

# Woodward-Clyde Consultants

PHASE II SITE EXPLORATION  
RAILROAD AVENUE PROPERTY  
LIVERMORE, CALIFORNIA

Prepared for

City of Livermore  
Redevelopment Agency  
1052 South Livermore Avenue  
Livermore, California 94550

April, 1989

Prepared by

CITY MANAGER'S OFFICE

NOV 15 1994

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500 12th Street, Suite 100  
Oakland, CA 94607-4014



PHASE II SITE EXPLORATION  
RAILROAD AVENUE PROPERTY  
LIVERMORE, CALIFORNIA

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INTRODUCTION

This report presents the results of our Phase II Site Exploration for the presence of petroleum products in the soil at the Railroad Avenue Property, Alameda County, Livermore, California (Figure 1). The Phase II study included six exploratory borings, at the location of former and existing underground petroleum storage tanks. Soil samples were collected from the borings at five foot depth intervals and tested in the laboratory for petroleum products and selected metals. In addition a stack of ceiling tiles was sampled and analysed for asbestos. The borings were located at Arrow Rentals, 187 North "L" Street, and at 1934 Railroad Avenue. The approximate locations were previously identified in our proposal dated January 16, 1989. The actual boring locations are shown on Figure 2.

While drilling, a WCC geologist: 1) collected soil samples from each boring, 2) measured the volatile organic vapor content of the samples using an HNu photoionization detector, 3) prepared a field log for each boring describing the materials encountered using the Unified Soils Classification System.

Chemical analyses of the soil samples from the six borings were conducted by Sequoia Analytical Laboratory at their state-certified laboratory in Redwood City, California. Total petroleum hydrocarbons (TPH -gasoline) are reported as low boiling point hydrocarbons by the laboratory. Total petroleum hydrocarbons (TPH - diesel) are reported as high boiling point hydrocarbons by the laboratory (Appendix A). The soil samples from borings B-1 through B-5 were analyzed for TPH - gasoline, and benzene, toluene, ethylbenzene and xylene (BTEX); one sample from the 15 foot depth was

analyzed for TPH as diesel and BTEX; one sample from below the bottom of the former tanks in borings B-1, B-2, B-3 were analyzed for purgeable and extractable priority pollutants. Soil samples from boring B-6 <sup>at five foot depth intervals,</sup> were analyzed for TPH as gasoline and BTEX, two samples ~~at five foot depth intervals~~ from two and five foot depths were analysed for Cr, Cu, Ni, Pb, Zn, and Hg, and one sample was analysed for purgeable and extractable pollutants. The results of the field exploration and the laboratory analyses are summarized below.

## FIELD EXPLORATION

### Soil Borings

Six soil borings (B-1 to B-6) were drilled on March 2 and 3, 1988 at locations shown on Figure 2. The borings were drilled using a truck-mounted Mobile B-61 drill rig with 8 inch diameter, hollow-stem, continuous flight augers. The field log of each soil boring, prepared by a WCC geologist, is presented in Appendix B.

Boring B-1 was located between the former 6,000 and 4,000 gallon tanks in the present driveway area of 187 North "L" Street. Borings B-2 and B-3 were located in approximately the center of the northern and southernmost of three former 1,500 gallon tanks immediately west of B-1. Boring B-4 was relocated from the center of the pump island to the northwest corner of the pump island in order to avoid overhead wires. Boring B-5 was located next to the north side of the existing 1,000 gallon tank. Boring B-6 was relocated 10 feet south of the planned location at 1940 Railroad Avenue to avoid a eucalyptus tree. Five of the soil borings; B-1, B-2, B-3, B-5, and B-6, were drilled to 25-1/2 to 26 foot depths. Boring B-4 was drilled to a 15-1/5 foot depth. No free water was observed in any of the borings at the time of drilling activities.

Before use at the site, the augers were steam cleaned by the drilling company. Clean augers were used for each boring. The sampler was cleaned between sampling intervals with Alconox detergent and triple rinsed, the final rinse was with deionized water. Each boring was backfilled with a cement-bentonite slurry in order to reduce the potential vertical migration of possible contaminants in the borehole. The cuttings generated from the borings were placed in 55 gallon drums and stored temporarily on site. The soil should be disposed of properly based on the laboratory test results.

#### Soil Sampling

Soil Samples were collected at five-foot intervals by advancing a modified California Sampler through the hollow stem of the augers. The sampler was driven into the soil a maximum of 18 inches, using a 140 pound hammer with a 30-inch drop. The number of blows required to drive the sampler are shown on the boring log. The soil samples were retained in three four-inch long, two inch diameter brass liners within the sampler. The brass liners were identified as A through C from top to bottom. The liner retained for laboratory analysis is identified on the boring log (Appendix A). The sample selected for laboratory analysis was covered on both ends with teflon sheeting and sealed with plastic end caps and vinyl tape, labeled, placed in a plastic zip-lock type bag, and transported on ice to the laboratory at the end of each field day using WCC chain of custody procedures (Appendix A).

A second of the four soil samples was used to perform a head-space analysis in the field for volatile organic compounds. The test procedure involved emptying the contents of the brass liner into a zip-lock type plastic bag, sealing the bag, placing it in a warm area for 20 or 30 minutes, then inserting the probe. This technique provides a means for approximate evaluations of relative hydrocarbon levels in the soil. The total organic vapor is measured in parts per million (ppm-HNu units), with an HNu photoionization detector. The results of these tests appear on the boring logs and are summarized in Table 1.

The remaining two soil samples were described by a WCC geologist using the Unified Soils Classification System. The descriptions are shown on the boring logs presented in Appendix A.

## RESULTS

### Soil Description

Concrete paving covered the ground surface at borings B-1, B-2, B-3 and B-4. Asphaltic concrete and underlying base-rock was encountered at B-5 and B-6. The soil encountered in all six borings ranged from clayey, silty to sandy gravel. The upper 8 to 13 feet of clayey silty and sandy gravel in borings B-1, B-2 and B-3 is very likely backfill material that was placed to fill the excavation after removal of the former underground tanks. The increase in blow counts during sampling below a depth of about 10 feet suggests the deeper soils are denser and are likely in-place natural soils. The upper 10 feet of sandy gravel in boring B-5 may also be backfill material placed in the excavation for the existing 1,000 gallon gasoline storage tank.

The 1-1/2 foot thick layer of silty clay found in boring B-4 is probably a natural topsoil layer. The underlying clayey and silty gravel layers are probably also natural soil layers.

The upper 1-1/2 foot thick layer of silty sand in boring B-6 might be fill material. The underlying silty gravel layer extending to a depth of about 8 feet might also be fill material. The sandy and clayey gravel below 8 feet appears to be natural undisturbed soil, based upon its very dense condition.

No free ground water was encountered in any of the borings at the time of drilling. Logs of the borings, shown in Appendix B, show the depth of soil samples, and the results of field tests for organic vapors.

Organic Vapor and Hydrocarbon Odors

Organic vapor was detected by the HNu photoionization detector in the field in samples from 4 of the borings located on the Arrow Rentals Property. In boring B-1 organic vapor was detected at 5.6 ppm at the 20 foot depth and 68.5 ppm at the 25 foot depth. In boring B-2 organic vapor was detected at 32.6 ppm at the 25 foot depth. In boring B-3 organic vapor was detected at 3.1 ppm at the 20 foot depth and 1.2 ppm at the 25 foot depth. In boring B-5 organic vapor was detected at 16.3 ppm at the 25 foot depth. No odors and no organic vapors were detected in soil from borings B-4 and B-6.

Laboratory Soil Analysis

187 North "L" Street, Arrow Rentals - Soil samples from four of the borings at the Arrow Rentals site showed detectable concentrations of TPH (total petroleum hydrocarbons) as gasoline. Soil from two of the borings showed detection of one or more components of BTEX (benzene, toluene ethylbenzene, xylenes) and soil from three borings showed detectable levels of TPH as diesel. Components of gasoline were also detected in soil from two borings, during analysis for volatile organics (EPA 8240) and semi-volatile organics (EPA 8270).

In boring B-1, TPH as gasoline was present at 170 ppm at 20 feet, and 220 ppm at 25 feet (see Table 2). TPH as diesel was present at 2.3 ppm at 15 feet. Benzene at 2.1 ppm, toluene at 1.4 ppm, ethylbenzene at 0.22 ppm, and xylene at 1.5 ppm were also present at 20 feet. Toluene at 2.4 ppm, ethylbenzene at 2.1, and xylene at 11.0 ppm were present at 25 feet. In the volatile organics analyses at the 25 foot depth benzene was present at 380  $\mu$  g/kg, ethylbenzene at 6,400  $\mu$  g/kg toluene at 7,100  $\mu$  g/kg and total xylenes at 52,000  $\mu$  g/kg. Two of the semi-volatile organics were present at the 25 foot depth; 2-methylnaphthalene at 3500  $\mu$  g/kg, 2-naphthalene at 3,400  $\mu$  g/kg, and phenol at 300  $\mu$  g/kg (Table 2).

In boring B-2, TPH as gasoline was present at 3.5 ppm at the 2 foot depth and 8.2 ppm at the 5 foot depth, and 1.7 ppm at the 25 foot depth (Table 2). Xylene was present at 0.1 ppm at the 2 foot, and 0.13 ppm at the 25 foot depth. TPH as diesel was present at 2.3 ppm at the 15 foot depth. Volatile organics were present at the 25 foot level as xylene at 550  $\mu$  g/kg (Table 2).

In boring B-3, TPH as gasoline was present at 1.3 ppm at the 25 foot depth, and TPH as diesel was present at 2.6 ppm at the 15 foot depth. In boring B-5, TPH as gasoline was present at 1.9 ppm at the 5 foot depth, and 1.7 ppm at the 25 foot depth. All test results for boring B-4 were reported as non-detected.

#### 1934 Railroad Avenue

TPH as gasoline was present in boring B-6 at 1.8 ppm at the 5 foot depth. Metals were present at the following levels at the 2 foot and 5 foot depths respectively: Cr at 42 mg/kg and 43 mg/kg,  $Cu^u$  at 34 mg/kg and 16  $\mu$ g/kg, Ni at 100 mg/kg at both depths, Pb at 5.8 and 4.4 mg/kg, Hg at 0.035 mg/kg and 0.059 mg/kg, and Zn at 36  $\mu$  g/kg and 35  $\mu$  g/kg. All metals results from the 2 and 5 foot depths are below the Total Threshold Limit Concentration (TTLC) values as required by Titled 22, Section 66699., of the California Administrative Code. Since the results are less than 10 times the Soluble Threshold Limit Concentration (STLC) there is a low potential that if the samples were tested using the Waste Extraction Test (WET) that they would exceed the STLC values. Laboratory results are summarized in Table 2.

#### Ceiling Tile

No asbestos was detected in the ceiling tile sample collected from the storage lot southwest of the Arrow Rentals property. This material can be considered as non-hazardous. Laboratory test results are included in Appendix A.

#### LIMITATIONS

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The scope of this investigation is limited by time constraints, expense, and practicality. A limited number of samples were taken at locations at the site and a limited number of laboratory chemical analyses were performed for those samples. Professional opinions concerning the presence of hazardous substances were developed based on the resulting data. It would be prohibitively expensive and time consuming to sample all locations at the site and analyze the samples for all substances which are now, or in the future might be, considered hazardous. Therefore, WCC cannot be held responsible should the investigation fail to detect the presence or quantity of all hazardous substances at all locations of the site.

#### CONCLUSIONS AND RECOMMENDATIONS

##### 187 North "L" Street Arrow Rentals

The levels of TPH and benzene at the 20 and 25 foot depth of boring B-1 located between the former 4,000 and 6,000 gallon tanks indicate there is some contamination of the soil and since the petroleum was detected to the bottom of the boring, the possibility of groundwater being affected needs to be investigated. The Leaking Underground Fuel Tank Field Manual (LUFT) by the State Water Resources Control Board (Tables 2-1 and 2-2) were used to estimate levels of TPH and BTEX that can safely be left in place, using a leaching potential analysis. This provides a way to assess the possible threat to groundwater from contaminated soils. Benzene exceeded the acceptable cumulative soil contamination levels for protection of groundwater at the 20 and 25 foot depths in boring B-1. The acceptable level at 20 feet was 2.0 ppm; and at 25 feet was 1.0 ppm; the cumulative concentration was 2.1 ppm for both depths (2.1 ppm + 0.0 ppm).

at 20' it benzene  
was detected at 2.1 ppm

no benzene was detected at 25' 6-

The increasing TPH, from 170 to 220 ppm, with increasing depth, and the presence of TPH in three other borings close to the B-1 location (B-2, B-3 and B-5) at the 25 foot depth, suggest that the extent of contamination has not been assessed, and that further investigation is required to assess



whether or not groundwater has been affected by the petroleum products. The concentration of TPH in the soil is between 100 ppm and 1,000 ppm which usually requires groundwater monitoring according to the Regional Board guidelines.

We recommend that three groundwater monitoring wells be installed, which extend to groundwater at a depth of 60 to 70 feet, soil samples should be collected from each boring in order to further explore the extent of petroleum contamination in the soil. Groundwater elevations should be measured to establish the direction of groundwater flow. The groundwater monitoring wells may also be used for future monitoring of groundwater if necessary.

1934 Railroad Avenue

*boring B-6 is upgradient of the tank*

The boring B-6, located near the existing underground tank, contained 1.8 ppm TPH as gasoline at the 1934 Railroad Avenue property. This was found at the 5 foot depth. It falls below the minimum concentration, 100 ppm TPH, which would require further investigation of possible groundwater contamination. Because the status and exact location of the 500 gallon gasoline tank are not know, it is recommended that the tank be located and removed, following county and state guidelines. It is also recommended that soil samples be collected at the time of tank removal from under the tank and that the soil samples be tested for petroleum products.

Ceiling Tile

The ceiling tile results report that no asbestos was detected in the material sampled. Since the laboratory test results show no detection of asbestos the stack of ceiling tile are not considered a hazardous waste.

Soil Cuttings

The soil cuttings from the drilling remain on site in 55 gallon drums. The cuttings from boring B-1 should be disposed of at a waste management facility suitable for the detected contaminants. We are available to assist the City with the disposal of the soil from B-1. The remaining soil from the other borings are not considered a hazardous waste.

DISCUSSION

We appreciate the opportunity to provide this Phase II Site Exploration report. Please call if you have any questions regarding this report or the recommendations. We can prepare an estimate of costs for the recommended groundwater monitoring wells, groundwater analyses and tanks removal at your request.

REFERENCES

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Leaking Underground Fuel Tank Field Manual:  
Guidelines for Assessment, Cleanup, and Underground  
Storage Tank Closure; State of California  
Leaking Underground Fuel Tank Task Force;  
State Water Resources Control Board, State of  
California; May 1988

Title 22, California Administrative Code,  
Section 66699

TABLES

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8810220T/COT

Table 1

## Organic Vapor Concentrations Measured with an HNu Photoionization Detector

<u>Boring Number</u>	<u>Depth feet</u>	<u>Maximum HNU Reading* (ppm-HNU Units)</u>
B-1	2	0
	5	0
	10	0
	15	0
	20	5.6
	25	68.5
B-2	2	0
	5	0
	10	0
	15	0
	20	0
	25	32.6
B-3	2	0
	5	0
	10	0
	15	0
	20	3.1
	25	1.2
B-4	2	0
	5	0
	10	0
	15	0
B-5	2	0
	5	0
	10	0
	15	0
	20	0
	25	16.3
B-6	2	0
	5	0
	10	0
	15	0
	20	0
	25	0

\* Relative hydrocarbon levels

Table 2

Summary of Laboratory Analyses of Soil Samples

## Total Petroleum Hydrocarbons and BTEX (EPA 8015/8020)

<u>Boring Number</u>	<u>Depth (feet)</u>	<u>TPH gasoline (ppm)</u>	<u>TPH diesel (ppm)</u>	<u>Benzene ppm</u>	<u>Toluene ppm</u>	<u>Ethyl-benzene ppm</u>	<u>xylene ppm</u>
B-1	2	ND	NT	ND	ND	ND	ND
	5	ND	NT	ND	ND	ND	ND
	10	ND	NT	ND	ND	ND	ND
	15	ND	2.3	ND	ND	ND	ND
	20	170	NT	2.1	1.4	0.22	1.5
	25	220	NT	ND	2.4	2.1	11.0
B-2	2	3.5	NT	ND	ND	ND	0.1
	5	8.2	NT	ND	ND	ND	ND
	10	ND	NT	ND	ND	ND	ND
	15	ND	2.3	ND	ND	ND	ND
	25	1.7	NT	ND	ND	ND	0.13
B-3	2	ND	NT	ND	ND	ND	ND
	5	ND	NT	ND	ND	ND	ND
	10	ND	NT	ND	ND	ND	ND
	15	ND	2.6	ND	ND	ND	ND
	20	ND	NT	ND	ND	ND	ND
	25	1.3	NT	ND	ND	ND	ND
B-4	2	ND	NT	ND	ND	ND	ND
	5	ND	NT	ND	ND	ND	ND
	10	ND	NT	ND	ND	ND	ND
	15	ND	NT	ND	ND	ND	ND
B-5	2	ND	NT	ND	ND	ND	ND
	5	1.9	NT	ND	ND	ND	ND
	10	ND	NT	ND	ND	ND	ND
	15	ND	NT	ND	ND	ND	ND
	20	ND	ND	ND	ND	ND	ND
	25	1.7	NT	ND	ND	ND	ND
B-6	5	1.8	NT	ND	ND	ND	ND
	10	ND	NT	ND	ND	ND	ND
	15	ND	NT	ND	ND	ND	ND
	20	ND	NT	ND	ND	ND	ND
	25	ND	NT	ND	ND	ND	ND

ND = Non-Detected

NT = Not-Tested

Table 2 (concluded)  
Summary of Soil Samples Analytical Laboratory Results

Volatile Organics (EPA 8240)

<u>Boring Number</u>	<u>Depth (feet)</u>	<u>Benzene ug/kg</u>	<u>toluene ug/kg</u>	<u>Ethyl-benzene ug/kg</u>	<u>xylene ug/kg</u>
B-1	25	380	7,100	6,400	52,000
B-2	25	ND	ND	ND	550

Semi-Volatile Organics (EPA 8210<sup>70</sup>)

<u>Boring Number</u>	<u>Depth (feet)</u>	<u>Component</u>	<u>Concentration ug/kg</u>
B-1	25	2-Methylnaphthalene	3,500
		2-Naphthalene	3,400
		phenol	300

*} found in waste oils in spurs*

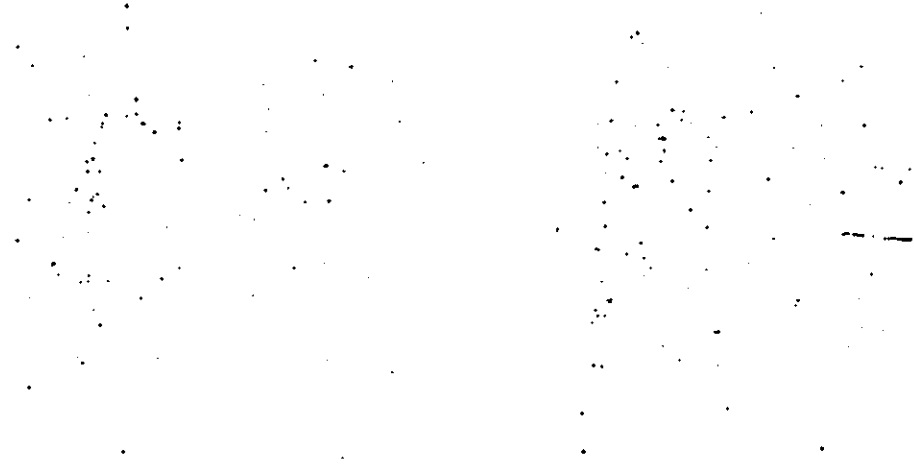
Metals Analyses  
 1940 Railroad Ave.

<u>Boring Number</u>	<u>Depth (feet)</u>	<u>Cr mg/kg</u>	<u>Cu mg/kg</u>	<u>Ni mg/kg</u>	<u>Pb mg/kg</u>	<u>Hg mg/kg</u>	<u>Zn mg/kg</u>
B-6	2	42	34	100	5.8	0.035	36
	5	43	16	100	4.4	0.059	35
(TTLC)*		(2500)	(2500)	(2000)	(1000)	(20)	(5000)
(STLC)+		( 560)	( 25)	( 20)	( 5)	( 0.2)	( 250)

\* TTLC = Total Threshold Limit Concentration (CAC, Title 22)  
 + STLC = Soluble Threshold Limit Concentration (CAC, Title 22)

FIGURES

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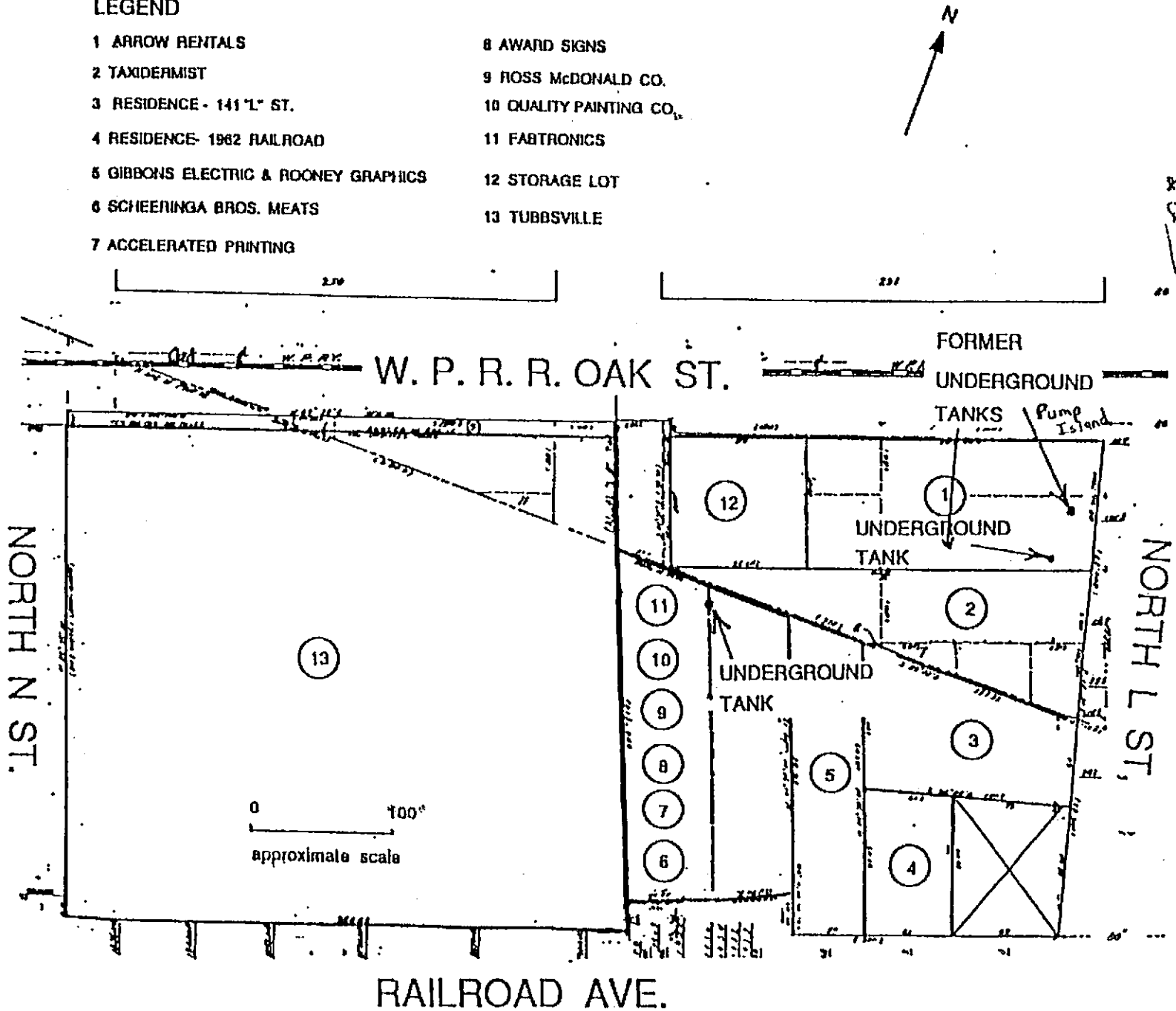




Project No. 8810220A	RAILROAD AVENUE PROPERTY
PROPERTY LOCATION MAP	
FIGURE 1	

**LEGEND**

- |                                      |                         |
|--------------------------------------|-------------------------|
| 1 ARROW RENTALS                      | 8 AWARD SIGNS           |
| 2 TAXIDERMIST                        | 9 ROSS McDONALD CO.     |
| 3 RESIDENCE - 141 1/2 ST.            | 10 QUALITY PAINTING CO. |
| 4 RESIDENCE- 1962 RAILROAD           | 11 FABTRONICS           |
| 5 GIBBONS ELECTRIC & ROONEY GRAPHICS | 12 STORAGE LOT          |
| 6 SCHEERINGA BROS. MEATS             | 13 TUBBSVILLE           |
| 7 ACCELERATED PRINTING               |                         |



*Check on  
8810220A*

APPENDIX A  
LABORATORY TEST RESULTS

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8810220T/COT



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

Woodward-Clyde Consultants  
500 12th St., Suite 100  
Oakland, CA 94607-4041  
Attention: Ann McDonald

Client Project ID: #8810220A  
Matrix Descript: Soil  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 903-0794

Sampled: Mar 3, 1989  
Received: Mar 3, 1989  
Analyzed: Mar 17, 1989  
Reported: Mar 27, 1989

## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
903-0794	4-3-A	N.D.	N.D.	N.D.	N.D.	N.D.
903-0795	4-4-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0796	5-1-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0797	5-2-C	1.9	N.D.	N.D.	N.D.	N.D.
903-0798	5-3-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0799	5-4-A	N.D.	N.D.	N.D.	N.D.	N.D.
903-0800	5-5-A	N.D.	N.D.	N.D.	N.D.	N.D.
903-0801	5-6-A	1.7	N.D.	N.D.	N.D.	N.D.
903-0803	6-2-C	1.8	N.D.	N.D.	N.D.	N.D.
903-0804	6-3-A	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.05	0.1	0.1	0.1
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Matrix Descript: Soil	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: EPA 5030/8015/8020	Analyzed: Mar 17, 1989
Attention: Ann McDonald	First Sample #: 903-0805	Reported: Mar 27, 1989

## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons			Ethyl Benzene	Xylenes
		mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	mg/kg (ppm)	mg/kg (ppm)
903-0805	6-4-A	N.D.	N.D.	N.D.	N.D.	N.D.
903-0806	6-5-A	N.D.	N.D.	N.D.	N.D.	N.D.
903-0807	6-6-A	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:

1.0

0.05

0.1

0.1

0.1

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

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Arthur G. Burton  
Laboratory Director



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Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Matrix Descript: Soil	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: EPA 3550/8015	Analyzed: Mar 16, 1989
Attention: Ann McDonald	First Sample #: 903-0777	Reported: Mar 27, 1989

## TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
903-0777	1-4-B	2.3
903-0783	2-4-B	2.3
903-0789	3-4-B	2.6

Detection Limits:

1.0

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

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Arthur G. Burton  
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9030774.W00 <5>



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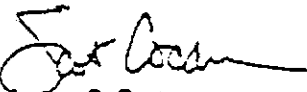
Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Sample Descript: Bulk Material	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: Polarized Light Microscopy	Analyzed: Mar 24, 1989
Attention: Ann McDonald	First Sample #: 903-0807	Reported: Mar 27, 1989

## ASBESTOS ANALYSIS

Sample Number	Sample Description	Detection Limit %	Sample Result %	Asbestos Type (if present)	Other Fibers %	Nonfibrous Materials %
903-0807	#01	1.0	N.D.	-	15	85

Analytes reported as N.D. were not present above the stated limit of detection. Percentages reported are an estimation. This report does not establish or represent product safety, hazard, or endorsement by Sequoia Analytical or the NVLAP.

SEQUOIA ANALYTICAL

  
Arthur G. Burton  
Laboratory Director

9030774.WCC <8>



# SEQUOIA ANALYTICAL

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Woodward-Clyde Consultants 500 12th St., Suite 100 Oakland, CA 94607-4041 Attention: Ann McDonald	Client Project ID: #8810220A Sample Descript: Soil, 1-6-B Analysis Method: EPA 8240 Lab Number: 903-0779	Sampled: Mar 3, 1989 Received: Mar 3, 1989 Analyzed: Mar 16, 1989 Reported: Mar 27, 1989
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## VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone.....	500.0	N.D.
<b>Benzene.....</b>	<b>100.0</b>	<b>380</b>
Bromodichloromethane.....	100.0	N.D.
Bromoform.....	100.0	N.D.
Bromomethane.....	100.0	N.D.
2-Butanone.....	500.0	N.D.
Carbon disulfide.....	100.0	N.D.
Carbon tetrachloride.....	100.0	N.D.
Chlorobenzene.....	100.0	N.D.
Chlorodibromomethane.....	100.0	N.D.
Chloroethane.....	100.0	N.D.
2-Chloroethyl vinyl ether.....	500.0	N.D.
Chloroform.....	100.0	N.D.
Chloromethane.....	100.0	N.D.
1,1-Dichloroethane.....	100.0	N.D.
1,2-Dichloroethane.....	100.0	N.D.
1,1-Dichloroethene.....	100.0	N.D.
Total 1,2-Dichloroethene.....	100.0	N.D.
1,2-Dichloropropane.....	100.0	N.D.
cis 1,3-Dichloropropene.....	100.0	N.D.
trans 1,3-Dichloropropene.....	100.0	N.D.
<b>Ethylbenzene.....</b>	<b>100.0</b>	<b>8,400</b>
2-Hexanone.....	500.0	N.D.
Methylene chloride.....	100.0	N.D.
4-Methyl-2-pentanone.....	500.0	N.D.
Styrene.....	100.0	N.D.
1,1,2,2-Tetrachloroethane.....	100.0	N.D.
Tetrachloroethene.....	100.0	N.D.
<b>Toluene.....</b>	<b>100.0</b>	<b>7,100</b>
1,1,1-Trichloroethane.....	100.0	N.D.
1,1,2-Trichloroethane.....	100.0	N.D.
Trichloroethene.....	100.0	N.D.
Trichlorofluoromethane.....	100.0	N.D.
Vinyl acetate.....	100.0	N.D.
Vinyl chloride.....	100.0	N.D.
<b>Total Xylenes.....</b>	<b>100.0</b>	<b>52,000</b>

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

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Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Sample Descript: Soil 2-6-B	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: EPA 8240	Analyzed: Mar 16, 1989
Attention: Ann McDonald	Lab Number: 903-0785	Reported: Mar 27, 1989

## VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone.....	500.0	N.D.
Benzene.....	100.0	N.D.
Bromodichloromethane.....	100.0	N.D.
Bromoform.....	100.0	N.D.
Bromomethane.....	100.0	N.D.
2-Butanone.....	500.0	N.D.
Carbon disulfide.....	100.0	N.D.
Carbon tetrachloride.....	100.0	N.D.
Chlorobenzene.....	100.0	N.D.
Chlorodibromomethane.....	100.0	N.D.
Chloroethane.....	100.0	N.D.
2-Chloroethyl vinyl ether.....	500.0	N.D.
Chloroform.....	100.0	N.D.
Chloromethane.....	100.0	N.D.
1,1-Dichloroethane.....	100.0	N.D.
1,2-Dichloroethane.....	100.0	N.D.
1,1-Dichloroethene.....	100.0	N.D.
Total 1,2-Dichloroethene.....	100.0	N.D.
1,2-Dichloropropane.....	100.0	N.D.
cis 1,3-Dichloropropene.....	100.0	N.D.
trans 1,3-Dichloropropene.....	100.0	N.D.
Ethylbenzene.....	100.0	N.D.
2-Hexanone.....	500.0	N.D.
Methylene chloride.....	100.0	N.D.
4-Methyl-2-pentanone.....	500.0	N.D.
Styrene.....	100.0	N.D.
1,1,2,2-Tetrachloroethane.....	100.0	N.D.
Tetrachloroethene.....	100.0	N.D.
Toluene.....	100.0	N.D.
1,1,1-Trichloroethane.....	100.0	N.D.
1,1,2-Trichloroethane.....	100.0	N.D.
Trichloroethene.....	100.0	N.D.
Trichlorofluoromethane.....	100.0	N.D.
Vinyl acetate.....	100.0	N.D.
Vinyl chloride.....	100.0	N.D.
<b>Total Xylenes.....</b>	<b>100.0</b>	<b>550</b>

Analytes reported as N.D. were not present above the stated limit of detection.

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Laboratory Director





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Woodward-Clyde Consultants  
500 12th St., Suite 100  
Oakland, CA 94607-4041  
Attention: Ann McDonald

Client Project ID: #88k10220A  
Sample Descript: Soil 6-4-B  
Analysis Method: EPA 8240  
Lab Number: 903-0805

Sampled: Mar 3, 1989  
Received: Mar 3, 1989  
Analyzed: Mar 16, 1989  
Reported: Mar 27, 1989

## VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone.....	500.0	N.D.
Benzene.....	100.0	N.D.
Bromodichloromethane.....	100.0	N.D.
Bromoform.....	100.0	N.D.
Bromomethane.....	100.0	N.D.
2-Butanone.....	500.0	N.D.
Carbon disulfide.....	100.0	N.D.
Carbon tetrachloride.....	100.0	N.D.
Chlorobenzene.....	100.0	N.D.
Chlorodibromomethane.....	100.0	N.D.
Chloroethane.....	100.0	N.D.
2-Chloroethyl vinyl ether.....	500.0	N.D.
Chloroform.....	100.0	N.D.
Chloromethane.....	100.0	N.D.
1,1-Dichloroethane.....	100.0	N.D.
1,2-Dichloroethane.....	100.0	N.D.
1,1-Dichloroethene.....	100.0	N.D.
Total 1,2-Dichloroethene.....	100.0	N.D.
1,2-Dichloropropane.....	100.0	N.D.
cis 1,3-Dichloropropene.....	100.0	N.D.
trans 1,3-Dichloropropene.....	100.0	N.D.
Ethylbenzene.....	100.0	N.D.
2-Hexanone.....	500.0	N.D.
Methylene chloride.....	100.0	N.D.
4-Methyl-2-pentanone.....	500.0	N.D.
Styrene.....	100.0	N.D.
1,1,2,2-Tetrachloroethane.....	100.0	N.D.
Tetrachloroethene.....	100.0	N.D.
Toluene.....	100.0	N.D.
1,1,1-Trichloroethane.....	100.0	N.D.
1,1,2-Trichloroethane.....	100.0	N.D.
Trichloroethene.....	100.0	N.D.
Trichlorofluoromethane.....	100.0	N.D.
Vinyl acetate.....	100.0	N.D.
Vinyl chloride.....	100.0	N.D.
Total Xylenes.....	100.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Laboratory Director



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Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Sample Descript: Soil, 1-6-8	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: EPA 8270	Extracted: Mar 16, 1989
Attention: Ann McDonald	Lab Number: 903-0779	Analyzed: Mar 24, 1989
		Reported: Mar 27, 1989

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acenaphthene.....	100.0	N.D.
Acenaphthylene.....	100.0	N.D.
Aniline.....	100.0	N.D.
Anthracene.....	100.0	N.D.
Benzidine.....	2,500.0	N.D.
Benzoic Acid.....	500.0	N.D.
Benzo(a)anthracene.....	100.0	N.D.
Benzo(b)fluoranthene.....	100.0	N.D.
Benzo(k)fluoranthene.....	100.0	N.D.
Benzo(g,h,i)perylene.....	100.0	N.D.
Benzo(a)pyrene.....	100.0	N.D.
Benzyl alcohol.....	100.0	N.D.
Bis(2-chloroethoxy)methane.....	100.0	N.D.
Bis(2-chloroethyl) ether.....	100.0	N.D.
Bis(2-chloroisopropyl) ether.....	100.0	N.D.
Bis(2-ethylhexyl) phthalate.....	500.0	N.D.
4-Bromophenyl ether.....	100.0	N.D.
Butyl benzyl phthalate.....	100.0	N.D.
4-Chloroaniline.....	100.0	N.D.
2-Chloronaphthalene.....	100.0	N.D.
4-Chloro-3-methylphenol.....	100.0	N.D.
2-Chlorophenol.....	100.0	N.D.
4-Chlorophenyl phenyl ether.....	100.0	N.D.
Chrysene.....	100.0	N.D.
Dibenz(a,h)anthracene.....	100.0	N.D.
Dibenzofuran.....	100.0	N.D.
Di-N-butyl phthalate.....	500.0	N.D.
1,3-Dichlorobenzene.....	100.0	N.D.
1,4-Dichlorobenzene.....	100.0	N.D.
1,2-Dichlorobenzene.....	100.0	N.D.
3,3-Dichlorobenzidine.....	500.0	N.D.
2,4-Dichlorophenol.....	100.0	N.D.
Diethyl phthalate.....	100.0	N.D.
2,4-Dimethylphenol.....	100.0	N.D.
Dimethyl phthalate.....	100.0	N.D.
4,6-Dinitro-2-methylphenol.....	500.0	N.D.
2,4-Dinitrophenol.....	500.0	N.D.



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Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Sample Descript: Soil, 1-6-B	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: EPA 8270	Extracted: Mar 16, 1989
Attention: Ann McDonald	Lab Number: 903-0779	Analyzed: Mar 24, 1989
		Reported: Mar 27, 1989

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
2,4-Dinitrotoluene.....	100.0	N.D.
2,6-Dinitrotoluene.....	100.0	N.D.
Di-N-octyl phthalate.....	100.0	N.D.
Fluoranthene.....	100.0	N.D.
Fluorene.....	100.0	N.D.
Hexachlorobenzene.....	100.0	N.D.
Hexachlorobutadiene.....	100.0	N.D.
Hexachlorocyclopentadiene.....	100.0	N.D.
Hexachloroethane.....	100.0	N.D.
Indeno(1,2,3-cd)pyrene.....	100.0	N.D.
Isophorone.....	100.0	N.D.
<b>2-Methylnaphthalene.....</b>	<b>100.0</b>	<b>3,500</b>
2-Methylphenol.....	100.0	N.D.
4-Methylphenol.....	100.0	N.D.
<b>Naphthalene.....</b>	<b>100.0</b>	<b>3,400</b>
2-Nitroaniline.....	100.0	N.D.
3-Nitroaniline.....	100.0	N.D.
4-Nitroaniline.....	100.0	N.D.
Nitrobenzene.....	100.0	N.D.
2-Nitrophenol.....	100.0	N.D.
4-Nitrophenol.....	500.0	N.D.
N-Nitrosodiphenylamine.....	100.0	N.D.
N-Nitroso-di-N-propylamine.....	100.0	N.D.
Pentachlorophenol.....	500.0	N.D.
Phenathrene.....	100.0	N.D.
<b>Phenol.....</b>	<b>100.0</b>	<b>330</b>
Pyrene.....	100.0	N.D.
1,2,4-Trichlorobenzene.....	100.0	N.D.
2,4,5-Trichlorophenol.....	100.0	N.D.
2,4,6-Trichlorophenol.....	100.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director



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Woodward-Clyde Consultants 500 12th St., Suite 100 Oakland, CA 94607-4041 Attention: Ann McDonald	Client Project ID: #8810220A Sample Descript: Soil, 2-6-B Analysis Method: EPA 8270 Lab Number: 903-0785	Sampled: Mar 3, 1989 Received: Mar 3, 1989 Extracted: Mar 16, 1989 Analyzed: Mar 24, 1989 Reported: Mar 27, 1989
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## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acenaphthene.....	100.0	N.D.
Acenaphthylene.....	100.0	N.D.
Aniline.....	100.0	N.D.
Anthracene.....	100.0	N.D.
Benzidine.....	2,500.0	N.D.
Benzoic Acid.....	500.0	N.D.
Benzo(a)anthracene.....	100.0	N.D.
Benzo(b)fluoranthene.....	100.0	N.D.
Benzo(k)fluoranthene.....	100.0	N.D.
Benzo(g,h,i)perylene.....	100.0	N.D.
Benzo(a)pyrene.....	100.0	N.D.
Benzyl alcohol.....	100.0	N.D.
Bis(2-chloroethoxy)methane.....	100.0	N.D.
Bis(2-chloroethyl)ether.....	100.0	N.D.
Bis(2-chloroisopropyl)ether.....	100.0	N.D.
Bis(2-ethylhexyl)phthalate.....	500.0	N.D.
4-Bromophenyl ether.....	100.0	N.D.
Butyl benzyl phthalate.....	100.0	N.D.
4-Chloroaniline.....	100.0	N.D.
2-Chloronaphthalene.....	100.0	N.D.
4-Chloro-3-methylphenol.....	100.0	N.D.
2-Chlorophenol.....	100.0	N.D.
4-Chlorophenyl phenyl ether.....	100.0	N.D.
Chrysene.....	100.0	N.D.
Dibenz(a,h)anthracene.....	100.0	N.D.
Dibenzofuran.....	100.0	N.D.
Di-N-butyl phthalate.....	500.0	N.D.
1,3-Dichlorobenzene.....	100.0	N.D.
1,4-Dichlorobenzene.....	100.0	N.D.
1,2-Dichlorobenzene.....	100.0	N.D.
3,3-Dichlorobenzidine.....	500.0	N.D.
2,4-Dichlorophenol.....	100.0	N.D.
Diethyl phthalate.....	100.0	N.D.
2,4-Dimethylphenol.....	100.0	N.D.
Dimethyl phthalate.....	100.0	N.D.
4,5-Dinitro-2-methylphenol.....	500.0	N.D.
2,4-Dinitrophenol.....	500.0	N.D.



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Woodward-Clyde Consultants  
500 12th St., Suite 100  
Oakland, CA 94607-4041  
Attention: Ann McDonald

Client Project ID: #8810220A  
Sample Descript: Soil, 2-5-B  
Analysis Method: EPA 8270  
Lab Number: 903-0785

Sampled: Mar 3, 1989  
Received: Mar 3, 1989  
Extracted: Mar 16, 1989  
Analyzed: Mar 24, 1989  
Reported: Mar 27, 1989

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
2,4-Dinitrotoluene.....	100.0	N.D.
2,6-Dinitrotoluene.....	100.0	N.D.
Di-N-octyl phthalate.....	100.0	N.D.
Fluoranthene.....	100.0	N.D.
Fluorene.....	100.0	N.D.
Hexachlorobenzene.....	100.0	N.D.
Hexachlorobutadiene.....	100.0	N.D.
Hexachlorocyclopentadiene.....	100.0	N.D.
Hexachloroethane.....	100.0	N.D.
Indeno(1,2,3-cd)pyrene.....	100.0	N.D.
Isophorone.....	100.0	N.D.
2-Methylnaphthalene.....	100.0	N.D.
2-Methylphenol.....	100.0	N.D.
4-Methylphenol.....	100.0	N.D.
Naphthalene.....	100.0	N.D.
2-Nitroaniline.....	100.0	N.D.
3-Nitroaniline.....	100.0	N.D.
4-Nitroaniline.....	100.0	N.D.
Nitrobenzene.....	100.0	N.D.
2-Nitrophenol.....	100.0	N.D.
4-Nitrophenol.....	500.0	N.D.
N-Nitrosodiphenylamine.....	100.0	N.D.
N-Nitroso-di-N-propylamine.....	100.0	N.D.
Pentachlorophenol.....	500.0	N.D.
Phenathrene.....	100.0	N.D.
Phenol.....	100.0	N.D.
Pyrene.....	100.0	N.D.
1,2,4-Trichlorobenzene.....	100.0	N.D.
2,4,5-Trichlorophenol.....	100.0	N.D.
2,4,6-Trichlorophenol.....	100.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director



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Woodward-Clyde Consultants	Client Project ID: #8810220A	Sampled: Mar 3, 1989
500 12th St., Suite 100	Sample Descript: Soil, 6-4-A	Received: Mar 3, 1989
Oakland, CA 94607-4041	Analysis Method: EPA 8270	Extracted: Mar 16, 1989
Attention: Ann McDonald	Lab Number: 903-0805	Analyzed: Mar 24, 1989
		Reported: Mar 27, 1989

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acenaphthene.....	100.0	N.D.
Acenaphthylene.....	100.0	N.D.
Aniline.....	100.0	N.D.
Anthracene.....	100.0	N.D.
Benzidine.....	2,500.0	N.D.
Benzoic Acid.....	500.0	N.D.
Benzo(a)anthracene.....	100.0	N.D.
Benzo(b)fluoranthene.....	100.0	N.D.
Benzo(k)fluoranthene.....	100.0	N.D.
Benzo(g,h,i)perylene.....	100.0	N.D.
Benzo(a)pyrene.....	100.0	N.D.
Benzyl alcohol.....	100.0	N.D.
Bis(2-chloroethoxy)methane.....	100.0	N.D.
Bis(2-chloroethyl)ether.....	100.0	N.D.
Bis(2-chloroisopropyl)ether.....	100.0	N.D.
Bis(2-ethylhexyl)phthalate.....	500.0	N.D.
4-Bromophenyl ether.....	100.0	N.D.
Butyl benzyl phthalate.....	100.0	N.D.
4-Chloroaniline.....	100.0	N.D.
2-Chloronaphthalene.....	100.0	N.D.
4-Chloro-3-methylphenol.....	100.0	N.D.
2-Chlorophenol.....	100.0	N.D.
4-Chlorophenyl phenyl ether.....	100.0	N.D.
Chrysene.....	100.0	N.D.
Dibenz(a,h)anthracene.....	100.0	N.D.
Dibenzofuran.....	100.0	N.D.
Di-N-butyl phthalate.....	500.0	N.D.
1,3-Dichlorobenzene.....	100.0	N.D.
1,4-Dichlorobenzene.....	100.0	N.D.
1,2-Dichlorobenzene.....	100.0	N.D.
3,3-Dichlorobenzidine.....	500.0	N.D.
2,4-Dichlorophenol.....	100.0	N.D.
Diethyl phthalate.....	100.0	N.D.
2,4-Dimethylphenol.....	100.0	N.D.
Dimethyl phthalate.....	100.0	N.D.
4,5-Dinitro-2-methylphenol.....	500.0	N.D.
2,4-Dinitrophenol.....	500.0	N.D.



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Woodward-Clyde Consultants  
500 12th St, Suite 100  
Oakland, CA 94607-4041  
Attention: Ann McDonald

Client Project ID: #8810220A  
Sample Descript: Soil, 6-4-A  
Analysis Method: EPA 8270  
Lab Number: 903-0805

Sampled: Mar 3, 1989  
Received: Mar 3, 1989  
Extracted: Mar 16, 1989  
Analyzed: Mar 24, 1989  
Reported: Mar 27, 1989

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
2,4-Dinitrotoluene.....	100.0	N.D.
2,6-Dinitrotoluene.....	100.0	N.D.
Di-N-octyl phthalate.....	100.0	N.D.
Fluoranthene.....	100.0	N.D.
Fluorene.....	100.0	N.D.
Hexachlorobenzene.....	100.0	N.D.
Hexachlorobutadiene.....	100.0	N.D.
Hexachlorocyclopentadiene.....	100.0	N.D.
Hexachloroethane.....	100.0	N.D.
Indeno(1,2,3-cd)pyrene.....	100.0	N.D.
Isophorone.....	100.0	N.D.
2-Methylnaphthalene.....	100.0	N.D.
2-Methylphenol.....	100.0	N.D.
4-Methylphenol.....	100.0	N.D.
Naphthalene.....	100.0	N.D.
2-Nitroaniline.....	100.0	N.D.
3-Nitroaniline.....	100.0	N.D.
4-Nitroaniline.....	100.0	N.D.
Nitrobenzene.....	100.0	N.D.
2-Nitrophenol.....	100.0	N.D.
4-Nitrophenol.....	500.0	N.D.
N-Nitrosodiphenylamine.....	100.0	N.D.
N-Nitroso-di-N-propylamine.....	100.0	N.D.
Pentachlorophenol.....	500.0	N.D.
Phenathrene.....	100.0	N.D.
Phenol.....	100.0	N.D.
Pyrene.....	100.0	N.D.
1,2,4-Trichlorobenzene.....	100.0	N.D.
2,4,5-Trichlorophenol.....	100.0	N.D.
2,4,6-Trichlorophenol.....	100.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

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Woodward-Clyde Consultants 500 12th St., Suite 100 Oakland, CA 94607-4041 Attention: Ann McDonald	Client Project ID: #8810220A Sample Descript: Soil, 6-1-B  Lab Number: 903-0802	Sampled: Mar 3, 1989 Received: Mar 3, 1989 Extracted: Mar 16, 1989 Analyzed: Mar 16, 1989 Reported: Mar 27, 1989
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## LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Chromium	0.05	42
Copper	0.1	34
Nickel	0.5	100
Lead	0.05	5.8
Mercury	0.01	0.034
Zinc	0.1	38

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director





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Woodward-Clyde Consultants  
500 12th St., Suite 100  
Oakland, CA 94607-4041  
Attention: Ann McDonald

Client Project ID: #8810110A  
Sample Descript: Soil, 6-2-C  
Lab Number: 903-0803

Sampled: Mar 3, 1989  
Received: Mar 3, 1989  
Extracted: Mar 16, 1989  
Analyzed: Mar 16, 1989  
Reported: Mar 27, 1989


## LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
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Chromium	0.05	43
Copper	0.1	16
Nickel	0.5	100
Lead	0.05	4.4
Mercury	0.01	0.059
Zinc	0.1	35

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

  
Arthur G. Burton  
Laboratory Director

9030774.W00 <17>



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

Woodward-Clyde Consultants 500 12th St., Suite 100 Oakland, CA 94607-4041 Attention: Ann McDonald	Client Project ID: #8810220A Matrix Descript: Soil Analysis Method: EPA 5030/8015/8020 First Sample #: 903-0774	Sampled: Mar 3, 1989 Received: Mar 3, 1989 Analyzed: Mar 17, 1989 Reported: Mar 27, 1989
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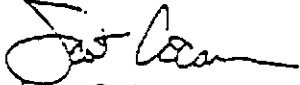
## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
903-0774	1-1-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0775	1-2-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0776	1-3-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0777	1-4-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0778	1-5-B	170	2.1	1.4	0.22	1.5
903-0779	1-6-B	220	N.D.	2.4	2.1	1.1
903-0780	2-1-C	3.5	N.D.	N.D.	N.D.	0.1
903-0781	2-2-C	8.2	N.D.	N.D.	N.D.	N.D.
903-0782	2-3-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0783	2-4-B	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.05	0.1	0.1	0.1
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

  
Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

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Woodward-Clyde Consultants 500 12th St., Suite 100 Oakland, CA 94607-4041 Attention: Ann McDonald	Client Project ID: #8810220A Matrix Descript: Soil Analysis Method: EPA 5030/8015/8020 First Sample #: 903-0784	Sampled: Mar 3, 1989 Received: Mar 3, 1989 Analyzed: Mar 17, 1989 Reported: Mar 27, 1989
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## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
903-0784	2-5-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0785	2-6-B	1.7	N.D.	N.D.	N.D.	0.13
903-0786	3-1-A	N.D.	N.D.	N.D.	N.D.	N.D.
903-0787	3-2-C	N.D.	N.D.	N.D.	N.D.	N.D.
903-0788	3-3-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0789	3-4-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0790	3-5-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0791	3-6-B	1.3	N.D.	N.D.	N.D.	N.D.
903-0792	4-1-B	N.D.	N.D.	N.D.	N.D.	N.D.
903-0793	4-2-B	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	1.0	0.05	0.1	0.1	0.1
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
 (415) 384-9600 • FAX (415) 384-9233

Woodward-Clyde Consultants 500 12th St., Suite 100 Oakland, CA 94607-4041 Attention: Ann McDonald	Client Project ID: #8810220A Sample Descript.: Soil, 6-1-B Analysis Method: EPA 5030/8015/8020 Lab Number: 903-0802	Sampled: Mar 3, 1989 Received: Mar 3, 1989 Analyzed: Mar 17, 1989 Reported: Mar 29, 1989
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## TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit mg/kg (ppm)	Sample Results mg/kg (ppm)
Low to Medium Boiling Point Hydrocarbons.....	1.0	N.D.
Benzene.....	0.05	N.D.
Toluene.....	0.1	N.D.
Ethyl Benzene.....	0.1	N.D.
Xylenes.....	0.1	N.D.

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.  
 Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

*Arthur G. Burton*  
 Arthur G. Burton  
 Laboratory Director



# SEQUOIA ANALYTICAL

580 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9222 • FAX (415) 364-9233

## FACSIMILE TRANSMISSION

TO

Name: Ann McDonald  
Company: Woodward - Clyde  
Fax #: 874-3268

FROM

Belinda Vega

SEQUOIA ANALYTICAL LABORATORY

Fax (415) 364-9233

Date: 3/29/89

Number of Pages (including this page): 2

APPENDIX B  
LOGS OF BORINGS

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BORING LOCATION		Boring # 1: Approx. 13.5' S X 3' E of SW corner of Arrow Rental Bldg.		ELEVATION AND DATUM		Pavement Surface	
DRILLING AGENCY		Kvilhaug Drilling		DRILLER		C. Holman	
DRILLING EQUIPMENT		B - 61 Mobile Drill		DATE STARTED		March 2, 1989	
DRILLING METHOD		8" Hollow Stem Augers		DRILL BIT		Drag	
SIZE AND TYPE OF CASING		n/a		COMPLETION DEPTH		26 ft.	
TYPE OF PERFORATION		n/a		NO. OF SAMPLES		DIST. n/a	
SIZE AND TYPE OF PACK		n/a		UNDIST.		8	
TYPE OF SEAL		NO. 1 n/a		WATER LEVEL		FRST n/a	
		NO. 2 n/a		COMPL. n/a		24 HRS. n/a	
LOGGED BY:				P. Respess			
CHECKED BY:				A. McDonald			

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG		Water Content	Plasticity Index	SAMPLES				REMARKS (Drill Rate, Fluid Loss, Odor, etc.)	
		Liquidity	Plasticity			Drift	Sample Number	Blow Count	Remarks		
0	4" Concrete										
0-5	SANDY GRAVEL (GP) - brown - gravel fine to medium coarse - some fine-grained sand - medium dense - wet					1	A B C	16 15 18		OVM = 0 ppm No odor	
5-10	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse (to 2.5") - clay moderately plastic - loose - wet					2	A B C	5 5 7		OVM = 0 ppm No odor	
10-15	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - medium dense to dense - wet					3	A B C	12 22 10		OVM = 0 ppm No odor	
15-20	CLAYEY GRAVEL (GC) - brown - fine to coarse gravel - fine to coarse-grained sand - little clay - dense to very dense - wet					4	A B	20 50		OVM = 0 ppm No odor	
20-25	CLAYEY GRAVEL (GC) - brown - fine to coarse gravel - fine to coarse-grained sand - little clay - dense to very dense - wet					5	A B	24 50		OVM = 5.6 ppm Gasoline odor fairly strong	
25-30	CLAYEY GRAVEL (GC) - brown - fine to coarse gravel - fine to coarse-grained sand - little clay - dense to very dense - wet					6	A B	17 50		OVM = 68.5 ppm Strong gasoline odor	
30-35	Bottom of boring at 26 ft. No free water observed ATD										

BORING LOCATION		Boring # 2 Approx. 14.5' S X 25' W of SW corner of Arrow Rental Bldg.		ELEVATION AND DATUM		Pavement Surface	
DRILLING AGENCY		Kvilhaug Drilling		DRILLER		C. Holman	
DATE STARTED		March 2, 1989		DATE FINISHED			
DRILLING EQUIPMENT		B - 61 Mobile Drill		COMPLETION DEPTH		26 ft	
SAMPLER		2.5" I.D. Modified California Type		NO. OF SAMPLES		DIST. n/a	
DRILLING METHOD		8" Hollow Stem Augers		DRILL BIT		Drag	
UNDIST.		6		WATER LEVEL		FRST n/a	
SIZE AND TYPE OF CASING		n/a		COMPL.		n/a	
24 HRS.		n/a		LOGGED BY:		CHECKED BY:	
TYPE OF PERFORATION		n/a		FROM n/a TO n/a ft.		P. Respass	
SIZE AND TYPE OF PACK		n/a		FROM n/a TO n/a ft.		A. McDonald	
TYPE OF SEAL		NO. 1 n/a		FROM n/a TO n/a ft.			
		NO. 2 n/a		FROM n/a TO n/a ft.			

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG		Water Content	Plasticity Index	SAMPLES					REMARKS (Drill Rate, Fluid Loss, Odor, etc.)	
		Lithology	Plasticity Index			Sample Number	Blow Count (Feet)	Blow Count	Blow Count	Blow Count		
0	Concrete											
0 - 10	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - medium dense - moist to wet					1	A B C	9 11 14				OVM = 0 ppm No odor
10 - 15	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - dense to very dense - wet					2	A B C	10 10 10				OVM = 0 ppm No odor
15 - 20	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - dense to very dense - wet					3	A B	20 30				OVM = 0 ppm No odor
20 - 25	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - dense to very dense - wet					4	A B	30 50				OVM = 0 ppm No odor
25 - 30	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - dense to very dense - wet					5	A B	30 50				OVM = 0 ppm No odor
30 - 35	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - dense to very dense - wet					6	A B	30 50				OVM = 32.6 ppm Strong gasoline odor
35	Bottom of boring at 26 ft. No free water observed ATD											





BORING LOCATION		Boring # 3: Approx. 28' S X 25' W of SW corner of Arrow Rental Bldg.		ELEVATION AND DATUM		Pavement Surface	
DRILLING AGENCY		Kvilhaug Drilling		DRILLER		G. Holoman	
DATE STARTED		March 2, 1989		DATE FINISHED			
DRILLING EQUIPMENT		B - 61 Mobile Drill		COMPLETION DEPTH		26 ft.	
SAMPLER		2.5" I.D. Modified California Type		NO. OF SAMPLES		DIST. n/a	
DRILLING METHOD		8" Hollow Stem Augers		DRILL BIT		Drag	
UNDIST.		8		WATER LEVEL		FRST n/a	
COMPL.		n/a		24 HRS.		n/a	
SIZE AND TYPE OF CASING		n/a		LOGGED BY:		CHECKED BY:	
TYPE OF PERFORATION		n/a		FROM n/a TO n/a Ft.		P. Respass	
SIZE AND TYPE OF PACK		n/a		FROM n/a TO n/a Ft.		A. McDonald	
TYPE OF SEAL		NO. 1 n/a		FROM n/a TO n/a Ft.			
		NO. 2 n/a		FROM n/a TO n/a Ft.			

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG				SAMPLES					REMARKS (Drill Rate, Fluid Loss, Odor, etc.)	
		Lithology	Placement or Installation	Water Content	Plasticity Data	Drive Number	Sample Number	Recess (Feet)	Blow Counts			
0	1" Concrete											
0-4	SILTY GRAVEL (GC) - brown - gravel fine to coarse - slightly rounded - very dense - damp					1	A			50		OVM = 0 ppm No odor
4-6	SILTY GRAVEL (GC) - brown - gravel fine to coarse - medium dense - damp					2	A			10		OVM = 0 ppm No odor
							B			25		
							C			27		
6-10	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - slightly clayey - medium dense to dense - moist					3	A			24		OVM = 0 ppm No odor
							B			50		
10-15	SANDY GRAVEL (GW) - brown - gravel fine to medium coarse - sand fine to coarse-grained - trace of silt - medium dense to dense - moist					4	A			27		OVM = 0 ppm No odor
							B			50		
15-20	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - sand fine to coarse-grained - clay moderately plastic - dense - moist					5	A			26		OVM = 3.1 ppm No odor
							B			50		
20-25						6	A			30		OVM = 1.2 ppm Slight gasoline odor
							B			50		
25-26	Bottom of boring at 26 ft. No free water observed ATD											

BORING LOCATION <u>Spring # 4: Approx. 11' N X 14.5' E of SE corner of Arrow Rental Bldg.</u>		ELEVATION AND DATUM <u>Pavement Surface</u>	
DRILLING AGENCY <u>Kvilhaug Drilling</u>	DRILLER <u>C. Holoman</u>	DATE STARTED <u>March 2, 1989</u> DATE FINISHED	
DRILLING EQUIPMENT <u>B - 61 Mobile Drill</u>		COMPLETION DEPTH <u>16 ft.</u>	SAMPLER <u>2.5" I.D. Modified California Type</u>
DRILLING METHOD <u>8" Hollow Stem Augers</u>		DRILL BIT <u>Drag</u>	NO. OF SAMPLES <u>n/a</u> DIST. <u>n/a</u> UNDIST. <u>4</u>
SIZE AND TYPE OF CASING <u>n/a</u>		WATER LEVEL	FIRST <u>n/a</u> COMPL. <u>n/a</u> 24 HRS. <u>n/a</u>
TYPE OF PERFORATION <u>n/a</u>		FROM <u>n/a</u> TO <u>n/a</u> FL.	LOGGED BY: <u>P. Roesper</u>
SIZE AND TYPE OF PACK <u>n/a</u>		FROM <u>n/a</u> TO <u>n/a</u> FL.	
TYPE OF SEAL	NO. 1 <u>n/a</u>	FROM <u>n/a</u> TO <u>n/a</u> FL.	
	NO. 2 <u>n/a</u>	FROM <u>n/a</u> TO <u>n/a</u> FL.	CHECKED BY: <u>A. McDonald</u>

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG		Water Content	Penetration	Drive Number	SAMPLES		REMARKS (Dry Rate, Flum Loss, Odor, etc.)
		Lithology	Placement or Installation				Sample Number	Recovery (Feet)	
0	Concrete								
0 - 4	SILTY CLAY (CL) - brown - moderately plastic - little fine gravel - moderately stiff - damp to moist					1	A 25 B 50		OVM = 0 ppm No odor
4 - 7	CLAYEY GRAVEL (GC) - brown - gravel fine to medium coarse - clay moderately plastic - medium dense to dense - moist					5	A 33 B 50		OVM = 0 ppm No odor
7 - 13	SILTY GRAVEL (GM) - brown - gravel fine to coarse (2") - trace of silt - sand fine to coarse-grained - medium dense to dense - damp					10	A 50		OVM = 0 ppm No odor
13 - 16	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse - clay moderately plastic - dense - moist					15	A 35 B 50		OVM = 0 ppm No odor
16 - 16.5	Bottom of boring at 16 ft. No free water observed ATD								

BORING LOCATION		Boring # 5: Approx. 32.5' S X 8.5' E of SE corner of Arrow Rental Bldg.		ELEVATION AND DATUM		Pavement Surface	
DRILLING AGENCY		Kvilhaug Drilling		DRILLER		C. Holman	
DATE STARTED		March 3, 1989		DATE FINISHED			
DRILLING EQUIPMENT		B-61 Mobile Drill		COMPLETION DEPTH		25.5 ft.	
DRILLING METHOD		8" Hollow Stem Augers		DRILL BIT		Drag	
NO. OF SAMPLES		n/a		DIST.		n/a	
UNDIST.		6		WATER LEVEL		FRST n/a	
COMPL.		n/a		24 HRS.		n/a	
TYPE OF PERFORATION		n/a		FROM n/a TO n/a ft.		LOGGED BY:	
CHECKED BY:		A. McDonald		P. Respass			
SIZE AND TYPE OF PACK		n/a		FROM n/a TO n/a ft.			
TYPE OF SEAL		NO. 1 n/a		FROM n/a TO n/a ft.			
		NO. 2 n/a		FROM n/a TO n/a ft.			

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG			SAMPLES					REMARKS (Drill Rate, Fluid Loss, Odor, etc.)	
		Lithology	Piezometer Installation	Water Content	Pneumometer Data	Drive Number	Sample Number	Recon. (feet)	Blow Counts		
0	3" Asphalt Concrete - 6" Aggregate Base										
0 - 10	SANDY GRAVEL (GP) - brown - gravel fine to medium coarse (2") - sand fine to coarse-grained - loose - wet  → slight clayey										OVM = 0 ppm No odor
5					1	A	13				
						B	14				
						C	17				
10	CLAYEY GRAVEL (GC) - brown - gravel fine to coarse (2"), rounded - sand fine to coarse - trace of clay - moderately plastic - medium dense to dense - wet										OVM = 0 ppm No odor
15					2	A	50				
20					3	A	50				
25					4	A	50				
30					5	A	50				
35					6	A	50				OVM = 16.3 ppm Slight gasoline odor
25.5	Bottom of boring at 25.5 ft. No free water observed ATD										

BORING LOCATION		Boring # 6: Approx. 10' S X 10' E of NE corner of Fabrication Bldg.		ELEVATION AND DATUM		Pavement Surface	
DRILLING AGENCY		Kvilhaug Drilling		DRILLER		C. Holoman	
DATE STARTED		March 3, 1989		DATE FINISHED			
DRILLING EQUIPMENT		B - 61 Mobile Drill		COMPLETION DEPTH		25.5 ft.	
SAMPLER		2.5" I.D. Modified California Type		NO. OF SAMPLES		DIST. n/a	
DRILLING METHOD		8" Hollow Stem Augers		DRILL BIT		Drag	
SIZE AND TYPE OF CASING		n/a		WATER LEVEL		FIRST n/a	
TYPE OF PERFORATION		n/a		FROM n/a TO n/a ft.		LOGGED BY:	
SIZE AND TYPE OF PACK		n/a		FROM n/a TO n/a ft.		P. Raspess	
TYPE OF SEAL		NO. 1 n/a		FROM n/a TO n/a ft.		CHECKED BY:	
		NO. 2 n/a		FROM n/a TO n/a ft.		A. McDonald	

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG			SAMPLES					REMARKS (Drill Rate, Fluid Loss, Color, etc.)
		Lithology	Piezometer Installation	Water Content	Piezometer Data	Drive Number	Sample Number	Recovery (feet)	Blow Counts	
0	2" Asphalt Concrete, 4" Aggregate Base									
0	SILTY SAND (SM)									
0	• brown									
0	• sand fine to medium-grained									
0	• little coarse gravel									
0	• loose									
0	• damp									
5	SILTY GRAVEL (GM)									
5	• brown									
5	• gravel to 2"									
5	• sand fine-grained									
5	• medium dense to dense									
5	• damp									
10	SANDY GRAVEL (GP)									
10	• brown									
10	• gravel to 2" (coarse)									
10	• sand medium to coarse-grained									
10	• dense to very dense									
10	• moist									
15										
15										
20	CLAYEY GRAVEL (GC)									
20	• brown									
20	• gravel to 2"									
20	• sand fine to coarse-grained									
20	• trace of clay - moderately plastic									
25	→ more clay in sample than above									
25	Bottom of boring at 25.5 ft. No free water observed ATD									
30										
35										

# Woodward-Clyde Consultants

500 12th Street, Suite 100, Oakland, CA 94607-4041  
(415) 893-3600

# Chain of Custody Record

PROJECT NO.  
8810270A

SAMPLERS: (Signature)  
*[Signature]*

### ANALYSES

DATE	TIME	SAMPLE NUMBER	General Mineral	Priority Inorganic Metals	EPA Method 824	EPA Method 825	EPA Method 806	PH & DTC	Metals - DTC	Metals - DTC	Metals - DTC	Bulk Asbestos	Number of Containers
3/3/89		5-1-C					X						1
		5-2-C					X						1
		5-3-C					X						1
		5-4-A					X						1
		5-5-A					X						1
		5-6-A					X						1
		6-1-B									X		1
		6-2-C					X				X		1
		6-3-A					X						1
		6-4-A					X		X				1
		6-5-A					X						1
		6-6-A					X						1
		ASBESTOS SAMPLE #01										X	1

*from field  
Block ice  
in chest*

TOTAL NUMBER OF CONTAINERS  
13

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE/TIME 3/3/89 16:00	RECEIVED BY: (Signature) <i>[Signature]</i>	RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE/TIME 3/3/89 16:40	RECEIVED BY: (Signature) <i>[Signature]</i>
METHOD OF SHIPMENT:		SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

# Woodward-Ciyde Consultants

500 12th Street, Suite 100, Oakland, CA 94607-4041  
(415) 893-3600

# Chain of Custody Record

PROJECT NO. <b>8810220A</b>		ANALYSES						Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
SAMPLERS: (Signature) <i>[Signature]</i>		General Mineral	Priority Pollutant Metals	EPA Method 821	EPA Method 823	EPA Method 808	PPH - PPH PPH - PPH PPH - PPH PPH - PPH		
DATE	TIME	SAMPLE NUMBER							

DATE	TIME	SAMPLE NUMBER	General Mineral	Priority Pollutant Metals	EPA Method 821	EPA Method 823	EPA Method 808	PPH - PPH	PPH - PPH	PPH - PPH	PPH - PPH	Number of Containers
3/2/89		1-1-C						X				1
		1-2-C						X				1
		1-3-C						X				1
		1-4-B						X	X			1
		1-5-B						X				1
		1-6-B						X	X			1
		2-1-C						X				1
		2-2-C						X				1
		2-3-B						X				1
		2-4-B						X	X			1
		2-5-B						X				1
		2-6-B						X	X			1
		3-1-A						X				1
		3-2-C						X				1
		3-3-B						X				1
		3-4-B						X	X			1
		3-5-B						X				1
		3-6-B						X				1
		4-1-B						X				1
		4-2-B						X				1
		4-3-BA						X				1
		4-4-B						X				1

*imposed  
black in chest*

TOTAL NUMBER OF CONTAINERS	<b>22</b>
----------------------------	-----------

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE/TIME 3/3/89	RECEIVED BY: (Signature) <i>[Signature]</i>	RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE/TIME 3/3/89 16:40	RECEIVED BY: (Signature) <i>[Signature]</i>
METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME	