolved oxygen was measured on May 5, 11, 18 and 27 at concentrations from 0.9 to 2.9 mg/l (milligrams per liter).

Methylene chloride was detected in trip blanks on May 1 and May 5 at concentrations of 1.3 μg/l on both days.

V HAZARDOUS WASTE SHIPMENTS AND AERATION OF STOCKPILED SOILS

During this reporting period, soils exhibiting evidence of the presence of petroleum hydrocarbons unearthed in the northeastern and southwestern corner of the site have been aerated and restockpiled. Samples of these soils have been collected and submitted to Crown Environmental, Inc. (a mobile lab located at the site) and to WESCO for analysis to confirm aeration of hydrocarbons. At the present time, approximately 1,000 yd^3 are stockpiled on site. Approximately 2000 yd^3 of soils aerated to remove hydrocarbons were transported from the site during May. After aeration, these soils exhibited TPH concentrations of less than 100 parts per million (ppm), which is the RWQCB guideline for designated wastes. The soils were transported by Charles Campanella, Inc. to the West Contra Costa Sanitary Landfill in Richmond, California for disposal.

Activities associated with soils handling and aeration are being conducted with the permission of the Bay Area Air Quality Management District (BAAQMD) and in accordance with BAAQMD regulations, in particular Regulation 8-40.

TABLES

TABLE 1. TREATMENT SYSTEM WATER ANALYSIS: INFLUENT SAMPLES

Harding Lawson Associates

HLA SAMPLE ID #	88172701	88172802	88172902	88173002	88180102	88180504	88191122	88201821	88212722
DATE	04/27	04/28	04/29	04/30	05/01	05/05	05/11	05/18	05/27
TEST METHOD/ COMPOUNDS									
EPA 602									
Benzene	18	17	45	47	33	83	6.3	25	4.8
Toluene	1.9	2.9	18	22	1.9	95	2.4	2	1.0
Chlorobenzene	2.0	2.3	3.2	6.0	3.5	7.1	1.7	5.8	5.0
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	1.1	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	8.6	17	ND < 0.2	55	ND < 0.2	1.7	ND < 0.2
1,2-Dichlorobenzene	ND < 0.2	ND < 0.2	1.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 602 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
TPH									
Gasoline	70	84	280	330	180	720	91	140	130
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 601									
1,1-dichloroethane	NT	NT	NT	NT	NT	0.6	ND < 0.5	ND < 0.5	ND < 0.5
Chloroform	NT	NT	NT	NT	NT	1.0	ND < 0.5	ND < 0.5	1.0
1,2-dichloroethane	NT	NT	NT	NT	NT	42	16.0	28.6	40
Trichloroethene	NT	NT	NT	NT	NT	620	160	223	330
Tetrachloroethene	NT	NT	NT	NT	NT	0.6	ND < 0.5	0.6	0.7
Chlorobenzene	NT	NT	NT	NT	NT	7.1	1.7	5.8	5.0
Bromoform	NT	NT	NT	NT	NT	ND < 0.5	2.2	7.8	ND < 0.5
Dibromochloromethane	NT	NT	NT	NT	NT	ND < 0.5	ND < 0.5	0.6	ND < 0.5
All other 601 compounds	NT	NT	NT	NT	NT	ND	ND	ND	ND

ND - Not detected at stated detection limit.

NT - Not tested.

All results reported in parts per billion (ppb).

TABLE 2. TREATMENT SYSTEM WATER ANALYSIS: INTERMEDIATE SAMPLES

Harding Lawson Associates

HLA SAMPLE ID #	88172702	88172801	88172901	88173001	88173001	88180503	88191121	---	88212721
DATE	04/27	04/28	04/29	04/30	05/01	05/05	05/11	05/18	05/27
TEST METHOD/COMPOUNDS									
EPA 602									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	ND < 0.2
Toluene	4.4	1.8	9.3	3.5	3.9	1.9	11.0	NT	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	ND < 0.2
Chlorobenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	ND < 0.2
1,3-Dichlorobenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	0.8
All other 602 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	ND < 0.2
TPH									
Gasoline	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	NT	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 601									
1,2-dichloroethane	NT	NT	NT	NT	NT	ND < 0.5	ND < 0.5	NT	3.6
Trichloroethene	NT	NT	NT	NT	NT	ND < 0.5	ND < 0.5	NT	3.0
1,3-dichlorobenzene	NT	NT	NT	NT	NT	ND < 0.5	ND < 0.5	NT	0.8
All other 601 compounds	NT	NT	NT	NT	NT	ND	ND	NT	ND

ND - Not detected at stated detection limit.

NT - Not tested.

All results reported in parts per billion (ppb).

TABLE 3. TREATMENT SYSTEM WATER ANALYSIS: EFFLUENT SAMPLES

Harding Lawson Associates

HLA SAMPLE ID #	88172703	88172804	88172904	88173004	88170103	88180502	88191124	88201824	88212723
DATE	04/27	04/28	04/29	04/30	05/01	05/05	05/11	05/18	05/27
TOTAL FLOW (THOUSAND GALLONS	1227.8	1251.8	1270.0	1290.2	1315.4	1394.6	1542.6	1651.3	1902.4
AVERAGE FLOW (GPM)	21.2	16.7	12.6	14.0	17.5	13.7	17.1	10.8	19.4
TEST METHOD/COMPOUNDS									
TEST METHOD/COMPOUNDS									
EPA 602									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	0.9	ND < 0.2	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Diphenylhydrazine	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 602 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
TPH									
Gasoline	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 601									
1,2 dichloroethane	NT	NT	NT	NT	NT	0.8	1.8	ND < 0.5	ND < 0.5
Trichloroethene	NT	NT	NT	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 601 compounds	NT	NT	NT	NT	NT	ND	ND	ND	ND
EPA 624									
Toluene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
Methylene Chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
1,2-Dichloroethane	1.3	1.4	1.5	1.3	1.0	NT	NT	NT	NT
Trichloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
All other 624 compounds	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
EPA 625									
All compounds	ND	ND	ND	ND	ND	NT	NT	NT	NT
EPA 360.2									

ND - Not detected at stated detection limit.

NT - Not Tested.

NA - Analytic results not yet available.

All results reported in parts per billion (ppb).

TABLE 4. TREATMENT SYSTEM WATER ANALYSIS: BLANK SAMPLES

HLA SAMPLE ID #	88172704	88172803	88172903	88173003	88180104	88180503	88191121	88201823	88212708
DATE	04/27	04/28	04/29	04/30	05/01	05/05	05/11	05/18	05/27
TEST METHOD/COMPOUNDS									
EPA 602									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 602 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
TPH									
Gasoline	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 601									
Methylene chloride	NT	NT	NT	NT	1.3	1.3	ND < 0.5	ND < 0.5	ND < 0.5
All other 601 compounds	NT	NT	NT	NT	ND	ND	ND	ND	ND
EPA 624									
Toluene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
Methylene Chloride	1.6	6.2	1.7	ND < 0.5	1.1	NT	NT	NT	NT
Chloroform	11	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
Diphenylhydrazine	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
All other 624 compounds	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	NT	NT	NT
EPA 625									
All compounds	ND	ND	ND	ND	ND	NT	NT	NT	NT

ND - Not detected at stated detection level.

NT - Not Tested.

NA - Analytic results not yet available.

All results reported in parts per billion (ppb).

Appendix

LABORATORY ANALYTICAL RESULTS FOR TREATMENT SYSTEM SAMPLES

TREATMENT SYSTEM 5-5-88

WESCO Laboratories

Report Date:	25-May-88	Client Contract/PO:	09382,026.02
Client:	Harding Lawson Associates	Date Sampled:	05-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	05-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	05-May-88
Analyst:	Attia	Hold Time:	0 days
WESCO JOB #:	HLA 0831.64-L		
Analytical Method:	EPA 5030/8015		
Matrix:	WATER		

LAB #: 8-4677 CLIENT ID: 180501 Blank

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 99 %

LAB #: 8-4678 CLIENT ID: 180502 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 101 %

LAB #: 8-4679 CLIENT ID: 180503 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 104 %

LAB #: 8-4680 CLIENT ID: 180504 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	720	100.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 117 %

N.D.: Not Detected

Report Date:	25-May-88	Client Contract/PO:	09382,026.02
Client:	Harding Lawson Associates	Date Sampled:	05-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	05-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none		
Analyst:	Attia	Analysis Completion Date:	05-May-88
WESCO JOB #:	HLA 0831.64-L		
Analytical Method:	EPA 602	Hold Time:	0 days

LAB #: 8-4677 MATRIX: WATER
CLIENT'S ID: 180501 Blank

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	100 %

LAB #: 8-4678 MATRIX: WATER
CLIENT'S ID: 180502 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	100 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	25-May-88	Client Contract/PO:	09382,026.02
Client:	Harding Lawson Associates	Date Sampled:	05-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	05-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge	
Preservatives:	none	Date:	05-May-88
Analyst:	Attia	Analysis Completion	
WESCO JOB #:	HLA 0831.64-L	Date:	05-May-88
Analytical Method:	EPA 602	Hold Time:	0 days

LAB #: 8-4679 MATRIX: WATER
CLIENT'S ID: 180503 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	1.9	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	100 %

LAB #: 8-4680 MATRIX: WATER
CLIENT'S ID: 180504 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	83	0.2
Toluene	95	0.2
Chlorobenzene	7.1	0.2
Ethylbenzene	1.1	0.2
Xylene	55	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	97 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	25-May-88	Client Contract/09382,026.02	
Client:	Harding Lawson Associates	Date Sampled:	05-May-88
Attn:	David Leland	Site: City of Oakland	
Sampled by:	Tim Walker	Date Received:	05-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge	
Preservatives:	none	Date:	05-May-88
Analyst:	Attia	Analysis Completion	
WESCO JOB #:	HLA 0831.64-L	Date:	05-May-88
Analytical Method:	EPA 601	Hold time, days:	0
MATRIX: WATER			

LAB #:		8-4677	8-4678	
CLIENT'S ID:	Blank	180501	180502	Effluent

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	1.3	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	0.5
Chloroform	N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	N.D.	0.8	0.5
Trichloroethene (TCE)	N.D.	N.D.	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	N.D.	0.5
Dibromochloromethane	N.D.	N.D.	0.5
Chlorobenzene	N.D.	N.D.	0.5
Bromoform	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery		
Bromochloromethane	95 %	96 %
1,4-Dichlorobutane	88 %	90 %

N.D.: Not Detected

Analytical Supervisor

Report Date: 25-May-88
Client: Harding Lawson Associates
Attn: David Leland
Sampled by: Tim Walker
Submitted by: Tim Walker
Preservatives: none
Analyst: Attia
WESCO JOB #: HLA 0831.64-L
Analytical Method: EPA 601
MATRIX: WATER

Client Contract/09382,026.02
Date Sampled: 05-May-88
Site: City of Oakland
Date Received: 05-May-88
Extract/Digest/Purge Date: 05-May-88
Analysis Completion Date: 05-May-88
Hold time, days: 0

LAB #:		8-4679	8-4680	
CLIENT'S ID:	Intermediate	180503	180504	Influent

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	N.D.	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	0.6	0.5
Chloroform	N.D.	1.0	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	N.D.	42	0.5
Trichloroethene (TCE)	N.D.	620	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	0.6	0.5
Dibromochloromethane	N.D.	N.D.	0.5
Chlorobenzene	N.D.	7.1	0.5
Bromoform	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA
Surrogate Spike Percent Recovery

Bromochloromethane	90 %	90 %
1,4-Dichlorobutane	91 %	81 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	25-May-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	05-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	05-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	11-May-88
Preservatives:	none	Analysis Completion Date:	11-May-88
Analyst:	Costigan	Hold Time:	6 days
WESCO JOB #:	HLA 0831.64-L		
Analytical Method:	Dissolved Oxygen		

MATRIX: WATER

LAB #	CLIENT ID	Dissolved Oxygen (mg/l)
8-4681	180502	0.9
Detection limit		0.2 mg/l
Method number		Note 1

QUALITY CONTROL DATA

Duplicate % Deviation	2%

Note 1: EPA 600: 14-79-020, 1983; Method 360.2
Modified Winkler method

Analytical Supervisor

Harding Lawson Associates
Environmental Services Division
200 Rush Landing Road
Novato, California 94947
(415) 892-0821

CHAIN OF CUSTODY FORM

Number: CITY OF OAKLAND
/Location: 9382 026 02
ct Manager: D. LELAND

Samplers: WALKER T
Recorder: [signature] (Signature Required)

MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (Cl)	DISSEL-VI-O2
X				X			88	18	0501	88	05	05	1200		X	X					X	
X				X			88	18	0502	88	05	05	1200		X	X					X	X
X				X			88	18	0503	88	05	05	1202		X	X					X	
X				X			88	18	0504	88	05	05	1202		X	X					X	

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

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME

DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Timothy J Walker	5/5/88 1940	[signature]	5/5/88 1940

METHOD OF SHIPMENT

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

0533

HARDING LAWSON A

JUN - 1 1988

TREATMENT SYSTEM 5-11-88

WESCO Laboratories

~~Report Date:~~	25-May-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	11-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	11-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	13-May-88
Preservatives:	none	Analysis Completion Date:	13-May-88
Analyst:	Attia	Hold Time:	2 days
WESCO JOB #:	HLA 0831.66-L		
Analytical Method:	EPA 5030/8015		
Matrix:	WATER		

LAB #: 8-4799 CLIENT ID: 191121 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 99 %

LAB #: 8-4801 CLIENT ID: 191122 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	91	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 108 %

LAB #: 8-4803 CLIENT ID: 191123 Blank

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 95 %

LAB #: 8-4805 CLIENT ID: 191124 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 97 %

N.D.: Not Detected

Analytical Supervisor

14 Gold Drive, Suite

Report Date:	25-May-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	11-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	11-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	13-May-88
Preservatives:	none		
Analyst:	Attia	Analysis Completion Date:	13-May-88
WESCO JOB #:	HLA 0831.66-L		
Analytical Method:	EPA 602	Hold Time:	2 days

LAB #: 8-4799 MATRIX: WATER
CLIENT'S ID: 191121 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	11.0	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	99 %

LAB #: 8-4801 MATRIX: WATER
CLIENT'S ID: 191122 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	6.3	0.2
Toluene	2.4	0.2
Chlorobenzene	1.7	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	108 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	25-May-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	11-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	11-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	13-May-88
Preservatives:	none	Analysis Completion Date:	13-May-88
Analyst:	Attia	Hold Time:	2 days
WESCO JOB #:	HLA 0831.66-L		
Analytical Method:	EPA 602		

LAB #: 8-4803 MATRIX: WATER
CLIENT'S ID: 191123 Blank

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	95 %

LAB #: 8-4805 MATRIX: WATER
CLIENT'S ID: 191124 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	0.9	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	97 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	25-May-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	11-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	11-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	15-May-88
Preservatives:	none	Analysis Completion Date:	15-May-88
Analyst:	Arntzen	Hold time, days:	4
WESCO JOB #:	HLA 0831.66-L		
Analytical Method:	EPA 601		
MATRIX:	WATER		

LAB #:		8-4798	8-4799	
CLIENT'S ID:		Intermediate 191121	191122	Influent
COMPOUND		RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane		N.D.	N.D.	2.0
Chloromethane		N.D.	N.D.	2.0
Vinyl Chloride		N.D.	N.D.	2.0
Bromomethane		N.D.	N.D.	2.0
Chloroethane		N.D.	N.D.	2.0
Trichlorofluoromethane		N.D.	N.D.	2.0
1,1-Dichloroethene		N.D.	N.D.	0.5
Methylene Chloride		N.D.	N.D.	0.5
trans-1,2-Dichloroethene		N.D.	N.D.	0.5
1,1-Dichloroethane		N.D.	N.D.	0.5
Chloroform		N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)		N.D.	N.D.	0.5
Carbon Tetrachloride		N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)		N.D.	16.0	0.5
Trichloroethene (TCE)		N.D.	160	0.5
1,2-Dichloropropane		N.D.	N.D.	0.5
Bromodichloromethane		N.D.	N.D.	0.5
2-Chloroethylvinyl ether		N.D.	N.D.	0.5
trans-1,3-Dichloropropene		N.D.	N.D.	0.5
cis-1,3-Dichloropropene		N.D.	N.D.	0.5
1,1,2-Trichloroethane		N.D.	N.D.	0.5
Tetrachloroethene		N.D.	N.D.	0.5
Dibromochloromethane		N.D.	N.D.	0.5
Chlorobenzene		N.D.	1.7	0.5
Bromoform		N.D.	2.2	0.5
1,1,2,2-Tetrachloroethane		N.D.	N.D.	0.5
1,3-Dichlorobenzene		N.D.	N.D.	0.5
1,4-Dichlorobenzene		N.D.	N.D.	0.5
1,2-Dichlorobenzene		N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery		
Bromochloromethane	79 %	86 %
1,4-Dichlorobutane	79 %	89 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	25-May-88	Client Contract/9382,026.02	
Client:	Harding Lawson Associates	Date Sampled:	11-May-88
Attn:	David Leland	Site: City of Oakland	
Sampled by:	Tim Walker	Date Received:	11-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	16-May-88
Preservatives:	none	Analysis Completion Date:	16-May-88
Analyst:	Arntzen	Hold time, days:	5
WESCO JOB #:	HLA 0831.66-L		
Analytical Method:	EPA 601		
MATRIX: WATER			

LAB #:		8-4802	8-4804	
CLIENT'S ID:	Blank	191123	191124	Effluent

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	3.2	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	0.5
Chloroform	N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	N.D.	1.8	0.5
Trichloroethene (TCE)	N.D.	N.D.	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	N.D.	0.5
Dibromochloromethane	N.D.	N.D.	0.5
Chlorobenzene	N.D.	N.D.	0.5
Bromoform	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery

Bromochloromethane	84 %	80 %
1,4-Dichlorobutane	78 %	97 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	26-May-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	11-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	11-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	13-May-88
Preservatives:	none	Analysis Completion Date:	13-May-88
Analyst:	Costigan	Hold Time:	2 days
WESCO JOB #:	HLA 0831.66-L		
Analytical Method:	DO		

MATRIX: WATER

LAB #	CLIENT ID	Dissolved Oxygen (mg/l)
8-4797	191124	0.9
Detection limit		0.2 mg/l
Method number		Note 1

QUALITY CONTROL DATA

Duplicate % Deviation	22%

Note 1: EPA 600: 14-79-020, 1983; Method 360.2
Modified Winkler method

Analytical Supervisor

Environmental Services Division
200 Rush Landing Road
Novato, California 94947
(415) 892-0821

CHAIN OF CUSTODY FORM

[illegible] 6637.06-2

[Job] Number: C7382,026,02
[Na]me/Location: City of Oakland
[Pr]oject Manager: Dave Leland

Samplers: David M Evans
Tim J Walker

Recorder: David M Evans (Signature Required)

MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pltnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. L	Diss O2
X				4			88	14	1121	88	05	11	1545	Intermediate	X	X					X	
X				4			88	12	1122	88	05	11	1545	Influent	X	X					X	
X				4			88	11	1123	88	05	11	1545	Blank	X	X					X	
X				6			88	14	1124	88	05	11	1545	Effluent	X	X					X	X

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

Wesco Lab

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
David M Evans		
RELINQUISHED BY: (Signature)	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)	DATE/TIME
David M Evans	5-11-88 13:20	[illegible] Stagg	19:15

METHOD OF SHIPMENT: Hand delivered ~~[illegible]~~ ONE in cooler w/ice

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

6533

TREATMENT SYSTEM 5-18-88

WESCO Laboratories

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	18-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Larkin/Evans	Date Received:	18-May-88
Submitted by:	C. Larkin	Extract/Digest/Purge Date:	18-May-88
Preservatives:	none	Analysis Completion Date:	18-May-88
Analyst:	Attia	Hold Time:	0 days
WESCO JOB #:	HLA 0831.69-L		
Analytical Method:	EPA 5030/8015		
Matrix:	WATER		

LAB #: 8-5140 CLIENT ID: 201821 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	140	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 108 %

LAB #: 8-5141 CLIENT ID: 201822 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	170	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 108 %

LAB #: 8-5142 CLIENT ID: 201823 Blank

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 100 %

LAB #: 8-5143 CLIENT ID: 201824 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 101 %

N.D.: Not Detected

14 Goff Drive Stra Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	18-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Larkin/Evans	Date Received:	18-May-88
Submitted by:	C. Larkin	Extract/Digest/Purge Date:	18-May-88
Preservatives:	none		
Analyst:	Attia	Analysis Completion Date:	18-May-88
WESCO JOB #:	HLA 0831.69-L	Hold Time:	0 days
Analytical Method:	EPA 602		

LAB #: 8-5140 MATRIX: WATER
CLIENT'S ID: 201821 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	25	0.2
Toluene	2.0	0.2
Chlorobenzene	5.8	0.2
Ethylbenzene	N.D.	0.2
Xylene	1.7	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	108 %

LAB #: 8-5141 MATRIX: WATER
CLIENT'S ID: 201822 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	25	0.2
Toluene	10	0.2
Chlorobenzene	4.7	0.2
Ethylbenzene	N.D.	0.2
Xylene	1.7	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	108 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	18-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Larkin/Evans	Date Received:	18-May-88
Submitted by:	C. Larkin	Extract/Digest/Purge Date:	18-May-88
Preservatives:	none		
Analyst:	Attia	Analysis Completion Date:	18-May-88
WESCO JOB #:	HLA 0831.69-L		
Analytical Method:	EPA 602	Hold Time:	0 days

LAB #: 8-5142 MATRIX: WATER
CLIENT'S ID: 201823 Blank

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	100 %

LAB #: 8-5143 MATRIX: WATER
CLIENT'S ID: 201824 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	101 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	18-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Larkin/Evans	Date Received:	18-May-88
Submitted by:	C. Larkin	Extract/Digest/Purge Date:	26-May-88
Preservatives:	none	Analysis Completion Date:	26-May-88
Analyst:	Attia	Hold time, days:	8
WESCO JOB #:	HLA 0831.69-L		
Analytical Method:	EPA 601		
MATRIX:	WATER		

LAB #:		8-5144	8-5145	
CLIENT'S ID:	Influent	201821	201822	Influent

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	N.D.	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	0.5
Chloroform	N.D.	0.6	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	28.6	17.4	0.5
Trichloroethene (TCE)	223	178	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	N.D.	0.5
Dibromochloromethane	0.6	0.6	0.5
Chlorobenzene	5.8	4.7	0.5
Bromoform	7.8	7.8	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery		
Bromochloromethane	99 %	101 %
1,4-Dichlorobutane	104 %	78 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	18-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Larkin/Evans	Date Received:	18-May-88
Submitted by:	C. Larkin	Extract/Digest/Purge Date:	26-May-88
Preservatives:	none	Analysis Completion Date:	26-May-88
Analyst:	Attia	Hold time, days:	8
WESCO JOB #:	HLA 0831.69-L		
Analytical Method:	EPA 601		
MATRIX:	WATER		

LAB #:	8-5146	8-5147
CLIENT'S ID:	Blank 201823	201824 Effluent

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	N.D.	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	0.5
Chloroform	N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	N.D.	N.D.	0.5
Trichloroethene (TCE)	N.D.	N.D.	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	N.D.	0.5
Dibromochloromethane	N.D.	N.D.	0.5
Chlorobenzene	N.D.	N.D.	0.5
Bromoform	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery

Bromochloromethane	100 %	87 %
1,4-Dichlorobutane	85 %	67 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	18-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Larkin/Evans	Date Received:	18-May-88
Submitted by:	C. Larkin	Extract/Digest/Purge	
Preservatives:	none	Date:	26-May-88
Analyst:	Staggs	Analysis Completion	
WESCO JOB #:	HLA 0831.69-L	Date:	26-May-88
Analytical Method:	Dissolved Oxygen	Hold Time:	8 days

MATRIX: WATER

LAB #	CLIENT ID	Dissolved Oxygen (mg/l O2)
8-5148	201824	2.12
Detection limit		1
Method number		EPA 600,1983: Method 360.2

Analytical Supervisor

Environmental Services Division
200 Rush Landing Road
Novato, California 94947
(415) 892-0821

CHAIN OF CUSTODY FORM

Number: 9382,026.02
e/Location: City of Oakland.
ect Manager: Dave Leland

Samplers: C. LARKIN / DAVE EVANS

Recorder: [signature] (Signature Required)

MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (L)	DISSOLVED OXYGEN
X				4			88	20	1821	88	20	18	1427		X	X					X	
X				4			88	20	1822	88	20	18	1427		X	X					X	
X				4			88	20	1823	88	20	18	1427		X	X					X	
X				6			88	20	1824	88	20	18	1427		X	X					X	X

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

WESCO

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
[signature]		
RELINQUISHED BY: (Signature)	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)	DATE/TIME
		[signature]	5/18 6:00 pm

METHOD OF SHIPMENT

RECEIVED
JUN 13 1988
HARDING LAWSON ASSOC.

TREATMENT SYSTEM 5-27-88

WESCO Laboratories

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	27-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	27-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	31-May-88
Preservatives:	none	Analysis Completion Date:	31-May-88
Analyst:	Lewis/Attia	Hold Time:	4 days
WESCO JOB #:	HLA 0831.70-L		
Analytical Method:	EPA 5030/8015		
Matrix:	WATER		

LAB #: 8-5369 CLIENT ID: 212721 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 115 %

LAB #: 8-5370 CLIENT ID: 212722 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	130	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 109 %

LAB #: 8-5371 CLIENT ID: 212723 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 99 %

LAB #: 8-5372 CLIENT ID: 212724 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)-----	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 98 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	27-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	27-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge	
Preservatives:	none	Date:	31-May-88
Analyst:	Lewis/Attia	Analysis Completion	
WESCO JOB #:	HLA 0831.70-L	Date:	31-May-88
Analytical Method:	EPA 602	Hold Time:	4 days

LAB #: 8-5369 MATRIX: WATER
CLIENT'S ID: 212721 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	0.8	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	96 %

LAB #: 8-5370 MATRIX: WATER
CLIENT'S ID: 212722 Influent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	4.8	0.2
Toluene	1.0	0.2
Chlorobenzene	5.0	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	102 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	27-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	Tim Walker	Date Received:	27-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge Date:	31-May-88
Preservatives:	none	Analysis Completion Date:	31-May-88
Analyst:	Lewis/Attia	Hold Time:	4 days
WESCO JOB #:	HLA 0831.70-L		
Analytical Method:	EPA 602		

LAB #: 8-5371 MATRIX: WATER
CLIENT'S ID: 212723 Effluent

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	88 %

LAB #: 8-5372 MATRIX: WATER
CLIENT'S ID: 212724 Intermediate

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.2
Toluene	N.D.	0.2
Chlorobenzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Xylene	N.D.	0.2
1,3-Dichlorobenzene	N.D.	0.2
1,4-Dichlorobenzene	N.D.	0.2
1,2-Dichlorobenzene	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery
Fluorobenzene	93 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/9382,026.02	
Client:	Harding Lawson Associates	Date Sampled:	27-May-88
Attn:	David Leland	Site: City of Oakland	
Sampled by:	Tim Walker	Date Received:	27-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge	
Preservatives:	none	Date:	31-May-88
Analyst:	Lewis/Attia	Analysis Completion	
WESCO JOB #:	HLA 0831.70-L	Date:	31-May-88
Analytical Method:	EPA 601	Hold time, days:	4
MATRIX: WATER			

LAB #:		8-5369	8-5370	
CLIENT'S ID:	Intermediate	212721	212722	Influent

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	N.D.	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	0.5
Chloroform	N.D.	1.0	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	3.6	40	0.5
Trichloroethene (TCE)	3.0	330	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	0.7	0.5
Dibromochloromethane	N.D.	N.D.	0.5
Chlorobenzene	N.D.	5.0	0.5
Bromoform	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	0.8	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery		
Bromochloromethane	103 %	99 %
1,4-Dichlorobutane	97 %	107 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/9382,026.02	
Client:	Harding Lawson Associates	Date Sampled:	27-May-88
Attn:	David Leland	Site: City of Oakland	
Sampled by:	Tim Walker	Date Received:	27-May-88
Submitted by:	Tim Walker	Extract/Digest/Purge	
Preservatives:	none	Date:	31-May-88
Analyst:	Lewis/Attia	Analysis Completion	
WESCO JOB #:	HLA 0831.70-L	Date:	31-May-88
Analytical Method:	EPA 601	Hold time, days:	4
MATRIX: WATER			

LAB #:		8-5371	8-5372	
CLIENT'S ID:	Effluent	212723	212724	Intermediate

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	0.5
Methylene Chloride	N.D.	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	0.5
Chloroform	N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	N.D.	1.7	0.5
Trichloroethene (TCE)	N.D.	1.6	0.5
1,2-Dichloropropane	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	N.D.	0.5
Dibromochloromethane	N.D.	N.D.	0.5
Chlorobenzene	N.D.	N.D.	0.5
Bromoform	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike Percent Recovery		
Bromochloromethane	92 %	88 %
1,4-Dichlorobutane	72 %	67 %

N.D.: Not Detected

Analytical Supervisor

Report Date:	07-Jun-88	Client Contract/PO:	9382,026.02
Client:	Harding Lawson Associates	Date Sampled:	27-May-88
Attn:	David Leland	Site:	City of Oakland
Sampled by:	D. Evans	Date Received:	27-May-88
Submitted by:	D. Evans	Extract/Digest/Purge Date:	02-Jun-88
Preservatives:	none	Analysis Completion Date:	02-Jun-88
Analyst:	Staggs	Hold Time:	6 days
WESCO JOB #:	HLA 0831.70-L		
Analytical Method:	Dissolved Oxygen		

MATRIX: WATER

LAB #	CLIENT ID	Dissolved Oxygen (mg/l O2)
8-5371	Effluent 212723	2.94
Detection limit		1.0
Method number		EPA 600,1983: Method 360.2

Analytical Supervisor

Environmental Services Division
200 Rush Landing Road
Novato, California 94947
(415) 892-0821

CHAIN OF CUSTODY FORM

Job Number: 9382 026 02
Name/Location: CITY OF OAKLAND
Project Manager: DAVE LELAND

Samplers: WALKER TJ
EVANS DM

Recorder: [signature]
(Signature Required)

CODE	Water	Sediment	Soil	Oil	Unpres.	H_2SO_4	HNO_3	Sample No. Yr	Wk	Seq	Date Yr	Mo	Dy	Time	Station Description/Notes	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (L)	Alk O2
3	✓				✓			60	21	2721	88	05	27	1600		X	X					X	
3	✓				✓			60	21	2722	88	05	27	1600		X	X					X	
3	✓				✓			60	21	2723	88	05	27	1600		X	X					X	X
3	✓				✓			60	21	2724	88	05	27	1600		X	X					X	

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

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME

DISPATCHED BY: (Signature) [signature] DATE/TIME 5/27/88 2100
RECEIVED FOR LAB BY: (Signature) [signature] DATE/TIME 5/27/88 2100
METHOD OF SHIPMENT

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

653

DISTRIBUTION

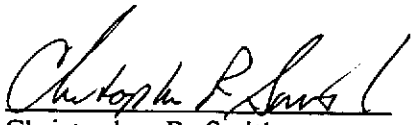
REPORT OF SYSTEM MONITORING: MAY 1988
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA
June 15, 1988

COPY NO. _____

		Copy No.
1 copy:	California Regional Water Quality Control Board San Francisco Bay Region 1111 Jackson Street, Room 6000 Oakland, California 94607 Attention: Mr. Peter Johnson	1
2 copies:	City of Oakland Redevelopment Agency One City Hall Plaza Oakland, California 94612 Attention: Mr. Peter Chen	2-3
1 copy:	Alameda County Department of Environmental Health 470 27th Street Oakland, California 94612 Attention: Mr. Storm Goranson	4

CEM/DFL/clm/A4477-R

QUALITY CONTROL REVIEWER



Christopher R. Smith
Associate Hydrogeologist