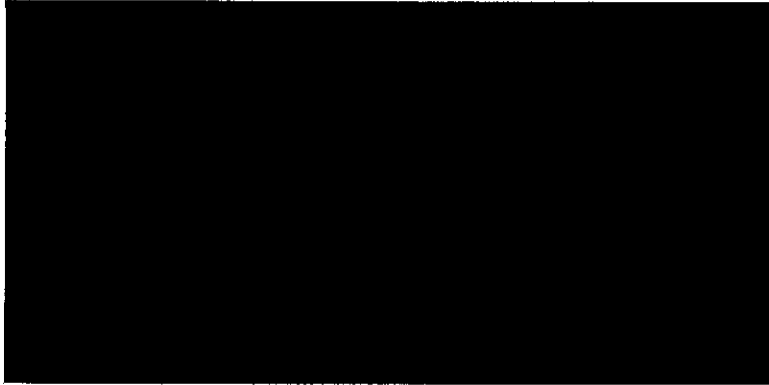


CS

ENVIRONMENTAL
PROTECTION
96 AUG 22 PM 2:16



LUSH GEOSCIENCES
I N C O R P O R A T E D

GEOLOGICAL AND ENVIRONMENTAL SERVICES

LUSH GEOSCIENCES
I N C O R P O R A T E D
GEOLOGICAL AND ENVIRONMENTAL SERVICES

**QUARTERLY MONITORING REPORT
BECK ROOFING
HAYWARD, CALIFORNIA**

LUSH GEOSCIENCES JOB NO. 423-001

AUGUST 21, 1996

F. William Welter
Project Manager

Andrew P. Lush
RG 4421

**LUSH
GEOSCIENCES**

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE BACKGROUND	2
2.1 Previous Work.....	2
3.0 QUARTERLY GROUNDWATER SAMPLING	2
3.1 Field Procedures	2
3.2 Groundwater Analyses	4
3.3 Groundwater Gradient	5
3.4 Quality Assurance/ Quality Control	6
3.4.1 Laboratory QA/QC.....	6
4.0 CONCLUSIONS	6
5.0 RECOMMENDATIONS	7
6.0 LIMITATIONS	7

LIST OF TABLES

TABLE 1 - PURGED WATER PARAMETERS, GROUNDWATER WELLS	3
TABLE 2 - RESULTS OF LABORATORY ANALYSES, GROUNDWATER SAMPLES	4
TABLE 3 -GROUNDWATER ELEVATION DATA	5

LIST OF FIGURES

FIGURE 1 - SITE LOCATION MAP	
FIGURE 2 - GROUNDWATER POTENTIOMETRIC SURFACE MAP (7/30/96)	

APPENDICES

APPENDIX A - REPORTS OF LABORATORY ANALYSES

1.0 INTRODUCTION

This report was prepared to summarize quarterly monitoring work performed in the investigation of contamination associated with one former 1,000-gallon underground gasoline storage tank at the Beck Roofing Facility in Hayward, California (site). The report describes methods and procedures used to evaluate groundwater quality near the former tank. The methods and procedures used during this phase of investigation included:

- Collecting groundwater samples from the four previously installed wells;
- Analyzing the groundwater samples; and,
- Preparing this report.

This report summarizes the field and laboratory operations conducted, the methods and procedures used, the data obtained, and presents conclusions and recommendations.

2.0 SITE BACKGROUND

The site is an operating roofing company. One wooden structure located on the northwest side of the site contains office and warehouse space. The remainder of the site is used for equipment and materials storage. In May of 1990, a 1,000-gallon underground fuel tank, used to store gasoline, was removed. When the tank was removed, evidence of leakage was noted in soil adjacent to the tank.

We have attached a Generalized Site Plan (Figure 2), showing the site configuration.

2.1 Previous Work

Previous work, performed by other consultants, includes excavation of approximately 350 cubic yards of contaminated soil, drilling and sampling 20 soil borings, installation of four groundwater monitoring wells, excavation of an additional 400 cu yd of contaminated soil, and quarterly monitoring of the wells. Previous analyses have shown variable contaminant concentrations in one well (MW3), and slight to non-detectable levels in the remaining wells.

3.0 QUARTERLY GROUNDWATER SAMPLING

3.1 Field Procedures

Groundwater samples were collected from each well on July 30, 1996. Sampling activities were conducted as follows:

- Water and product levels were determined using an electronic water sensitive measuring device. Depth to water or product was measured to an accuracy of 0.01ft. No free product was encountered.
- Prior to sampling, each well was purged with a submersible pump until at least 3 well volumes of water were removed. The purged water was monitored for temperature, pH, and electrical conductivity (Table 1). Purging continued until these parameters stabilized. The well was allowed to recover until at least 80% of the initial water level had been reached.
- After each well stabilized, a sample was collected with an unused, clean, disposable polyethylene bailer. The collected sample was transferred from the bailer to appropriate 40-ml glass sample vials. All sample containers were filled completely with a convex meniscus to eliminate any trapped air or headspace. Each sample container cap was fitted with a Teflon septum.
- After sampling, the samples were labeled, showing the sample number, well number, date, time, samplers name, and preservation. The samples were refrigerated in a cooler containing ice until delivery to the laboratory to perform the specified analyses. Chain-of-custody documentation was maintained from the sampling location to the laboratory. The chain-of custody was signed by the sampler and placed in the container holding the samples.

TABLE 1
PURGED WATER PARAMETERS
GROUNDWATER MONITORING WELLS
BECK ROOFING FACILITY
HAYWARD, CALIFORNIA
Page 1 of 2

Well	Date	Subjective Evidence	T(°F)	pH	K	3WV	Volume Purged	
MW1	10/25/94	No Odor	64.7	6.98	1930	27	30	
MW2	10/25/94	No Odor	63.8	6.92	2600	27	30	
MW3	10/25/94	No Odor	66.5	6.90	2600	27	30	
MW4	10/25/94	No Odor	64.5	8.61	2400	27	30	
MW1	1/20/95	No Odor	62.9	7.37	570	27	30	
MW2	1/20/95	No Odor	62.1	7.20	775	27	30	
MW3	1/20/95	No Odor	63.6	7.10	870	27	30	
MW4	1/20/95	No Odor	63.3	7.26	728	27	30	
MW1	4/11/95	No Odor	65.9	6.66	637	30	35	
MW2	4/11/95	No Odor	72.9	6.63	926	30	35	
MW3	4/11/95	Odor	70.8	6.62	873	30	35	
MW4	4/11/95	No Odor	69.2	6.68	791	30	35	
MW1	7/13/95		INACCESSIBLE					
MW2	7/13/95	No Odor	73.6	6.30	819	30	35	
MW3	7/13/95	Odor	75.0	6.60	800	30	35	
MW4	7/13/95	No Odor	75.0	7.0	739	30	35	
MW1	10/10/95	No Odor	68.7	7.2	544	30	30	
MW2	10/10/95	No Odor	68.4	7.05	732	30	30	
MW3	10/10/95	Odor	68.0	7.79	704	30	30	
MW4	10/10/95	No Odor	68.1	7.01	693	30	30	

Continued on Next Page

K = Conductivity in micromhos
T = Temperature in degrees Fahrenheit
pH = Hydrogen ion concentration
3WV = Calculated three well volumes in gallons

<p align="center">TABLE 1</p> <p align="center">PURGED WATER PARAMETERS</p> <p align="center">GROUNDWATER MONITORING WELLS</p> <p align="center">BECK ROOFING FACILITY</p> <p align="center">HAYWARD, CALIFORNIA</p> <p align="center">Page 2 of 2</p>							
Well	Date	Subjective Evidence	T(°F)	pH	K	3WV	Volume Purged
MW1	1/11/96	No Odor	67.0	6.81	565	30	30
MW2	1/11/96	No Odor	65.8	6.43	734	30	30
MW3	1/11/96	No Odor	63.1	7.59	690	30	30
MW4	1/11/96	No Odor	63.2	7.59	644	30	30
MW1	4/23/96	No Odor	67.3	6.54	1187	30	30
MW2	4/23/96	No Odor	67.9	6.51	1613	30	30
MW3	4/23/96	No Odor	66.5	6.87	980	30	30
MW4	4/23/96	No Odor	66.4	6.52	1416	30	30
MW1	7/30/96	No Odor	68.2	6.74	511	30	30
MW2	7/30/96	No Odor	68.0	6.60	686	30	30
MW3	7/30/96	Sl. Odor	70.8	6.90	664	30	30
MW4	7/30/96	No Odor	69.0	6.62	626	30	30

K = Conductivity in micromhos
T = Temperature in degrees Fahrenheit
pH = Hydrogen ion concentration
3WV = Calculated three well volumes in gallons

3.2 Groundwater Analyses

Groundwater samples from each accessible well were analyzed for TPHg using Environmental Protection Agency (EPA) Method 8015 (modified for gasoline) with purge and trap EPA Method 5030, and for the associated volatile constituents BTEX using EPA Method 602 with purge and trap EPA Method 5030. Results of the analyses are summarized in Table 2; copies of laboratory reports are attached as Appendix A. All analyses were conducted by Sparger Technology Laboratories, of Sacramento, California, which is certified by the State of California for the requested analyses.

TABLE 2
RESULTS OF LABORATORY ANALYSES
GROUNDWATER SAMPLES
BECK ROOFING FACILITY
HAYWARD, CALIFORNIA
Page 1 of 2

Well Number and Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW1					
8/4/94	<0.05	<0.0003	<0.0003	<0.0003	<0.0005
10/25/94	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
1/20/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
4/11/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
7/13/95		INACCESSIBLE			
10/10/95	<0.05	<0.0003	<0.0003	<0.0003	0.0012
1/11/96	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
4/23/96	0.53	<0.0003	0.00064	<0.0003	0.00082
7/30/96	<0.05	0.0013 1.3	0.0021	0.00064	0.003
MW2					
8/4/94	<0.05	<0.0003	<0.0003	<0.0003	<0.0005
10/25/94	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
1/20/95	<0.05	0.0010	<0.0003	<0.0003	<0.0003
4/11/95	<0.05	0.0012	<0.0003	<0.0003	<0.0003
7/13/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
10/10/95	<0.05	0.00069	<0.0003	<0.0003	0.052
1/11/96	<0.05	<0.0003	<0.0003	<0.0003	0.00067
4/23/96	0.039	0.00029	0.00068	<0.0003	0.00066
7/30/96	<0.05	0.0034 3.4	0.0056	0.0017	0.0093
Continued on Next Page					
TPHg = Total petroleum hydrocarbons Results given in milligrams per liter (parts per million) < = Less than laboratory minimum detection limits MW1 = Monitoring well number					

**RESULTS OF LABORATORY ANALYSES
GROUNDWATER SAMPLES
BECK ROOFING FACILITY
HAYWARD, CALIFORNIA**

Page 2 of 2

Well Number and Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW3					
8/4/94	4.2	0.45	<0.003	0.18	0.16
10/25/94	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
1/20/95	4.4	0.58	0.002	0.130	0.160
4/11/95	1.8	0.088	0.0014	0.033	0.027
7/13/95 25.95	3.4	0.5 500	<0.0003	0.130	0.094
10/10/95 27.22	4.2	0.360 360	0.0024	0.190	0.096
1/11/96 24.26	<0.05	<0.0003 0.300	<0.0003	<0.0003	<0.0003
4/23/96 23.06	0.079	0.0012 1.2	0.00033	0.00045	0.00048
7/30/96 25.23	3.8	0.24 240	0.0082	0.014	0.091
MW4					
8/4/94	<0.05	<0.003	0.0005	<0.0003	<0.0005
10/25/94	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
1/20/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
4/11/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
7/13/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
10/10/95	<0.05	<0.0003	<0.0003	<0.0003	<0.0003
1/11/96	<0.05	0.0021	0.004	<0.0003	0.00079
4/23/96	0.043	0.00042	0.0011	0.00039	0.00079
7/23/96	<0.05	0.00097	0.0017	0.00067	0.003
TPHg = Total petroleum hydrocarbons					
Results given in milligrams per liter (parts per million)					
< = Less than laboratory minimum detection limits					
MW1 = Monitoring well number					

7/24/96

3.3 Groundwater Gradient

The groundwater gradient was approximated from calculations made using surveyed wellhead elevations and locations in combination with depth to groundwater measurements made on July 30, 1996, (Table 3) (Figures 3 and 4). The data indicate that groundwater flow direction was oriented S69°W. The gradient data is very consistent with data generated during the preceding twelve months indicating a southwesterly flow across the site.

TABLE 3
GROUNDWATER ELEVATION DATA
BECK ROOFING FACILITY
HAYWARD, CALIFORNIA
Page 1 of 3

Well Number	Elevation of Top of Casing (ft. above MSL)	Depth to Water (ft. below top of casing)	Water-level Elevation (ft. above MSL)	Gradient and Direction
8/4/94				
MW1	58.55	29.96	29.29	
MW2	58.65	29.35	29.30	
MW3	58.52	29.27	29.25	
MW4	58.01	28.80	29.21	
10/25/94				
MW1	58.55	30.10	28.45	
MW2	58.65	30.15	28.50	0.0009 ft/ft
MW3	58.52	30.10	28.42	S22°W
MW4	58.01	29.60	28.41	
1/20/95				
MW1	58.55	26.57	31.98	
MW2	58.65	26.65	32.00	0.0002 ft/ft
MW3	58.52	26.54	31.98	S0°W
MW4	58.01	26.03	31.98	
4/11/95				
MW1	58.55	23.87	34.68	
MW2	58.65	23.92	34.73	0.0009 ft/ft
MW3	58.52	23.87	34.65	S24°W
MW4	58.01	23.38	34.63	
Continued on Next Page				
TOC = Top of the well casing (elevation in ft. above mean sea level- AMSL)				
Gradient = groundwater gradient in ft per ft				
Direction = groundwater flow direction				

TABLE 3
GROUNDWATER ELEVATION DATA
BECK ROOFING FACILITY
HAYWARD, CALIFORNIA

Page 2 of 3

Well Number	Elevation of Top of Casing (ft. above MSL)	Depth to Water (ft. below top of casing)	Water-level Elevation (ft. above MSL)	Gradient and Direction
5/09/95				
MW2	58.55	24.65	33.90	
MW2	58.65	24.735	33.915	0.00125ft/ft
MW3	58.52	24.66	33.86	S65°W
MW4	58.01	24.20	33.81	
6/09/95				
MW1	58.55	25.39	33.16	
MW2	58.65	25.47	33.18	0.0008ft/ft
MW3	58.52	25.40	33.12	S59°W
MW4	58.01	24.92	33.10	
7/13/95				
MW1	58.55	INACCESSIBLE		
MW2	58.65	26.0	32.65	
MW3	58.52	25.95	32.57	
MW4	58.01	25.5	32.51	
8/10/95				
MW1	58.55	26.33	32.16	
MW2	58.65	26.48	32.17	
MW3	58.52	26.43	32.09	
MW4	58.01	25.97	32.04	
9/14/95				
MW1	58.55	26.84	31.71	
MW2	58.65	26.92	31.73	
MW3	58.52	26.87	31.65	
MW4	58.01	26.42	31.30	
10/10/95				
MW1	58.55	27.18	31.37	
MW2	58.65	27.27	31.38	
MW3	58.52	27.22	31.30	
MW4	58.01	26.76	31.25	
TOC = Top of the well casing (elevation in ft. above mean sea level- AMSL)				
Gradient = groundwater gradient in ft per ft				
Direction = groundwater flow direction				

TABLE 3
GROUNDWATER ELEVATION DATA
BECK ROOFING FACILITY
HAYWARD, CALIFORNIA
Page 3 of 3

Well Number	Elevation of Top of Casing (ft. above MSL)	Depth to Water (ft. below top of casing)	Water-level Elevation (ft. above MSL)	Gradient and Direction
11/7/95				
MW1	58.55	27.52	31.03	
MW2	58.65	27.60	31.05	0.001ft/ft
MW3	58.52	27.55	30.97	S65°W
MW4	58.01	27.08	30.93	
12/6/95				
MW1	58.55	27.80	30.75	
MW2	58.65	27.88	30.77	0.001ft/ft
MW3	58.52	27.83	30.65	S63°W
MW4	58.01	27.37	30.64	
1/11/96				
MW1	58.55	26.76	31.79	
MW2	58.65	26.84	31.81	0.001ft/ft
MW3	58.52	26.77	31.75	S67°W
MW4	58.01	26.30	31.71	
2/7/96				
MW1	58.55	24.24	34.31	
MW2	58.65	24.32	34.33	0.0007ft/ft
MW3	58.52	24.26	34.26	S57°W
MW4	58.01	23.76	34.25	
4/23/96				
MW1	58.55	23.02	35.53	
MW2	58.65	23.09	35.56	0.0014ft/ft
MW3	58.52	23.06	35.46	S63°W
MW4	58.01	22.60	35.41	
7/30/96				
MW1	58.55	25.18	33.37	
MW2	58.65	25.25	33.40	0.0015ft/ft
MW3	58.52	25.23	33.29	S69°W
MW4	58.01	24.79	33.22	
TOC = Top of the well casing (elevation in ft. above mean sea level- AMSL)				
Gradient = groundwater gradient in ft per ft				
Direction = groundwater flow direction				

3.4 Quality Assurance/Quality Control

All field equipment was cleaned and decontaminated prior to being introduced into the sampling environment. Each sample was collected using a dedicated, disposable bailer. Care was taken to prevent the bailer from becoming contaminated prior to being introduced into the sampling environment.

3.4.1 Laboratory QA/QC

Sparger is certified by the CalEPA Hazardous Waste Testing Laboratory Certification Program to conduct the analyses requested. The methods used by the laboratory are published, approved analytical methods which have built-in QA/QC practices. Other QA/QC practices are part of CalEPA's certification program. The laboratory provided pertinent QA/QC documents pertaining to the analytical protocol. These QA/QC documents include surrogate recovery data and analytical charts including those of the spikes and matrix spike duplicates. Copies of these documents were incorporated into the laboratory reports of analyses (Appendix A).

4.0 CONCLUSIONS AND DISCUSSION

Gasoline in was detected in MW3 at a concentration of 3.9 ppm with proportionate concentrations of the volatile constituents benzene, toluene, and xylenes. During the last two previous sampling events petroleum hydrocarbon concentrations were detected at significantly lower concentrations. The presence of gasoline is at 3.9 ppm is consistent with earlier historic data for that well. Reportable quantities of ^{TPH-4} gasoline were not detected in any of the remaining wells MW1, MW2, and MW4. The volatile gasoline constituents detected in those wells were generally detected at higher concentrations than were measured during the last previous sampling event. The detection of petroleum hydrocarbons in wells MW1, MW2, and MW3 during this sampling event, and the last previous event, may still be indicative the plume is migrating. *OK*

Monthly groundwater elevation data indicates that the groundwater has been recharging since January 1996. The groundwater elevation measured during this event is roughly 2 ft lower than was measured during the last regular quarterly monitoring event in April 1996.

BTEX detected

Shift slightly in flow. may contribute?

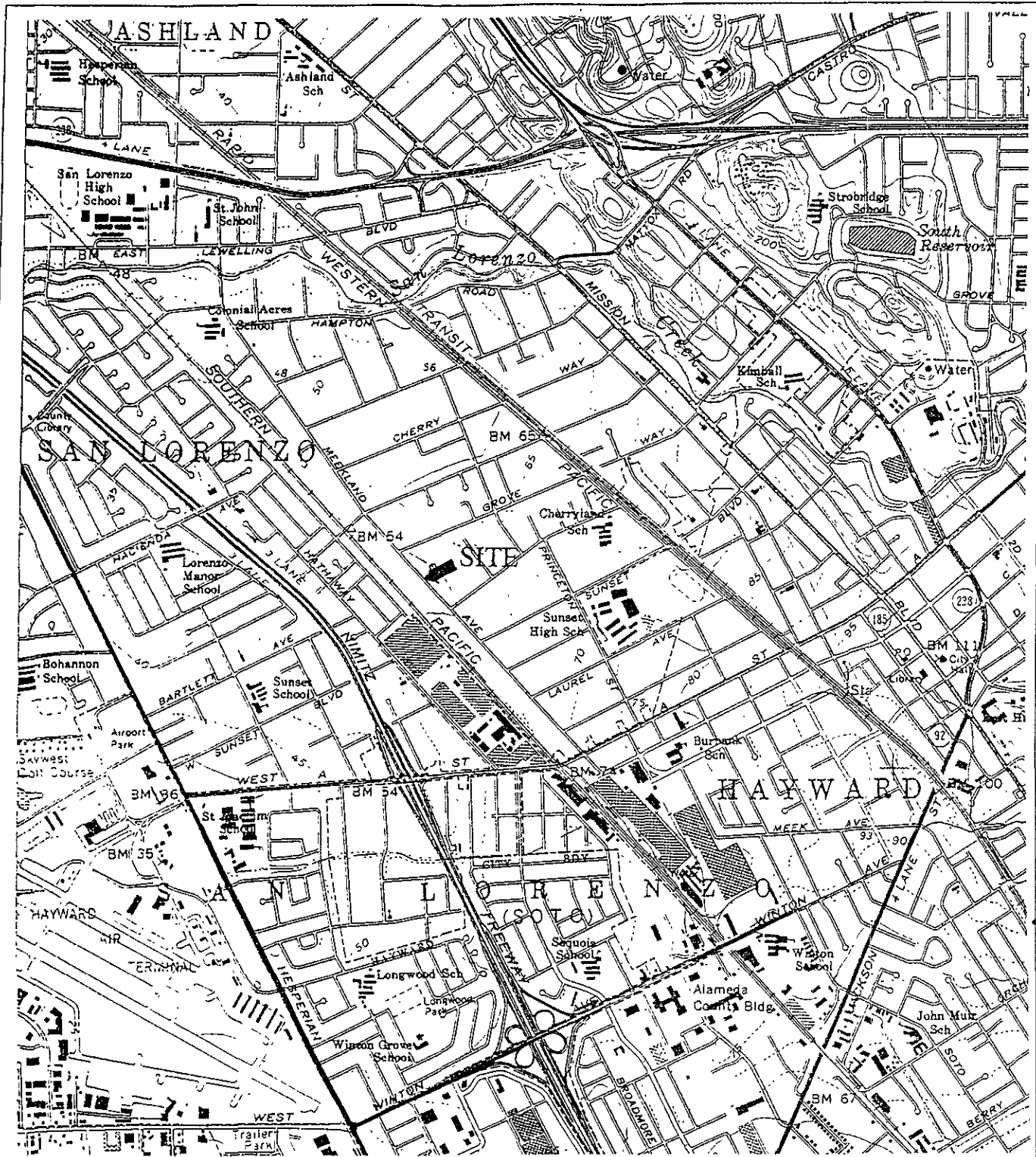
5.0 RECOMMENDATIONS

The present data continues to suggest the groundwater contamination plume may be beginning to migrate. Further remedial action is being considered. In the interim, sampling of all of the onsite monitoring wells should continue on a quarterly basis. ✓

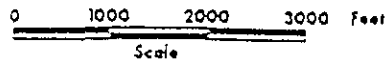
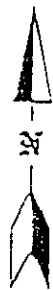
6.0 LIMITATIONS

The above conclusions are based on our assessment of conditions indicated to exist as of the dates of our field work. Our assessment included review of previous documents and interviews with state or local regulatory persons familiar with the area. This assessment was conducted in accordance with generally accepted standards of environmental geological practice at the time it was performed. The results of this assessment do not preclude the possibility that substances that are currently, or which in the future may be defined as hazardous, may be present on the property because of activities that we could not identify, or in locations which were not sampled.

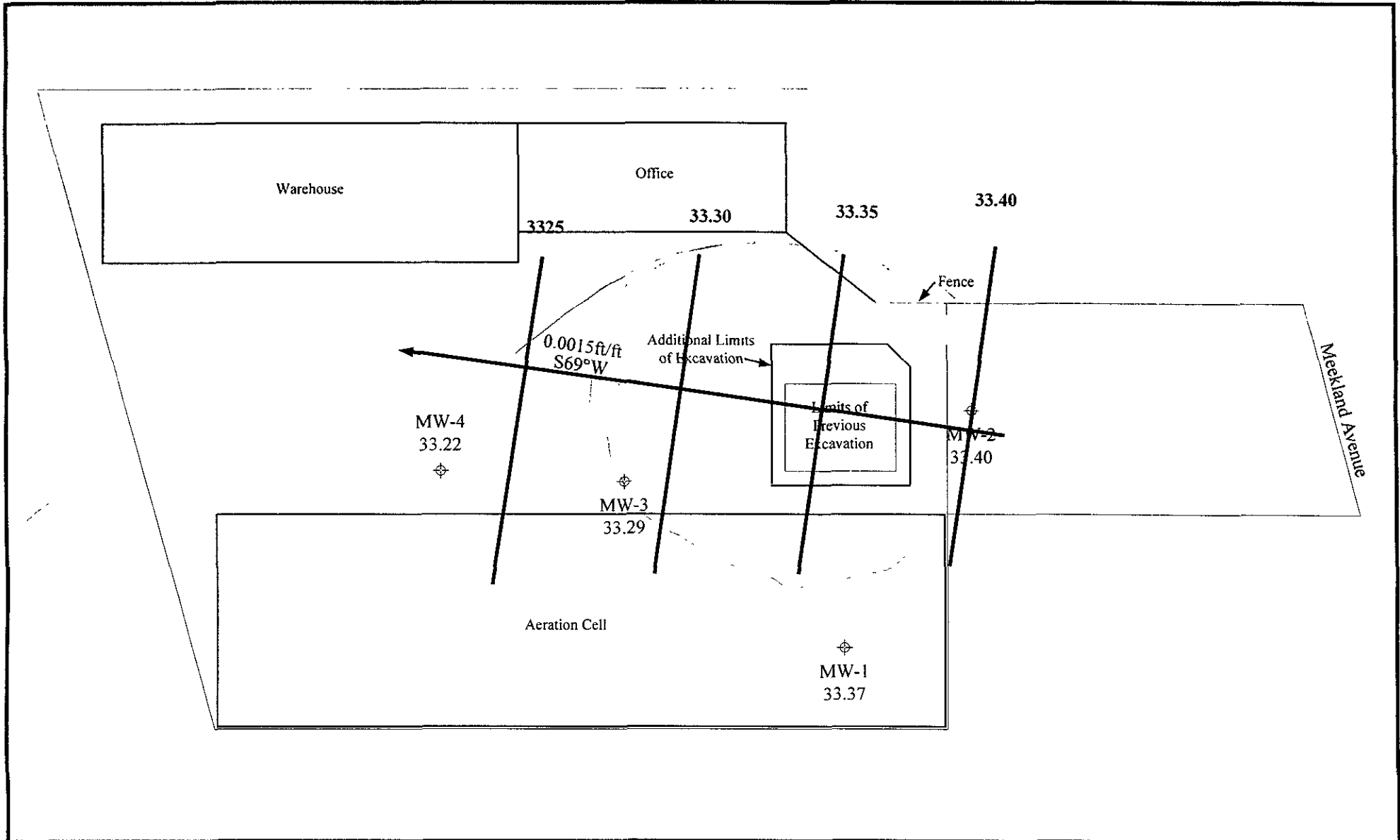
Our conclusions are based on groundwater sample analyses representative of contaminant concentrations at the locations sampled. These results are considered indicative of site conditions, but such conditions may vary away from the points sampled. Further investigation, including additional subsurface exploration and laboratory testing of soil and groundwater samples can reduce the uncertainties inherent in this type of limited environmental assessment. No soil engineering or geotechnical references are made, nor should they be inferred.



Reference: USGS 7.5'- series topographic map of the Hayward Quadrangle (photorevised 1980)

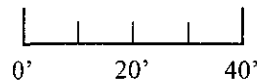


SITE LOCATION MAP
BECK ROOFING FACILITY
21123 MEEKLAND AVENUE
HAYWARD, CALIFORNIA



North

⊕ Monitoring Well Location



POTENTIOMETRIC SURFACE MAP

JULY 30, 1996

BECK ROOFING FACILITY

21123 MEEKLAND AVENUE

LUSH GEOSCIENCES

6840

SPARGER TECHNOLOGY, INC.

Analytical Laboratory Phone: (916) 362-0947
 3060 Fife Circle, #112 Sacramento, CA 95827 FAX: (916) 362-0947

Company: **LUSH GEOSCIENCES** Phone: (916) 737-9294
 Project Manager: FAX (916) 737-9298

Report Address: Billing Name & Address:
 1560 BUSINESS DRIVE, SUITE 120
 SACRAMENTO, CA 95820

Project Name: **BECKS. Roofing** Project/Job #:
 Project Location: **HAYWARD** P.O. #:

CHAIN OF CUSTODY RECORD

STAT Invoice Number:

ANALYSIS REQUEST

REMARKS:

SAMPLE ID	Sampling		Container			Preservative Used			Matrix					
	Date	Time	40 mL VOA	Brass Sleeve	1 L amber bottle	250 mL Plastic	Other:	HCl/HNO3/HCl	None	Other:	Water	Soil	Air	Other:
MW-1	7-30		Z							X				
MW-2	7-30		Z							X				
MW-3	7-30		Z							X				
MW-4	7-30		Z							X				

ICUP	WEI (STLC)			Total	TAI
STEX (SO2/SCC01/SC01)					
STEX (SO2/SCC01/SC01)					
TPH/diesel/TPH/motor oil/kerosene(SC15)					
EPA 601/6010/SC01/SC04					
EPA 602/8020					
EPA 608/8080 (Pesticides)/505/508					
EPA 908/8080 (Pesticides)					
EPA 624/8240/SC01/SC02					
EPA 625/8250/SC01					
Total Oil & Grease (SE20)					
Non-Polar O & G/TPH (412.1)					
Organic Lead					
RCI					
CAM-17 Metals					
CAM-5 Metals (Cd, Cr, Pb, Ni, Zn)					
Lead					
Standard					
Rush Services (72hr / 48hr / 24hr / 12hr)					
Holiday/Weekend Rush					

Relinquished by: *[Signature]*
 Date: 7-31-96 Time: 8:45

Received by: *[Signature]*
 Date: 7/31/96 Time: 8:45

Relinquished by:
 Date: Time:

Received by:
 Date: Time:

August 8, 1996

Invoice #: 6840
Project #: 423-001
Project Name: Becks Roofing

Mr. Andrew Lush
Lush Geosciences
3560 Business Dr., Ste. 120
Sacramento, CA 95820

Mr. Andrew Lush,

Enclosed is the report for four (4) water samples. The samples were received at Sparger Technology Analytical Lab on July 31, 1996.

The samples were received in eight (8) 40 ml VOAs. The samples were transported and received under documented chain of custody and stored at four (4) degrees C until analysis was performed.

The report consists of the following sections:

- I. Sample Description & Analysis Request
- II. Quality Control Report
- III. Analysis Results

No problems were encountered with the analysis of your samples.

If you require additional information please give us a call at (916) 362-8947.

Sincerely,



R. L. James
Principal Chemist

I Sample Description & Analysis Request

Laboratory ID			Sample ID	Analysis Description	Matrix
6840	001	A	MW-1	BTEX/TPHgas	W
6840	002	A	MW-2	BTEX/TPHgas	W
6840	003	A	MW-3	BTEX/TPHgas	W
6840	004	A	MW-4	BTEX/TPHgas	W

II Quality Control

A. **Project Specific QC.** No project specific QC (i.e., spikes and/or duplicates) was requested.

B. **Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blank associated with your sample at the reporting limit levels noted on the data sheets in the Analytical Results section.

C. **Laboratory Control Spike.** A Laboratory Control Spike (LCS) is a sample which is spiked with known analyte concentrations, and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The LCS results associated with your samples are on the attached Laboratory Control Spike and Laboratory Control Spike Duplicate Analysis Report.

D. **Matrix Spike Results.** A Matrix Spike is a sample which is spiked with known analyte concentrations, and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The Matrix Spike results associated with your samples are on the attached Matrix Spike and Matrix Spike Duplicate Analysis Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration}) \times 100}{(\text{actual concentration})}$$

III Analysis Results

Results are on the attached data sheets.

**EPA Method 8020/8015
Modified Analysis Report**

Attention:	Mr. Andrew Lush Lush Geosciences 3560 Business Dr., Ste. 120 Sacramento, CA 95820	Date Sampled:	Jul 30, 1996
		Date Received:	Jul 31, 1996
		Date Analyzed:	Jul 31, 1996
		Invoice #:	6840
Project #:	423-001	Project Name:	Becks Roofing
Client ID:	MW-1	LAB ID:	6840-001A
Matrix:	Water	Dilution:	1: 1


Name	Amount	Detection Limit	Units
Benzene	1.3	0.3	ug/l
Toluene	2.1	0.3	ug/l
Ethylbenzene	0.64	0.3	ug/l
Xylenes	3.0	0.3	ug/l
TPHgas	ND	50	ug/l

Surrogate % Recovery of Trifluorotoluene = 98%

ppb = parts per billion = ug/l = micrograms per liter

ppm = parts per million = ug/ml = micrograms per milliliter

ND = Not Detected Compound(s) may be present at concentrations below the detection limit


C. Chapman, GC Manager

Aug 5, 1996

Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC IS CERTIFIED BY THE STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
(Certification No 1814)

8020001.XLS

• For more information, call (916) 362-8947 • FAX (916) 362-0947


**EPA Method 8020/8015
 Modified Analysis Report**

Attention:	Mr. Andrew Lush Lush Geosciences 3560 Business Dr., Ste. 120 Sacramento, CA 95820	Date Sampled:	Jul 30, 1996
		Date Received:	Jul 31, 1996
		Date Analyzed:	Aug 1, 1996
		Invoice #:	6840
Project #:	423-001	Project Name:	Becks Roofing
Client ID:	MW-2	LAB ID:	6840-002A
Matrix:	Water	Dilution:	1: 1

Name	Amount	Detection Limit	Units
Benzene	3.4	0.3	ug/l
Toluene	5.6	0.3	ug/l
Ethylbenzene	1.7	0.3	ug/l
Xylenes	9.3	0.3	ug/l
TPHgas	ND	50	ug/l

Surrogate % Recovery of Trifluorotoluene = 97%

ppb = parts per billion = ug/l = micrograms per liter
 ppm = parts per million = ug/ml = micrograms per milliliter
 ND = Not Detected. Compound(s) may be present at concentrations below the detection limit


 C. Chapman, GC Manager

Aug 5, 1996
 Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC IS CERTIFIED BY THE STATE OF CALIFORNIA
 DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
 (Certification No. 1614)

**EPA Method 8020/8015
 Modified Analysis Report**

Attention:	Mr. Andrew Lush Lush Geosciences 3560 Business Dr., Ste. 120 Sacramento, CA 95820	Date Sampled:	Jul 30, 1996
		Date Received:	Jul 31, 1996
		Date Analyzed:	Aug 2, 1996
		Invoice #:	6840
Project #:	423-001	Project Name:	Becks Roofing
Client ID:	MW-3	LAB ID:	6840-003A
Matrix:	Water	Dilution:	1: 10

Name	Amount	Detection Limit	Units
Benzene	240	3.0	ug/l
Toluene	8.2	3.0	ug/l
Ethylbenzene	140	3.0	ug/l
Xylenes	91	3.0	ug/l
TPHgas	3800	500	ug/l

Surrogate % Recovery of Trifluorotoluene = 92%

ppb = parts per billion = ug/l = micrograms per liter
 ppm = parts per million = ug/ml = micrograms per milliliter
 ND = Not Detected Compound(s) may be present at concentrations below the detection limit


 C. Chapman, GC Manager

Aug 5, 1996
 Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC IS CERTIFIED BY THE STATE OF CALIFORNIA
 DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
 (Certification No. 1614)

**EPA Method 8020/8015
 Modified Analysis Report**

Attention: Mr. Andrew Lush
 Lush Geosciences
 3560 Business Dr., Ste. 120
 Sacramento, CA 95820

Date Sampled: Jul 30, 1996
 Date Received: Jul 31, 1996
 Date Analyzed: Aug 1, 1996
 Invoice #: 6840

Project #: 423-001

Project Name: Becks Roofing

Client ID: MW-4

LAB ID: 6840-004A

Matrix: Water

Dilution: 1: 1

Name	Amount	Detection Limit	Units
Benzene	0.97	0.3	ug/l
Toluene	1.7	0.3	ug/l
Ethylbenzene	0.67	0.3	ug/l
Xylenes	3.0	0.3	ug/l
TPHgas	ND	50	ug/l

Surrogate % Recovery of Trifluorotoluene = 98%

ppb = parts per billion = ug/l = micrograms per liter
 ppm = parts per million = ug/ml = micrograms per milliliter
 ND = Not Detected Compound(s) may be present at concentrations below the detection limit


 C. Chapman, GC Manager

Aug 5, 1996
 Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC IS CERTIFIED BY THE STATE OF CALIFORNIA
 DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
 (Certification No 1814)

**EPA Method 8020
 Modified Matrix Spike (MS) & Matrix Spike Duplicate (MSD)
 BTEX Analysis Report**

Attention: Mr. Andrew Lush
 Lush Geosciences
 3560 Business Dr., Ste. 120
 Sacramento, CA 95820

Date Sampled: Jul 30, 1996
 Date Received: Jul 31, 1996
 Date Analyzed: Aug 1, 1996
 Invoice #: 6840

Project ID: 423-001

Project Name: Becks Roofing

Client ID: MS/MSD

LAB ID: 6840-004MS
 6840-004MSD

Matrix: Water

Dilution:


Name	Conc. Spike Added	Sample Result	MS Result	MSD Result	Units	MS % Recovery	MSD % Recovery	% RPD Recovery
Benzene	30	0.97	32	33	ug/l	103%	107%	3%
Toluene	30	1.7	32	34	ug/l	101%	108%	6%
Ethylbenzene	30	0.67	31	32	ug/l	101%	104%	3%
m,p-Xylenes	60	1.9	65	68	ug/l	105%	110%	5%

Surrogate % Recovery of Trifluorotoluene =

95% MS

94% MSD

ppb = parts per billion = ug/l = micrograms per liter
 ppm = parts per million = ug/ml = micrograms per milliliter
 ND = Not Detected. Compound(s) may be present at concentrations below the detection limit.


 C. Chapman, BC Supervisor

Aug 5, 1996
 Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC. IS CERTIFIED BY THE STATE OF CALIFORNIA
 DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
 (Certification No. 1614)

8020MS.XLS

**EPA Method 8020
 Modified Laboratory Control Spike (LCS) &
 Laboratory Control Spike Duplicate (LCSD) BTEX Analysis Report**

Attention: Mr. Andrew Lush
 Lush Geosciences
 3560 Business Dr., Ste. 120
 Sacramento, CA 95820

Date Sampled: Jul 30, 1996
 Date Received: Jul 31, 1996
 Date Analyzed: Aug 1, 1996
 Invoice #: 6840

Project ID: 423-001

Project Name: Becks Roofing

Client ID: LCS/LCSD

LAB ID: 6840-LCS
 6840-LCSD

Matrix: Water

Dilution:

Name	Conc. Spike Added	Sample Result	LCS Result	LCSD Result	Units	LCS % Recovery	LCSD % Recovery	% RPD Recovery
Benzene	30	ND	30	30	ug/l	100%	100%	0%
Toluene	30	ND	30	30	ug/l	100%	100%	0%
Ethylbenzene	30	ND	30	30	ug/l	100%	100%	0%
m,p-Xylenes	60	ND	62	62	ug/l	103%	103%	0%

Surrogate % Recovery of Trifluorotoluene =

94% LCS

96% LCSD

ppb = parts per billion = ug/l = micrograms per liter
 ppm = parts per million = ug/ml = micrograms per milliliter
 ND = Not Detected Compound(s) may be present at concentrations below the detection limit


 C. Chapman, GC Supervisor

Aug 5, 1996
 Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC IS CERTIFIED BY THE STATE OF CALIFORNIA
 DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
 (Certification No 1614)

LUSH GEOSCIENCES
I N C O R P O R A T E D
GEOLOGICAL AND ENVIRONMENTAL SERVICES

ENVIRONMENTAL
PROTECTION
96 AUG 22 PM 2: 16

August 21, 1996
423-001

Ms. Juliet Shin
Alameda County Health Services
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: Transmittal of Quarterly Monitoring Report
Beck Roofing Facility, Hayward, California

Dear Ms. Shin:

Enclosed, please find the Quarterly Monitoring Report for the Beck Roofing Facility at 21123 Meekland Avenue in Hayward, California. Please call our office if you have any questions regarding this report or any other aspect of this project.

Sincerely,

LUSH GEOSCIENCES



Andrew P. Lush
President

Enclosure