INFO

Noted E. P. SO. OCT 17 1991

Harding Lawson Associates

site address = 11th & Webster St.

October 11, 1991

09382,040.02

California Regional Water
Quality Control Board
San Francisco Bay Region
2101 Webster Street
Oakland, California 94612

Attention: Mr. Don Dalke

01-0392 10/11 QR.

Dear Mr. Dalke:

~~**Report of Monitoring: September 1991**~~
Chinatown Redevelopment Project Area
Oakland, California

11th and WEBSTER

This letter transmits a report titled *Report of Groundwater Monitoring, September 1991, Chinatown Redevelopment Project Area, Oakland, California*, dated October 11, 1991. The report was prepared by Harding Lawson Associates (HLA) on behalf of the Redevelopment Agency of the City of Oakland (Agency).

We look forward to meeting with you on November 1 to discuss the results of recent monitoring and recommendations for continued monitoring of groundwater levels and chemistry in the Chinatown area. Please call me at 899-7352 or Peter Chen of the Agency at 273-3692 if you have any questions.

Yours very truly,

HARDING LAWSON ASSOCIATES

David F. Leland

David F. Leland, P.E.
Associate Engineer

DFL/jc20044-oakland

Attachment: *Report of Groundwater Monitoring, September 1991, Chinatown Redevelopment Project Area, Oakland, California*

cc: Lester Feldman, RWQCB
Richard Hiett, RWQCB (without attachment)
Lowell Miller, Alameda County
Peter Chen, Agency (2)

A Report Prepared for

Redevelopment Agency of the City of Oakland
1333 Broadway, 9th Floor
Oakland, California 94612

REPORT OF GROUNDWATER MONITORING
SEPTEMBER 1991
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA

HLA Job No. 9382,040.02

Submitted to:

California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

by

Mark T. Egbert
Project Geologist

David F. Leland, P.E.
Associate Engineer

Harding Lawson Associates
7655 Redwood Boulevard
P.O. Box 578
Novato, California 94948
415/892-0821

October 11, 1991

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1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring in the Chinatown Redevelopment Project Area (Project Area) of Oakland, California (Plate 1), for September 1991. Dewatering activities at the Pacific Renaissance Plaza (PRP) site were completed on July 1, 1991. Quarterly groundwater monitoring was recommended through June 1992 in Harding Lawson Associates' (HLA) report titled *Groundwater Monitoring and Dewatering Effluent Treatment System Operation and Monitoring, April through July 1991 (HLA, 1991).*

Groundwater monitoring in September 1991 consisted of sampling two monitoring wells and measuring water levels at 11 wells. This report evaluates groundwater flow directions in the vicinity of the PRP site following termination of dewatering activities; it also evaluates the presence and distribution of gasoline and gasoline constituents in groundwater at selected wells in the vicinity of the PRP site where these compounds have occurred in the past.

2.0 QUARTERLY GROUNDWATER MONITORING

Water levels were measured at 11 wells and groundwater samples were collected from monitoring wells MW-18 and MW-19 on September 19, 1991, to monitor hydraulic conditions at the PRP site and to monitor groundwater chemistry at these 2 wells. A field blank was also poured and kept with the samples until delivery to the laboratory.

Standard HLA decontamination protocol was followed prior to sampling. HLA employees performing field work were trained in safety procedures and used Level D personal protective equipment.

At least three well volumes were purged from both wells prior to sampling; the purge water was collected in a 55-gallon drum onsite. Groundwater samples were collected with a stainless steel bailer. After being decanted into 40-milliliter sample bottles, samples were labeled and stored on ice until delivery under chain of custody to Pace Laboratories, Inc., (PACE), of Novato, California, for chemical analysis. Each sample was analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Test Method 8020 and for total petroleum hydrocarbons (TPH) as gasoline using EPA Test Method 8015.

3.0 RESULTS

3.1 Groundwater Elevations and Potentiometric Contours

Depths to groundwater and calculated water levels for September 1991 are presented in Table 1; potentiometric contours interpreted from the water-level data are shown on Plate 1. The data indicate groundwater flow is to the northwest in the northern portions of the Project Area, and generally west to slightly south of west in the southern portions of the Project Area. Potentiometric data are not interpreted in the area bounded by 9th, 11th, Franklin, and Webster streets, the area occupied by the PRP and East Bay Municipal Utility District buildings.

Water levels increased in 10 of 11 wells between June 6 and September 19, 1991, with increases ranging from 0.38 foot at MW-18 to 5.66 feet at MW-3. The water level decreased in Monitoring Well MW-23 by 0.18 feet. These data indicate that since the termination of dewatering, the natural flow regime has partially returned to pre-pumping conditions (*HLA, 1989*).

3.2 Analytical Results - Groundwater Monitoring Wells

Results of chemical analyses of the groundwater samples collected on September 19, 1991, are presented in Table 2 along with historical groundwater chemistry data for BTEX and TPH as gasoline for all monitoring wells. Laboratory reports for groundwater samples are presented in the Appendix.

BTEX compounds were detected in the groundwater samples collected from Monitoring Well MW-19; benzene and toluene concentrations have decreased slightly, ethylbenzene concentrations have increased slightly, and xylenes have remained generally stable since June 1991 and are substantially lower than concentrations measured before

dewatering activities began in November 1990. BTEX compounds were not detected in the sample from Monitoring Well MW-18.

At Monitoring Well MW-19, TPH as gasoline was detected in September at a concentration of 3.5 milligrams/liter (mg/l), similar to the concentration measured in June of 3.4 mg/l, and substantially less than the 12 mg/l measured just after the start of dewatering. TPH as gasoline was not detected in the sample from Well MW-18.

4.0 DISCUSSION AND RECOMMENDATIONS

Results of analysis of water samples collected in September 1991 indicate that concentrations of petroleum hydrocarbons and BTEX compounds at MW-19 remain significantly lower than pre-dewatering concentrations for those constituents.

Based on water levels measured in March 1988 (*HLA, 1989*), before the initiation of dewatering activities in the Project Area, HLA estimated groundwater flow to be generally westerly. The September 1991 measurements are the first water-level data collected since dewatering activities ceased and appear to show the influence of the buildings constructed in the Project Area. In the vicinity of Well MW-19, groundwater flow is estimated to be westerly to slightly south of west.

Review of water-level contours indicates Well MW-18 is the best-situated well to monitor the potential for migration of dissolved gasoline constituents from the vicinity of Well MW-19. To characterize the possible continued presence of hydrocarbons at MW-19 and the potential for migration of any hydrocarbons present, HLA recommends quarterly sampling and analysis of groundwater from Monitoring Wells MW-18 and MW-19 through June 1992.

The next quarterly groundwater monitoring round is scheduled for December 1991. Water levels will be measured at Monitoring Wells MW-2, MW-3, MW-6, MW-7, MW-8, and MW-18 through MW-23. Samples from Monitoring Well MW-18 will be analyzed for BTEX, and samples from MW-19 for TPH as gasoline and BTEX. Results will be presented in a report to be submitted to the Regional Water Quality Control Board.

5.0 REFERENCES

Harding Lawson Associates, 1989. *A-Aquifer Monitoring Report, Chinatown Redevelopment Project Area, Oakland, California.* January 31.

_____, 1991. *Groundwater Monitoring and Dewatering Effluent Treatment System, Operation and Monitoring, April through July 1991, Chinatown Redevelopment Project Area, Oakland, California.* August 16.

LARGE MAP REMOVED

Table 1. WATER-LEVEL ELEVATIONS - AUGUST 1990 THROUGH SEPTEMBER 1991

Well No.	MW-2		MW-3		MW-6		MW-7		MW-8		MW-12	
	GROUND SURFACE 40.05	TOP OF CASING 39.55	GROUND SURFACE 39.02	TOP OF CASING 38.35	GROUND SURFACE 39.95	TOP OF CASING 39.59	GROUND SURFACE 39.35	TOP OF CASING 39.10	GROUND SURFACE 40.63	TOP OF CASING 40.47	GROUND SURFACE 37.70	TOP OF CASING 37.00
DATE	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation
3-Aug-90	25.59	13.96	25.33	13.02	25.37	14.22	25.38	13.72	27.02	13.45	21.15	15.85
27-Aug-90	-	-	-	-	-	-	-	-	-	-	-	-
12-Sep-90	-	-	-	-	-	-	-	-	-	-	24.08	12.92
13-Sep-90	-	-	-	-	-	-	25.15	13.95	-	-	-	-
14-Nov-90	25.38	14.17	23.91	14.44	25.25	14.34	24.97	14.13	26.72	13.75	23.37	13.63
3-Dec-90	26.12	13.43	24.69	13.66	25.44	14.15	27.66	11.44	27.28	13.19	25.45	11.55
11-Jan-91	28.60	10.95	28.97	9.38	27.50	12.09	29.82	9.28	29.04	11.43	*	*
11-Feb-91	32.39	7.16	32.37	5.98	29.43	10.16	32.35	6.75	30.88	9.59	*	*
8-Mar-91	33.57	5.98	32.29	6.06	30.41	9.18	32.04	7.06	31.98	8.49	*	*
12-Apr-91	32.67	6.88	31.89	6.46	30.25	9.34	31.37	7.73	32.01	8.46	*	*
10-May-91	31.90	7.65	31.29	7.06	29.94	9.65	30.94	8.16	31.66	8.81	*	*
6-Jun-91	32.56	6.99	30.94	7.41	30.27	9.32	31.06	8.04	31.94	8.53	*	*
19-Sep-91	26.94	12.61	25.28	13.07	26.58	13.01	26.96	12.14	28.65	11.82	*	*

NOTES:

Elevations are in feet above mean sea level (MSL).

Depth to water measured in feet from top of casing.

* Well MW-12 was damaged during excavation and construction activities and can no longer be monitored.

Table 1. WATER-LEVEL ELEVATIONS - AUGUST 1990 THROUGH SEPTEMBER 1991

Well No.	MW-18		MW-19		MW-20		MW-21		MW-22		MW-23	
	GROUND SURFACE 36.52	TOP OF CASING 35.88	GROUND SURFACE 37.15	TOP OF CASING 36.62	GROUND SURFACE 38.32	TOP OF CASING 37.86	GROUND SURFACE 38.67	TOP OF CASING 38.08	GROUND SURFACE 37.70	TOP OF CASING 37.34	GROUND SURFACE 34.68	TOP OF CASING 34.23
DATE	Depth to Water	Ele-vation	Depth to Water	Ele-vation	Depth to Water	Ele-vation	Depth to Water	Ele-vation	Depth to Water	Ele-vation	Depth to Water	Ele-vation
3-Aug-90	24.41	11.47	25.32	11.30	25.01	12.85	27.60	10.48	-	-	-	-
27-Aug-90	-	-	-	-	-	-	27.52	10.56	22.93	14.41	22.45	11.78
12-Sep-90	-	-	-	-	24.06	13.80	27.38	10.70	-	-	-	-
13-Sep-90	24.33	11.55	22.44	14.18	-	-	-	-	22.78	14.56	21.27	12.96
14-Nov-90	24.13	11.75	21.97	14.65	24.47	13.39	27.32	10.76	22.65	14.69	21.80	12.43
3-Dec-90	24.81	11.07	22.16	14.46	26.29	11.57	27.39	10.69	22.78	14.56	22.00	12.23
11-Jan-91	25.90	9.98	25.33	11.29	28.38	9.48	28.03	10.05	24.98	12.36	22.51	11.72
11-Feb-91	26.40	9.48	26.55	10.07	29.55	8.31	28.08	10.00	26.05	11.29	22.69	11.54
8-Mar-91	26.44	9.44	26.56	10.06	29.95	7.91	28.33	9.75	26.63	10.71	22.77	11.46
12-Apr-91	26.31	9.57	25.92	10.70	29.62	8.24	28.52	9.56	26.22	11.12	22.36	11.87
10-May-91	25.48	10.40	24.90	11.72	29.01	8.85	28.34	9.74	25.84	11.50	22.14	12.09
6-Jun-91	25.61	10.27	24.75	11.87	29.06	8.80	28.21	9.87	25.69	11.65	22.17	12.06
19-Sep-91	25.23	10.65	23.12	13.50	26.46	11.40	27.81	10.27	23.73	13.61	22.35	11.88

NOTES:

Elevations are in feet above mean sea level (MSL).

Depth to water measured in feet from top of casing.

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-3	10-Mar-88	ND	ND	ND	ND	ND
	18-Mar-88	ND	ND	ND	ND	ND
	25-Mar-88	ND	ND	ND	ND	ND
	1-Apr-88	0.7	0.4	ND	1.2	ND
	15-Apr-88	ND	ND	ND	ND	ND
	28-Apr-88	ND	ND	ND	ND	ND
	28-Apr-88	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND
	11-May-88	ND	ND	ND	ND	ND
	27-May-88	ND	ND	ND	ND	ND
	16-Jun-88	ND	ND	ND	ND	ND
	27-Jul-88	ND	ND	ND	ND	ND
	26-Aug-88	ND	ND	ND	ND	ND
	30-Sep-88	ND	ND	ND	ND	ND
	2-Nov-88	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND
	2-Dec-88	ND	ND	ND	ND	ND
	4-Jan-89	ND	ND	ND	ND	ND
	3-Feb-89	ND	0.0009	ND	ND	ND (0.25)
	3-Dec-90	ND	0.0002 †	ND	ND	ND
	8-Mar-91	ND	ND	ND	ND	ND
	6-Jun-91	ND	ND	ND	ND a	NT
MW-7	4-Apr-89	ND	0.0007	0.0010	0.0012	ND
	3-May-89	ND	0.0012	0.0018	0.0048	0.27
	6-Jun-89	0.0010	0.001	0.0022	0.0011	0.4
	7-Jul-89	0.0002	0.001	0.00034	0.0059	0.56
	2-Aug-89	ND	0.0015	0.0054	0.0059	0.7
	7-Sep-89	ND	ND	ND	0.0015	0.59
	5-Oct-89	ND	0.0011	0.0006	0.0013	0.73
	2-Nov-89	0.0002	0.001	0.0055	0.0036	0.63
	6-Dec-89	0.0006	0.0087	0.0059	0.0036	0.32
	3-Jan-90	0.0007	0.0007	0.0006	0.0013	0.18
	1-Feb-90	ND	0.0009	ND	0.0003	ND
	28-Feb-90	ND	0.0006	0.0004	0.0052	0.09
	11-Apr-90	ND	0.0007	0.0033	0.0029	0.130
	16-May-90	ND	0.0008	0.0014	0.0008	0.43
	13-Sep-90	ND	0.0019	ND	ND	NT
	3-Dec-90	0.0002	0.0024	0.0019	0.0012	0.32
	11-Feb-91	ND	ND	ND	ND	ND
	8-Mar-91	ND	ND	ND	ND	ND
	6-Jun-91	ND	ND	ND	ND a	ND
MW-12	15-Feb-89	ND	ND	ND	ND	ND
	3-Mar-89	NT	NT	NT	NT	ND
	5-Apr-89	0.0014	0.0023	ND	0.0054	ND
	2-May-89	0.026	0.0033	ND	0.0063	0.10
	7-Jun-89	0.034	0.0037	ND	0.012	0.18
	6-Jul-89	0.029	0.0025	ND	0.0059	0.12
	2-Aug-89	0.023	0.002	ND	0.005	ND
	7-Sep-89 @	0.051/0.059	0.0016/0.0022	ND/ND	0.0049/0.0058	ND/ND
	5-Oct-89 @	0.037/0.040	0.0032/0.0031	ND/ND	0.0086/0.0094	ND/ND
	2-Nov-89	0.0056	0.0011	ND	0.0019	0.071
	6-Dec-89	0.0062	0.0012	ND	0.0017	0.06
	3-Jan-90	0.0086	0.0010	ND	0.0012	0.09
	1-Feb-90 @	0.0018/0.0024	0.0010/0.0004	ND/ND	0.0005/0.0004	ND/ND
	1-Mar-90	0.0016	0.0014	ND	0.0003	ND
	11-Apr-90	0.0066	0.0174	0.0015	0.0116	0.147
	18-May-90	ND	0.0009	ND	ND	ND
	12-Sep-90	ND	ND	ND	0.0002	NT
	3-Dec-90	0.0006	0.0002 †	ND	0.0002 †	ND

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-18	15-Feb-89	ND	ND	ND	ND	ND
	3-Mar-89	NT	NT	NT	NT	ND
	5-Apr-89	ND	ND	ND	ND	ND
	2-May-89	ND	ND	ND	ND	ND
	7-Jun-89	ND	ND	ND	ND	ND
	6-Jul-89	ND	ND	ND	ND	ND
	2-Aug-89	ND	ND	ND	ND	ND
	6-Sep-89	ND	ND	ND	ND	ND
	5-Oct-89	ND	ND	ND	ND	ND
	1-Nov-89	ND	ND	ND	ND	ND
	6-Dec-89	ND	0.0009	ND	0.0013	ND
	2-Jan-90	0.016	0.0080	0.0014	0.0098	0.10
	1-Feb-90	ND	ND	ND	ND	ND
	1-Mar-90	0.0003	ND	ND	0.0002	ND
	11-Apr-90	0.0004	0.0006	0.0005	0.0003	ND
	18-May-90	ND	ND	ND	ND	ND
	13-Sep-90	0.0027	ND	ND	ND	NT
	4-Dec-90	0.0029	0.0002 †	ND	0.0003 †	ND
	8-Mar-91	0.0009	0.0003	ND	ND	ND
	6-Jun-91	ND	ND	ND	ND a	NT
	19-Sep-91	ND b	ND b	ND b	ND b	ND
MW-19	15-Dec-89	5.0	0.30	0.078	0.61	12
	3-Jan-90	3.0	0.46	0.12	1.1	13
	1-Feb-90	1.1	0.022	LT 0.0040	0.032	1.9
	1-Mar-90	4.2	0.92	0.24	0.82	9.2
	11-Apr-90	3.8	1.1	0.82	0.34	10
	18-May-90	5.6	0.75	0.70	0.78	11
	13-Sep-90	1.4	1.2	0.35	1.6	NT
	4-Dec-90	2.1	1.5	0.42	1.6	12
	11-Feb-91	0.45	0.12	0.086	0.21	2.7
	8-Mar-91	0.52	0.057	0.020	0.083	1.40
	10-May-91	0.32	0.088	0.055	0.160	1.80
	6-Jun-91	0.38	0.027	0.023	0.092	3.40
	6-Jun-91 (dup)	0.46	0.038	0.030	0.15	NT
	19-Sep-91	0.21	0.023	0.094	0.15	3.50
MW-20	15-Dec-89	ND	ND	ND	ND	ND
	3-Jan-90	0.0004	0.0004	ND	0.0008	ND
	1-Feb-90	ND	0.0014	ND	0.0005	ND
	28-Feb-90	ND	ND	ND	0.0005	ND
	11-Apr-90	0.0028	0.0110	0.0011	0.0066	ND
	18-May-90	ND	ND	ND	ND	ND
	12-Sep-90	ND	ND	ND	ND	NT
	3-Dec-90	ND	0.0002 †	ND	ND	ND
	8-Mar-91	ND	ND	ND	ND	ND
	6-Jun-91	ND	ND	ND	ND a	NT
MW-21	27-Aug-90	ND	ND	ND	ND	NT
	12-Sep-90	ND	ND	ND	ND	NT
	3-Dec-90	ND	0.0005 †	ND	0.0011 †	ND
	8-Mar-91	ND	ND	ND	ND	ND
	6-Jun-91	ND	ND	ND	ND a	NT
MW-22	27-Aug-90	ND	ND	ND	ND	NT
	13-Sep-90	ND	ND	ND	ND	NT
	4-Dec-90	ND	0.0002 †	ND	0.0002 †	ND
	8-Mar-91	ND	ND	ND	ND	ND
	6-Jun-91	ND	ND	ND	ND a	NT

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-23	27-Aug-90	ND	ND	ND	ND	NT
	13-Sep-90	ND	ND	ND	ND	NT
	4-Dec-90	ND	0.0002 †	ND	ND	ND
	8-Mar-91	ND	ND	ND	ND	ND
	6-Jun-91	ND	0.0004	ND	ND a	NT
BLANK	5-Apr-89	0.5	ND	ND	ND	ND
	1-May-89	ND	ND	ND	ND	ND
	6-Jun-89	ND	ND	ND	ND	ND
	6-Jul-89	ND	ND	ND	ND	ND
	1-Aug-89	ND	ND	ND	ND	ND
	2-Aug-89	ND	ND	ND	ND	ND
	3-Aug-89	ND	ND	ND	ND	ND
	6-Sep-89	ND	ND	ND	ND	ND
	7-Sep-89	ND	ND	ND	ND	ND
	4-Oct-89	ND	ND	ND	ND	ND
	2-Nov-89	ND	ND	ND	ND	ND
	5-Dec-89	ND	ND	ND	ND	ND
	3-Jan-90	ND	0.0006	ND	0.0017	ND
	13-Sep-90	ND	ND	ND	ND	NT
	11-Feb-91	ND	ND	ND	ND	NT
	8-Mar-91	ND	ND	ND	ND	ND
	19-Sep-91	ND b	ND b	ND b	ND b	ND

NOTES:

Results reported in milligrams per liter (mg/l); equivalent to parts per million.
Analyses performed by PACE Laboratories, Inc., Novato, California.

LOD: Limit of Detection.
ND: Not detected at or above LOD.
NT: Not tested.
*: LOD Changed to 0.0002 on 01-May-89
**: LOD Changed to 0.05 on 01-May-89
†: PACE laboratory reported toluene and total xylenes in the method blanks analyzed along with the samples.
@: Two values indicate results of duplicate analyses.
(dup): Duplicate analysis
LT: Less than the concentration indicated.
a: Limit of detection is 0.0004 mg/l.
b: Limit of detection is 0.0005 mg/l.

APPENDIX

RESULTS OF LABORATORY ANALYSIS OF GROUNDWATER SAMPLES FROM MONITORING WELLS

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

30 SEP 91 9:50

September 27, 1991

Mr. Marc Egbert
Harding Lawson Associates
7655 Redwood Blvd.
P.O.Box 578
Novato, CA 94948

RE: PACE Project No. 410919.506
Client Reference: PRP/09382,039.02

Dear Mr. Egbert:

Enclosed is the report of laboratory analyses for samples received September 19, 1991.

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

Sincerely,

Carol Reid

Carol Reid
Project Manager

Enclosures

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
7655 Redwood Blvd.
P.O.Box 578
Novato, CA 94948

September 27, 1991
PACE Project Number: 410919506

Attn: Mr. Marc Egbert

MW-19

Client Reference: PRP/09382,039.02

PACE Sample Number:			70 0091330	
Date Collected:			09/19/91	
Date Received:			09/19/91	
Client Sample ID:			91091901	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/20/91
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	3500	09/20/91
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	09/20/91
Benzene	ug/L	0.5	210	09/20/91
Toluene	ug/L	0.5	23	09/20/91
Ethylbenzene	ug/L	0.5	94	09/20/91
Xylenes, Total	ug/L	0.5	150	09/20/91

MDL Method Detection Limit

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Marc Egbert
Page 2

September 27, 1991
PACE Project Number: 410919506

Client Reference: PRP/09382,039.02

MW-18

PACE Sample Number:			70 0091349	
Date Collected:			09/19/91	
Date Received:			09/19/91	
Client Sample ID:			91091902	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/25/91
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	ND	09/25/91
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	09/25/91
Benzene	ug/L	0.5	ND	09/25/91
Toluene	ug/L	0.5	ND	09/25/91
Ethylbenzene	ug/L	0.5	ND	09/25/91
Xylenes, Total	ug/L	0.5	ND	09/25/91

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

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Marc Egbert
Page 3

September 27, 1991
PACE Project Number: 410919506

Client Reference: PRP/09382,039.02

Blank

PACE Sample Number:			70 0091357	
Date Collected:			09/19/91	
Date Received:			09/19/91	
Client Sample ID:			91091903	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/20/91
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	ND	09/20/91
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	09/20/91
Benzene	ug/L	0.5	ND	09/20/91
Toluene	ug/L	0.5	ND	09/20/91
Ethylbenzene	ug/L	0.5	ND	09/20/91
Xylenes, Total	ug/L	0.5	ND	09/20/91

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

These data have been reviewed and are approved for release.

Mark A. Valentini

Mark A. Valentini, Ph.D.
Regional Director

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Client Reference: PRP/09382,039.02

PURGEABLE FUELS AND AROMATICS
Batch: 70 06329
Samples: 70 0091330, 70 0091357

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	385	102%	102%	0%
Benzene	ug/L	0.5	40	93%	94%	1%
Toluene	ug/L	0.5	40	95%	96%	1%
Xylenes, Total	ug/L	0.5	120	101%	102%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Marc Egbert
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QUALITY CONTROL DATA

September 27, 1991
PACE Project Number: 410919506

Client Reference: PRP/09382,039.02

TPH GASOLINE/BTEX
Batch: 70 06358
Samples: 70 0091349

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	350	92%	94%	2%
Benzene	ug/L	0.5	40.0	94%	96%	2%
Toluene	ug/L	0.5	40.0	95%	97%	2%
Ethylbenzene	ug/L	0.5	40.0	99%	100%	1%
Xylenes, Total	ug/L	0.5	120	105%	106%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

[redacted]ardin[redacted]son A[redacted]ates
7655 Redwood Boulevard
P.O. Box 578
Novato, California 94948
415/892-0821
Telecopy: General: 415/892-0831
Accounting: 415/898-1052

CHAIN OF CUSTODY FORM

4 1 0 8 1 9 · 5 0 6

Lab: PACE

Samplers: KJG

Job Number: 09382.039.02

Name/Location: TRP

Project Manager: MARC EGBERT

Recorder: [signature] (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
23	X							3	91	09	1901	91	09	19	1315	9133.0
23	X							3	91	09	1902	91	09	19	1415	34.9
23	X							3	91	09	1903	91	09	19	1445	35.7
								2	Trip Blanks							36.5

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	ICP METALS	EPA 8015M/TPH	TPH - GAS	BTEX 8020
						X	X
						X	X
						X	X

10/2

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Trip blanks added by sample receiving

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
[signature]	[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) [signature] PACE	DATE/TIME 9/19/9 16:35
METHOD OF SHIPMENT		

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

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REPORT OF GROUNDWATER MONITORING
SEPTEMBER 1991
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA
October 11, 1991

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QUALITY CONTROL REVIEWER

Tamara L. Williams

Tamara L. Williams
Geologist - 3954