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 F. Leland
Date: March 16, 1990
Subject: February 1990 Ground-Water Treatment System NPDES Monitoring Report
Job No.: 09382,040.02

Remarks: Please find attached a copy of the *Report of System Monitoring: February 1990, Dewatering Effluent Treatment System, Pacific Renaissance Plaza, Oakland, California*, describing the operations and monitoring of the ground-water treatment system located at the Pacific Renaissance Plaza site in Oakland.

DFL/dc/dfl033#1

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cc:

A Report Prepared for

California Regional Water Quality Control Board
San Francisco Bay Region
1800 Harrison Street, Suite 700
Oakland, California 94607

REPORT OF SYSTEM MONITORING
FEBRUARY 1990
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA

HLA Job No. 09382,040.02

Submitted on behalf of:

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

by

Laura O. Hollingsworth
Staff Engineer

David F. Leland
Associate Hydrologist

Harding Lawson Associates
7655 Redwood Boulevard
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Novato, California 94948
415/892-0821

March 15, 1990

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I INTRODUCTION

This report discusses the operation and monitoring of the groundwater treatment system at 10th and Webster streets, Oakland, California for February 1990. The system is treating groundwater produced from extraction wells located in the area bounded by 9th, 11th, Webster and Franklin streets. Groundwater extraction is being conducted in conjunction with 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.

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 hydrocarbons in groundwater to less than discharge limits specified in the NPDES permit.

II TREATMENT SYSTEM OPERATION

The groundwater 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 groundwater extraction wells may be pumped through either module first. The system also includes 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 February 1, 1990 to March 1, 1990, total effluent discharged from the system was 988,780 gallons, based on readings of the flowmeters located on each extraction well. Average flow through the treatment system for the month was 24.5 gallons per minute (gpm). Of the 988,780 gallons of treatment system effluent, 92 percent, or 908,700 gallons, were recycled to the PRP biotreatment injection system and 80,080 gallons, or 8 percent, were discharged to the storm drain.

Bag filters were replaced approximately every 2 to 5 days. The sand filter was backwashed with fresh water twice a day on the days there were site visits, i.e., approximately every other day. The sand in the sand filter was replaced on February 2. Cartridge filters were changed on February 18. The carbon vessels were not backwashed in February.

III TREATMENT SYSTEM MONITORING

February treatment system samples were collected on January 31 from the influent, intermediate, and effluent sampling ports. A duplicate effluent sample was also collected and submitted for analysis.

All samples were analyzed by Pace Laboratories, Novato, California, a California-certified laboratory. All samples were analyzed for benzene, toluene, ethylbenzene, and xylenes by EPA Test Method 8020, and for TPH as gasoline by EPA Test Method 8015. Influent and effluent samples were analyzed for halogenated organics by EPA Test Method 8010, 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 August 1, 1989 through January 31, 1990 are summarized in Tables 1 through 3. Analytical results for samples collected January 31 are discussed in this report.

IV RESULTS

Results of treatment system water sample analyses for TPH and for the EPA Test Method 8010, 8020, and 504 compounds analyzed indicate that on the sampling date (January 31, 1990), the carbon treatment system removed most but not all constituents to nondetectable levels; NPDES discharge limits were exceeded for four constituents.

In all, five individual constituents and TPH as gasoline were detected in at least one of two effluent samples. Benzene and chloroform were detected in one sample at concentrations of 1.3 ppb and 3.9 ppb, respectively. Benzene was not detected in the duplicate effluent sample, which was not analyzed by EPA Test Method 8010. Xylenes were detected in both effluent samples at identical concentrations of 0.6 ppb. These concentrations do not exceed discharge limits.

Toluene, 1,2-dichloroethane (1,2-DCA), and ethylene dibromide (EDB) were detected in one effluent sample at 1.5 ppb, 5.1 ppb, and 0.4 ppb, respectively. In the duplicate sample, TPH as gasoline was measured at 70 ppb, and toluene was detected at 0.2 ppb. Concentrations of toluene and TPH in excess of discharge limits in one effluent sample were not confirmed by duplicate sample results. Concentrations of 1,2-DCA and EDB exceed the associated discharge limits.

The results of the treatment system water sample analyses indicate that the carbon beds are not removing all constituents to discharge limits. The carbon is scheduled for exchange on Wednesday, March 14.

TABLE 1. TREATMENT SYSTEM WATER ANALYSIS: INFLUENT SAMPLES

HLA SAMPLE ID #	8930CSIN	89090741	8910CSIN	89451124	89490017	90010311	90013109
DATE	08/01/89	09/07/89	10/05/89	11/02/89	12/05/89	01/03/90	01/31/90
TEST METHOD/ COMPOUNDS							
EPA 8020							
Benzene	710	6.3	2.2	ND < 0.2	3.7	2	7.0
Toluene	610	0.7	1.7	ND < 0.2	0.7	0.4	4.1
Ethylbenzene	46	ND < 2.0	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	0.6
Xylenes	1100	39	38	12	25	10	20
Chlorobenzene	ND < 2.0	NT	NT	NT	NT	NT	NT
1,2-Dichlorobenzene	ND < 2.0	NT	NT	NT	NT	NT	NT
All other 8020 compounds	ND < 2.0	NT	NT	NT	NT	NT	NT
EPA 8015							
TPH (Gasoline)	6200	ND < 50	120	ND < 50	50	ND < 50	70
EPA 8010							
1,1-dichloroethene	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Methylene chloride	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1-dichloroethane	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chloroform	ND < 5.0	4.3	ND < 0.5	5.5	3.3	ND < 0.5	2.7
1,1,1-trichloroethane	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloroethane	ND < 5.0	7.6	6.6	10	7.1	6.7	6
Trichloroethene	ND < 5.0	14	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloropropane	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromodichloromethane	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Cis-1,3-dichloropropene	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Tetrachloroethene	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chlorobenzene	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1,2,2-tetrachloroethane	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Dibromochloromethane	ND < 5.0	ND < 0.5	ND < 0.5	ND < 0.5	0.63	0.69	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND
EPA 504							
Ethylene dibromide	0.09	ND < 0.02	1.6	2.8	LT 4.0	2.1	0.9 (*)
Standard Method 408E							
Residual chlorine (mg/l)	ND < 0.05	0.5	ND < 0.05	0.1	ND < 0.05	ND < 0.05	ND < 0.05
EPA 360.2							
Dissolved oxygen (mg/l)	20	6.8	5.6	3.4	5.6	8.4	9.4

LT - Detected but not quantified at a concentration less than indicated value.
ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.
(*) Analysis conducted in excess of EPA holding time.

TABLE 2. TREATMENT SYSTEM WATER ANALYSIS: INTERMEDIATE SAMPLES

HLA SAMPLE ID #	8930CSIM	89090742	8910CSIT	89451126	89490018	90010312	90013110
DATE	08/01/89	09/07/89	10/05/89	11/02/89	12/05/89	01/03/90	01/31/90
TEST METHOD/COMPOUNDS							
EPA 8020							
Benzene	79	ND < 0.2	1.7	NT	ND < 0.2	ND < 0.2	ND < 0.2
Toluene	61	ND < 0.2	ND < 0.2	NT	1.8	ND < 0.2	4.0
Ethylbenzene	2.6	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	140	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	2.6
Chlorobenzene	ND < 0.2	NT	NT	NT	NT	NT	NT
1,3-Dichlorobenzene	ND < 0.2	NT	NT	NT	NT	NT	NT
All other 8020 compounds	ND < 0.2	NT	NT	NT	NT	NT	NT
EPA 8015							
TPH (Gasoline)	NT	NT	ND < 50	NT	ND < 50	ND < 50	ND < 50
EPA 8010							
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
1,1-dichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
Chloroform	5.6	4.7	ND < 0.5	ND < 0.5	3.8	3.6	NT
1,1,1-trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
1,2-dichloroethane	ND < 0.5	6.2	7.7	7.5	6.6	6.3	NT
Trichloroethene	2.7	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
Tetrachloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
Chlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
Bromoform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
1,3-dichlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
All other 8010 compounds	ND	ND	ND	ND	ND	ND	NT

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 #	8930CSEF	89090740	8910CSEF	89451127	89490019	90010313	90010314	90013111	90013112
DATE	08/01/89	09/07/89	10/05/89	11/02/89	12/05/89	01/03/90	01/03/90	01/31/90	01/31/90
TOTAL FLOW (THOUSAND GALLONS	12120.6	13566.4	14424.0	-	-	-	-	-	-
AVERAGE FLOW (GPM)	30.0	27.1	21.3	-	-	-	-	-	-
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	1.3	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	0.7	ND < 0.2	1.2	ND < 0.2	ND < 0.2	1.5	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	0.6	0.6
Diphenylhydrazine	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	NT	NT	NT	NT
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	NT	NT	NT	NT
EPA 8015									
TPH (Gasoline)	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	70
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	NT
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	NT
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	0.53	ND < 0.5	ND < 0.5	ND < 0.5	NT
1,1-dichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
Chloroform	ND < 0.5	ND < 0.5	ND < 0.5	1.5	1.6	ND < 0.5	ND < 0.5	3.9	NT
1,1,1-trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
1,2-dichloroethane	0.7	1.1	1.7	2.8	3.0	3.3	3.5	5.1	NT
Trichloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	NT
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	NT
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	NT
EPA 360.2									
Dissolved oxygen (mg/l)	1.0	1.9	1.3	1.8	5.3	2.6	NT	7	NT
EPA 504									
Ethylene dibromide	ND < 0.02	ND < 0.02	ND < 0.02	ND < 0.01	ND < 0.02	0.04	0.05	0.4(*)	NT
Standard Method 408E									
Residual chlorine (mg/l)	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	NT	ND < 0.05	NT

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.
(*) Analysis conducted in excess of EPA holding times.

Appendix

LABORATORY ANALYTICAL RESULTS FOR TREATMENT SYSTEM SAMPLES

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Offices:
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REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

Attn: Mr. David Leland

February 28, 1990
PACE Project
Number: 400131501B
PACE WP Number: WPPLAB 1227

PRP HLA#09382,039.02

			Influent	Inter
PACE Sample Number:			712470	712480
Date Collected:			01/31/90	01/31/90
Date Received:			01/31/90	01/31/90
Parameter	Units	MDL	90013109	90013110
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Chlorine, Total Residual	mg/L	0.05	ND	-
Oxygen, Dissolved	mg/L	0.1	9.4	-
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	0.07	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-
Benzene	mg/L	0.0002	0.0070	ND
Ethylbenzene	mg/L	0.0002	0.0006	ND
Toluene	mg/L	0.0002	0.0041	0.0040
Xylenes, Total	mg/L	0.0002	0.020	0.0026
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dichlorodifluoromethane	ug/L	2.0	ND	-
Chloromethane	ug/L	2.0	ND	-
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	2.7	-
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	6.0	-
Trichloroethene (TCE)	ug/L	0.5	ND	-

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

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February 28, 1990
PACE Project Number: 4001315018

PRP HLA#09382,039.02

PACE Sample Number:			712470	712480
Date Collected:			01/31/90	01/31/90
Date Received:			01/31/90	01/31/90
Parameter	Units	MDL	90013109	90013110
ORGANIC ANALYSIS				
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
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)			95%	-
1,4-Dichlorobutane (Surrogate Recovery)			106%	-
1,2-DIBROMOETHANE (EDB) EPA METHOD 504				
1,2-Dibromoethane	ug/L	0.01	0.9	-
Date Extracted			2/20/90(*)	-

MDL Method Detection Limit
ND Not detected at or above the MDL.
(*) Analysis conducted in excess of EPA holding times.

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REPORT OF LABORATORY ANALYSIS

Mr. David Leland
Page 4

February 28, 1990
PACE Project
Number: 400131501B

PRP HLA#09382,039.02

Parameter	Units	MDL	712490 01/31/90 01/31/90 90013111	712500 01/31/90 01/31/90 90013112
PACE Sample Number:				
Date Collected:				
Date Received:				
ORGANIC ANALYSIS				
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
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)			106%	-
1,4-Dichlorobutane (Surrogate Recovery)			110%	-
1,2-DIBROMOETHANE (EDB) EPA METHOD 504				
1,2-Dibromoethane	ug/L	0.01	0.4	-
Date Extracted			2/20/90(*)	-

MDL Method Detection Limit
ND Not detected at or above the MDL.
(*) Analysis conducted in excess of EPA holding times.

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REPORT OF LABORATORY ANALYSIS

Offices:
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Irvine, California
Asheboro, North Carolina

February 28, 1990
PACE Project
Number: 4001315018

PRP HLA#09382,039.02

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 Nackord
Stephen F. Nackord
Director, Sampling and Analytical Services

Steve Nackord for
Douglas E. Oram, Ph.D.
Organic Chemistry Manager

pace laboratories, inc.

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas
Irvine, California
Asheboro, North Carolina

February 28, 1990

Mr. David Leland
Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

RE: PACE Project No. 400131.501B
PRP HLA#09382,039.02

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received January 31, 1990.

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

Sincerely,

Stephen Nackord

Stephen F. Nackord
Director, Sampling and Analytical Services

Enclosures

Harding Lawson Associates
200 Rush Landing Road
P.O. Box 6107
Novato, California 94948
415/892-0821
Telecopy: 415/892-1586

CHAIN OF CUSTODY FORM

Lab: PACE

400131 · 501

Samplers: Bill Kelly, Dave Evans

Job Number: 09382.039.02

Name/Location: PRP

Project Manager: Dave Leland

Recorder: _____ (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCl	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 601/8010	EPA 602/8020 BTXE	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	Dissolved oxygen DO	EPA 2005 (TPH) Gas	EPA 5014 (TPH) Gas/W	Chlorine
2 3	X				3			3	9 0 0 1	3 1	0 9	9 0	0 1	3 1	1 6 0 6	712 47 (1GAL 2GL)	X	X						X	X	X	X
2 3	X							2	9 0 0 1	3 1	1 0	9 0	0 1	3 1	1 6 1 4	48	X	X							*		
2 3	X				3			3	9 0 0 1	3 1	1 1	9 0	0 1	3 1	1 6 2 3	49 (1GAL 2GL)	X	X						X	X	X	X
2 3	X							2	9 0 0 1	3 1	1 2	9 0	0 1	3 1	1 6 3 9	50	X	X							*		

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

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) DATE/TIME	RECEIVED FOR LAB BY: (Signature) Michelle Casey	DATE/TIME 1-31 6:25

METHOD OF SHIPMENT: Cooler w/ Blue ice

1005 52

Laboratory Copy Project Office Copy Field or Office Copy

6533

DISTRIBUTION

REPORT OF SYSTEM MONITORING
FEBRUARY 1990
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA
March 15, 1990

Copy No. 4

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LOH/DFL/ld/LOH750-R

QUALITY CONTROL REVIEWER

Tamara L. Williams

Tamara L. Williams
Geologist - 3954