



HAGEMAN-AGUIAR, INC.

*Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering*

ALCO  
HAZMAT

94 OCT -4 AM 8:35

**QUARTERLY  
GROUNDWATER SAMPLING REPORT**

(sampled August 11, 1994)

**RIX INDUSTRIES  
6460 Hollis Street  
Emeryville, CA**

**September 27, 1994**

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**ATTACHMENT A -- Well Sampling Logs**

**ATTACHMENT B -- Analytical Results: Groundwater**

## I. INTRODUCTION

The site location is the property at 6460 Hollis Street in Emeryville, California. The location of the site is shown in Figure 1.

The current occupant a the property, Rix Industries, has been present for more than twenty years. The current Rix Industries operation involves the construction of compressor parts, as well as compressor performance testing. In conjunction with a previous paint formulation plant that occupied the property prior to Rix Industries, ten (10) underground chemical storage tanks have been present for a number of years on the property. Five (5) of the underground tanks are present within the existing Rix Industries fabrication building.

On June 27, 1992, three shallow groundwater monitoring wells were installed on the site (wells MW-1, MW-2 and MW-3) by Hageman-Aguiar, Inc. The locations of the monitoring wells are shown in Figure 2, along with the locations of the ten (10) underground storage tanks. The report of that investigation was issued on July 24, 1992.

On July 30, 1994, the five (5) underground storage tanks inside the facility were closed-in-place under the direction of Hageman-Aguiar, Inc., in accord with Alameda County Department of Environmental Health's tank closure requirements. Prior to being filled with a neat cement slurry, each tank had its contents removed.

On August 11, 1994 all three on-site monitoring wells were sampled for the laboratory analysis for dissolved petroleum constituents, alcohols and ketones. This sampling represents

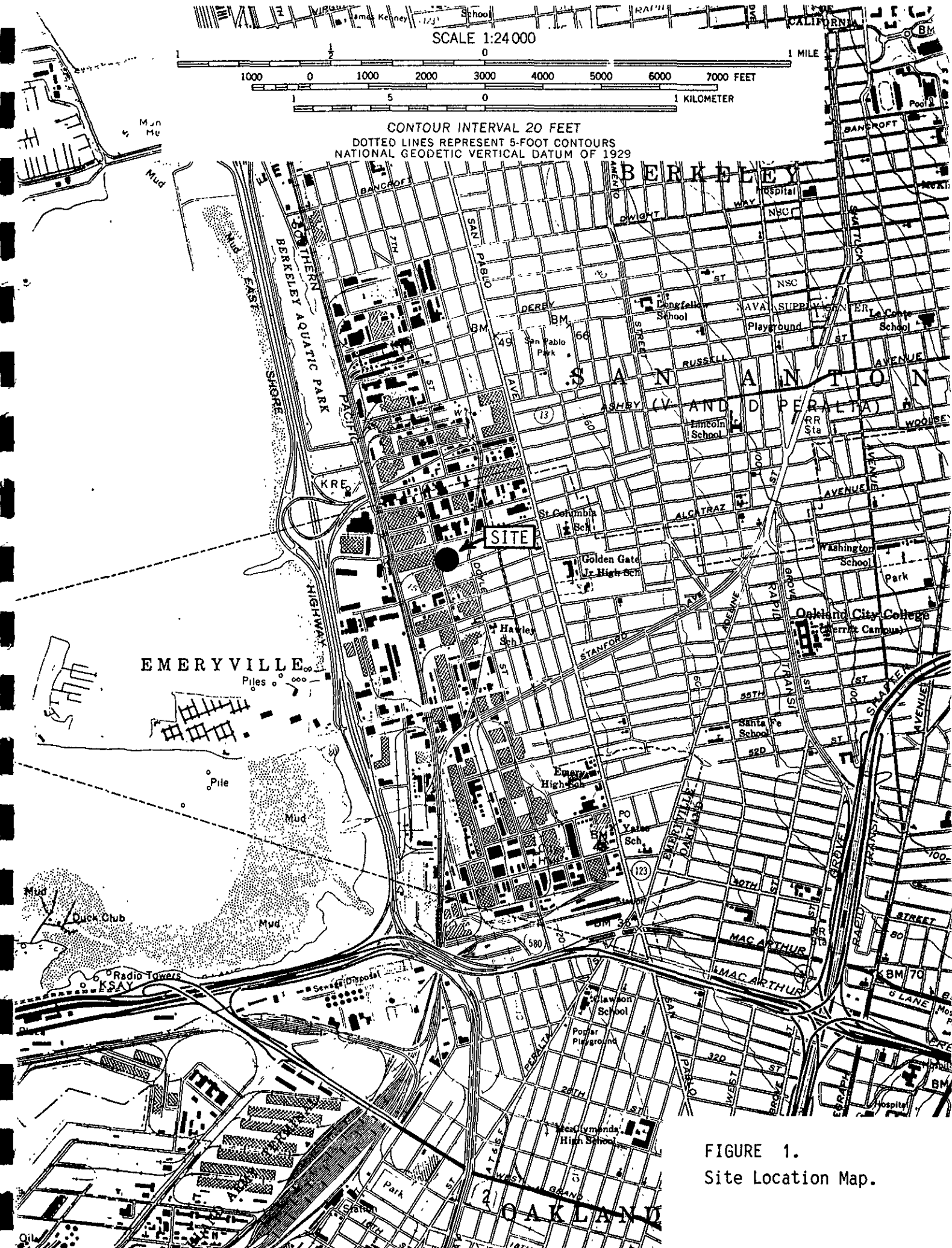
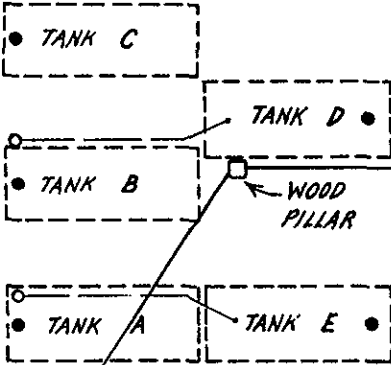


FIGURE 1.  
 Site Location Map.



STORAGE  
YARD



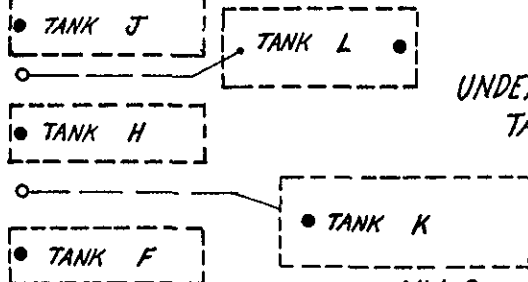
MW-3

GATE

(PROPERTY LINE)

CURB

UNDERGROUND  
TANKS



MW-1

MW-2

109'

BUILDING

SYBASE FACILITY

HOLLIS STREET

the first "round" of quarterly sampling, following the soil and groundwater investigation (well installations) previously conducted at the site by Hageman-Aguiar in July 1992.

## II. FIELD WORK

### Monitoring Well Sampling

On August 11, 1994, groundwater samples were collected from each of the three (3) on-site monitoring wells MW-1, MW-2 and MW-3.

Prior to groundwater sampling, each well was purged by bailing approximately 10 casing volumes of water. Field conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. Purging continued until readings appeared to have reasonably stabilized. After the water level in the well had attained 80% or more of the original static water level, a groundwater sample was collected using a clean teflon bailer. The water sample was placed inside appropriate 40 mL VOA vials and 1-liter amber bottles free of any headspace. The samples were immediately placed on ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time each monitoring well was sampled, the following information was recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior to purging, using a clear teflon bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample.

Copies of the well sampling logs are included as Attachment A.

### Wastewater Generation

All water removed from the wells during development and purging was drummed and stored on-site until the results of laboratory analyses were obtained. Based upon these results, this water should be collected by a licensed waste hauler and transported as a hazardous liquid waste under proper manifest to an appropriate TSD facility for treatment and disposal. The disposal of wastewater is the responsibility of the property owner (waste generator), and is beyond the scope of work as described in this report.



### III. RESULTS OF WATER LEVEL MEASUREMENTS

#### Shallow Groundwater Flow Direction

Shallow water table elevations were measured on August 11, 1994. These measurements are shown in Table 1. Figure 3 presents a contour map for the shallow groundwater table beneath the site. As shown in this figure, the data from these monitoring wells indicate that the shallow groundwater beneath the site flows in the westerly direction.

#### Shallow Water Table Hydraulic Gradient

Figure 3 presents the contour map for the shallow groundwater table beneath the site. As shown in this figure, the shallow groundwater table beneath the site appears to be relatively flat, with a calculated hydraulic gradient of  $dH/dL = 1.0'/13.5' = 0.080$ .

#### Historical Water Level Measurements

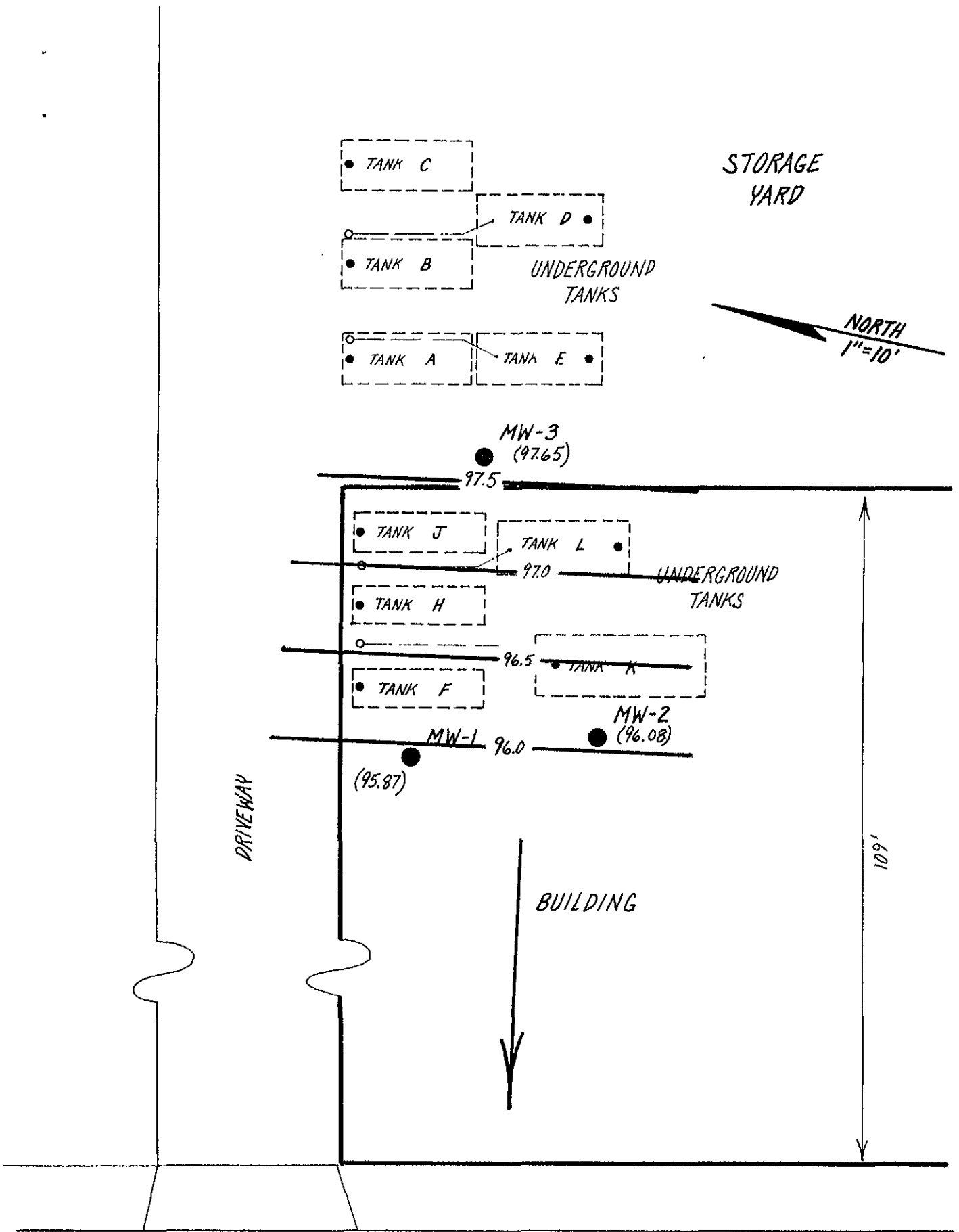
Table 2 presents the results of all water level measurements collected on July 7, 1992, and August 11, 1994.

**TABLE 1.**

**Shallow Water Table Elevations  
August 11, 1994**

<b>Well</b>	<b>Top of Casing Elevation (feet)</b>	<b>Depth to Water (feet)</b>	<b>Water Table Elevation (feet)</b>
<b>MW-1</b>	100.00	4.13	95.87
<b>MW-2</b>	100.04	3.96	96.08
<b>MW-3</b>	101.99	4.34	97.65

Datum is the top-of-rim on MW-1 well box set at 100.00 feet.



HOLLIS STREET

FIGURE 3. Shallow Groundwater Table Contour Map, measured August 11, 1994.

**TABLE 2.**

**Historical Water Table Elevations  
( feet )**

<b>Well</b>	<b>Date of Measurement</b>								
	<b>7-7-92</b>	<b>8-11-94</b>							
<b>MW-1</b>	96.10	95.87							
<b>MW-2</b>	96.38	96.08							
<b>MW-3</b>	97.64	97.65							
<b>Hydraulic Gradient</b>	0.070	0.080							
<b>Flow Direction</b>	W	W							

#### IV. SHALLOW GROUNDWATER SAMPLING RESULTS

##### Laboratory Analysis

All analyses were conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures (Priority Environmental Lab, Milpitas, CA). All Groundwater samples were analyzed for 1) Total Petroleum Hydrocarbons as Gasoline (EPA method 5030/8015), 2) Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602), 3) Total Petroleum Hydrocarbons as Kerosene, Diesel and Mineral Spirits (EPA method 3510/8015), and 4) Isopropanol, sec-Butanol, Methyl Ethyl Ketone (MEK), Methyl Iso-butyl Ketone (MIBK) and Acetone (EPA method 8015).

##### Results of Laboratory Analysis

The results of the laboratory analyses are presented in Tables 3, 4 and 5.

As shown in Table 3, Total Petroleum Hydrocarbons as Gasoline were detected in wells MW-2 and MW-3 at concentrations of 4,800  $\mu\text{g/L}$  (ppb), and 4,300  $\mu\text{g/L}$  (ppb), respectively. In addition, Toluene was detected in the groundwater samples collected from wells MW-2 and MW-3 at concentrations of 1.2  $\mu\text{g/L}$  (ppb) and 10  $\mu\text{g/L}$  (ppb), respectively. Ethylbenzene was detected in the groundwater samples collected from wells MW-2 and MW-3 at concentrations of 5.6  $\mu\text{g/L}$  (ppb) and 2.6  $\mu\text{g/L}$  (ppb), respectively. Total Xylenes were detected in the groundwater samples collected from wells MW-2 and MW-3 at concentrations of 18  $\mu\text{g/L}$  (ppb) and 10  $\mu\text{g/L}$  (ppb), respectively.

**TABLE 3.**  
**Shallow Groundwater Sampling Results**  
**Volatile Petroleum Hydrocarbons**

<b>Well</b>	<b>Date</b>	<b>TPH as Gasoline (ug/L)</b>	<b>Benzene (ug/L)</b>	<b>Toluene (ug/L)</b>	<b>Ethylbenzene (ug/L)</b>	<b>Total Xylenes (ug/L)</b>
<b>MW-1</b>	07-07-92 08-11-94	<b>680</b> ND	<b>3.8</b> ND	ND ND	<b>38</b> ND	<b>3.4</b> ND
<b>MW-2</b>	07-07-92 08-11-94	<b>1,400</b> <b>4,800</b>	ND ND	<b>12</b> <b>1.2</b>	<b>69</b> <b>5.6</b>	<b>530</b> <b>18</b>
<b>MW-3</b>	07-07-92 08-11-94	<b>9,300</b> <b>4,300</b>	ND ND	<b>3,600</b> <b>10</b>	ND <b>2.6</b>	<b>700</b> <b>10</b>
<b>Detection Limit</b>		<b>50</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>

ND = Not Detected

**TABLE 4.**  
**Shallow Groundwater Sampling Results**

**Extractable Petroleum Hydrocarbons**

<b>Well</b>	<b>Date</b>	<b>TPH as Kerosene (ug/L)</b>	<b>TPH as Diesel (ug/L)</b>	<b>TPH as Mineral Spirits (ug/L)</b>	<b>Oil &amp; Grease (ug/L)</b>
<b>MW-1</b>	07-07-92 08-11-94	6,100 960	6,100 590	6,400 ND	14 ---
<b>MW-2</b>	07-07-92 08-11-94	17,000 490	17,000 320	20,000 ND	19 ---
<b>MW-3</b>	07-07-92 08-11-94	20,000 470	20,000 310	21,000 ND	28 ---
<b>Detection Limit</b>		50	50	50	50

ND = Not Detected

**TABLE 5.  
Shallow Groundwater Sampling Results**

**Alcohols & Ketones**

<b>Well</b>	<b>Date</b>	<b>Acetone (mg/L)</b>	<b>Iso- Proponal (mg/L)</b>	<b>Methyl Ethyl Ketone (mg/L)</b>	<b>Methyl Iso- Butyl Ketone (mg/L)</b>	<b>Sec- Butanol (mg/L)</b>
<b>MW-1</b>	07-07-92	ND	ND	ND	ND	ND
	08-11-94	0.21	9.1	0.23	0.18	0.71
<b>MW-2</b>	07-07-92	ND	ND	ND	ND	ND
	08-11-94	ND	0.41	ND	ND	0.09
<b>MW-3</b>	07-07-92	ND	ND	ND	ND	ND
	08-11-94	ND	9.4	0.37	0.25	0.82
<b>Detection Limit</b>		0.05	0.10	0.05	0.05	0.05

ND = Not Detected



As shown in Table 4, Total Petroleum Hydrocarbons as Kerosene were detected in wells MW-1, MW-2 and MW-3 at concentrations of 960  $\mu\text{g/L}$  (ppb), 490  $\mu\text{g/L}$  (ppb) and 470  $\mu\text{g/L}$  (ppb), respectively. In addition, Total Petroleum Hydrocarbons as Diesel were detected in the groundwater samples from wells MW-1, MW-2 and MW-3 at concentrations of 590  $\mu\text{g/L}$  (ppb), 320  $\mu\text{g/L}$  (ppb) and 310  $\mu\text{g/L}$  (ppb), respectively. For this round of groundwater sampling, no detectable concentrations of Mineral Spirits were detected in any of the shallow groundwater samples.

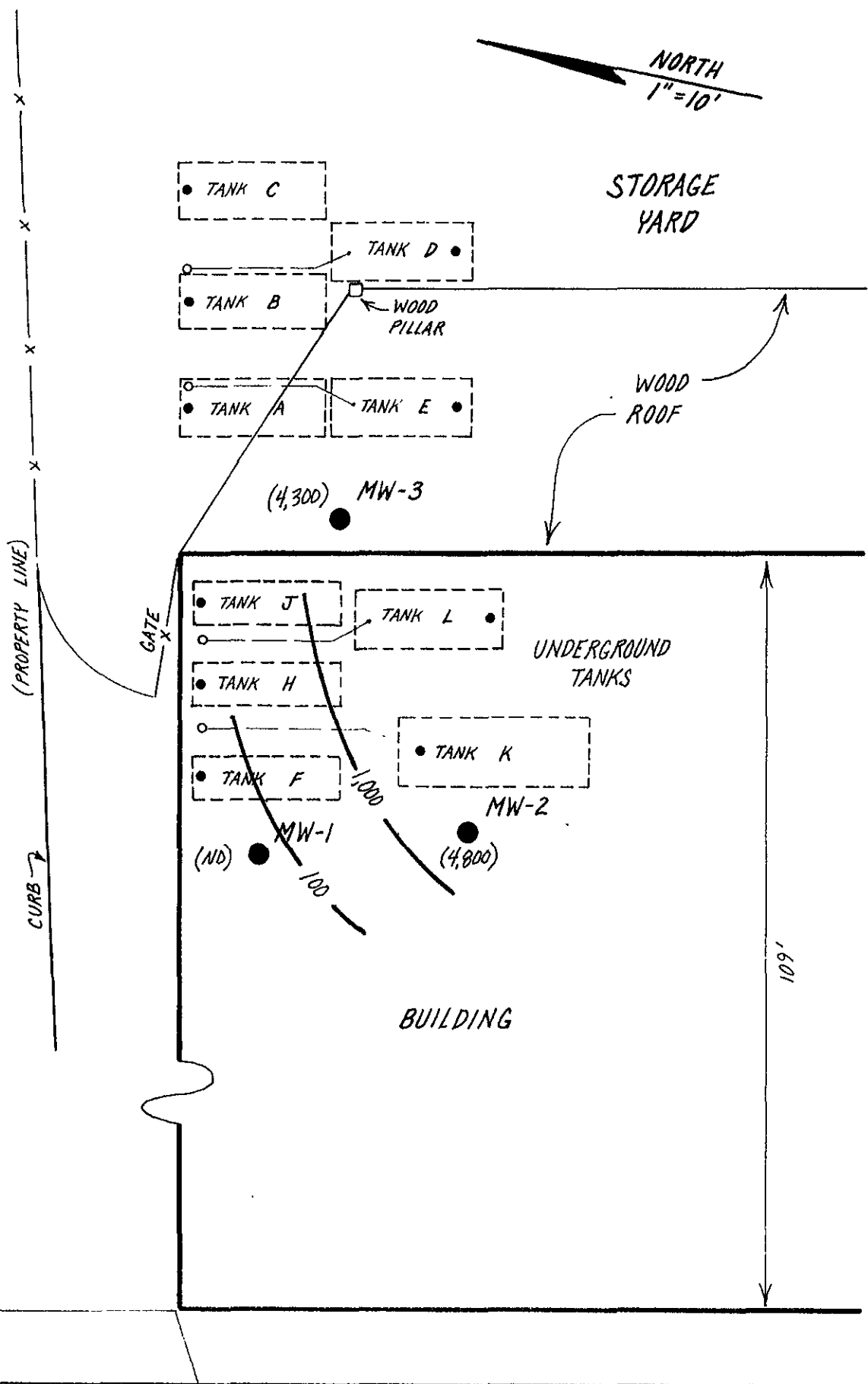
As shown in Table 5, Isopropanol was detected in the groundwater samples from wells MW-1, MW-2 and MW-3 at concentrations of 9.1 mg/L (ppm), 0.41 mg/L (ppm), and 9.4 mg/L (ppm), respectively. In addition, Sec-butanol was detected in the groundwater samples collected from wells MW-1, MW-2 and MW-3 at concentrations of 0.71 mg/L (ppm), 0.09 mg/L (ppm) and 0.82 mg/L (ppm), respectively.

As shown in Table 5, Methyl Ethyl Ketone was detected in the groundwater samples collected from wells MW-1 and MW-3 at concentrations of 0.23 mg/L (ppm) and 0.37 mg/L (ppm), respectively. Methyl Iso-butyl Ketone was detected in the groundwater samples collected from wells MW-1 and MW-3 at concentrations of 0.18 mg/L (ppm) and 0.25 mg/L (ppm), respectively. Lastly, Acetone was detected in the groundwater sample collected from well MW-1 at a concentration of 0.21 mg/L (ppm).

A copies of the laboratory certificates for the water sample analyses are included in Attachment B.

### Chemical Concentration Contours

Figures 4, 5 and 6 show lines of equal concentration for Total Petroleum Hydrocarbons as Gasoline, Toluene and Isopropanol, respectively, in the shallow groundwater. Since these lines have been drawn based upon relatively limited data (three data points), the plots represent only a small portion of the respective concentration plumes. The plots do suggest, however, that the dissolved concentrations of these three chemical constituents are located down-gradient of the existing underground storage tank locations.



SYBASE FACILITY

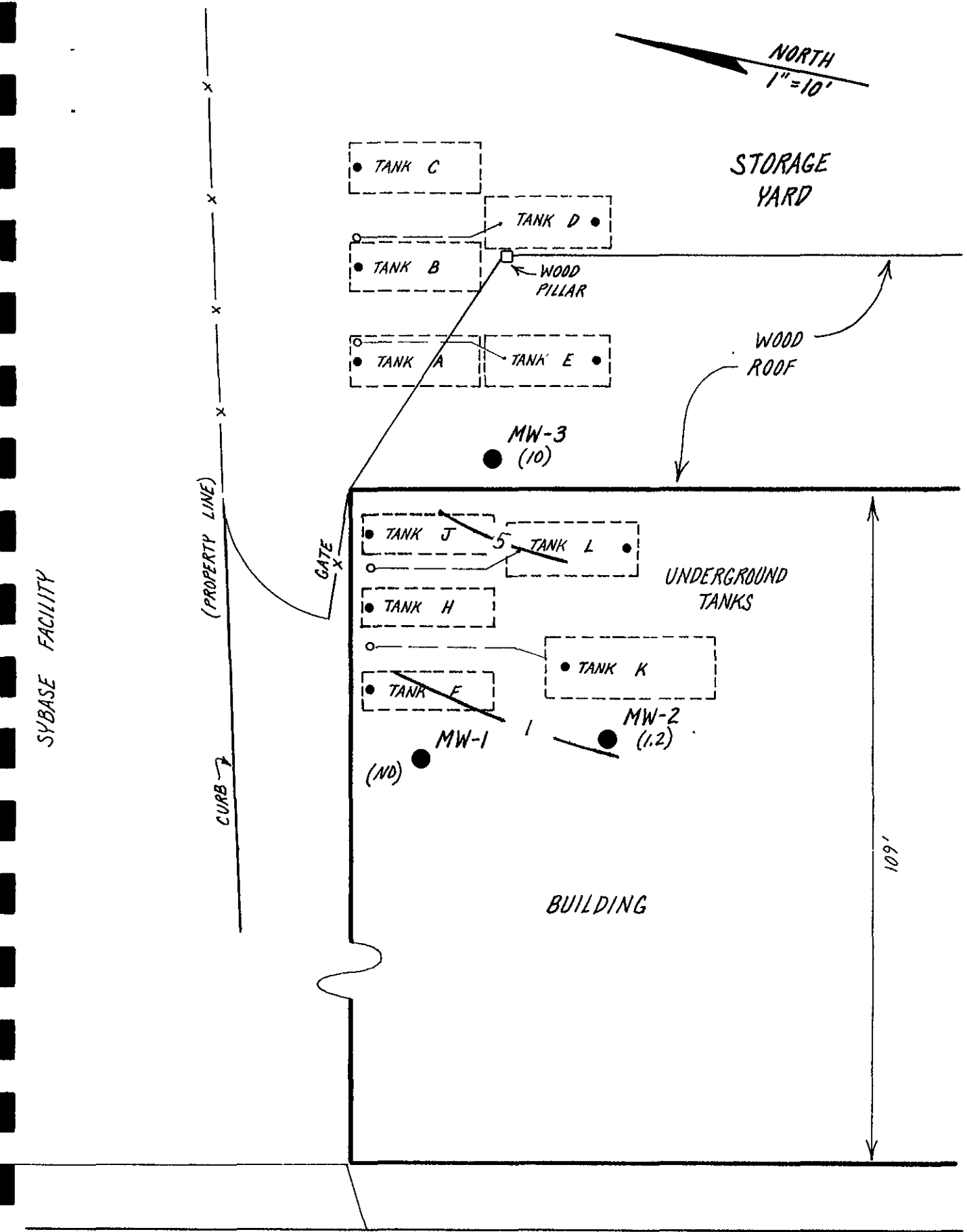
STORAGE YARD

UNDERGROUND TANKS

BUILDING

HOLLIS STREET

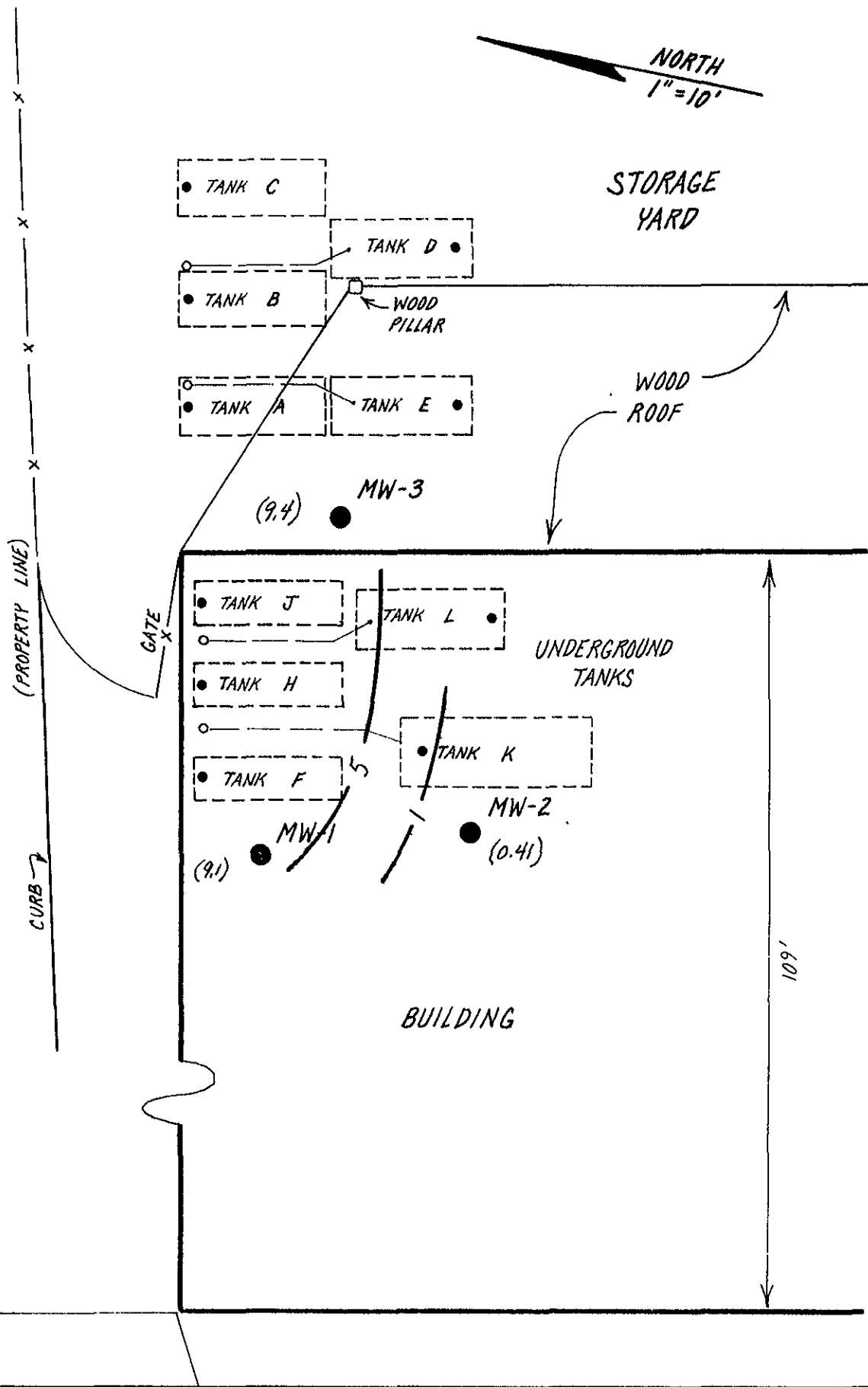
FIGURE 4. Lines of Equal Concentration of Gasoline in ug/L (ppb) in the Shallow Groundwater. (August 11, 1994)



HOLLIS STREET

FIGURE 5. Lines of Equal Concentration of Toluene in ug/L (ppb) in the Shallow Groundwater. (August 11, 1994)

SYBASE FACILITY

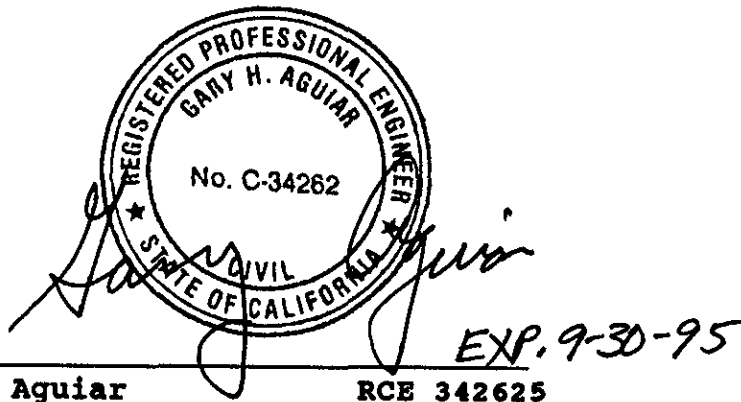


HOLLIS STREET

FIGURE 6. Lines of Equal Concentration of Isopropanol in mg/L (ppm) in the Shallow Groundwater. (August 11, 1994)

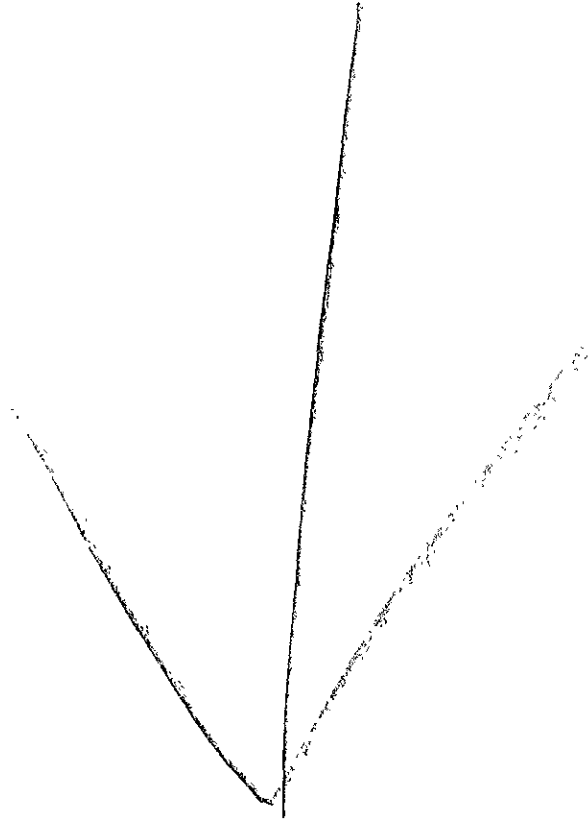
QUARTERLY GROUNDWATER SAMPLING REPORT  
RIX INDUSTRIES  
6460 Hollis Street, Emeryville, California

September 27, 1994



Gary Aguiar RCE 342625

  
Gerard F. Aarons Geologist



# WELL SAMPLING LOG

Project/No. Rix Industries Page 1 of 3  
Site Location EMERYVILLE, CA Date 8/11/94  
Well No. MW 1 Time Began 1530  
Weather CLEAR/80°F Completed 1550

## EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE  
Total Sounded Depth of Well Below MP 15.02  
- Depth to Water Below MP 4.13 Diameter of Casing 2"  
= Water Column in Well 10.89  
Gallons in Casing 1.6 + Annular Space (x10) = Total Gallons 16  
(30% porosity)  
Gallons Pumped Prior to Sampling 15  
Evacuation Method PVC BAILER

## SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE DETECTED  
(thickness to 0.1 inch, if any)

Time	1530	1536	1542	1550
Gals Removed	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>
Temperature	<u>22.2</u>	<u>21.2</u>	<u>21.0</u>	<u>21.4</u>
Conductivity	<u>180</u>	<u>190</u>	<u>185</u>	<u>200</u>
pH	<u>6.9</u>	<u>6.8</u>	<u>6.7</u>	<u>6.7</u>
Color / Odor	<u>CLR/ORG</u>	<u>GRY/HK</u>	<u>GRY/HK</u>	<u>GRY/HK</u>
Turbidity	<u>LOW</u>	<u>HIGH</u>	<u>HIGH</u>	<u>HIGH</u>

Comments: NONE



WELL SAMPLING LOG

Project/No. RIX INDUSTRIES Page 2 of 3  
Site Location EMERYVILLE, CA Date 8/11/94  
Well No. MW 2 Time Began 1554  
Weather CLEAR/80°F Completed 1615

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE  
Total Sounded Depth of Well Below MP 15.23  
- Depth to Water Below MP 3.96 Diameter of Casing 2"  
= Water Column in Well 11.27  
Gallons in Casing 1.7 + Annular Space (10) = Total Gallons 17  
(30% porosity)  
Gallons Pumped Prior to Sampling 15  
Evacuation Method PVC BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE DETECTED  
(thickness to 0.1 inch, if any)

	<u>1554</u>	<u>1600</u>	<u>1610</u>	<u>1615</u>
Time				
Gals Removed	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>
Temperature	<u>22.7</u>	<u>22.1</u>	<u>22.4</u>	<u>21.8</u>
Conductivity	<u>221</u>	<u>218</u>	<u>205</u>	<u>201</u>
pH	<u>6.5</u>	<u>6.7</u>	<u>6.8</u>	<u>6.5</u>
Color / Odor	<u>clear/HC</u>	<u>grey/HC</u>	<u>grey</u>	<u>grey</u>
Turbidity	<u>low</u>	<u>high</u>	<u>high</u>	<u>high</u>

Comments: NONE

## WELL SAMPLING LOG

Project/No. RIX INDUSTRIES Page 3 of 3  
 Site Location EMERYVILLE, CA Date 8/11/94  
 Well No. MW 3 Time Began 1525  
 Weather CLEAR / 80°F Completed 1545

### EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE  
 Total Sounded Depth of Well Below MP 17.40  
 - Depth to Water Below MP 4.34 Diameter of Casing 2"  
 = Water Column in Well 13.06  
 Gallons in Casing 1.9 + Annular Space (x10) = Total Gallons 19  
(30% porosity)  
 Gallons Pumped Prior to Sampling 15  
 Evacuation Method PVC BAILER

### SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE DETECTED  
(thickness to 0.1 inch, if any)

Time	<u>1525</u>	<u>1535</u>	<u>1540</u>	<u>1545</u>
Gals Removed	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>
Temperature	<u>29.1</u>	<u>22.6</u>	<u>22.6</u>	<u>23.4</u>
Conductivity	<u>171</u>	<u>197</u>	<u>202</u>	<u>208</u>
pH	<u>7.0</u>	<u>6.8</u>	<u>6.7</u>	<u>6.6</u>
Color / Odor	<u>clear/org</u>	<u>brown/org<sup>HC</sup></u>	<u>grey</u>	<u>grey</u>
Turbidity	<u>low</u>	<u>high</u>	<u>high</u>	<u>high</u>

Comments: NONE



# PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

August 15, 1994

PEL # 9408045

HAGEMAN-AGUIAR, INC.

Attn: Jeffrey Roth

Re: Three water samples for Gasoline/BTEX and TEPH analyses.

Project name: Rix Industries

Project location: Hollis Street - Emeryville, CA

Date sampled: Aug 11, 1994

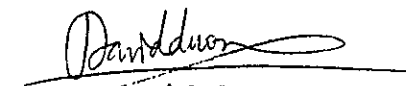
Date submitted: Aug 12, 1994

Date extracted: Aug 12-15, 1994

Date analyzed: Aug 12-15, 1994

## RESULTS:

SAMPLE I.D.	Kerosene (ug/L)	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	Mineral Spirits (ug/L)
MW 1	960	N.D.	590	N.D.	N.D.	N.D.	N.D.	N.D.
MW 2	490	4800	320	N.D.	1.2	5.6	18	N.D.
MW 3	470	4300	310	N.D.	10	2.6	10	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	---	85.3%	100.7%	90.3%	92.5%	105.2%	98.5%	---
Detection limit	50	50	50	0.5	0.5	0.5	0.5	50
Method of Analysis	3510/ 8015	5030/ 8015	3510/ 8015	602	602	602	602	3510/ 8015

  
 David Duong  
 Laboratory Director



# PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

August 15, 1994

PEL # 9408045

HAGEMAN-AGUIAR, INC.

Attn: Jeffrey Roth

Re: Three water samples for Acetone, Isopropanol, Methyl Ethyl Ketone, Methyl Isobutyl Ketone, and Sec-butanol analyses.

Project name: Rix Industries

Project location: Hollis Street - Emeryville, CA

Date sampled: Aug 11, 1994

Date submitted: Aug 12, 1994

Date extracted: Aug 12-15, 1994

Date analyzed: Aug 12-15, 1994

## RESULTS:


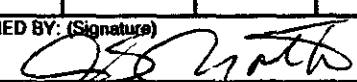

SAMPLE I.D.	Acetone (mg/L)	Isopropanol (mg/L)	MEK (mg/L)	MIBK (mg/L)	Sec-Butanol (mg/L)
MW 1	0.21	9.1	0.23	0.18	0.71
MW 2	N.D.	0.41	N.D.	N.D.	0.09
MW 3	N.D.	9.4	0.37	0.25	0.82
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Detection limit	0.05	0.10	0.05	0.05	0.05
Method of Analysis	8015	8015	8015	8015	8015

David Duong  
Laboratory Director

PEL # 9408045

INV # 25091

# CHAIN OF CUSTODY RECORD

PROJECT NAME AND ADDRESS:					SAMPLER (Signature)	ANALYSIS REQUESTED							REMARKS
Rix Industries Hollis St. Emeryville, CA					 <b>HAGEMAN - AGUIAR, INC.</b> 3732 Mt. Diablo Blvd., Suite 372 Lafayette, CA 94549 (415)284-1661 (415)284-1664 (FAX)	TPH Gas / BTEX TPH Diesel / KEROSENE MER, MIK ACETONE ISOPROPANOL SEC-BUTANOL MINERAL SPIRITS							
CROSS REFERENCE NUMBER	DATE	TIME	SOIL	WATER		STATION LOCATION							
MW 1	8-11-94			X	MONITOR WELL # 1	X	X	X	X	X	X	Norm TAT	
MW 2	8-11-94			X	↓ ↓ # 2	X	X	X	X	X	X		
MW 3	8-11-94			X	↓ ↓ # 3	X	X	X	X	X	X	↓	
RELINQUISHED BY: (Signature)					DATE	RECEIVED BY: (Signature)					DATE		
					8/12/94						13:37		
RELINQUISHED BY: (Signature)					TIME	RECEIVED BY: (Signature)					DATE		
					0905						TIME		
RELINQUISHED BY: (Signature)					DATE	RECEIVED BY: (Signature)					DATE		
					13:37						TIME		
RELINQUISHED BY: (Signature)					DATE	RECEIVED BY: (Signature)					DATE		
RELINQUISHED BY: (Signature)					DATE	RECEIVED FOR LABORATORY BY: (Signature)					DATE		
											8/12/94		
											13:37		