



ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY



DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

June 2, 1994  
STID 3623

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

Donnell Choy  
Deputy City Attorney  
Oakland City Attorney Office  
505-14th St., 12th Floor  
Oakland CA 94612

RE: 13th and Jefferson Streets, Oakland CA 94612

Dear Mr. Choy,

We are in receipt of the "Request for Site Closure, Hydrocarbon and Lead Contamination Sites, 13th and Jefferson Streets, Oakland California," prepared by Subsurface Consultants, Inc. (SCI), dated 4/15/94. As we discussed by phone today, we cannot grant case closure for this site because it is the same parcel of land as the ongoing groundwater monitoring at 14th St. and Martin Luther King Way. If these two areas were subdivided, then we could begin the case closure process.

Upon review of the above named report, this office concurs that **no further cleanup or monitoring work is warranted for the site at 13th St. and Jefferson St., as shown on the attached map.** This map is Plate 1 of SCI's 4/15/94 "Request for Site Closure, Hydrocarbon and Lead Contamination Sites, 13th and Jefferson Streets, Oakland California." Please understand that this statement is different from a Remedial Actions Completion Certification, aka a "closure letter," which is signed by our Assistant Agency Director (currently Rafat Shahid).

If you have any questions, please contact me at 510-271-4530.

Sincerely,

Jennifer Eberle  
Hazardous Materials Specialist

cc: David Ralph, City of Oakland, OEDE, 1333 Broadway, #900,  
Oakland CA 94612  
Andrew Clark-Clough, City of Oakland, Environmental  
Affairs, 1333 Broadway, #330, Oakland CA 94612  
Jim Bowers, Subsurface Consultants, Inc., 171-12th St.,  
Suite 201, Oakland CA 94607  
Kevin Graves, RWQCB  
Ed Howell/file

attachment  
je

James P. Bowers, PE  
R. William Rudolph, Jr., PE

ALCO  
HAZMAT  
94 APR 25 PM 2:49

April 22, 1994  
SCI 430.010

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
Gasoline Contamination  
1330 Martin Luther King Jr. Way at 14th Street  
Oakland, California**

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. The location of the site is presented on Plate 1.

Contaminated soil and groundwater resulting from the gasoline release were remediated. Site remediation consisted of (1) vapor extraction, and (2) groundwater extraction and treatment. The vapor extraction system removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume. Soil and groundwater remediation were terminated on November 18, 1993, per your verbal approval.

During this event, Wells 11, 31, 39, 42 and 43 were sampled. The groundwater monitoring event consist of (1) measuring groundwater levels, (2) purging water from each well until pH, conductivity and temperature had stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified

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laboratory for hazardous waste and water testing. The analytical tests included:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

**Conclusions**

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements.

In general, the analytical results indicate that dissolved hydrocarbon concentrations in groundwater remain generally consistent with the previous monitoring event. Hydrocarbons were detected in Wells 39 and 42; hydrocarbons were not detected at concentrations above the reporting limits in the other wells analyzed. We recommend that monitoring continue on a quarterly basis. During the next monitoring event, we propose to sample Wells 58, 39, 42 and EW-1.

how bout 59 as UG well?  
it's OK.

delete  
11  
31  
43

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If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:sld

Attachments: Table 1 - Contaminate Concentrations in Groundwater  
Table 2 - Groundwater Elevation Data  
Plate 1 - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. David W. Ralph  
Office of Economic Development and Employment  
1333 Broadway, Suite 900  
Oakland, California 94612

Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

**Table 1. Contaminant Concentrations In Groundwater**

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup></u> <u>(ug/L)<sup>5</sup></u>	<u>B<sup>2</sup></u> <u>(ug/L)</u>	<u>T<sup>2</sup></u> <u>(ug/L)</u>	<u>X<sup>2</sup></u> <u>(ug/L)</u>	<u>F<sup>2</sup></u> <u>(ug/L)</u>	<u>Total Organic Lead</u> <u>(ug/L)</u>	<u>EDB<sup>3</sup></u> <u>(ug/L)</u>	<u>1,2 DCA<sup>4</sup></u> <u>(ug/L)</u>
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	---	---	---
	04/03/89	53,000	7,100	4,000	2,400	380	---	---	---
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	---
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	---
	07/18/90	26,000	950	19	98	ND	---	---	---
	10/23/90	4,200	1,600	8.5	170	28	---	0.2	---
	01/21/91	1,900	600	6.2	84	60	---	0.15	---
	04/24/91	4,800	1,100	3.5	46	120	---	---	---
	07/24/91	950	330	0.9	1.8	12	---	---	---
	10/24/91	970	350	1.6	1.6	14	---	ND	---
	01/23/92	ND	ND	ND	ND	ND	---	---	---
	05/01/92	340	77	0.6	0.6	ND	---	---	---
	08/06/92	220	54	ND	ND	ND	---	---	---
	11/16/92	159	ND	ND	ND	ND	---	---	---
	02/16/93	ND	ND	ND	ND	ND	---	---	---
	05/12/93	ND	ND	ND	ND	ND	---	---	---
	08/18/93	ND	ND	ND	ND	ND	---	---	---
11/16/93	ND	ND	ND	ND	ND	---	---	---	
02/02/94	ND	ND	ND	ND	ND	---	---	---	
28	09/02/88	890	431	75.4	84	ND	ND	9.2	---
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	---
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	---
	04/03/89	450	ND	2.0	6.7	2.0	---	---	---
	07/06/89	ND	ND	15	ND	ND	ND	ND	---
	11/08/89	780	ND	14	32	7.9	ND	ND	---
	10/23/90	1,800	1.2	6.5	4.8	2.7	---	---	---
	01/21/91	1,100	ND	3.7	4.9	1.3	---	ND	---
	03/28/91	500	ND	1.6	0.8	ND	---	---	---
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	---
	04/03/89	ND	ND	ND	ND	ND	---	---	---
	07/06/89	ND	ND	ND	ND	ND	ND	ND	---
	11/08/89	ND	ND	ND	ND	ND	ND	ND	---
	07/18/90	ND	ND	ND	ND	ND	---	---	---
	01/21/91	ND	ND	0.6	2.1	ND	---	ND	---
	04/24/91	ND	ND	ND	ND	ND	---	---	---
	07/24/91	ND	ND	ND	ND	ND	---	---	---
	10/24/91	ND	ND	ND	ND	ND	---	---	---
	01/23/92	ND	ND	ND	ND	ND	---	---	---
	05/01/92	ND	ND	ND	ND	ND	---	---	---
	08/07/92	ND	ND	ND	ND	ND	---	---	---
	11/16/92	43	ND	ND	ND	ND	---	---	---
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	---	---	---
	02/16/93	ND	ND	ND	ND	ND	---	---	---
	05/12/93	ND	ND	ND	ND	ND	---	---	---
	08/17/93	ND	ND	ND	ND	ND	---	---	---
	02/02/94	ND	ND	ND	ND	ND	---	---	---

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	05/12/93	ND	ND	ND	ND	ND	--	--	--
08/18/93	ND	ND	ND	ND	ND	--	--	--	
11/16/93	ND	ND	ND	ND	ND	--	--	--	
02/02/94	20	ND	ND	2.9	2.2	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
	02/16/93	6730	386	51	411	183	--	--	--
	05/12/93	13400	748	238	777	ND	--	--	--
	08/17/93	4120	268	ND	323	377	--	--	--
	11/16/93	8350	143	41	199	133	--	--	--
	02/02/94	1080	7.4	11.2	144	67.1	--	--	--
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--
	05/12/93	96.4	ND	ND	ND	ND	--	--	--
	08/17/93	ND	ND	ND	ND	ND	--	--	--
	11/16/93	ND	ND	ND	ND	ND	--	--	--
	02/02/94	ND	ND	ND	ND	ND	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled



Table 2. Groundwater Elevation Data

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>	
11	99.66	01/19/89	26.82	72.84	--	
		04/03/89	26.35	73.31	--	
		07/05/89	26.95	72.71	--	
		11/09/89	27.28	72.83	--	
		01/24/90	27.40	72.26	--	
		04/30/90	27.56	72.10	--	
		07/03/90	28.89	70.77	--	
		10/23/90	28.93	70.73	--	
		01/21/91	27.75	71.97	--	
		04/24/91	28.14	71.52	--	
		07/24/91	28.78	70.88	--	
		10/24/91	29.09	70.57	--	
		01/23/92	29.85	69.81	--	
		05/01/92	27.44	72.22	--	
		08/07/92	27.86	71.80	--	
		11/16/92	27.84	71.82	--	
		02/16/93	25.94	73.72	--	
		05/12/93	27.13	72.53	--	
		08/17/93	27.20	72.46	--	
		11/16/93	26.85	72.81	--	
02/02/94	26.64	73.02	--			
28	98.99	01/19/89	26.16	72.83	--	
		04/03/89	25.70	73.29	--	
		07/05/89	26.26	72.73	--	
		11/08/89	26.59	72.40	--	
		01/24/90	26.81	72.18	--	
		97.79	05/10/90	31.83	65.96	1.22
			07/03/90	31.95	65.84	0.04
			10/23/90	31.25	66.54	1.38
			01/21/91	28.00	69.79	0.00
			10/24/91	27.26	70.53	0.00
	01/23/92		32.99	64.89	0.00	
	08/07/92		26.95	70.84	-- <sup>2</sup>	
	11/16/92		25.95	71.84	--	
	02/16/93		24.06	73.73	--	
	05/12/93		25.48	72.31	--	
	08/17/93	25.55	72.24	--		
	11/16/93	24.92	72.87	--		
	29	97.95	01/19/89	26.14	71.81	--
			04/03/89	25.88	72.07	--
			07/05/89	26.19	71.76	--
11/09/89			26.51	71.44	--	
01/24/90			26.66	71.29	--	
04/30/90			26.73	71.22	--	
07/03/90			27.22	70.73	--	
10/23/90			27.40	70.55	--	
01/21/91			26.89	71.06	--	

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
29		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--
		02/16/93	25.60	72.35	--
		05/12/93	26.04	71.91	--
		08/17/93	26.25	71.70	--
		11/16/93	26.22	71.73	--
		02/02/94	26.08	71.92	--
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
		02/16/93	25.42	73.88	--
		05/12/93	27.10	72.20	--
		08/17/93	27.01	72.29	--
		11/16/93	26.30	73.00	--
02/02/94	26.08	73.22	--		
31	98.90	01/19/89	26.15	72.75	--
		04/03/89	25.90	73.00	--
		07/05/89	26.28	72.76	--
		11/09/89	26.64	72.26	--
		01/24/90	26.84	72.06	--
		04/30/90	26.87	72.03	--
		07/03/90	27.50	71.40	--
		09/23/90	27.52	71.36	--
		01/21/91	27.09	71.81	--
		04/24/91	27.12	71.78	--
		07/24/91	27.60	71.30	--
		10/24/91	28.81	70.09	--
		01/23/92	28.31	70.59	--
		05/01/92	26.70	72.20	--
		08/07/92	27.00	71.90	--
		11/16/92	27.04	71.86	--
		02/16/93	25.63	73.27	--
		05/12/93	26.20	72.70	--
		08/17/93	26.41	72.49	--
		11/16/93	26.25	72.65	--
02/02/94	26.07	72.83	--		

Table 2. Groundwater Elevation Data (continued)

Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)	Free Product Thickness (feet)
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--
39	99.00	04/03/89	25.87	73.13	--
		07/05/89	26.38	72.62	--
		11/09/89	26.70	72.30	--
		01/24/90	26.86	72.14	--
		04/30/90	26.97	72.03	--
		07/03/90	28.17	70.83	--
		10/23/90	28.17	70.83	--
		01/21/91	27.15	71.85	--
		03/28/91	27.76	71.24	--
		04/24/91	27.33	71.67	--
		07/24/91	27.91	71.09	--
		10/24/91	28.26	70.74	--
		01/23/92	29.00	70.00	--
		05/01/92	26.82	72.18	--
		08/07/92	27.18	71.82	--
		11/16/92	27.19	71.81	--
		02/16/93	25.53	73.47	--
05/12/93	26.52	72.48	--		
08/17/93	26.65	72.35	--		
11/16/93	26.30	72.70	--		
02/02/94	26.10	72.90	--		
42	99.12	04/03/89	25.77	73.35	--
		07/05/89	26.30	72.89	--
		11/09/89	26.66	72.46	--
		01/24/90	26.82	72.30	--
		04/18/90	26.94	72.18	--
		07/03/90	28.58	70.54	--
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	--
		01/23/92	29.33	69.79	--
		05/01/92	26.88	72.44	--
		08/07/92	27.10	72.02	--
		11/16/92	26.68	72.44	--
		02/16/93	25.41	73.71	--
		05/12/93	26.74	72.38	--
		08/17/93	26.80	72.32	--
		11/16/93	26.25	72.87	--
02/02/94	26.03	73.09	--		

Table 2. Groundwater Elevation Data (continued)

Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)	Free Product Thickness (feet)
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--
		02/16/93	24.35	74.52	--
		05/12/93	25.90	72.97	--
		08/17/93	25.50	73.37	--
		11/16/93	25.21	73.66	--
		02/02/94	24.98	73.89	--
		45	100.90	02/16/93	24.35
12/05/89	28.71			72.19	--
04/30/90	28.85			72.05	--
07/03/90	29.45			71.45	--
10/23/90	29.50			71.40	--
01/21/91	29.03			71.87	--
04/24/91	28.87			72.03	--
07/25/91	29.63			71.27	--
10/24/91	29.62			71.28	--
01/23/92	30.45			70.45	--
05/01/92	28.42			72.48	--
08/07/92	28.70			72.20	--
11/16/92	28.84			72.06	--
02/16/93	27.14			73.76	--
05/12/93	28.00			72.90	--
08/17/93	28.35			72.55	--
11/16/93	28.15			72.75	--
02/02/94	27.95	72.95	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
		02/16/93	26.44	71.67	--
		05/12/93	26.78	71.33	--
		08/17/93	27.01	71.10	--
		11/16/93	27.10	71.01	--
		02/02/94	26.86	71.25	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--
		02/16/93	26.10	72.79	--
		05/12/93	26.68	72.21	--
		08/17/93	26.88	72.01	--
		11/16/93	26.77	72.12	--
		02/02/94	26.58	72.31	--

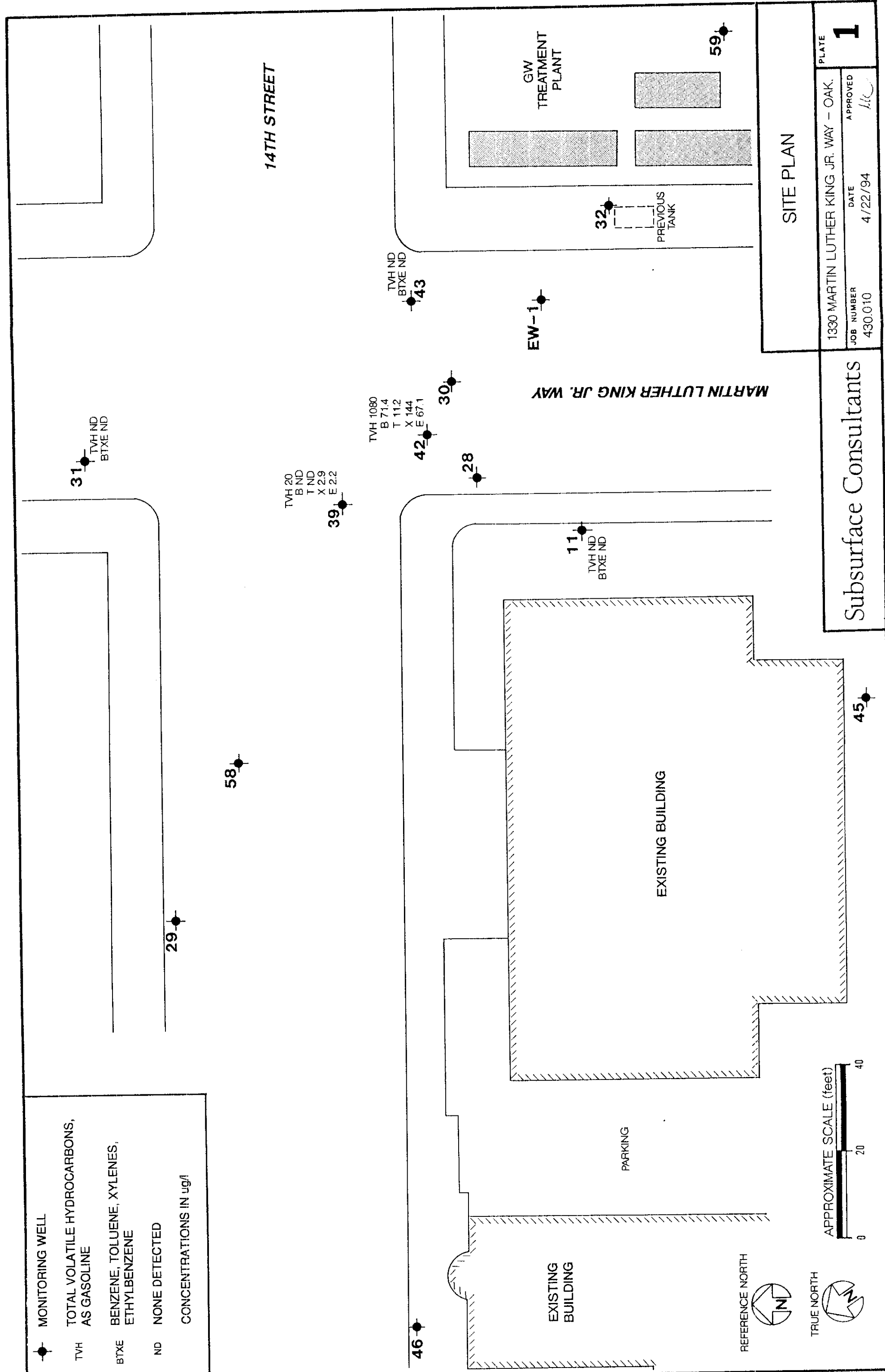
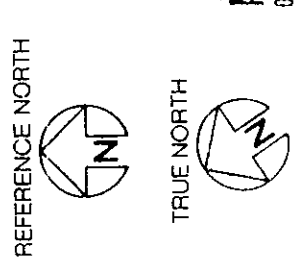
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<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet,

TOC = Top of casing

<sup>2</sup> -- = No free product present

- MONITORING WELL
- TVH TOTAL VOLATILE HYDROCARBONS,  
AS GASOLINE
- BTXE BENZENE, TOLUENE, XYLENES,  
ETHYLBENZENE
- ND NONE DETECTED
- CONCENTRATIONS IN ug/l



**SITE PLAN**

1330 MARTIN LUTHER KING JR. WAY - OAK.		DATE	APPROVED	PLATE
JOB NUMBER		4/22/94	<i>lit</i>	<b>1</b>
430.010				

Subsurface Consultants



# EUREKA LABORATORIES, INC.

Air Pollution  
Chemical Analysis,  
Research & Testing  
Environmental Studies  
Robotics  
Toxicology

*Corporate Office:*  
6790 FLORIN PERKINS ROAD  
SACRAMENTO, CA 95828  
TEL: (916) 381-7953  
FAX: (916) 381-4013

*Branch Office:*  
17403 N.E. 28th STREET  
REDMOND, WA 98052  
TEL: (206) 885-0284  
FAX: (206) 885-0284

February 16, 1994

Mark Kawakami  
SUBSURFACE CONSULTANTS  
171 12th Street  
Oakland, CA 94607

Reference - ELI Order #: 94-02-015  
Project: MLK Groundwater Treatment  
Project #: 430.010

Dear Mr. Kawakami:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for five (5) aqueous samples for the following analyses:

<u>ANALYSIS</u>	<u>METHOD</u>	<u>SAMPLE ID.</u>
Gasoline	California LUFT	MW-11, MW-31, MW-39, MW-42, MW-43
Purgeable Aromatics	EPA 8020	MW-11, MW-31, MW-39, MW-42, MW-43

Sincerely,  
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo  
Shao-Pin Yo, Ph.D.  
QA/QC Director

SPY/hft

Attachment

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-06A  
SAMPLE ID: METHOD BLANK

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date



PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-01A  
SAMPLE ID: MW-11

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-02A  
SAMPLE ID: MW-31

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNET  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-03A  
SAMPLE ID: MW-39

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.2	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	2.9	0.5

Note: All positively identified compounds were second column or second detector confirmed.

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 1 ml  
DILUTION FACTOR: 5

ELI SAMPLE ID: 9402015-04A  
SAMPLE ID: MW-42

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L * ug/L (ppb)
V1	Benzene	71.4	2.5
V2	Chlorobenzene	<2.5	2.5
V3	1,2-Dichlorobenzene	<2.5	2.5
V4	1,3-Dichlorobenzene	<2.5	2.5
V5	1,4-Dichlorobenzene	<2.5	2.5
V6	Ethyl benzene	67.1	2.5
V7	Toluene	11.2	2.5
V8	Xylenes (Dimethyl benzenes)	144	2.5

Note: All positively identified compounds were second column or second detector confirmed.

\* Higher detection limit is due to high analyte concentration.  
NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-05A  
SAMPLE ID: MW-43

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-08A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	112%
V2	Chlorobenzene	93%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	93%
V7	Toluene	89%
V8	Xylenes (Dimethyl benzenes)	92%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.  
NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-09A

SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	110%
V2	Chlorobenzene	91%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	91%
V7	Toluene	90%
V8	Xylenes (Dimethyl benzenes)	87%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.  
NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	112%
V2	Chlorobenzene	94%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	92%
V7	Toluene	93%
V8	Xylenes (Dimethyl benzenes)	90%

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date



PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNET  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/08/94  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-11A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUPLICATE

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	112%
V2	Chlorobenzene	94%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	92%
V7	Toluene	94%
V8	Xylenes (Dimethyl benzenes)	91%

NA = Not Applicable

Huey-Chen Chow  
Chemist

February 16, 1994  
Date

**GASOLINE**  
**California LUFT Method**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-06A  
SAMPLE ID: METHOD BLANK

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date

**GASOLINE**  
**California LUFT Method**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-01A  
SAMPLE ID: MW-11

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date

GASOLINE  
California LUFT Method

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-02A  
SAMPLE ID: MW-31

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date

GASOLINE  
California LUFT Method

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-03A  
SAMPLE ID: MW-39

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

Note: Hydrocarbons in the gasoline range are detected in the sample. However, their patterns are different from our standard. Therefore, area equivalent is used to quantitate this sample.

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date

GASOLINE  
California LUFT Method

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 5

ELI SAMPLE ID: 9402015-04A  
SAMPLE ID: MW-42

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	1080	100 *
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

\* Higher detection limit is due to high analyte concentration.

Note: Hydrocarbons in the gasoline range are detected in the sample. However, their patterns are different from our standard. Therefore, area equivalent is used to quantitate this sample.

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date

GASOLINE  
California LUFT Method

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMMENT  
JOB NUMBER: 430.010

DATE SAMPLED: 02/02/94  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-05A  
SAMPLE ID: MW-43

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen                      February 16, 1994  
Chemist                                      Date

GASOLINE  
California LUFT Method

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-08A  
SAMPLE ID: MATRIX SPIKE RECOVERY  
MW-11

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	90%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen February 16, 1994  
Chemist Date



**GASOLINE**  
**California LUFT Method**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-09A  
SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE  
MW-11

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	98%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date



GASOLINE  
California LUFT Method

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 94-02-015  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMNT  
JOB NUMBER: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/04/94  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/07,08/94  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9402015-11A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUPLICATE

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	107%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen  
Chemist

February 16, 1994  
Date

**CHAIN OF CUSTODY FORM**

~~450~~ UPS #0482-0220-333

4°C

PROJECT NAME: MLK LAB: Eureka  
 JOB NUMBER: 430,010 TURNAROUND: Normal  
 PROJECT CONTACT: Mark Kaurakaul REQUESTED BY: MLK  
 SAMPLED BY: Charles Pearson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS			METHOD PRESERVED			SAMPLING DATE				NOTES					
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCl	10% H <sub>2</sub> O <sub>2</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH		DAY	YEAR	TIME		
1A	MW-11	X				3				X					0	20	2	94		X	TPH - Gasoline
2A	MW-31	X				3				X					0	20	2	94		X	
3A	MW-39	X				3				X					0	20	2	94		X	
4A	MW-42	X				3				X					0	20	2	94		X	
5A	MW-43	X				3				X					0	20	2	94		X	BTEX

OFFICIAL ROUTE FROM EPL After 30 days from samples will be disposed of at a licensed waste disposal site unless client requests in writing by special arrangement for a long holding period. Charges for sample returned are \$200 per sample to cover costs of handling and shipping.

FEB 17 1994

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
<i>Charles Pearson</i>	2-3-94		
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME

**COMMENTS & NOTES:**

Rel'd by: *RL* 2/4/94  
1505

**Subsurface Consultants, Inc.**

171 12TH STREET, SUITE 204, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

~~1307~~ Jeff. St.

only 1310 in 1300 block

Ø in 1200 block

1221 Oak St.  
1st Floor  
Rm 109  
272-2755

2-29-178  
187

~~622~~ - 13th St.

654 } Preservation Venture  
660 } 1212 Bway #1800  
672 } Oak 612  
678 } bought 11-15-85

668 Redevel. Agency of City of Oak  
600 Mont. St  
SF 94111  
bought 8-2-85

17-022  
2-29-1

no CD  
or IM

85 152493  
8-2-85

no odd #s in 600 block.

also:

— 13th St. City Ctr Garage West Ass. ↑  
1111 Bway #1400, Oak 607  
17-022 (4455360LD)  
2-27-6-1 (4091220 IM)

91 140306  
bought  
5-31-91

— 13th St. Goodson Frank Jr + Alma P  
352 Alcatraz Av, Oak 6182  
17-001 (392040)  
6-11-30-1

Ø 78 12674  
7-3-78

MEMORANDUM

DATE: April 1, 1994

TO: Haz Mat Staff

FROM: Generalist Team

SUBJ: General Staff Meeting on Tuesday, April 12th

This month we have the pleasure of hosting the general staff meeting, and are soliciting for agenda items. If you would like to make a presentation, or would like to have a discussion on a certain topic, please notify Larry by Friday, April 8th.

Case also. Ann. vs. outline?  
Labeling files A, B, C?

4580 - cost ch  
4580 - cost ch  
dept -

ALCO  
HAZMAT  
93 DEC 15 AM 11:37

December 14, 1993  
SCI 430.010

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
Gasoline Contamination  
1330 Martin Luther King Jr. Way  
Oakland, California**

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. Subsurface Consultants, Inc. (SCI) has been providing consulting services for this project since 1989. The location of the site is presented on Plate 1.

Contaminated soil and groundwater resulting from the gasoline release is presently being remediated. Site remediation consists of (1) vapor extraction, and (2) groundwater extraction and treatment. The vapor extraction system has removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume.

During this event, Wells 11, 39, 42 and 43 were sampled. Well 31 was not sampled because the well was inadvertently covered with asphalt during the recent repaving of Martin Luther King Jr. Way. The groundwater monitoring events consist of (1) measuring groundwater levels, (2) purging water from each well until pH, conductivity and temperature have stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

■ **Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
December 14, 1993  
SCI 430.010  
Page 2

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified laboratory for hazardous waste and water testing. The analytical tests included:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

### Conclusions

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements. Locally, however, groundwater is flowing toward the extraction well (EW1) shown on Plate 1.

In general, the analytical results indicate that dissolved hydrocarbon concentrations in groundwater remain generally consistent with the previous monitoring event. Hydrocarbons were detected in Well 42 only; hydrocarbons were not detected at concentrations above the reporting limits in the other wells analyzed. We recommend that monitoring continue on a quarterly basis.




■ Subsurface Consultants, Inc.

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
December 14, 1993  
SCI 430.010  
Page 3

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:sld

Attachments: Table 1 - Contaminate Concentrations in Groundwater  
Table 2 - Groundwater Elevation Data  
Plate 1 - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Mr. David W. Ralph  
Office of Economic Development and Employment  
1333 Broadway, Suite 900  
Oakland, California 94612

Mr. Joseph Cotton  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

**Table 1. Contaminant Concentrations In Groundwater**

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup></u> <u>(ug/L)<sup>5</sup></u>	<u>B<sup>2</sup></u> <u>(ug/L)</u>	<u>T<sup>2</sup></u> <u>(ug/L)</u>	<u>X<sup>2</sup></u> <u>(ug/L)</u>	<u>E<sup>2</sup></u> <u>(ug/L)</u>	<u>Total Organic Lead</u> <u>(ug/L)</u>	<u>EDB<sup>3</sup></u> <u>(ug/L)</u>	<u>1,2 DCA<sup>4</sup></u> <u>(ug/L)</u>
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	---	---	---
	04/03/89	53,000	7,100	4,000	2,400	380	---	---	---
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	---
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	---
	07/18/90	26,000	950	19	98	ND	---	---	---
	10/23/90	4,200	1,600	8.5	170	28	---	0.2	---
	01/21/91	1,900	600	6.2	84	60	---	0.15	---
	04/24/91	4,800	1,100	3.5	46	120	---	---	---
	07/24/91	950	330	0.9	1.8	12	---	---	---
	10/24/91	970	350	1.6	1.6	14	---	ND	---
	01/23/92	ND	ND	ND	ND	ND	---	---	---
	05/01/92	340	77	0.6	0.6	ND	---	---	---
	08/06/92	220	54	ND	ND	ND	---	---	---
	11/16/92	159	ND	ND	ND	ND	---	---	---
	02/16/93	ND	ND	ND	ND	ND	---	---	---
	05/12/93	ND	ND	ND	ND	ND	---	---	---
	08/18/93	ND	ND	ND	ND	ND	---	---	---
11/16/93	ND	ND	ND	ND	ND	---	---	---	
28	09/02/88	890	431	75.4	84	ND	ND	9.2	---
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	---
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	---
	04/03/89	450	ND	2.0	6.7	2.0	---	---	---
	07/06/89	ND	ND	15	ND	ND	ND	ND	---
	11/08/89	780	ND	14	32	7.9	ND	ND	---
	10/23/90	1,800	1.2	6.5	4.8	2.7	---	---	---
	01/21/91	1,100	ND	3.7	4.9	1.3	---	ND	---
03/28/91	500	ND	1.6	0.8	ND	---	---	---	
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	---
	04/03/89	ND	ND	ND	ND	ND	---	---	---
	07/06/89	ND	ND	ND	ND	ND	ND	ND	---
	11/08/89	ND	ND	ND	ND	ND	ND	ND	---
	07/18/90	ND	ND	ND	ND	ND	---	---	---
	01/21/91	ND	ND	0.6	2.1	ND	---	ND	---
	04/24/91	ND	ND	ND	ND	ND	---	---	---
	07/24/91	ND	ND	ND	ND	ND	---	---	---
	10/24/91	ND	ND	ND	ND	ND	---	---	---
	01/23/92	ND	ND	ND	ND	ND	---	---	---
	05/01/92	ND	ND	ND	ND	ND	---	---	---
	08/07/92	ND	ND	ND	ND	ND	---	---	---
	11/16/92	43	ND	ND	ND	ND	---	---	---
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	---	---	---
02/16/93	ND	ND	ND	ND	ND	---	---	---	
05/12/93	ND	ND	ND	ND	ND	---	---	---	
08/17/93	ND	ND	ND	ND	ND	---	---	---	

**Table 1. Contaminant Concentrations In Groundwater (continued)**

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup> (ug/L)<sup>5</sup></u>	<u>B<sup>2</sup> (ug/L)</u>	<u>T<sup>2</sup> (ug/L)</u>	<u>X<sup>2</sup> (ug/L)</u>	<u>E<sup>2</sup> (ug/L)</u>	<u>Total Organic Lead (ug/L)</u>	<u>EDB<sup>3</sup> (ug/L)</u>	<u>1,2 DCA<sup>4</sup> (ug/L)</u>
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
05/12/93	ND	ND	ND	ND	ND	--	--	--	
08/18/93	ND	ND	ND	ND	ND	--	--	--	
11/16/93	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
	02/16/93	6730	386	51	411	183	--	--	--
	05/12/93	13400	748	238	777	ND	--	--	--
	08/17/93	4120	268	ND	323	377	--	--	--
11/16/93	8350	143	41	199	133	--	--	--	
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--
	05/12/93	96.4	ND	ND	ND	ND	--	--	--
	08/17/93	ND	ND	ND	ND	ND	--	--	--
	11/16/93	ND	ND	ND	ND	ND	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
02/16/93	ND	ND	ND	ND	ND	--	--	--	
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled

Table 2. Groundwater Elevation Data

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>	
11	99.66	01/19/89	26.82	72.84	--	
		04/03/89	26.35	73.31	--	
		07/05/89	26.95	72.71	--	
		11/09/89	27.28	72.83	--	
		01/24/90	27.40	72.26	--	
		04/30/90	27.56	72.10	--	
		07/03/90	28.89	70.77	--	
		10/23/90	28.93	70.73	--	
		01/21/91	27.75	71.97	--	
		04/24/91	28.14	71.52	--	
		07/24/91	28.78	70.88	--	
		10/24/91	29.09	70.57	--	
		01/23/92	29.85	69.81	--	
		05/01/92	27.44	72.22	--	
		08/07/92	27.86	71.80	--	
		11/16/92	27.84	71.82	--	
		02/16/93	25.94	73.72	--	
		05/12/93	27.13	72.53	--	
		08/17/93	27.20	72.46	--	
		11/16/93	26.85	72.81	--	
28	98.99	01/19/89	26.16	72.83	--	
		04/03/89	25.70	73.29	--	
		07/05/89	26.26	72.73	--	
		11/08/89	26.59	72.40	--	
		01/24/90	26.81	72.18	--	
		97.79	05/10/90	31.83	65.96	1.22
			07/03/90	31.95	65.84	0.04
			10/23/90	31.25	66.54	1.38
			01/21/91	28.00	69.79	0.00
			10/24/91	27.26	70.53	0.00
	01/23/92		32.99	64.89	0.00	
	08/07/92		26.95	70.84	-- <sup>2</sup>	
	11/16/92		25.95	71.84	--	
	02/16/93		24.06	73.73	--	
	05/12/93		25.48	72.31	--	
	08/17/93	25.55	72.24	--		
	11/16/93	24.92	72.87	--		
	29	97.95	01/19/89	26.14	71.81	--
			04/03/89	25.88	72.07	--
			07/05/89	26.19	71.76	--
11/09/89			26.51	71.44	--	
01/24/90			26.66	71.29	--	
04/30/90			26.73	71.22	--	
07/03/90			27.22	70.73	--	
10/23/90			27.40	70.55	--	
01/21/91			26.89	71.06	--	

**Table 2. Groundwater Elevation Data (continued)**

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
29		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--
		02/16/93	25.60	72.35	--
		05/12/93	26.04	71.91	--
		08/17/93	26.25	71.70	--
		11/16/93	26.22	71.73	--
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
		02/16/93	25.42	73.88	--
		05/12/93	27.10	72.20	--
		08/17/93	27.01	72.29	--
		11/16/93	26.30	73.00	--
31	98.90	01/19/89	26.15	72.75	--
		04/03/89	25.90	73.00	--
		07/05/89	26.28	72.76	--
		11/09/89	26.64	72.26	--
		01/24/90	26.84	72.06	--
		04/30/90	26.87	72.03	--
		07/03/90	27.50	71.40	--
		09/23/90	27.52	71.36	--
		01/21/91	27.09	71.81	--
		04/24/91	27.12	71.78	--
		07/24/91	27.60	71.30	--
		10/24/91	28.81	70.09	--
		01/23/92	28.31	70.59	--
		05/01/92	26.70	72.20	--
		08/07/92	27.00	71.90	--
		11/16/92	27.04	71.86	--
		02/16/93	25.63	73.27	--
		05/12/93	26.20	72.70	--
		08/17/93	26.41	72.49	--
		11/16/93	26.25	72.65	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--
39	99.00	04/03/89	25.87	73.13	--
		07/05/89	26.38	72.62	--
		11/09/89	26.70	72.30	--
		01/24/90	26.86	72.14	--
		04/30/90	26.97	72.03	--
		07/03/90	28.17	70.83	--
		10/23/90	28.17	70.83	--
		01/21/91	27.15	71.85	--
		03/28/91	27.76	71.24	--
		04/24/91	27.33	71.67	--
		07/24/91	27.91	71.09	--
		10/24/91	28.26	70.74	--
		01/23/92	29.00	70.00	--
		05/01/92	26.82	72.18	--
		08/07/92	27.18	71.82	--
		11/16/92	27.19	71.81	--
02/16/93	25.53	73.47	--		
05/12/93	26.52	72.48	--		
08/17/93	26.65	72.35	--		
11/16/93	26.30	72.70	--		
42	99.12	04/03/89	25.77	73.35	--
		07/05/89	26.30	72.89	--
		11/09/89	26.66	72.46	--
		01/24/90	26.82	72.30	--
		04/18/90	26.94	72.18	--
		07/03/90	28.58	70.54	--
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	--
		01/23/92	29.33	69.79	--
		05/01/92	26.88	72.44	--
		08/07/92	27.10	72.02	--
		11/16/92	26.68	72.44	--
		02/16/93	25.41	73.71	--
		05/12/93	26.74	72.38	--
		08/17/93	26.80	72.32	--
11/16/93	26.25	72.87	--		

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--
		02/16/93	24.35	74.52	--
		05/12/93	25.90	72.97	--
		08/17/93	25.50	73.37	--
		11/16/93	25.21	73.66	--
		45	100.90	02/16/93	24.35
12/05/89	28.71			72.19	--
04/30/90	28.85			72.05	--
07/03/90	29.45			71.45	--
10/23/90	29.50			71.40	--
01/21/91	29.03			71.87	--
04/24/91	28.87			72.03	--
07/25/91	29.63			71.27	--
10/24/91	29.62			71.28	--
01/23/92	30.45			70.45	--
05/01/92	28.42			72.48	--
08/07/92	28.70			72.20	--
11/16/92	28.84			72.06	--
02/16/93	27.14			73.76	--
05/12/93	28.00			72.90	--
08/17/93	28.35			72.55	--
11/16/93	28.15	72.75	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
		02/16/93	26.44	71.67	--
		05/12/93	26.78	71.33	--
		08/17/93	27.01	71.10	--
		11/16/93	27.10	71.01	--



Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--
		02/16/93	26.10	72.79	--
		05/12/93	26.68	72.21	--
		08/17/93	26.88	72.01	--
		11/16/93	26.77	72.12	--

---

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet, TOC = Top of casing

<sup>2</sup> -- = No free product present



TVH  
BTXE  
ND

TOTAL VOLATILE HYDROCARBONS,  
AS GASOLINE  
BENZENE, TOLUENE, XYLENES,  
ETHYLBENZENE

ND NONE DETECTED

CONCENTRATIONS IN ug/l

14TH STREET

DIRECTION OF  
GROUNDWATER  
FLOW

TVH ND  
B 143  
T 41  
X 199  
E 133

TVH ND  
BTXE ND

EXISTING  
BUILDING

PARKING

EXISTING BUILDING

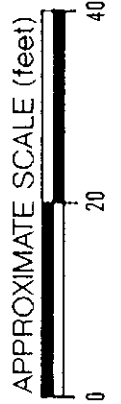
MARTIN LUTHER KING JR. WAY

GW  
TREATMENT  
PLANT

PREVIOUS  
TANK



TRUE NORTH



SITE PLAN

1330 MARTIN LUTHER KING JR. WAY - OAK.

JOB NUMBER  
430.010

DATE  
12/9/93

APPROVED

PLATE  
**1**

Subsurface Consultants

29

31

58

TVH ND  
BTXE ND

39

42

28

30

TVH ND  
BTXE ND

11

BTXE ND

32

46

45



# EUREKA LABORATORIES, INC.

Corporate Office:  
6790 FLORIN PERKINS ROAD  
SACRAMENTO, CA 95828  
TEL: (916) 381-7953  
FAX: (916) 381-4013

Branch Office:  
17403 N.E. 28th STREET  
REDMOND, WA 98052  
TEL: (206) 885-0284  
FAX: (206) 885-0284

Air Pollution  
Chemical Analysis,  
Research & Testing  
Environmental Studies  
Robotics  
Toxicology

December 6, 1993

Mr. Mark Kawakami  
SUBSURFACE CONSULTANTS  
171 12th Street  
Oakland, CA 94607

Reference - ELI Order #: 93-11-172  
Job #: 430.010  
Project: MLK Groundwater Remediation

Dear Mr. Kawakami:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for four (4) aqueous samples for the following analyses:

<u>ANALYSIS</u>	<u>METHOD</u>	<u>SAMPLE ID.</u>
Total Petroleum Hydrocarbons (Gasoline)	EPA 8015 (Modified)	MW-11, MW-39, MW-42 & MW-43
Purgeable Aromatics	EPA 602	MW-11, MW-39, MW-42 & MW-43

Sincerely,  
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo  
Shao-Pin Yo, Ph.D.  
QA/QC Director

SPY/pv

Attachment

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-05A  
SAMPLE ID: METHOD BLANK ✓

	CONCENTRATION	DETECTION LIMIT
	[ug/L (ppb)]	[ug/L (ppb)]
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-01A  
SAMPLE ID: MW-11

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20 ✓	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-02A  
SAMPLE ID: MW-39 ✓

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20 ✓	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

December 6, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 250

ELI SAMPLE ID: 9311172-03A  
SAMPLE ID: MW-42 ✓

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT *</u> [ug/L (ppb)]
Gasoline Range	8350 ** ✓	5000
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

\* Higher detection limit is due to high analyte concentration.

\*\* Hydrocarbons in the gasoline range are detected in the sample. However, their patterns are different from our standard. Therefore, area equivalent is used to quantitate this sample.

Jeannette Chen  
Chemist

December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-04A  
SAMPLE ID: MW-43 ✓

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20 ✓	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

December 6, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-07A  
SAMPLE ID: MW-11 MATRIX SPIKE RECOVERY

---

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

104%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Jeannette Chen  
Chemist

December 6, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5.0 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-08A  
SAMPLE ID: MW-11 MATRIX SPIKE RECOVERY  
DUPLICATE

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

100%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Jeannette Chen  
Chemist

December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
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Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-08A  
SAMPLE ID: REAGENT SPIKE RECOVERY

---

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

104%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Jeannette Chen  
Chemist

December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

---

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

107%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Jeannette Chen  
Chemist

December 6, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 602**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-05A  
CLIENT SAMPLE ID: METHOD BLANK

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Susie Yang  
Chemist

December 6, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-01A  
CLIENT SAMPLE ID: MW-11

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Susie Yang  
Chemist

December 6, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-02A  
CLIENT SAMPLE ID: MW-39

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Susie Yang  
Chemist

December 6, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 602**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 10

ELI SAMPLE ID: 9311172-03A  
CLIENT SAMPLE ID: MW-42

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L * ug/L (ppb)
V1	Benzene	143	5.0
V2	Chlorobenzene	<5.0	5.0
V3	1,2-Dichlorobenzene	<5.0	5.0
V4	1,3-Dichlorobenzene	<5.0	5.0
V5	1,4-Dichlorobenzene	<5.0	5.0
V6	Ethyl benzene	133	5.0
V7	Toluene	41	5.0
V8	Xylenes (Dimethyl benzenes)	199	5.0

Note: All positively indentified compounds were second column or second detector confirmed.

\* Higher detection limit is due to high analyte concentration.

Susie Yang  
Chemist

December 6, 1993  
Date



PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-04A  
CLIENT SAMPLE ID: MW-43

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Susie Yang  
Chemist

December 6, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172--07A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	84%
V2	Chlorobenzene	84%
V3	1,2-Dichlorobenzene	65%
V4	1,3-Dichlorobenzene	64%
V5	1,4-Dichlorobenzene	65%
V6	Ethyl benzene	89%
V7	Toluene	84%
V8	Xylenes (Dimethyl benzenes)	91%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Susie Yang  
Chemist

December 6, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-08A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	85%
V2	Chlorobenzene	87%
V3	1,2-Dichlorobenzene	69%
V4	1,3-Dichlorobenzene	68%
V5	1,4-Dichlorobenzene	69%
V6	Ethyl benzene	92%
V7	Toluene	86%
V8	Xylenes (Dimethyl benzenes)	92%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Susie Yang  
Chemist

December 6, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-09A  
CLIENT SAMPLE ID: REAGENT SPIKE RECOVERY

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	86%
V2	Chlorobenzene	87%
V3	1,2-Dichlorobenzene	92%
V4	1,3-Dichlorobenzene	90%
V5	1,4-Dichlorobenzene	105%
V6	Ethyl benzene	92%
V7	Toluene	85%
V8	Xylenes (Dimethyl benzenes)	92%

Susie Yang  
Chemist

December 6, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER REMEDIATION

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311172-10A  
CLIENT SAMPLE ID: REAGENT SPIKE RECOVER DUP.

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	96%
V2	Chlorobenzene	94%
V3	1,2-Dichlorobenzene	103%
V4	1,3-Dichlorobenzene	98%
V5	1,4-Dichlorobenzene	94%
V6	Ethyl benzene	102%
V7	Toluene	102%
V8	Xylenes (Dimethyl benzenes)	105%

Susie Yang  
Chemist

December 6, 1993  
Date

# CHAIN OF CUSTODY FORM

93-11-172 GCV8/19

PROJECT NAME: MLK Groundwater Remediation  
 LAB: Excelsa  
 JOB NUMBER: 430,010  
 TURNAROUND: Normal  
 PROJECT CONTACT: Mark Kawakami  
 REQUESTED BY: Mk  
 SAMPLED BY: Charles Pearson

PAGE \_\_\_\_\_ OF \_\_\_\_\_ ANALYSIS REQUESTED

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES	
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR
1A	MW-11	X				4				X		X		11	16	93		X TPH - Gasoline
2A	MW-39	X				4				X		X		11	16	93		X BTX
3A		X				4				X		X		11	16	93		X
4A		X				4				X		X		11	16	93		X

OFFICIAL NOTICE FROM EL: After 30 days from the date of disposal of a filemed waste disposal site unless requests their return or by special arrangement for a long holding period. Changes in sample returns are \$2.00 per sample to cover costs of handling.

COMMENTS & NOTES:

## CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
<i>[Signature]</i>	11/19/93	<i>[Signature]</i>	11/19/93
<i>[Signature]</i>		Simon P. Jeff	10/20
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 266-0461 • FAX: 510-268-0197

ALCO  
HAZMAT  
93 DEC 15 AM 11:39

December 10, 1993  
SCI 430.015

Mr. William Meckel  
East Bay Municipal Utility District  
Mail Slot #702  
P.O. Box 24055  
Oakland, California 94623-1055

Quarterly Monitoring Report 15  
Wastewater Discharge Permit Account #502-29091  
1330 Martin Luther King Jr. Way  
Oakland, California

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the fifteenth quarter of operation (October 9, 1993 through January 8, 1993) approximately 190,880 gallons of treated water were discharged into the EBMUD sanitary sewer system. The analytical results from 57 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene and ethylbenzene have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. However, low concentrations (<1.0 ug/l) of xylene were detected in samples A-57, B-57 and SS#1-57, suggesting that breakthrough may have occurred in both carbon units. Results of the water quality data generated during the fifteenth quarter are presented in Table 1. Analytical test reports and Chain-of-Custody documents are attached.

On November 23, 1993, groundwater treatment was terminated. Since this date, no water has been discharged into the EBMUD sanitary sewer system. The groundwater treatment system will remain off indefinitely.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Subsurface Consultants, Inc.

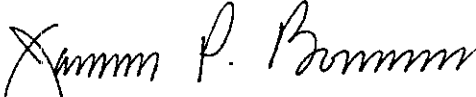
Mr. William Meckel  
East Bay Municipal Utility District  
SCI 430.015  
December 10, 1993  
Page 2

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

  
James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:sld

Attachments: Table 1 - Contaminant Concentrations in Water  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. David W. Ralph  
Office of Economic Development and Employment

Mr. Joseph Cotten  
Environmental Affairs

✓ Ms. Jennifer Eberle  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland



TABLE 1. CONTAMINANT CONCENTRATIONS IN WATER

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH (ug/L)</u>	<u>Benzene (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl-Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>
EW-2-56	10/19/93	131	4.2	1.0	2.3	11.3
A-56		ND	ND	ND	ND	ND
B-56		ND	ND	ND	ND	ND
SS#1-56		ND	ND	ND	ND	ND
EW-2-57	11/16/93	160	3.4	1.0	2.0	5.9
A-57		ND	ND	ND	ND	0.8
B-57		ND	ND	ND	ND	0.8
SS#1-57		ND	ND	ND	ND	0.9

---

TVH = Total volatile hydrocarbons, EPA 8015/5030

BTEX, Analyses by EPA 8020/5030

ug/L = micrograms per liter or parts per billion (ppb)

ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits

EW-2 = indicates sample from Extraction Well #2

A = influent at primary carbon vessel

B = Between carbon vessels

SS#1 = side sewer #1, (effluent sample)



# EUREKA LABORATORIES, INC.

*Corporate Office:*  
6790 FLORIN PERKINS ROAD  
SACRAMENTO, CA 95828  
TEL: (916) 381-7953  
FAX: (916) 381-4013

*Branch Office:*  
17403 N.E. 28th STREET  
REDMOND, WA 98052  
TEL: (206) 885-0284  
FAX: (206) 885-0284

Air Pollution  
Chemical Analysis,  
Research & Testing  
Environmental Studies  
Robotics  
Toxicology

November 4, 1993

Mr. Mark Kawakami  
SUBSURFACE CONSULTANTS  
171 12th Street  
Oakland, CA 94607

Reference - ELI Order #: 93-10-183  
Project: MLK Groundwater Treatment System  
Job #: 430.015

Dear Mr. Kawakami:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for four (4) aqueous samples for the following analyses:

<u>ANALYSIS</u>	<u>METHOD</u>	<u>SAMPLE ID.</u>
Total Petroleum Hydrocarbons	EPA 8015 (Modified)	EW-2-56, A-56, B-56, SS#1-56
Purgeable Aromatics	EPA 602	same as above

Sincerely,  
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo  
Shao-Pin Yo, Ph.D.  
QA/QC Director

SPY/pvc

Attachment

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 10/21/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 10/21/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9310183-05A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

November 4, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT PLANT

DATE SAMPLED: 10/19/1993  
DATE RECEIVED: 10/21/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 10/21/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9310183-01A  
SAMPLE ID: EW-2-56

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	131	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

Hydrocarbons in the gasoline range are detected in the sample. However, their patterns are different from our standard. Therefore, area equivalent is used to quantitate this sample.

Jeannette Chen  
Chemist

November 4, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 10/19/1993
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: SVG7
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9310183-02A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: A-56	DILUTION FACTOR: 1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

November 4, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
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Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	10/19/1993
JOB #: 430.015	DATE RECEIVED:	10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	10/21/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9310183-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-56	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

November 4, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
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Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	10/19/1993
JOB #: 430.015	DATE RECEIVED:	10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	10/21/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9310183-04A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-56	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

November 4, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	10/21/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9310183-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-56 MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	86%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen \_\_\_\_\_  
Chemist

November 4, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: NA
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: SVG7
	MATRIX: AQUEOUS
	% MOISTURE: NA
ELI SAMPLE ID: 9310183-08A	REPORT WT.: NA
SAMPLE ID: A-56 MATRIX SPIKE RECOVERY	SAMPLE VOL./WT.: 5ml
DUPLICATE	DILUTION FACTOR: 1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	95%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

November 4, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	10/21/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9310183-09A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	76%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

November 4, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	10/21/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9310183-10A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	98%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

November 4, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: NA
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9310183-05A	SAMPLE VOL./WT.: NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 602**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 10/19/1993
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9310183-01A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: EW-2-56	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	4.2	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.3	0.5
V7	Toluene	1.0	0.5
V8	Xylenes (Dimethyl benzenes)	11.3	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 602**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 10/19/1993
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9310183-02A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: A-56	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 602**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS JOB #: 430.015 PROJECT: MLK GROUNDWATER TREATMENT PLANT  ELI SAMPLE ID: 9310183-03A SAMPLE ID: B-56	DATE SAMPLED: 10/19/1993 DATE RECEIVED: 10/21/1993 DATE EXTRACTED: NA DATE ANALYZED: 10/21/1993 INSTRUMENT ID: VG-1 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: 5ml DILUTION FACTOR: 1
---	--

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 602**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 10/19/1993
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9310183-04A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: SS#1-56	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

November 4, 1993  
Date



PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 10/21/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 10/21/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

HLI SAMPLE ID: 9310183-07A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	75%
V2	Chlorobenzene	71%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	76%
V7	Toluene	76%
V8	Xylenes (Dimethyl benzenes)	80%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 10/21/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 10/21/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9310183-08A  
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	71%
V2	Chlorobenzene	65%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	72%
V7	Toluene	74%
V8	Xylenes (Dimethyl benzenes)	76%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 10/21/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 10/21/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9310183-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	79%
V2	Chlorobenzene	74%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	81%
V7	Toluene	79%
V8	Xylenes (Dimethyl benzenes)	84%

Huey-Chen Chow  
Chemist

November 4, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-10-183  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: NA
JOB #: 430.015	DATE RECEIVED: 10/21/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 10/21/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9310183-10A	SAMPLE VOL./WT.: NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR: 1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	75%
V2	Chlorobenzene	68%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	75%
V7	Toluene	78%
V8	Xylenes (Dimethyl benzenes)	79%

Huey-Chen Chow  
Chemist

November 4, 1993  
Date



# EUREKA LABORATORIES, INC.

*Corporate Office:*  
6790 FLORIN PERKINS ROAD  
SACRAMENTO, CA 95828  
TEL: (916) 381-7953  
FAX: (916) 381-4013

*Branch Office:*  
17403 N.E. 28th STREET  
REDMOND, WA 98052  
TEL: (206) 885-0284  
FAX: (206) 885-0284

Air Pollution  
Chemical Analysis,  
Research & Testing  
Environmental Studies  
Robotics  
Toxicology

December 6, 1993

Mr. Mark Kawakami  
SUBSURFACE CONSULTANTS  
171 12th Street  
Oakland, CA 94607

Reference - ELI Order #: 93-11-173  
Job #: 430.015  
Project: MLK Groundwater Treatment System

Dear Mr. Kawakami:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for four (4) aqueous samples for the following analyses:

<u>ANALYSIS</u>	<u>METHOD</u>	<u>SAMPLE ID.</u>
Total Petroleum Hydrocarbons (Gasoline)	EPA 8015 (Modified)	EW-2-57, A-57, B-57 & SS#1-57
Purgeable Aromatics	EPA 602	EW-2-57, A-57, B-57 & SS#1-57

Sincerely,  
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo  
Shao-Pin Yo, Ph.D.  
QA/QC Director

SPY/pv

Attachment

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: NA
JOB #: 430.015	DATE RECEIVED: 11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 11/22/1993
	INSTRUMENT ID: SVG-7
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9311173-05A	SAMPLE VOL./WT.: NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR: 1

---

	CONCENTRATION	DETECTION LIMIT
	<u>[ug/L (ppb)]</u>	<u>[ug/L (ppb)]</u>
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
5790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS

JOB #: 430.015

PROJECT: MLK GROUNDWATER TREATMENT SYSTEM

DATE SAMPLED: 11/16/1993

DATE RECEIVED: 11/19/1993

DATE EXTRACTED: NA

DATE ANALYZED: 11/22/1993

INSTRUMENT ID: SVG-7

MATRIX: AQUEOUS

% MOISTURE: NA

REPORT WT.: NA

SAMPLE VOL./WT.: 5 ml

DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-01A

SAMPLE ID: EW-2-57

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	160 *	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

\* Hydrocarbons in the gasoline range are detected in the sample. However, their patterns are different from our standard. Therefore, area equivalent is used to quantitate this sample.

Jeannette Chen  
Chemist

December 6, 1993  
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TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 11/16/1993
JOB #: 430.015	DATE RECEIVED: 11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 11/22/1993
	INSTRUMENT ID: SVG-7
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9311173-02A	SAMPLE VOL./WT.: 5 ml
SAMPLE ID: A-57	DILUTION FACTOR: 1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

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**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	11/16/1993
JOB #: 430.015	DATE RECEIVED:	11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	11/22/1993
	INSTRUMENT ID:	SVG-7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9311173-03A	SAMPLE VOL./WT.:	5 ml
SAMPLE ID: B-57	DILUTION FACTOR:	1

---

	CONCENTRATION	DETECTION LIMIT
	[ug/L (ppb)]	[ug/L (ppb)]
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
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December 6, 1993  
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**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

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CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	11/16/1993
JOB #: 430.015	DATE RECEIVED:	11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	11/22/1993
	INSTRUMENT ID:	SVG-7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9311173-04A	SAMPLE VOL./WT.:	5 ml
SAMPLE ID: SS#1-57	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

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December 6, 1993  
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EPA METHOD 5030/8015 (Modified)

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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	11/22/1993
	INSTRUMENT ID:	SVG-7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9311173-07A	SAMPLE VOL./WT.:	5 ml
SAMPLE ID: MATRIX SPIKE RECOVERY *	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	104%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

December 6, 1993  
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TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	11/22/1993
	INSTRUMENT ID:	SVG-7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9311173-08A	SAMPLE VOL./WT.:	5 ml
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. *	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	100%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

December 6, 1993  
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TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: NA
JOB #: 430.015	DATE RECEIVED: 11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 11/22/1993
	INSTRUMENT ID: SVG-7
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9311173-09A	SAMPLE VOL./WT.: NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR: 1

---

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

104%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Jeannette Chen  
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December 6, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: NA
JOB #: 430.015	DATE RECEIVED: 11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 11/22/1993
	INSTRUMENT ID: SVG-7
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9311173-10A	SAMPLE VOL./WT.: NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR: 1

---

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

107%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Jeannette Chen  
Chemist

December 6, 1993  
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PURGEABLE AROMATICS  
EPA METHOD 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-05A  
CLIENT SAMPLE ID: METHOD BLANK

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Susie Yang  
Chemist

December 6, 1993  
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PURGEABLE AROMATICS  
EPA METHOD 602

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-01A  
CLIENT SAMPLE ID: EW-2-57

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	3.4	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.0	0.5
V7	Toluene	1.0	0.5
V8	Xylenes (Dimethyl benzenes)	5.9	0.5

Note: All positively indentified compounds were second column or second detector confirmed.

Susie Yang  
Chemist

December 6, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 602**

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Sacramento, CA 95828  
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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 11/16/1993
JOB #: 430.015	DATE RECEIVED: 11/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 11/22/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9311173-02A	SAMPLE VOL./WT.: 5 ml
CLIENT SAMPLE ID: A-57	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	0.8	0.5

Note: All positively indentified compounds were second column or second detector confirmed.

Susie Yang  
Chemist

December 6, 1993  
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**PURGEABLE AROMATICS**  
**EPA METHOD 602**

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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-03A  
CLIENT SAMPLE ID: B-57

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	0.8	0.5

Note: All positively indentified compounds were second column or second detector confirmed.

Susie Yang  
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**PURGEABLE AROMATICS**  
**EPA METHOD 602**

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Order No.: 93-11-173  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM

DATE SAMPLED: 11/16/1993  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-04A  
CLIENT SAMPLE ID: SS#1-57

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	0.9	0.5

Note: All positively indentified compounds were second column or second detector confirmed.

Susie Yang  
Chemist

December 6, 1993  
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Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-07A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	84%
V2	Chlorobenzene	84%
V3	1,2-Dichlorobenzene	65%
V4	1,3-Dichlorobenzene	64%
V5	1,4-Dichlorobenzene	65%
V6	Ethyl benzene	89%
V7	Toluene	84%
V8	Xylenes (Dimethyl benzenes)	91%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Susie Yang  
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EPA METHOD 602

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DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-08A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	85%
V2	Chlorobenzene	87%
V3	1,2-Dichlorobenzene	69%
V4	1,3-Dichlorobenzene	68%
V5	1,4-Dichlorobenzene	69%
V6	Ethyl benzene	92%
V7	Toluene	86%
V8	Xylenes (Dimethyl benzenes)	92%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

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DATE SAMPLED: NA  
DATE RECEIVED: 11/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-09A  
CLIENT SAMPLE ID: REAGENT SPIKE RECOVERY

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	86%
V2	Chlorobenzene	87%
V3	1,2-Dichlorobenzene	92%
V4	1,3-Dichlorobenzene	90%
V5	1,4-Dichlorobenzene	105%
V6	Ethyl benzene	92%
V7	Toluene	85%
V8	Xylenes (Dimethyl benzenes)	92%

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DATE SAMPLED: NA  
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DATE EXTRACTED: NA  
DATE ANALYZED: 11/22/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9311173-10A  
CLIENT SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	96%
V2	Chlorobenzene	94%
V3	1,2-Dichlorobenzene	103%
V4	1,3-Dichlorobenzene	98%
V5	1,4-Dichlorobenzene	94%
V6	Ethyl benzene	102%
V7	Toluene	102%
V8	Xylenes (Dimethyl benzenes)	105%

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