Harding Lawson Associates

Transmittal/Memorandum

To: Alameda County Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Lowell Miller

From: David Leland
Date: July 14, 1989
Subject: June 1989 Ground-Water Treatment System Monitoring Report
Job No.: 09382,040.02

Remarks: Please find attached a copy of the "Report of System Monitoring: June 1989, Dewatering Effluent Treatment System, Chinatown Redevelopment Project Area, Oakland, California", describing the operations and monitoring of the ground-water treatment system located at 10th and Webster Streets in Oakland, California.

DFL/dc/df1008#1

cc:

Rec'd 7.18.89

A Report Prepared for

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

REPORT OF SYSTEM MONITORING:
JUNE 1989
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA

HLA Job No. 9382,040.02

Submitted on behalf of:

City of Oakland Redevelopment Agency
One City Hall Plaza
Oakland, California 94612

by

Charles E. Myrick
Project Engineer

David F. Leland
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July 14, 1989

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1 INTRODUCTION

This report discusses the operation and monitoring of the ground-water treatment system at 10th and Webster streets, Oakland, California from June 1 to June 30, 1989. The system is treating ground water produced from extraction wells located in the area bounded by 9th, 11th, Webster and Franklin streets. Ground-water extraction is being conducted in conjunction with 1) in situ biological treatment of soil at the Pacific Renaissance Plaza (PRP) site bounded by 9th, Franklin, and Webster streets and the East Bay Municipal Utility District (EBMUD) property line approximately 100 feet north of the centerline of 10th Street, and 2) dewatering for construction of the EBMUD administration building to the north of 10th Street.

This report has been prepared by Harding Lawson Associates (HLA) on behalf of the Redevelopment Agency of the City of Oakland (Agency) and is submitted in compliance with NPDES Permit CA 0029394, adopted on July 20, 1988, by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). Under the NPDES permit, treatment system discharge limits are 50 parts per billion (ppb) for total petroleum hydrocarbons (TPH) identified as gasoline; 5.6 ppb for lead; 5.0 ppb each for chlorobenzene, 1,2-dichloroethane, 1,2-dichloropropane, trichloroethylene, 1,1,2-trichloroethane, benzene, xylenes, and ethylbenzene; 0.5 ppb for toluene; 0.01 ppb for ethylene dibromide; and 0.0 ppb for total residual chlorine. The treatment system is designed to reduce concentrations of petroleum hydrocarbons in ground water to less than discharge limits specified in the Agency's NPDES permit.

II TREATMENT SYSTEM OPERATION

The ground-water treatment system was installed March 8, 1988, and has been in operation since March 14, 1988. Water is treated by pumping it through four carbon contactors arranged in pairs. Organic compounds in the influent are adsorbed onto 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 ground-water extraction wells may be pumped through either module first. The system also comprises a holding tank for influent water, pumps, filters, piping, and instrumentation. Four water sampling ports -- one influent, two intermediate, and one effluent -- enable water samples to be collected throughout 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.

Treated effluent is either recycled to the PRP biological treatment system or discharged to the storm drain. From June 1 to July 1, 1989, total effluent discharged from the system was 1,240,000 gallons, based on readings of the totalizing flowmeter located in the discharge line. Average flow was 29 gallons per minute (gpm). Of the 1,240,000 gallons of treatment system effluent, approximately 90 percent, or 1,120,000 gallons, was recycled to the PRP injection system and 10 percent, or 120,000 gallons, was discharged to the storm drain.

The carbon contactors were backwashed with freshwater on June 26. Cartridge filters were changed on June 8 and June 27. Bag filters were replaced on a daily or twice daily basis as a result of biological fouling.

On the afternoon of June 11, over a period of less than 2 hours, an estimated 3,000 gallons of untreated water were released prior to passage through the liquid carbon adsorption system. The release occurred from Holding Tank T-1 on the treatment system trailer because of clogging of bag filters used to remove suspended solids (including microbes) from the influent water. To minimize the likelihood of such a release in the future, the bag filters will be inspected and cleaned at least once a day. Efforts are also being made to reduce the holding time of untreated water in the Baker tanks to reduce microbial populations. Neither the release nor the mechanism of the release in any way affected the operational integrity of the carbon adsorption vessels or the ability of the system to remove organic compounds from the effluent prior to discharge.

III TREATMENT SYSTEM MONITORING

During this reporting period, treatment system samples were collected on June 8 from the influent, intermediate, and effluent sampling ports. A trip blank was submitted with the samples collected.

All treatment system samples collected were analyzed by Pace Laboratories, of Novato, California, a California-certified laboratory. All samples and the blank were analyzed for halogenated organics by EPA Test Method 8010. Influent, effluent and blank samples were analyzed for TPH as gasoline by EPA Test Method 8015 and for aromatic organics by EPA Test Method 8020. Influent and effluent samples were analyzed for ethylene dibromide by EPA Test Method 504, for residual chlorine by Standard Method 408E, and for dissolved oxygen by EPA Test Method 360.2.

Results of analyses of samples collected December 15, 1988 through June 8, 1989 are summarized in Tables 1 through 4. Analytical results for samples collected in June are discussed in this report.

IV RESULTS

Results of influent, intermediate, and effluent sample analyses for TPH and for EPA Test Method 8010, 8020, and 504 compounds indicate that on the sampling date (June 8, 1989), the treatment system removed most individual constituents to below detection levels. Methylene chloride was detected at a concentration of 0.6 μg/l (equivalent to ppb) in one effluent sample, but was not detected in a duplicate effluent sample.

Based on laboratory analysis of the treatment system influent sample collected in June (Table 1), the water released on June 11 is estimated to have contained total petroleum hydrocarbons (TPH) at 110 ppb. Compounds whose concentrations in the released water may have exceeded discharge limits include toluene, xylenes, 1,2-dichloroethane and trichloroethene.

TABLE 1. TREATMENT SYSTEM WATER ANALYSIS: INFLUENT SAMPLES

HLA SAMPLE ID #	88501501	88512101	89010501	89021201	89060801	89101101	89140601	89180330	89230801
DATE	12/15/88	12/21/88	01/05/89	01/12/89	02/08/89	03/10/89	04/06/89	05/03/89	06/08/89
TEST METHOD/ COMPOUNDS									
EPA 8020									
Benzene	NT	NT	9.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	0.5	1.2
Toluene	NT	NT	6.1	NT	1.1	ND < 0.2	ND < 0.2	0.2	0.9
Chlorobenzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Ethylbenzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	NT	NT	ND < 0.2	NT	ND < 0.2	68	ND < 0.2	ND < 0.2	26
1,2-Dichlorobenzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 8020 compounds	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
EPA 8015									
TPH (Gasoline)	NT	NT	130	NT	90	340	70	70	110
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
1,1-dichloroethene	ND < 0.5	ND < 0.5	0.8	ND < 0.5	ND < 0.5	ND < 0.5	0.8	ND < 0.5	ND < 0.5
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	6.3	ND < 0.5	ND < 0.5	9.8	0.6
1,1-dichloroethane	ND < 0.5	ND < 0.5	1.9	0.5	1.2	3.2	1.1	ND < 0.5	ND < 0.5
Chloroform	ND < 0.5	1.1	2.1	0.8	1.5	0.65	8.8	ND < 0.5	4.5
1,1,1-trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	1.8	0.7	ND < 0.5	ND < 0.5
1,2-dichloroethane	9.2	4.8	10.5	4.9	8.6	42	16.2	6.8	8.1
Trichloroethene	390	112	140	290	420	ND < 0.5	3.6	4.4	10.3
1,2-dichloropropane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromodichloromethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	0.7	ND < 0.5
Cis-1,3-dichloropropene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	0.65	1.0	ND < 0.5
Tetrachloroethene	ND < 0.5	ND < 0.5	1.4	0.4	0.66	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1,2,2-tetrachloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Dibromochloromethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 504									
Ethylene dibromide	NT	NT	ND < 0.02	NT	0.05	ND < 0.01	0.47	ND < 0.01	ND < 0.01
Standard Method 408E									
Residual chlorine (mg/l)	NT	NT	ND < 0.01	NT	ND < 0.01	ND < 0.01	0.05	ND < 0.01	ND < 0.05
EPA 360.2									
Dissolved oxygen (mg/l)	NT	NT	NT	NT	6.6	7.5	7.9	NT	14

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

TABLE 2. TREATMENT SYSTEM WATER ANALYSIS: INTERMEDIATE SAMPLES

HLA SAMPLE ID #	88501502	88512102	89010502	89021202	89060802	89101102	89140602	89180331	89230802
DATE	12/15/88	12/21/88	01/05/89	01/12/89	02/08/89	03/10/89	04/06/89	05/03/89	06/08/89
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	0.3	NT
Toluene	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	ND < 0.2	NT
Ethylbenzene	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	0.4	NT
Xylenes	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	0.3	NT
Chlorobenzene	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	ND < 0.2	NT
1,3-Dichlorobenzene	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	ND < 0.2	NT
All other 8020 compounds	NT	NT	ND < 0.2	NT	NT	NT	ND < 0.2	ND < 0.2	NT
EPA 8015									
TPH (Gasoline)	NT	NT	ND < 50	NT	NT	NT	NT	NT	NT
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	1.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1-dichloroethane	ND < 0.5	0.6	ND < 0.5	ND < 0.5	1.3	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chloroform	ND < 0.5	1.2	ND < 0.5	ND < 0.5	1.4	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1,1-trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	2.2	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloroethane	7.1	6.0	3.4	1.4	8.2	ND < 0.5	0.55	ND < 0.5	1.3
Trichloroethene	33.0	ND < 0.5	18.0	16.0	9.7	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Tetrachloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,3-dichlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

TABLE 3. TREATMENT SYSTEM WATER ANALYSIS: EFFLUENT SAMPLES

HLA SAMPLE ID #	88501503	88512103	89010504	89021204	89060803	89101103	89140603	89180332	89230803
DATE	12/15/88	12/21/88	01/05/89	01/12/89	02/08/89	03/10/89	04/06/89	05/03/89	06/08/89
TOTAL FLOW (THOUSAND GALLONS	6830.6	6972.2	7200.0	7310.7	7784.3	8000.0	8495.9	8948.7	9778.1
AVERAGE FLOW (GPM)	6.0	16.4	10.5	11.0	12.2	23.0	23.9	23.7	30.5
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	0.3	ND < 0.2
Toluene	NT	NT	ND < 0.2	NT	0.88	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Ethylbenzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	0.3	ND < 0.2
Diphenylhydrazine	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 8020 compounds	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
EPA 8015									
TPH (Gasoline)	NT	NT	ND < 50	NT	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Dichlorodifluoromethane	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0
1,1-dichlorethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	1.4	ND < 0.5	ND < 0.5	ND < 0.5	0.6
1,1-dichloroethane	ND < 0.5	ND < 0.5	1.0	0.9	1.4	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chloroform	ND < 0.5	ND < 0.5	1.4	1.0	1.6	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1,1-trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	2.4	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloroethane	4.3	3.5	6.8	5.3	9.1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Trichloroethene	ND < 0.5	ND < 0.5	0.8	1.0	2.2	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Tetrachloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 360.2									
Dissolved oxygen (mg/l)	NT	NT	NT	NT	9.9	8.0	7.8	NT	10
EPA 504									
Ethylene dibromide	NT	NT	ND < 0.02	NT	0.06	ND < 0.01	ND < 0.01	ND < 0.01	ND < 0.01
Standard Method 408E									
Residual chlorine (mg/l)	NT	NT	ND < 0.01	NT	ND < 0.01	ND < 0.01	ND < 0.05	ND < 0.01	ND < 0.05

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

TABLE 4. TREATMENT SYSTEM WATER ANALYSIS: BLANK SAMPLES

HLA SAMPLE ID #	88501505	88512105	89010505	89021205	89060805	89101105	---	89180334	89230805
DATE	12/15/88	12/21/88	01/05/89	01/12/89	02/08/89	03/10/89	04/06/89	05/03/89	06/08/89
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2
Toluene	NT	NT	ND < 0.2	NT	0.95	ND < 0.2	NT	ND < 0.2	ND < 0.2
Ethylbenzene	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2
Xylenes	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	0.7	ND < 0.2
All other 8020 compounds	NT	NT	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2
TPH									
Gasoline	NT	NT	NT	NT	ND < 50	ND < 50	NT	NT	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Dichlorodifluoromethane	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	NT	ND < 2.0	ND < 2.0
1,1-dichloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	ND < 0.5	ND < 0.5
Methylene chloride	13	ND < 0.5	9.6	1.0	2.9	42	NT	ND < 0.5	ND < 0.5
1,1,1-trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	5.9	NT	ND < 0.5	ND < 0.5
1,2-dichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	NT	ND	ND

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

Appendix A

LABORATORY ANALYTICAL RESULTS FOR TREATMENT SYSTEM SAMPLES

pace® laboratories, inc.

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

June 28, 1989

Mr. David Leland
Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94947

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received 06/08/89.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephen F. Nackord
Director, Sampling and Analytical Services

Enclosures

pace laboratories, inc

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94947

June 28, 1989
PACE Project Number: 490608501

Attn: Mr. David Leland

Pacific R. Plaza

Date Sample(s) Collected: 06/08/89
Date Sample(s) Received: 06/08/89

PACE Sample Number: / Parameter	Units	MDL	734910 89230801 Influent	734920 89230802 Intermediate Port	734930 89230803 Effluent
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chlorine, Total Residual	mg/L	0.05	ND	-	ND
Oxygen, Dissolved	mg/L	0.1	14	-	10
ORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Purgeable Fuels, as Gasoline (EPA 8015)	mg/L	0.05	0.11	-	ND
VOLATILE HALOCARBONS AND AROMATICS					
VOLATILE HALOCARBONS BY EPA 8010			-	-	-
Dichlorodifluoromethane	ug/L	2.0	ND	-	ND
Chloromethane	ug/L	2.0	ND	-	ND
Vinyl Chloride	ug/L	2.0	ND	-	ND
Bromomethane	ug/L	2.0	ND	-	ND
Chloroethane	ug/L	2.0	ND	-	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	-	ND
1,1-Dichloroethene	ug/L	0.5	ND	-	ND
Methylene Chloride	ug/L	0.5	0.6	-	0.6
trans-1,2-Dichloroethene	ug/L	0.5	ND	-	ND
1,1-Dichloroethane	ug/L	0.5	ND	-	ND
Chloroform	ug/L	0.5	4.5	-	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	-	ND
Carbon Tetrachloride	ug/L	0.5	ND	-	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	8.1	-	ND
Trichloroethene (TCE)	ug/L	0.5	10.3	-	ND
1,2-Dichloropropane	ug/L	0.5	ND	-	ND
Bromodichloromethane	ug/L	0.5	ND	-	ND

ND Not detected at or above the MDL.
MDL Method Detection Limit

pace laboratories, inc

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

REPORT OF LABORATORY ANALYSIS

Mr. David Leland
Page 3

June 28, 1989
PACE Project Number: 490608501

PACE Sample Number:			734910	734920	734930
Parameter	Units	MDL	89230801	89230802	89230803
			Influent	Intermediate Part	Effluent
ORGANIC ANALYSIS					
HALOGENATED VOLATILE COMPOUNDS EPA 8010					
Vinyl Chloride	ug/L	2.0	-	ND	-
Bromomethane	ug/L	2.0	-	ND	-
Chloroethane	ug/L	2.0	-	ND	-
Trichlorofluoromethane (Freon 11)	ug/L	2.0	-	ND	-
1,1-Dichloroethene	ug/L	0.5	-	ND	-
Methylene Chloride	ug/L	0.5	-	ND	-
trans-1,2-Dichloroethene	ug/L	0.5	-	ND	-
1,1-Dichloroethane	ug/L	0.5	-	ND	-
Chloroform	ug/L	0.5	-	ND	-
1,1,1-Trichloroethane (TCA)	ug/L	0.5	-	ND	-
Carbon Tetrachloride	ug/L	0.5	-	ND	-
1,2-Dichloroethane (EDC)	ug/L	0.5	-	1.3	-
Trichloroethene (TCE)	ug/L	0.5	-	ND	-
1,2-Dichloropropane	ug/L	0.5	-	ND	-
Bromodichloromethane	ug/L	0.5	-	ND	-
2-Chloroethylvinyl ether	ug/L	0.5	-	ND	-
trans-1,3-Dichloropropene	ug/L	0.5	-	ND	-
cis-1,3-Dichloropropene	ug/L	0.5	-	ND	-
1,1,2-Trichloroethane	ug/L	0.5	-	ND	-
Tetrachloroethene	ug/L	0.5	-	ND	-
Dibromochloromethane	ug/L	0.5	-	ND	-
Chlorobenzene	ug/L	0.5	-	ND	-
Bromoform	ug/L	0.5	-	ND	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	-	ND	-
1,3-Dichlorobenzene	ug/L	0.5	-	ND	-
1,4-Dichlorobenzene	ug/L	0.5	-	ND	-
1,2-Dichlorobenzene	ug/L	0.5	-	ND	-
Bromochloromethane (Surrogate Recovery)			-	87%	-
1,4-Dichlorobutane (Surrogate Recovery)			-	89%	-

ND Not detected at or above the MDL.
MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. David Leland
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June 28, 1989
PACE Project Number: 490608501

PACE Sample Number:			734940	734950
Parameter	Units	MDL	89230804	89230805
			Effluent Duplicate	Trip Blank
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Chlorine, Total Residual	mg/L	0.05	ND	-
Oxygen, Dissolved	mg/L	0.1	7.9	-
ORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Purgeable Fuels, as Gasoline (EPA 8015)	mg/L	0.05	ND	ND
VOLATILE HALOCARBONS AND AROMATICS				
VOLATILE HALOCARBONS BY EPA 8010			-	-
Dichlorodifluoromethane	ug/L	2.0	ND	ND
Chloromethane	ug/L	2.0	ND	ND
Vinyl Chloride	ug/L	2.0	ND	ND
Bromomethane	ug/L	2.0	ND	ND
Chloroethane	ug/L	2.0	ND	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	ND
1,1-Dichloroethene	ug/L	0.5	ND	ND
Methylene Chloride	ug/L	0.5	ND	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND	ND
1,1-Dichloroethane	ug/L	0.5	ND	ND
Chloroform	ug/L	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	ND
Carbon Tetrachloride	ug/L	0.5	ND	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	ND	ND
Trichloroethene (TCE)	ug/L	0.5	ND	ND
1,2-Dichloropropane	ug/L	0.5	ND	ND
Bromodichloromethane	ug/L	0.5	ND	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND	ND
1,1,2-Trichloroethane	ug/L	0.5	ND	ND
Tetrachloroethene	ug/L	0.5	ND	ND

ND Not detected at or above the MDL.
MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

June 28, 1989
PACE Project Number: 490608501

PACE Sample Number:			734940	734950
Parameter	Units	MDL	89230804	89230805
ORGANIC ANALYSIS			Effluent Duplicate	Trip Blank
VOLATILE HALOCARBONS AND AROMATICS				
Dibromochloromethane	ug/L	0.5	ND	ND
Chlorobenzene	ug/L	0.5	ND	ND
Bromoform	ug/L	0.5	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	ND
1,3-Dichlorobenzene	ug/L	0.5	ND	ND
1,4-Dichlorobenzene	ug/L	0.5	ND	ND
1,2-Dichlorobenzene	ug/L	0.5	ND	ND
Bromochloromethane (Surrogate Recovery)			91%	91%
1,4-Dichlorobutane (Surrogate Recovery)			88%	89%
VOLATILE AROMATICS BY EPA 8020			-	-
Benzene	ug/L	0.2	ND	ND
Toluene	ug/L	0.2	ND	ND
Chlorobenzene	ug/L	0.2	ND	ND
Ethylbenzene	ug/L	0.2	ND	ND
Xylenes, Total	ug/L	0.2	ND	ND
1,3-Dichlorobenzene	ug/L	0.2	ND	ND
1,4-Dichlorobenzene	ug/L	0.2	ND	ND
1,2-Dichlorobenzene	ug/L	0.2	ND	ND
Fluorobenzene (Surrogate Recovery)			101%	102%
1,2-DIBROMOETHANE (EDB) EPA METHOD 504				
1,2-Dibromoethane	ug/L	0.01	ND	-
Date Extracted			06/09/89	-

ND Not detected at or above the MDL.
MDL Method Detection Limit

pace laboratories, inc.

REPORT OF LABORATORY ANALYSIS

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Mr. David Leland
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June 28, 1989
PACE Project Number: 490608501

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Stephen F. Nackord
Director, Sampling and Analytical Services

Douglas E. Oram, Ph.D.
Organic Chemistry Manager

[redacted] Lawson Associates
20[redacted] Landi[redacted]
P.O. Box 6107
Novato, California 94948
415 892-0821
Telecopy: 415 892-1586

[redacted] CHAIN OF CUSTODY FORM [redacted]

Lab: [redacted]

Samplers: Caleb A. Deanovy

Job Number: 0938203902

Name/Location: Pacific R. Plaza

Project Manager: David Leland

Recorder: Caleb A. Deanovy
(Signature Required)

SOURCE CODE	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
23	X				3	3		89	23	01	89	06	08	0600	73191 *
23	X					1		89	23	02	89	06	08	0601	73492
23	X				3	3		89	23	03	89	06	08	0630	73493 **
23	X				3	3		89	23	04	89	06	08	0635	73494
23	X					3		89	23	05	89	06	08	0645	73495

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	EPA 8015	EDB SOU (EPA)	Chloride (Assoc.)	Dissolved Oxygen
X	X						X	X	X	X
X										
X	X						X	X	X	X
X	X						X	X	X	X
X	X						X			

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						* rec'd 4 VOAs
						** rec'd 2 VOAs

→ on-01, Time of 6:30 is actually on-03

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
Caleb A. Deanovy		
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 6/8/89 1pm
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REPORT OF SYSTEM MONITORING: JUNE 1989
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA
July 14, 1989

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CEM/DFL/TLW/rmc/E9041-H

QUALITY CONTROL REVIEWER

Tamara L. Williams

Tamara L. Williams
Geologist - 3954