

# RM Associates

## Environmental Consultants

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Alameda County  
Environmental Health

April 1, 2008

Mr. Jerry Wickham  
Hazard Materials Specialist  
Alameda County Health Care Services Agency  
Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**Reference: Rotten Robbie No 64  
(Formerly East Avenue Services)  
4186 East Avenue, Livermore, California  
Fuel Leak Case No. RO0002881**

**Subject: Groundwater Monitoring Report No. 2 - 1st Quarter 2008  
March 19, 2008**

Dear Mr. Wickham:

Enclosed is a copy of the subject report for the referenced site. The report was prepared and is submitted by RMA Associates, Inc, on behalf of Robinson Oil Corporation (ROC).

The report and this cover letter will be submitted electronically according to your requirements for electronic submission and has also been uploaded to GeoTracker.

RMA hereby certifies under the penalty of perjury, that to the best of our knowledge, all information and data presented in the report are true and correct. Mr. Robinson has reviewed the report and has authorized its transmittal. Mr. Robinson's transmittal letter is included in Appendix D of the report.

Should you have any questions regarding this report, please contact Thomas Robinson of Robinson Oil Corporation at (408) 257-2222, or the undersigned at (209) 295-6218.

Sincerely,

**RM ASSOCIATES**



Ronald W. Michelson, RG (CA 3875)  
Principal Geologist

Cc: Tom Robinson, Robinson Oil Corporation

Enclosures:

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16401 Meadow Vista Drive, Suite 102 - Pioneer CA 95666  
E-Mail: RMichelson@volcano.net

**GROUNDWATER MONITORING REPORT NO. 2 – 1ST QUARTER 2008**

**Rotten Robbie No. 64  
4186 East Avenue  
Livermore, California  
Fuel Leak Case No. RO0002881**

**Prepared for:  
Robinson Oil Corporation  
4250 Williams Road  
San Jose, California 95129**

**Prepared by:  
RM Associates  
16401 Meadow Vista Drive, Suite 102  
Pioneer, California 95666**

Project No. 101-6404

March 19, 2008

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**RM**Associates

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## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>SITE DESCRIPTION AND BACKGROUND.....</b>	<b>1</b>
<b>2.1</b>	<b>Phase II Environmental Assessment .....</b>	<b>1</b>
<b>2.2</b>	<b>UST Removal .....</b>	<b>2</b>
<b>2.3</b>	<b>Monitoring Well Installations.....</b>	<b>2</b>
<b>2.4</b>	<b>Initially Groundwater Sampling and Results.....</b>	<b>2</b>
<b>3.0</b>	<b>GROUNDWATER MONITORING.....</b>	<b>2</b>
<b>3.1</b>	<b>Groundwater Elevation Measurements and Sampling.....</b>	<b>2</b>
<b>3.2</b>	<b>Field Measurements and Groundwater Analytical.....</b>	<b>3</b>
<b>4.0</b>	<b>SUMMARY OF ANALYTICAL RESULTS .....</b>	<b>3</b>
<b>5.0</b>	<b>CONCLUSIONS/RECOMMENDATION .....</b>	<b>3</b>
<b>6.0</b>	<b>CERTIFICATION .....</b>	<b>4</b>
<b>7.0</b>	<b>DISTRIBUTION .....</b>	<b>5</b>

## TABLES

**TABLE 1 – Well Construction Details**

**TABLE 2 – Purge Data**

**TABLE 3 – Water Level Measurements and Elevation**

**TABLE 4 – Field Measurements**

**TABLE 5 – Groundwater Analytical Results (Petroleum Hydrocarbons)**

**TABLE 6 – Groundwater Analytical Results(Oxygenates and Chlorinated  
Hydrocarbons)**

**TABLE 7 – Groundwater Monitoring Schedule**

## **TABLE OF CONTENTS (CONTINUED)**

### **FIGURES**

**FIGURE 1 – Vicinity Map**

**FIGURE 2 – Site Map (showing soil boring and monitoring well locations)**

**FIGURE 3 – Groundwater Elevation Contours**

**FIGURE 4 – Distribution of Groundwater Analytical Results**

**FIGURE 5 – Iso-concentration Contours for TPHg**

**FIGURE 6 – Iso-concentration Contours for Benzene**

**FIGURE 7 – Iso-concentration Contours for MTBE**

### **APPENDICES**

**APPENDIX A - Groundwater Sampling Procedures**

**APPENDIX B - Purge and Sampling Worksheets**

**APPENDIX C - Laboratory Reports and Chain of Custody Documents**

**APPENDIX D – Transmittal Letter**

# GROUNDWATER MONITORING REPORT NO. 1 – 1ST QUARTER 2008

**Rotten Robbie No. 64 (Formerly East Avenue Services)  
4186 East Avenue, Livermore, California**

**March 19, 2008**

## **1.0 INTRODUCTION**

This “Groundwater Monitoring Report No. 2, 4th Quarter 2008” has been prepared by RM Associates, Inc. (RMA) on behalf of Robinson Oil Corporation (ROC), San Jose, California. The report presents the results of field measurements and groundwater analytical results conducted during the 1st quarter 2008. The results presented herein should be considered in context with the data and information presented in two previous reports:

“Report of Phase II Environmental Assessment,” by RMA, dated May 13, 2005

“Report of Preliminary Site Investigation Including UST Removal,” by RMA dated May 30, 2007

## **2.0 SITE DESCRIPTION AND BACKGROUND**

### Site Location

4186 East Avenue

Livermore, California

Contact: Mr. Thomas L. Robinson (408) 257-2222

Figure 1 is a generalized street map showing the general vicinity of the site. The site had been operated until July 2005 as East Avenue Services, a retail automotive fueling and service station facility that had five underground storage tanks (USTs) and two dispenser islands. The former USTs consisted of four 4,000-gallon tanks and one 6,000-gallon tank all containing gasoline.

### **2.1 Phase II Environmental Assessment**

In April 2005, preliminary to a property transaction, RMA conducted a routine Phase II Environmental Assessment (P2EA) that involved the installation of seven shallow soil borings and the collection and analysis of eleven soil samples and five groundwater grab samples. The results of this assessment are presented in the May 13, 2005 report cited above.

Figure 2 is a site diagram showing the location of the former building structure on the property, the former USTs and fuel dispensing islands, the locations of the soil sample and groundwater grab sample collection, and the locations of the three monitoring wells that have been installed on the site. The description and results of this activity are presented in the May 30, 2007 report cited above.

## **2.2 UST Removal**

During the week of March 26, 2007 the building structure and fuel dispensing facilities were demolished and removed from the site. On April 3, 2007 the five USTs, the product lines, and dispensers were removed from the site. During the removal activities, 10 soil samples were collected from the native soil beneath the USTs, and five samples were collected from the native soil beneath the product lines. All UST sampling was performed under the oversight of Ms. Danielle Stefani of the Livermore - Pleasanton Fire Department. There were no hydrocarbons detected in any of the 10 soil samples. The description and results of this activity are presented in the May 30, 2007 report cited above.

## **2.3 Monitoring Well Installations**

On May 2, 2007, three monitoring wells MW-1, MW-2, and MW-3 were installed on the site at the locations illustrated on Figure 2. The well installation activity, soil boring logs, and soil analytical results are presented in the May 30, 2007 report cited above. The well construction details are presented herein as Table 1.

## **2.4 Initial Groundwater Sampling and Results**

The groundwater monitoring wells MW-1, MW-2, and MW-3 were sampled on May 7, 2007. Although the depth to water was measured in each of the wells, the groundwater elevations with respect to mean sea level (MSL) could not be determined because, since the site was undergoing extensive renovation, the well vaults could not be set and therefore, the well casing elevations could not be surveyed. The field measurements, observations and analytical results for the initial monitoring well samples, presented in the May 2007 report cited above and are also included in Tables 2 through 6 of this groundwater monitoring report.

## **3.0 GROUNDWATER MONITORING**

### **3.1 Groundwater Elevation Measurements and Sampling**

On February 29, 2008, sampling subcontractor GeoRestoration, Inc. collected groundwater samples from the three on-site monitoring wells, MW-1, MW-2, and MW-3. Prior to sampling, the wells were developed by purging at least 3 well volumes from each well using a 12 volt submersible pump. The purge data for the monitoring event is presented in Table 2.

Prior to groundwater sampling, depths to groundwater were measured in each of the three wells. The depth to water measurements and groundwater elevation calculation for each well are presented in Table 3. The groundwater elevation contours, groundwater gradient, and groundwater flow direction are illustrated in Figure 3. Although, as a result of recent rainfall the average groundwater elevation has risen more than four feet over the previous six weeks, the groundwater gradient and flow direction have remained steady at approximately 0.015 ft./ft. to the southwest.

### **3.2 Field Measurements and Groundwater Analytical**

Field measurements made during purging and sampling are presented in Table 4 and also on the purge and sampling worksheets provided in Appendix B.

Groundwater samples obtained from monitoring wells MW-1 and MW-3 were submitted to Entech Analytical Laboratory (Entech), California DHS certified, to perform the requisite chemical analyses. The groundwater samples were analyzed for benzene, toluene, ethylbenzene, total xylenes, methyl tert-butyl ether (MTBE), tert-butanol (TBA), diisopropyl ether (DIPE), ethyl-tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), 1,2-dichloroethane (1,2-DCA) and 1,2-dibromoethane (EDB), all by EPA method 8260B. They were also analyzed for total petroleum hydrocarbons as gasoline (TPHg) by a GC-MS variation of EPA method 8260.

### **4.0 SUMMARY OF ANALYTICAL RESULTS**

The analytical results for the groundwater samples are presented in Tables 5 and 6. Copies of the signed laboratory analytical reports and chain-of-custody forms are provided in Appendix C.

During this monitoring event, significant concentration of petroleum hydrocarbon concentrations were again detected only in the groundwater sample from monitoring well MW-1 with TPHg, benzene, and MTBE concentrations at 4,800 µg/L, 190 µg/L, and 330 µg/L, respectively. These concentrations, while considerable higher than those for the previous November 2007 monitoring event but are of the similar magnitude as the earlier May 2007 results. A distribution of groundwater analytical results, showing the results for the last (or only) samples from each sampling point is presented in Figure 4. Based on the same information, iso-concentration contours for the distribution of TPHg, benzene, and MTBE concentrations are presented in Figures 5, 6, and 7, respectively.

### **5.0 CONCLUSIONS/RECOMMENDATION**

The results presented in this groundwater monitoring report and from previous investigations show a relatively small area of hydrocarbon impacted groundwater in an area in the general vicinity of former soil boring W-1 and monitoring well MW-1. The analytical results for the groundwater sampled from monitoring well MW-1, are likely far more representative of the shallow groundwater condition in this area, than are the results for the grab sample collected at the top of the water table from soil boring W1. The results also indicate that no appreciable amount of contaminant migration has occurred.


It is RMA's opinion that the petroleum hydrocarbon condition at this site does not pose any eminent hazard to either public health or safety or to the underlying groundwater resources. Therefore, it is recommended that groundwater monitoring should be conducted for at least three additional quarterly monitoring periods before further decisions are made regarding any additional investigative effort, and before any specific remedial actions are considered.

As shown on Table 7, the next groundwater monitoring event is currently scheduled for May 2008.

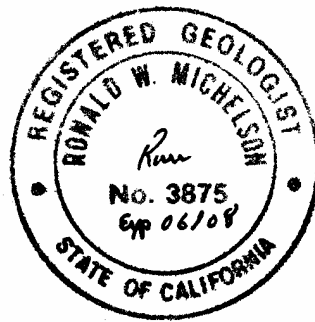
## 6.0 CERTIFICATION

We certify that, to the best of our knowledge all statements above and data provided herein are true and correct. This report has been reviewed and approved by ROC. A copy of their transmittal letter is presented as Appendix D.

### RM Associates



Ronald W. Michelson  
Principal Geologist





**7.0 DISTRIBUTION**

Mr. Tom Robinson  
Robinson Oil Corporation  
4250 Williams Road  
San Jose, CA 95129

Mr. Jerry Wickham  
Hazard Materials Specialist  
Alameda County Health Care Services Agency  
Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

Mr. Wyman Hong  
Zone 7 Water District  
100 N. Canyon Parkway  
Livermore, CA 94551

## **TABLES**

**RM Associates****TABLE 1- WELL CONSTRUCTION DETAILS  
Rotten Robbie 64, 4186 East Avemie. Livermore, California**

Monitoring Well	Drilling Date	Borehole Diameter (inches)	Depth of Borehole (feet)	Casing Diameter (inches)	Screened Interval (feet)	Filter Pack Interval (feet)	Bentonite Seal Interval (feet)	Cement/Bentonite Seal Interval (feet)
MW-1	05/02/01	8	30	2	15-30	13-30	10-13	0-10
MW-2	05/02/01	8	29	2	14-29	5-22	9-12	0-9
MW-3	05/02/01	8	30	2	15-30	13-15	10-13	0-10

Notes: MW- denotes monitoring well

**RM Associates****TABLE 2 - PURGE DATA  
Rotten Robbie 64, 4186 East Avenue, Livermore, California**

Well ID	Reporting Period	Method of Purging	Casing-Volumes Purged
MW-1	05/07/07	12 V. PUMP	13
	11/30/07	SS Bailer	4
	02/29/08	12 V. PUMP	4
MW-2	05/07/07	12 V. PUMP	16
	11/30/07	Well Dry	3
	02/29/08	12 V. PUMP	3
MW-3	05/07/07	12 V. PUMP	13
	11/30/07	SS Bailer	3
	02/29/08	12 V. PUMP	3

<b>RM Associates</b>				
<b>TABLE 3 - WATER LEVEL MEASUREMENTS AND ELEVATION</b>				
<b>Rotten Robbie 64, 4186 East Avenue, Livermore, California</b>				
Well Number	Sample Date	Well Head Elevation (feet MSL)	Depth to Groundwater (feet)	Groundwater Elevation (feet MSL)
MW-1	05/07/07	NS	21.11	NC
	11/30/07	NS	28.95	NC
	01/15/08	539.50	23.03	516.47
	<b>02/29/08</b>	<b>539.50</b>	<b>18.74</b>	<b>520.76</b>
MW-2	05/07/07	NS	22.45	NC
	11/30/07	NS	>29.0	NC
	01/15/08	539.15	23.33	515.82
	<b>02/29/08</b>	<b>539.15</b>	<b>18.86</b>	<b>520.29</b>
MW-3	05/07/07	NS	21.00	NC
	11/30/07	NS	27.83	NC
	01/15/08	539.76	22.70	517.06
	<b>02/29/08</b>	<b>539.76</b>	<b>18.67</b>	<b>521.09</b>
Notes:	MSL =	Mean Sea Level		4.26
	MW =	Monitoring Well		
	NYS =	Not Yet Surveyed		
	NC =	Not Calculated		
	<b>Bold =</b>	<b>Not Previously Reported</b>		
Wellhead survey completed by Licensed Engineering Contractor, Mid Coast Engineers on 11/03/07				

**RM Associates**

**TABLE 4 - FIELD MEASUREMENTS**

Rotten Robbie 64, 4186 East Avenue, Livermore, California

Well No.	Sample Date	pH (Units)	Conductivity (umhos/cm)	Temp (C)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Oxygen Reduction Potential (mV)
MW-1	05/07/07	7.7	986	21	NM(Clearing)	0.2	38
	11/30/07	7.5	825	20	NM(Clearing)	3.4	29
	<b>02/29/08</b>	<b>7.5</b>	<b>1173</b>	<b>19.9</b>	<b>Clear</b>	<b>1.2</b>	<b>122</b>
MW-2	05/07/07	7.7	979	21	NM(Clearing)	1.3	137
	11/30/07	NS	NS	NS	NS	NS	NS
	<b>02/29/08</b>	<b>7.7</b>	<b>1031</b>	<b>19.9</b>	<b>Clear</b>	<b>0.9</b>	<b>118.0</b>
MW-3	05/07/07	7.8	938	21	NM(Clearing)	1.60	121
	11/30/07	7.6	810	21	NM(Clearing)	3.50	-20
	<b>02/29/08</b>	<b>77.0</b>	<b>1095</b>	<b>19.7</b>	<b>Clear</b>	<b>5.20</b>	<b>120</b>

Notes:

- C = Degrees Centigrade
- mg/L = milligrams per liter
- mV = millivolts
- MW= Monitoring Well
- NM = Not Measured
- NTU = Nephelometric Turbidity Units
- umhos/cm Micromhos per centimeter
- NS = Not Sampled (Dry)
- Bold = Not Previously Reported**

**RM Associates**

**TABLE 5 - GROUNDWATER ANALYTICAL RESULTS  
Rotten Robbie 64, 4186 East Avenue, Livermore, California**

Well No.	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethyl benzene (ug/L)	Total Xylenes (ug/L)	TPH as Gasoline (ug/L)
Analytical Method		8260B	8260B	8260B	8260B	GC-MS
MW-1	05/07/07	150	7.0	620	160	4,800
	11/30/07	30	1.2	130	1.9	600
	<b>02/29/08</b>	<b>190</b>	<b>&lt;10</b>	<b>1,100</b>	<b>130</b>	<b>4,800</b>
MW-2	05/07/07	<0.5	<0.5	<0.5	<0.5	<50
	11/30/07	NS(DRY)	NS(DRY)	NS(DRY)	NS(DRY)	NS(DRY)
	<b>02/29/08</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>31</b>
MW-3	05/07/07	<0.5	<0.5	<0.5	<0.5	<50
	11/30/07	<0.5	<0.5	<0.5	<0.5	<25
	<b>02/29/08</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;25</b>

Notes:

MW = Monitoring Well  
 TPH = Total Petroleum Hydrocarbons  
 ug/L = Micrograms per liter (ppb)  
 NS = Not Sampled or Analyzed  
**Bold = Not Previously Reported**

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**TABLE 6- GROUNDWATER ANALYTICAL RESULTS  
Oxygenates and Chlorinated Hydrocarbons  
Rotten Robbie 64, 4186 East Avenue, Livermore, California**

Well No.	Sample Date	TBA (ug/L)	MTBE (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	1,2 DCA (ug/L)	EDB (ug/L)
Analytical Method		8260B	8260B	8260B	8260B	8260B	8260B	8260B
MW-1	05/07/07	<100	<b>310</b>	<50	<50	<50	<5	<5
	11/30/07	<20	180	<10	<10	<10	<1	<1
	<b>02/29/08</b>	<b>&lt;200</b>	<b>330</b>	<b>&lt;100</b>	<b>&lt;100</b>	<b>&lt;100</b>	<b>&lt;10</b>	<b>&lt;10</b>
MW-2	05/07/07	<10	<1	<5	<5	<5	<0.5	<0.5
	11/30/07	NS(DRY)	NS(DRY)	NS(DRY)	NS(DRY)	NS(DRY)	NS(DRY)	NS(DRY)
	<b>02/29/08</b>	<b>&lt;10</b>	<b>&lt;1</b>	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>
MW-3	05/07/07	<10	<1	<5	<5	<5	<0.5	<0.5
	11/30/07	<10	<1	<5	<5	<5	<0.5	<0.5
	<b>02/29/08</b>	<b>&lt;10</b>	<b>&lt;1</b>	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>

Notes:

1,2 DCA = 1, 2 Dichloroethane  
 DIPE = Di-Isopropyl Ether  
 EDB = Ethylene Dibromide  
 ETBE = Ethyl tert-Butyl Ether  
 MTBE = Methyl tert-Butyl Ether  
 MW = Monitoring Well  
 TAME = tert-Amyl Methyl Ether  
 TBA = tert-Butyl Alcohol (tert-Butanol)  
 ug/L = Micrograms per liter (ppb)  
 NS= Not Sampled or Analyzed  
**Bold = Not Previously Reported**



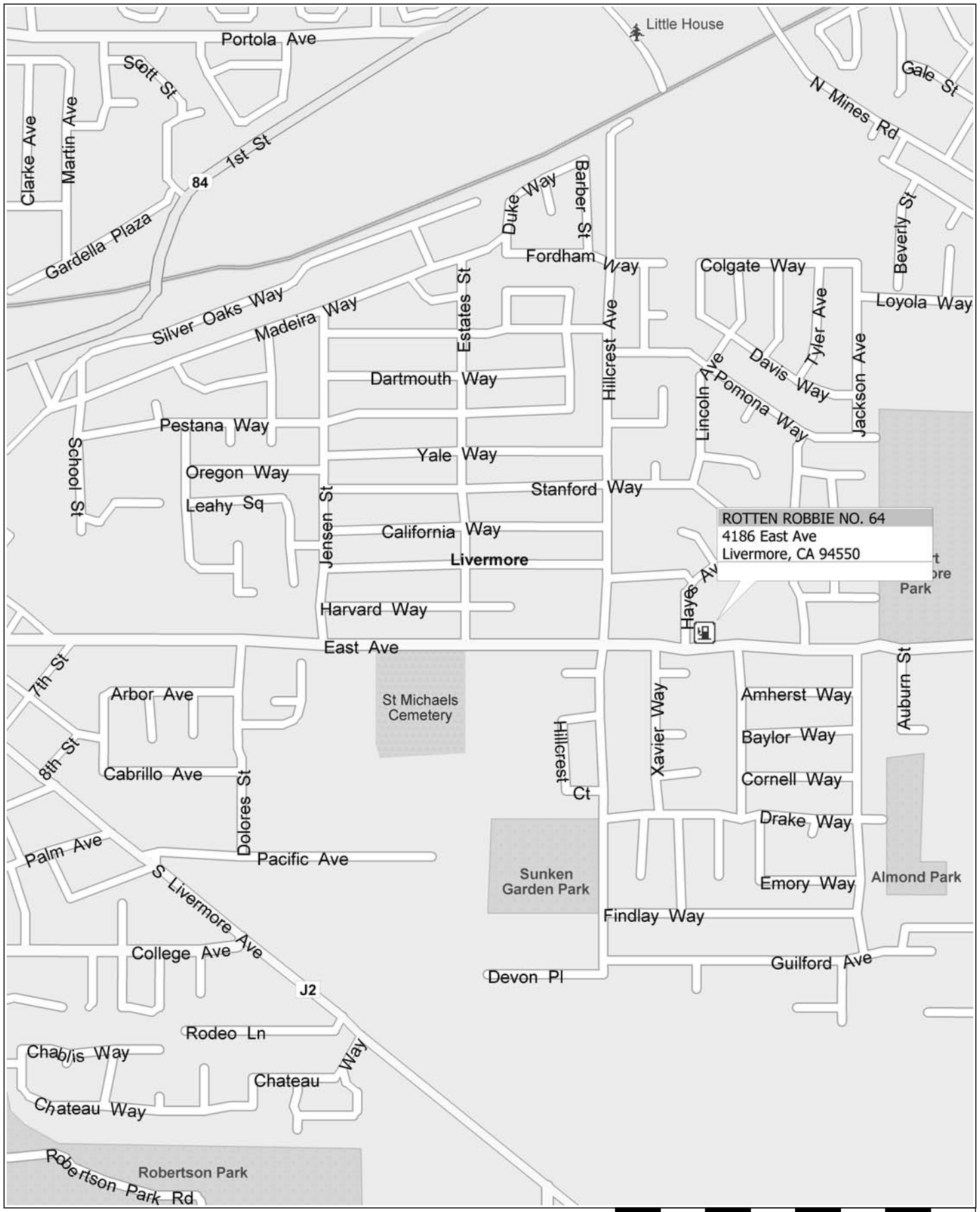
**RM Associates**

**TABLE 7 - GROUNDWATER MONITORING SCHEDULE**  
Rotten Robbie 64, 4186 East Avenue, Livermore, California

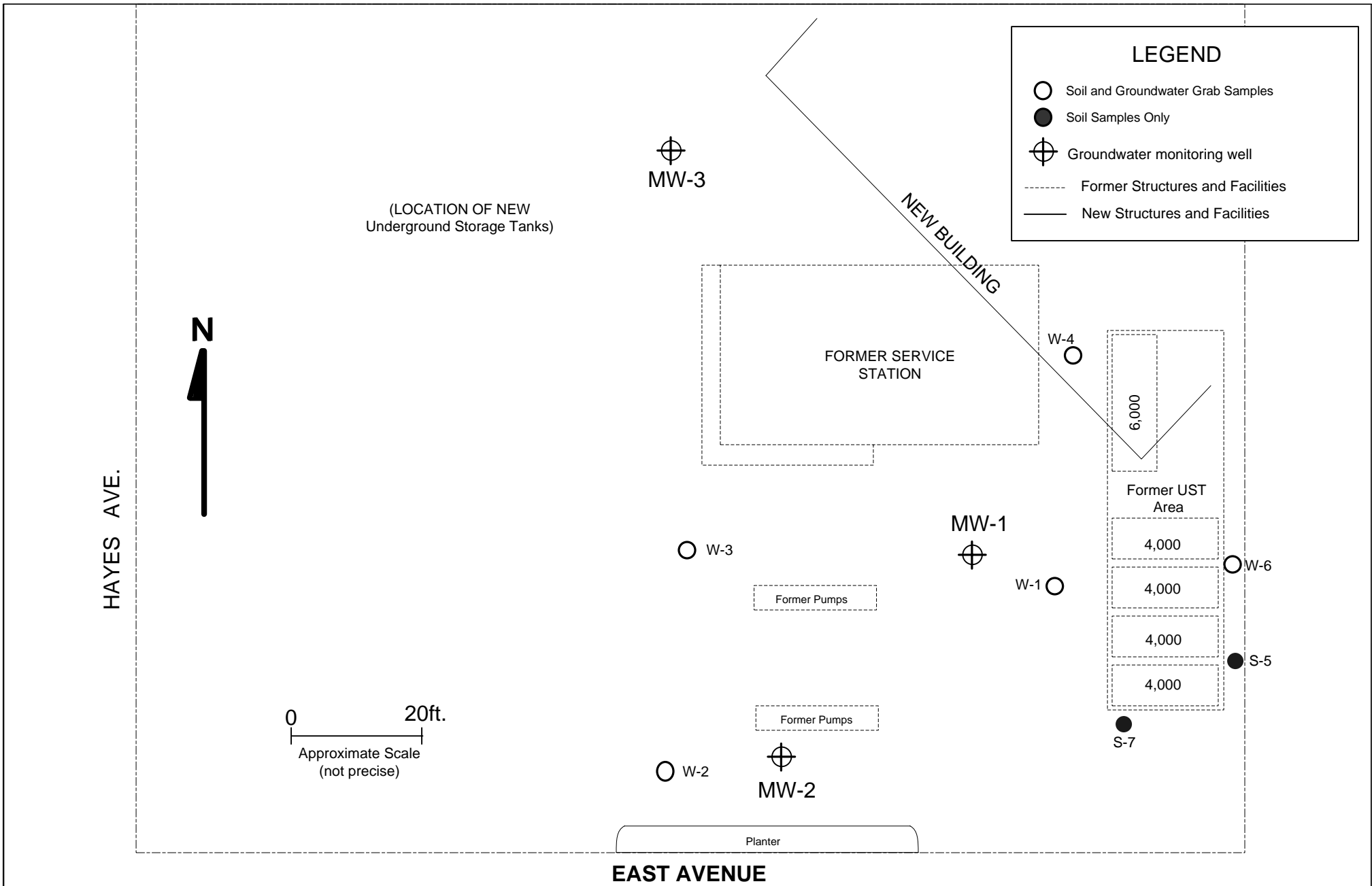
Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Water Level Measurement		X			X			X			X	
Water Sampling & Analysis		X			X			X			X	
Self-Monitoring Report			X			X			X			X

## FIGURES

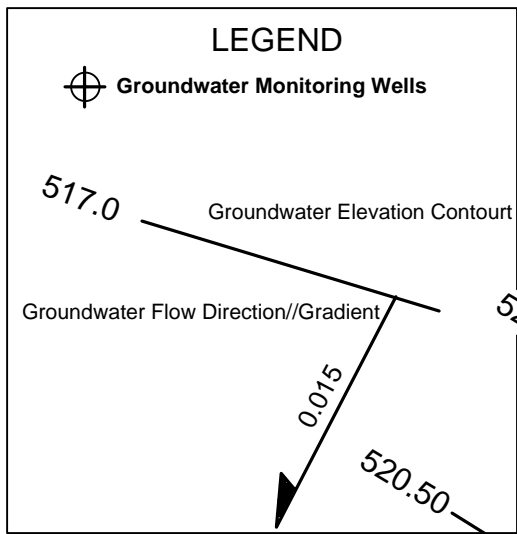
FIGURE 1 - VICINITY MAP



0 yds 200 400 600 800



<b>RM ASSOCIATES</b> Environmental Consultants	REVISED RM                      05/18/07	REVIEWED BY	<b>SITE MAP</b> (showing approximate locations of former and existing structures and former and existing sampling locations) 4186 EAST AVENUE, LIVERMORE, CALIFORNIA	FIGURE <b>2</b>
	8.5 x 11	REVIEW DATE		PROJECT 101-6404



MW-3  
521.00 521.09

NEW BUILDING

FORMER SERVICE STATION  
(NOW DEMOLISHED AND REMOVED)

FORMER UST AREA

MW-1  
520.76

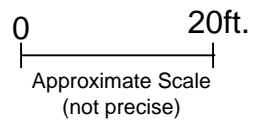
Former Pumps

Former Pumps

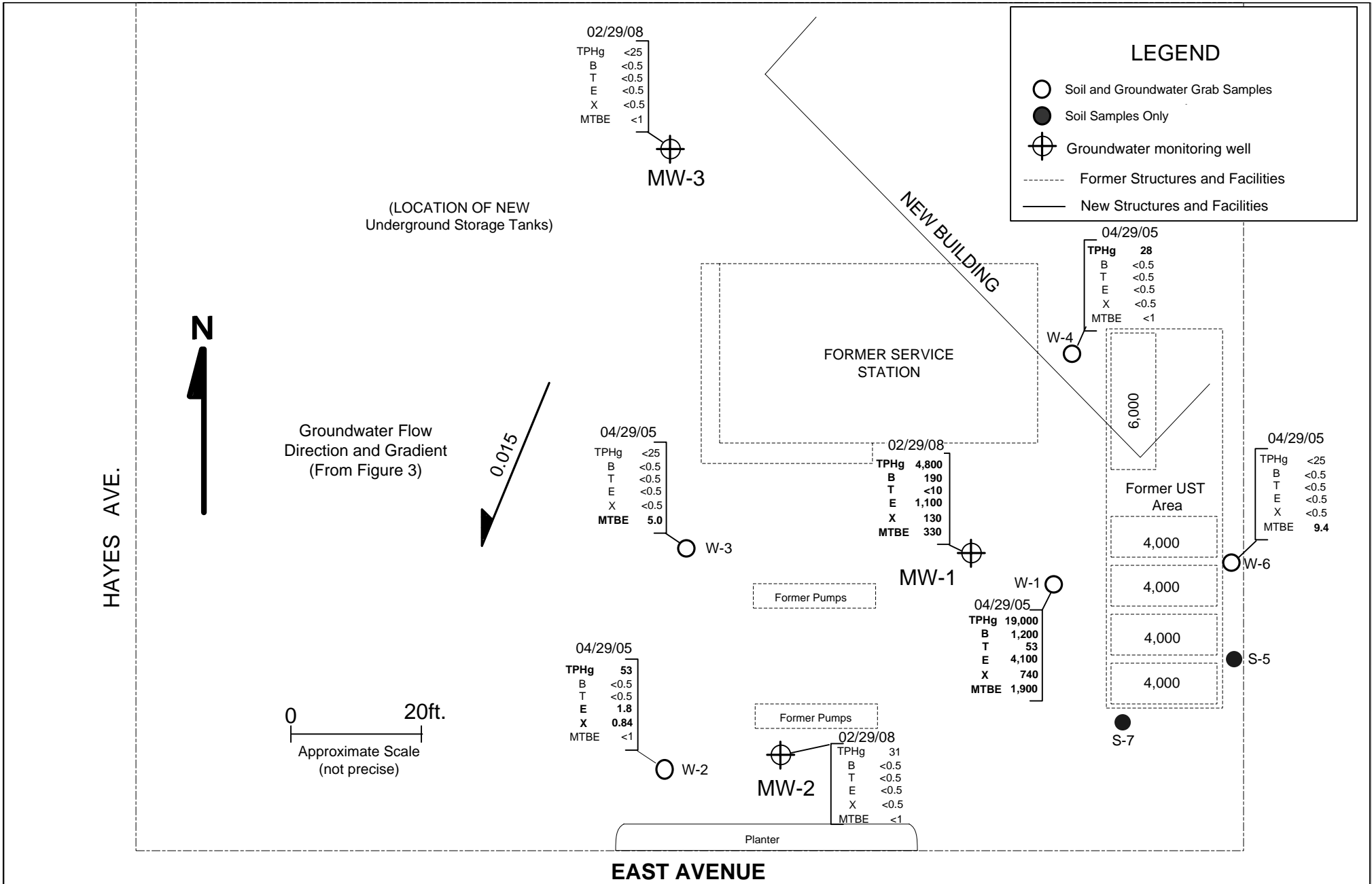
MW-2  
520.29

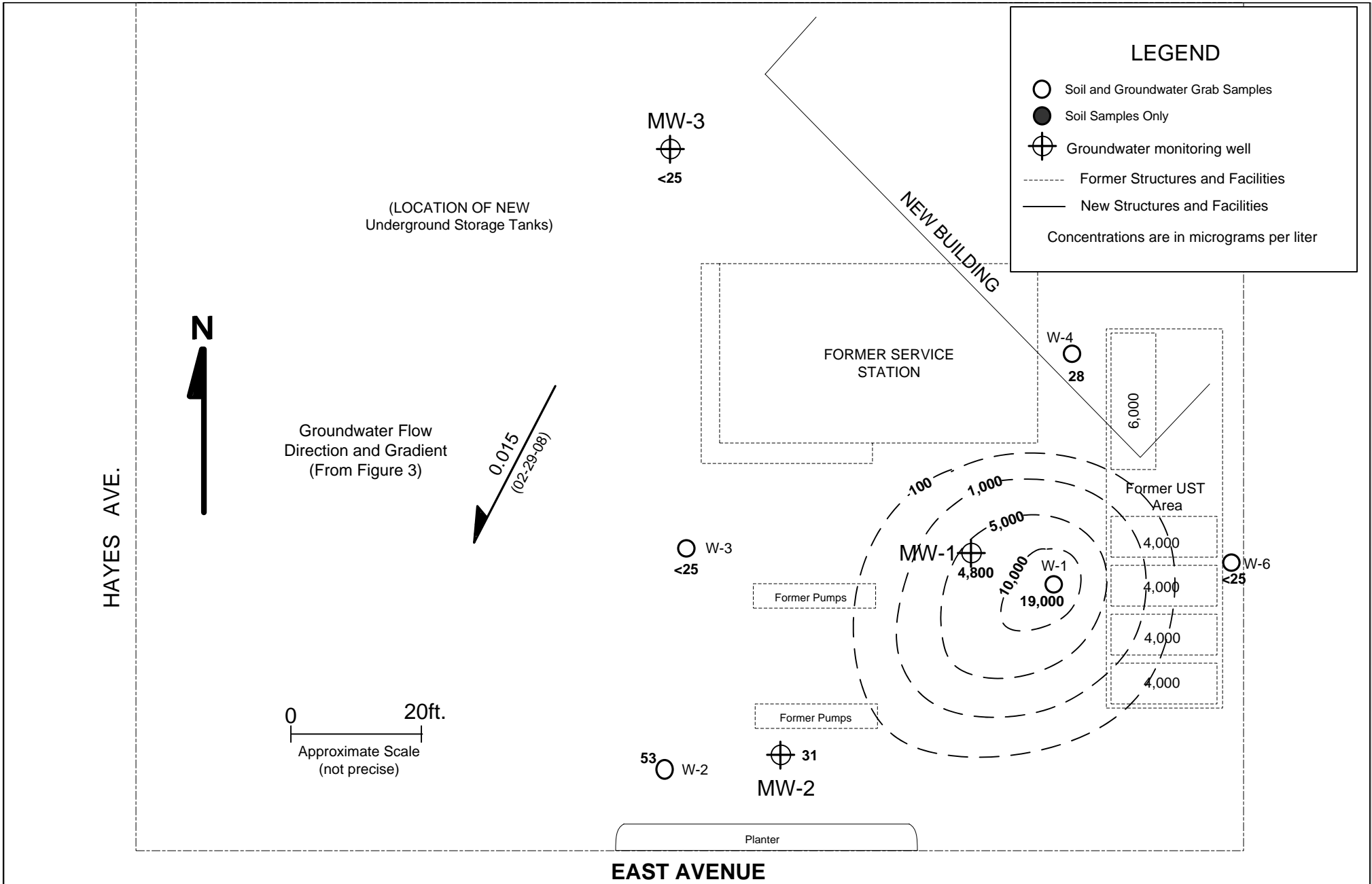
Planter

HAYES AVE.

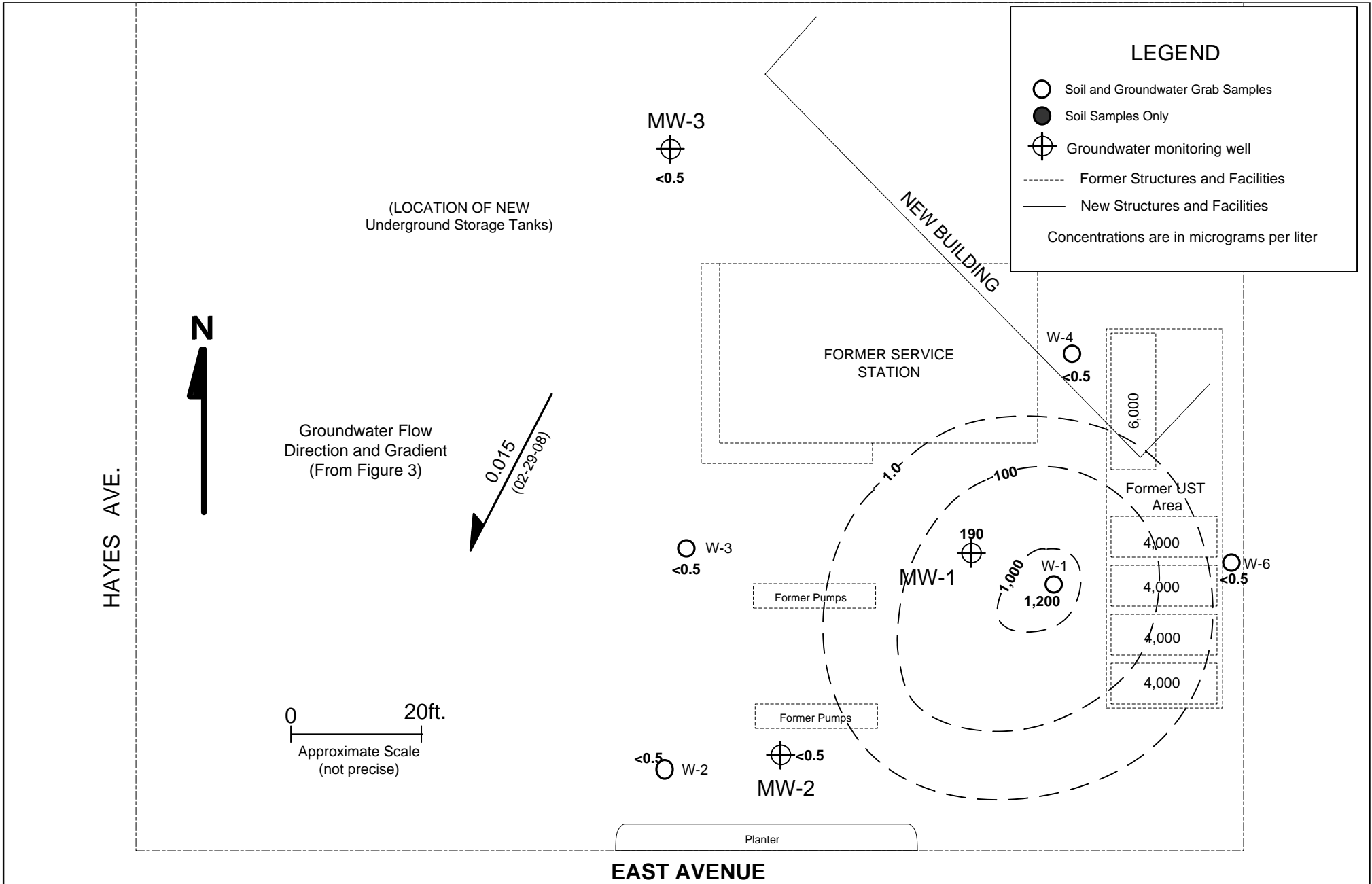


EAST AVENUE



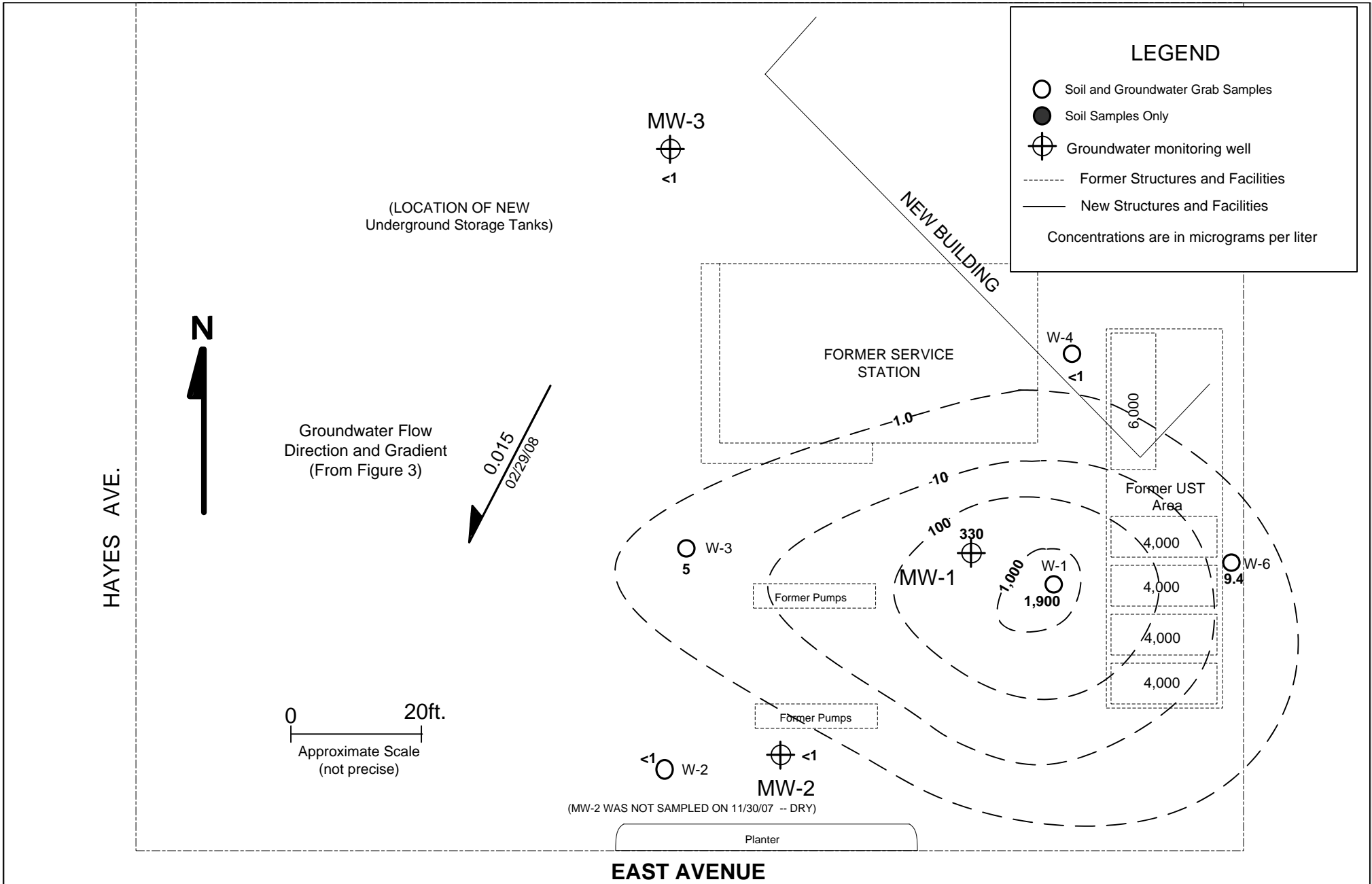


<b>RM ASSOCIATES</b> Environmental Consultants	REVISED	REVIEWED BY	<b>ISO-CONCENTRATION CONTOURS FOR TPHg</b> (Contours Based on Last Sampling Event at Each Sampling Location)  4186 EAST AVENUE, LIVERMORE, CALIFORNIA	FIGURE
	RM	05/18/07		5
	8.5 x 11	REVIEW DATE	PROJECT	101-6404



<b>RM ASSOCIATES</b> Environmental Consultants	REVISED	REVIEWED BY	<b>ISO-CONCENTRATION CONTOURS FOR BENZENE</b> (Contours Based on Last Sampling Event at Each Sampling Location)	FIGURE
	RM	05/18/07		
	8.5 x 11		REVIEW DATE	PROJECT
			4186 EAST AVENUE, LIVERMORE, CALIFORNIA	





<b>RM ASSOCIATES</b> Environmental Consultants	REVISED	REVIEWED BY	<b>ISO-CONCENTRATION CONTOURS FOR MTBE</b> (Contours Based on Last Sampling Event at Each Sampling Location)  4186 EAST AVENUE, LIVERMORE, CALIFORNIA	FIGURE
	RM	05/18/07		7
	8.5 x 11	REVIEW DATE	PROJECT	101-6404

## **APPENDICES**

**APPENDIX A**  
**GROUNDWATER SAMPLING PROCEDURES**

## **APPENDIX A**

### **GROUNDWATER SAMPLING PROCEDURES**

Field sampling procedures include a daily log of project activities, sample collection logs, and proper chain-of-custody records. Procedures for sample collection are described in the following sections.

The static water level in each well and the depth to the bottom of each well will be measured and a water sample collected. The water level will be measured using an electronic water level indicator. Prior to collection of the water sample, each well will be purged utilizing Teflon, disposable, or stainless steel bailer or an air diaphragm pump. If possible, three to four well volumes of standing water will be removed to draw a representative groundwater sample into the well from the surrounding soil. Temperature, pH, and specific conductance measurements will be obtained from each well after the removal of each well volume. When evacuation is completed, water samples will be collected.

If the recharge rate in the well is slower than the purging rate, the well will be purged dry. The well will be allowed to recharge and groundwater samples will be collected when the water has recharged to approximately 80 percent of its original level prior to purging. If the well is slow to recover, a water sample will be collected when enough water has collected to allow for sampling.

A disposable or clean Teflon bailer will be used to collect the water sample. Water samples will be placed in appropriate containers with appropriate preservative. Sample containers will be filled to the top, capped, and sealed.

The purged groundwater will be placed in sealed and labeled 55-gallon steel drums and stored on-site.

#### **Equipment Decontamination Procedures**

Rigorous cleaning procedures will be followed during sample collection to prevent cross-contamination. Sampling devices will be washed with a non-phosphate detergent, rinsed with distilled water, and rinsed again with distilled water before use and between sample collection points. Otherwise, disposable sampling bailers will be used. The sampling devices to be cleaned in this manner will include pumps and the bailers. Proper protective gloves will be worn while collecting samples.

#### **Field Quality Control Samples**

Quality control samples will be used to determine the integrity of the sampling activities, the impact of sample matrices and ambient field conditions, and to demonstrate that laboratories are operating within the prescribed requirements for precision and accuracy. The frequency and procedures for field-generated quality control samples to be utilized in this project are as follows:

Trip Blank - A trip blank, prepared by the laboratory, will be carried into the field and transported along with field samples. Quality control sampling will be documented in field log sheets by the sampler.

#### **Sample Preservation, Identification, and Custody Control**

Sample Preservation - All samples will be sealed in airtight plastic bags and placed in a refrigerated chest for preservation immediately after collection.

Sample Identification - The field geologist or sampling technician will identify all samples taken in the field by using a pre-printed sample label attached to the sample container. The sample label will include the following information:

- Project name and number;
- A unique sample identification number;
- The date, time, and location of sample collection;
- The initials of the sampler.

### **Chain-of-Custody Record and Shipment of Samples to the Laboratory**

All samples will be documented using standard chain-of-custody procedure, packed in a refrigerated chest, and delivered to a state-certified laboratory for testing.

**APPENDIX B**  
**PURGE/SAMPLING WORKSHEETS**

**GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET**

Project Name: Rotken Robinc #64 Project Number: \_\_\_\_\_  
 Address: \_\_\_\_\_ Reg. Agency: \_\_\_\_\_  
 Other Req's.: \_\_\_\_\_  
 Well Number: MW-1 Date: 2/29/08 Well Lock Number: \_\_\_\_\_

Sampler(s): Jim Pavick  
 Stagnant Volume Calculation: Well Casing Diameter (inches) 2" Total Well Depth (ft.) 29.70 Initial Depth to Groundwater (ft.) 18.74 Stagnant Volume (gal.) 1.75

**Stagnant Volume Calculation**

Well Casing Diameter (inches)	Linear Feet of Groundwater	Gallons per Linear Foot of Groundwater	Stagnant Volume (gal.)
2"	Total Well Depth (ft.)	0.17	
4"	Depth to GW (ft.)	0.66	
8"		1.5	

**Groundwater Surface Inspection (bailer check)**

0 Floating Product (ft.) (in.)  
NONE Sheen/Iridescence  
NONE Odor  
 Remarks: DO: 1.2 ORP 122

Date: 2/29/08 Time: 1430

Groundwater Purging: Purge Method Used Stainless Steel Baller; Submersible Pump Purged Water Containment  
Other: 12V Pump gals stored in 55 gal drum(s)  
Any previous drums? Capacity

Stagnant Volumes Purged	Volume Purged (gal)	Time	Temp. of °C	pH	Conductivity umhos us	Color/Turbidity (other)
0	0	1336	20.4	7.5	795	Clear
1	2	1338	19.9	7.5	769	"
2	4	1339	19.9	7.5	1172	"
3	6	1341	19.9	7.5	1171	"
4	8	1343	19.9	7.5	1173	"
5						
6						
7						
8						
9						
10						

Groundwater Sampling: Water Level Recovery Sample Containers  
 (P) After purging 23.00 1 liter, amber glass 1 How Many? 1 Preservatives? NONE  
 (I) Initially 18.74 40 ml, VOA 4 HEL PH 2  
 (S) Before sampling 19.00 500 ml, polypropylene \_\_\_\_\_  
 (P-S) / (P-I) x 100 = 93 % Total Recovery  
80% Recovery: S = P - 0.8 x (P-I)

**GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET**

Project Name: Rotten Robbie H 64 Project Number: \_\_\_\_\_  
 Address: \_\_\_\_\_ Reg. Agency: \_\_\_\_\_  
 \_\_\_\_\_ Other Req's.: \_\_\_\_\_  
 Well Number: MW-3 Date: 2/29/09 Well Lock Number: \_\_\_\_\_

Sampler(s): Jim Pavels

Stagnant Volume Calculation	Well Casing Diameter (inches)	Total Well Depth (ft.)	Initial Depth to Groundwater (ft.)	Stagnant Volume (gal.)
	<u>2"</u>	<u>30.00</u>	<u>18.67</u>	<u>1.81</u>

**Stagnant Volume Calculation**

Well Casing Diameter (inches)	Linear Feet of Groundwater	Gallons per Linear Foot of Groundwater	Stagnant Volume (gal.)
2	Total Well Depth (ft.)	0.17	
	Depth to GW (ft.)	0.68	
		1.5	

**Groundwater Surface Inspection (bailer check)**

0 Floating Product (ft.) (in.)  
NONE Sheen/Iridescence  
NONE Odor  
 Remarks: DO: 5-2 ORP 120  
 Date: 2/29/09 Time: 1415

Groundwater Purging: Stainless Steel Bailer / Submersible Pump / Other: 12 V. Pump

Purged Water Containment: \_\_\_\_\_ gals stored in \_\_\_\_\_ 55 gal drum(s)  
 Any previous drums? \_\_\_\_\_ Capacity \_\_\_\_\_

Stagnant Volumes Purged	Volume Purged (gal)	Time	Temp. of °C	pH	Conductivity umhos us	Color/Turbidity (other)
0	<u>0</u>	<u>13:22</u>	<u>20.4</u>	<u>7.7</u>	<u>790</u>	<u>Clear</u>
1	<u>2</u>	<u>13:24</u>	<u>19.8</u>	<u>7.7</u>	<u>1114</u>	<u>"</u>
2	<u>4</u>	<u>13:26</u>	<u>19.7</u>	<u>7.7</u>	<u>1099</u>	<u>"</u>
3	<u>6</u>	<u>13:28</u>	<u>19.7</u>	<u>7.7</u>	<u>1095</u>	<u>"</u>
4						
5						
6						
7						
8						
9						
10						

Groundwater Sampling: Water Level Recovery / Sample Containers

	Depth to GW (ft.)	How Many?	Preservatives?
(P) After purging	<u>21.00</u>	<u>1</u>	<u>NONE</u>
(I) Initially	<u>18.67</u>	<u>1</u>	<u>HCL pH 2</u>
(S) Before sampling	<u>18.67</u>		

(P-S) / (P-I) x 100 = 100 % Total Recovery  
 80% Recovery: S = P - 0.8 x (P-I)



**GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET**

Project Name: Rutter Rubric #44 Project Number: \_\_\_\_\_  
 Address: \_\_\_\_\_ Reg. Agency: \_\_\_\_\_  
 Other Req's: \_\_\_\_\_  
 Well Number: MW-2 Date: 2/29/08 Well Lock Number: \_\_\_\_\_

Sampler(s): Jim Parick  
 Stagnant Volume Calculation: Well Casing Diameter (inches) 2" Total Well Depth (ft.) 28.20 Initial Depth to Groundwater (ft.) 18.86 Stagnant Volume (gal.) 1.44

**Stagnant Volume Calculation**

Well Casing Diameter (inches)	Linear Feet of Groundwater	Gallons per Linear Foot of Groundwater	Stagnant Volume (gal.)
2	Total Well Depth (ft.)	0.17	
4	Depth to GW (ft.)	0.66	
8		1.5	

Groundwater Surface Inspection (baller check)  
 Floating Product (ft.) (in.)  
None Sheen/Iridescence  
None Odor  
 Remarks: DO: .9 ORP: 118

Date: 2/29/08 Time: 14:00

Groundwater Purging: Purge Method Used Stainless Steel Baller; Submersible Pump 12v Pump  
 Purged Water Containment: \_\_\_\_\_ gals stored in \_\_\_\_\_ 55 gal drum(s)  
 Any previous drums? \_\_\_\_\_ Capacity \_\_\_\_\_

Stagnant Volumes Purged	Volume Purged (gal)	Time	Temp. of °C	pH	Conductivity umhos us	Color/Turbidity (other)
0	<u>0</u>	<u>13:09</u>	<u>20.5</u>	<u>7.9</u>	<u>1082</u>	<u>Clear</u>
1	<u>1.5</u>	<u>13:10</u>	<u>20.0</u>	<u>7.8</u>	<u>1038</u>	<u>"</u>
2	<u>3.0</u>	<u>13:11</u>	<u>19.9</u>	<u>7.7</u>	<u>1030</u>	<u>"</u>
3	<u>4.5</u>	<u>13:13</u>	<u>19.9</u>	<u>7.7</u>	<u>1031</u>	<u>"</u>
4						
5						
6						
7						
8						
9						
10						

Groundwater Sampling: Water Level Recovery  
 Depth to GW (ft.)  
 (P) After purging 21.50  
 (I) Initially 18.86  
 (S) Before sampling 18.86  
 (P-S) / (P-I) x 100 = 100 % Total Recovery

Sample Containers  
 1 liter, amber glass 1  
 40 ml, VOA 4  
 500 ml, polypropylene \_\_\_\_\_

How Many? \_\_\_\_\_ Preservatives? None  
Acc PH 2

**80% Recovery: S = P - 0.8 x (P-I)**

Rotten Robbie # 64 Water Levels 2/29/08

MW-1	18.74
MW-2	18.86
MW-3	18.67

**APPENDIX C**  
**CERTIFIED ANALYTICAL RESULTS**

Northern California 3334 Victor Court, Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

**Ron Michelson**  
**RM Associates**  
**16401 Meadow Vista Drive, Suite 102**  
**Pioneer, CA 95666**

**Lab Order Number: 59902**  
**Issued: 03/07/2008**

**Project Number: 101-6404**  
**Project Name: Rotten Robbie No. 64**  
**Project Location: 4186 East Avenue, Livermore, California**

**P.O. Number: Invoice Robinson Oil Corp.**  
**Directly**  
**Global ID: T0600152516**

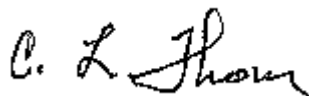
## Certificate of Analysis - Final Report

On February 29, 2008, samples were received under chain of custody for analysis.  
Entech analyzes samples "as received" unless otherwise noted. The following results are included:

<u>Matrix</u>	<u>Test / Comments</u>
Liquid	VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater Electronic Deliverables for Geotracker TPH-Purgeable - GC/MS: EPA 5030B / GC/MS TPH-Extractable: EPA 3510C / EPA 8015B(M)

Entech Analytical Labs, Inc. is certified for environmental analyses by the State of California (#2346).  
Subcontracted work is the responsibility of the subcontract laboratory, this includes turn-around-time and data quality.  
If you have any questions regarding this report, please call us at 408-588-0200 ext. 225.

Sincerely,



C. L. Thom  
Laboratory Director



Northern California

3334 Victor Court, Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

**RM Associates**  
**16401 Meadow Vista Drive, Suite 102**  
**Pioneer, CA 95666**  
**Attn: Ron Michelson**

Project Number: 101-6404  
 Project Name: Rotten Robbie No. 64  
 Project Location: 4186 East Avenue, Livermore, California  
 GlobalID: T0600152516  
 P.O. Number: Invoice Robinson Oil Corp. Directly  
 Samples Received: 02/29/2008  
 Sample Collected by: Client

## Certificate of Analysis - Data Report

**Lab # :** 59902-001    **Sample ID:** MW-1    **Matrix:** Liquid    **Sample Date:** 2/29/2008    2:20 PM

### TPH-Extractable: EPA 3510C / EPA 8015B(M)

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	850		0.96	48	µg/L	3/4/2008	WDA080304	3/5/2008	WDA080304
Not a typical pattern. Higher boiling gasoline compounds in the Diesel range (C9-C16).									

Surrogate	Surrogate Recovery	Control Limits (%)	Analyzed by:
n-Hexacosane	101	50 - 150	JHsiang
			Reviewed by: mtran

### VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	190		20	10	µg/L	N/A	N/A	3/5/2008	WM7080305
Toluene	ND		20	10	µg/L	N/A	N/A	3/5/2008	WM7080305
Ethyl Benzene	1100		20	10	µg/L	N/A	N/A	3/5/2008	WM7080305
Xylenes, Total	130		20	10	µg/L	N/A	N/A	3/5/2008	WM7080305
Methyl-t-butyl Ether	330		20	20	µg/L	N/A	N/A	3/5/2008	WM7080305
tert-Butyl Ethyl Ether	ND		20	100	µg/L	N/A	N/A	3/5/2008	WM7080305
tert-Butanol (TBA)	ND		20	200	µg/L	N/A	N/A	3/5/2008	WM7080305
Diisopropyl Ether	ND		20	100	µg/L	N/A	N/A	3/5/2008	WM7080305
tert-Amyl Methyl Ether	ND		20	100	µg/L	N/A	N/A	3/5/2008	WM7080305
1,2-Dichloroethane	ND		20	10	µg/L	N/A	N/A	3/5/2008	WM7080305
1,2-Dibromoethane (EDB)	ND		20	10	µg/L	N/A	N/A	3/5/2008	WM7080305

Surrogate	Surrogate Recovery	Control Limits (%)	Analyzed by:
4-Bromofluorobenzene	96.6	60 - 130	Bela
Dibromofluoromethane	93.2	60 - 130	Reviewed by: MaiChiTu
Toluene-d8	96.7	60 - 130	

### TPH-Purgeable - GC/MS: EPA 5030B / GC/MS

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	4800		20	500	µg/L	N/A	N/A	3/5/2008	WM7080305

Surrogate	Surrogate Recovery	Control Limits (%)	Analyzed by:
4-Bromofluorobenzene	95.0	60 - 130	Bela
Dibromofluoromethane	94.3	60 - 130	Reviewed by: MaiChiTu
Toluene-d8	95.1	60 - 130	



Northern California

3334 Victor Court, Santa Clara, CA 95054

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RM Associates  
 16401 Meadow Vista Drive, Suite 102  
 Pioneer, CA 95666  
 Attn: Ron Michelson

Project Number: 101-6404  
 Project Name: Rotten Robbie No. 64  
 Project Location: 4186 East Avenue, Livermore, California  
 GlobalID: T0600152516  
 P.O. Number: Invoice Robinson Oil Corp. Directly  
 Samples Received: 02/29/2008  
 Sample Collected by: Client

## Certificate of Analysis - Data Report

Lab #: 59902-002      Sample ID: MW-2      Matrix: Liquid      Sample Date: 2/29/2008      2:00 PM

### TPH-Extractable: EPA 3510C / EPA 8015B(M)

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	ND		0.96	48	µg/L	3/4/2008	WDA080304	3/5/2008	WDA080304
<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					Analyzed by: JHsiang	
n-Hexacosane	103		50	- 150				Reviewed by: mtran	

### VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	ND		1.0	0.50	µg/L	N/A	N/A	3/5/2008	WM7080305
Toluene	ND		1.0	0.50	µg/L	N/A	N/A	3/5/2008	WM7080305
Ethyl Benzene	ND		1.0	0.50	µg/L	N/A	N/A	3/5/2008	WM7080305
Xylenes, Total	ND		1.0	0.50	µg/L	N/A	N/A	3/5/2008	WM7080305
Methyl-t-butyl Ether	ND		1.0	1.0	µg/L	N/A	N/A	3/5/2008	WM7080305
tert-Butyl Ethyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	3/5/2008	WM7080305
tert-Butanol (TBA)	ND		1.0	10	µg/L	N/A	N/A	3/5/2008	WM7080305
Diisopropyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	3/5/2008	WM7080305
tert-Amyl Methyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	3/5/2008	WM7080305
1,2-Dichloroethane	ND		1.0	0.50	µg/L	N/A	N/A	3/5/2008	WM7080305
1,2-Dibromoethane (EDB)	ND		1.0	0.50	µg/L	N/A	N/A	3/5/2008	WM7080305
<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					Analyzed by: Bela	
4-Bromofluorobenzene	97.4		60	- 130				Reviewed by: MaiChiTu	
Dibromofluoromethane	97.4		60	- 130					
Toluene-d8	96.8		60	- 130					

### TPH-Purgeable - GC/MS: EPA 5030B / GC/MS

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	31		1.0	25	µg/L	N/A	N/A	3/5/2008	WM7080305
<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					Analyzed by: Bela	
4-Bromofluorobenzene	95.8		60	- 130				Reviewed by: MaiChiTu	
Dibromofluoromethane	99.0		60	- 130					
Toluene-d8	95.1		60	- 130					

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

D/P-F = Dilution and/or Prep Factor includes sample volume adjustments.

Qual = Data Qualifier



Northern California

3334 Victor Court, Santa Clara, CA 95054

Phone: (408) 588-0200

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RM Associates  
 16401 Meadow Vista Drive, Suite 102  
 Pioneer, CA 95666  
 Attn: Ron Michelson

Project Number: 101-6404  
 Project Name: Rotten Robbie No. 64  
 Project Location: 4186 East Avenue, Livermore, California  
 GlobalID: T0600152516  
 P.O. Number: Invoice Robinson Oil Corp. Directly  
 Samples Received: 02/29/2008  
 Sample Collected by: Client

## Certificate of Analysis - Data Report

Lab #: 59902-003      Sample ID: MW-3      Matrix: Liquid      Sample Date: 2/29/2008      2:15 PM

### TPH-Extractable: EPA 3510C / EPA 8015B(M)

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	ND		0.96	48	µg/L	3/4/2008	WDA080304	3/5/2008	WDA080304
<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					Analyzed by: JHsiang	
n-Hexacosane	103		50	- 150				Reviewed by: mtran	

### VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	ND		1.0	0.50	µg/L	N/A	N/A	3/4/2008	WM7080304
Toluene	ND		1.0	0.50	µg/L	N/A	N/A	3/4/2008	WM7080304
Ethyl Benzene	ND		1.0	0.50	µg/L	N/A	N/A	3/4/2008	WM7080304
Xylenes, Total	ND		1.0	0.50	µg/L	N/A	N/A	3/4/2008	WM7080304
Methyl-t-butyl Ether	ND		1.0	1.0	µg/L	N/A	N/A	3/4/2008	WM7080304
tert-Butyl Ethyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	3/4/2008	WM7080304
tert-Butanol (TBA)	ND		1.0	10	µg/L	N/A	N/A	3/4/2008	WM7080304
Diisopropyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	3/4/2008	WM7080304
tert-Amyl Methyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	3/4/2008	WM7080304
1,2-Dichloroethane	ND		1.0	0.50	µg/L	N/A	N/A	3/4/2008	WM7080304
1,2-Dibromoethane (EDB)	ND		1.0	0.50	µg/L	N/A	N/A	3/4/2008	WM7080304
<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					Analyzed by: Bela	
4-Bromofluorobenzene	92.5		60	- 130				Reviewed by: MaiChiTu	
Dibromofluoromethane	93.5		60	- 130					
Toluene-d8	97.3		60	- 130					

### TPH-Purgeable - GC/MS: EPA 5030B / GC/MS

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	ND		1.0	25	µg/L	N/A	N/A	3/4/2008	WM7080304
<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					Analyzed by: Bela	
4-Bromofluorobenzene	91.0		60	- 130				Reviewed by: MaiChiTu	
Dibromofluoromethane	94.3		60	- 130					
Toluene-d8	95.7		60	- 130					

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

D/P-F = Dilution and/or Prep Factor includes sample volume adjustments.

Qual = Data Qualifier

3/7/2008 11:52:33 AM - eling

**Method Blank - Liquid - TPH-Extractable: EPA 3510C / EPA 8015B(M)**

**QC/Prep Batch ID: WDA080304**

Validated by: mtran - 03/04/08

**QC/Prep Date: 3/4/2008**

Parameter	Result	DF	PQLR	Units
TPH as Diesel	ND	1	50	µg/L
<b>Surrogate for Blank</b>	<b>% Recovery</b>	<b>Control Limits</b>		
n-Hexacosane	87.7	50 - 150		

**LCS / LCSD - Liquid - TPH-Extractable: EPA 3510C / EPA 8015B(M)**

**QC Batch ID: WDA080304**

Reviewed by: mtran - 03/04/08

**QC/Prep Date: 3/4/2008**

**LCS**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
TPH as Diesel	<50	1000	757	µg/L	75.7	45 - 140
TPH as Motor Oil	<200	1000	666	µg/L	66.6	45 - 140
<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>				
n-Hexacosane	86.9	50 - 150				

**LCSD**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Diesel	<50	1000	809	µg/L	80.9	6.6	25.0	45 - 140
TPH as Motor Oil	<200	1000	717	µg/L	71.7	7.4	25.0	45 - 140
<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>						
n-Hexacosane	88.6	50 - 150						





Northern California 3334 Victor Court, Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

**Method Blank - Liquid - VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater**

**QC Batch ID: WM7080304**

Validated by: MaiChiTu - 03/05/08

**QC Batch Analysis Date: 3/4/2008**

Parameter	Result	DF	PQLR	Units
1,2-Dibromoethane (EDB)	ND	1	0.50	µg/L
1,2-Dichloroethane	ND	1	0.50	µg/L
Benzene	ND	1	0.50	µg/L
Diisopropyl Ether	ND	1	5.0	µg/L
Ethyl Benzene	ND	1	0.50	µg/L
Methyl-t-butyl Ether	ND	1	1.0	µg/L
tert-Amyl Methyl Ether	ND	1	5.0	µg/L
tert-Butanol (TBA)	ND	1	10	µg/L
tert-Butyl Ethyl Ether	ND	1	5.0	µg/L
Toluene	ND	1	0.50	µg/L
Xylenes, Total	ND	1	0.50	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	94.8	60 - 130
Dibromofluoromethane	91.1	60 - 130
Toluene-d8	99.5	60 - 130

**Method Blank - Liquid - TPH-Purgeable - GC/MS: EPA 5030B / GC/MS**

**QC Batch ID: WM7080304**

Validated by: MaiChiTu - 03/05/08

**QC Batch Analysis Date: 3/4/2008**

Parameter	Result	DF	PQLR	Units
TPH as Gasoline	ND	1	25	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	93.2	60 - 130
Dibromofluoromethane	92.4	60 - 130
Toluene-d8	97.8	60 - 130



**LCS / LCSD - Liquid - VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater**

**QC Batch ID: WM7080304**

Reviewed by: MaiChiTu - 03/05/08

**QC Batch ID Analysis Date: 3/4/2008**

**LCS**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
1,1-Dichloroethene	0.0	20	23.7	µg/L	119	70 - 130
Benzene	<0.50	20	21.8	µg/L	109	70 - 130
Chlorobenzene	0.0	20	21.7	µg/L	108	70 - 130
Methyl-t-butyl Ether	<1.0	20	20.2	µg/L	101	70 - 130
Toluene	<0.50	20	22.2	µg/L	111	70 - 130
Trichloroethene	0.0	20	22.5	µg/L	112	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	94.5	60 - 130
Dibromofluoromethane	97.5	60 - 130
Toluene-d8	94.3	60 - 130

**LCSD**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
1,1-Dichloroethene	0.0	20	21.0	µg/L	105	12	25.0	70 - 130
Benzene	<0.50	20	19.7	µg/L	98.4	10	25.0	70 - 130
Chlorobenzene	0.0	20	19.1	µg/L	95.5	13	25.0	70 - 130
Methyl-t-butyl Ether	<1.0	20	18.8	µg/L	94.1	7.0	25.0	70 - 130
Toluene	<0.50	20	19.7	µg/L	98.4	12	25.0	70 - 130
Trichloroethene	0.0	20	20.1	µg/L	100	11	25.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	96.5	60 - 130
Dibromofluoromethane	94.9	60 - 130
Toluene-d8	96.8	60 - 130

**LCS / LCSD - Liquid - TPH-Purgeable - GC/MS: EPA 5030B / GC/MS**

**QC Batch ID: WM7080304**

Reviewed by: MaiChiTu - 03/05/08

**QC Batch ID Analysis Date: 3/4/2008**

**LCS**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
TPH as Gasoline	<25	120	120	µg/L	96.3	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	91.1	60 - 130
Dibromofluoromethane	95.5	60 - 130
Toluene-d8	97.3	60 - 130

**LCSD**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Gasoline	<25	120	127	µg/L	101	5.0	25.0	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	94.3	60 - 130
Dibromofluoromethane	95.3	60 - 130
Toluene-d8	95.7	60 - 130



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**Method Blank - Liquid - VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater**

**QC Batch ID: WM7080305**

Validated by: MaiChiTu - 03/06/08

**QC Batch Analysis Date: 3/5/2008**

Parameter	Result	DF	PQLR	Units
1,2-Dibromoethane (EDB)	ND	1	0.50	µg/L
1,2-Dichloroethane	ND	1	0.50	µg/L
Benzene	ND	1	0.50	µg/L
Diisopropyl Ether	ND	1	5.0	µg/L
Ethyl Benzene	ND	1	0.50	µg/L
Methyl-t-butyl Ether	ND	1	1.0	µg/L
tert-Amyl Methyl Ether	ND	1	5.0	µg/L
tert-Butanol (TBA)	ND	1	10	µg/L
tert-Butyl Ethyl Ether	ND	1	5.0	µg/L
Toluene	ND	1	0.50	µg/L
Xylenes, Total	ND	1	0.50	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	94.9	60 - 130
Dibromofluoromethane	96.8	60 - 130
Toluene-d8	96.2	60 - 130

**Method Blank - Liquid - TPH-Purgeable - GC/MS: EPA 5030B / GC/MS**

**QC Batch ID: WM7080305**

Validated by: MaiChiTu - 03/06/08

**QC Batch Analysis Date: 3/5/2008**

Parameter	Result	DF	PQLR	Units
TPH as Gasoline	ND	1	25	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	93.3	60 - 130
Dibromofluoromethane	98.2	60 - 130
Toluene-d8	94.6	60 - 130



**LCS / LCSD - Liquid - VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater**

**QC Batch ID: WM7080305**

Reviewed by: MaiChiTu - 03/06/08

**QC Batch ID Analysis Date: 3/5/2008**

**LCS**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
1,1-Dichloroethene	0.0	20	23.1	µg/L	116	70 - 130
Benzene	<0.50	20	20.8	µg/L	104	70 - 130
Chlorobenzene	0.0	20	19.9	µg/L	99.5	70 - 130
Methyl-t-butyl Ether	<1.0	20	17.9	µg/L	89.3	70 - 130
Toluene	<0.50	20	20.8	µg/L	104	70 - 130
Trichloroethene	0.0	20	21.3	µg/L	107	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	95.5	60 - 130
Dibromofluoromethane	97.6	60 - 130
Toluene-d8	93.9	60 - 130

**LCSD**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
1,1-Dichloroethene	0.0	20	20.5	µg/L	102	12	25.0	70 - 130
Benzene	<0.50	20	19.5	µg/L	97.7	6.1	25.0	70 - 130
Chlorobenzene	0.0	20	18.7	µg/L	93.4	6.3	25.0	70 - 130
Methyl-t-butyl Ether	<1.0	20	17.5	µg/L	87.4	2.1	25.0	70 - 130
Toluene	<0.50	20	20.3	µg/L	102	2.1	25.0	70 - 130
Trichloroethene	0.0	20	19.7	µg/L	98.6	7.7	25.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	93.3	60 - 130
Dibromofluoromethane	93.9	60 - 130
Toluene-d8	96.0	60 - 130

**LCS / LCSD - Liquid - TPH-Purgeable - GC/MS: EPA 5030B / GC/MS**

**QC Batch ID: WM7080305**

Reviewed by: MaiChiTu - 03/06/08

**QC Batch ID Analysis Date: 3/5/2008**

**LCS**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
TPH as Gasoline	<25	120	122	µg/L	97.8	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	95.5	60 - 130
Dibromofluoromethane	98.4	60 - 130
Toluene-d8	96.3	60 - 130

**LCSD**

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Gasoline	<25	120	126	µg/L	101	3.4	25.0	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	94.4	60 - 130
Dibromofluoromethane	96.3	60 - 130
Toluene-d8	94.5	60 - 130



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MS / MSD - Liquid - VOCs: EPA 5030B / EPA 8260B for Groundwater and Water - EPA 624 for Wastewater

QC Batch ID: WM7080305

Reviewed by: MaiChiTu - 03/06/08

QC Batch ID Analysis Date: 3/5/2008

MS Sample Spiked: 59902-002

Parameter	Sample Result	DF	Spike Amount	Spike Result	Units	Analysis Date	% Recovery	Recovery Limits
Benzene	ND	1	20	24.7	µg/L	3/5/2008	124	70 - 130
Methyl-t-butyl Ether	ND	1	20	20.2	µg/L	3/5/2008	101	70 - 130
Toluene	ND	1	20	25.0	µg/L	3/5/2008	125	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	96.6	60 - 130
Dibromofluoromethane	98.4	60 - 130
Toluene-d8	95.4	60 - 130

MSD Sample Spiked: 59902-002

Parameter	Sample Result	DF	Spike Amount	Spike Result	Units	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
Benzene	ND	1	20	24.8	µg/L	3/5/2008	124	0.28	25.0	70 - 130
Methyl-t-butyl Ether	ND	1	20	19.6	µg/L	3/5/2008	98.0	3.2	25.0	70 - 130
Toluene	ND	1	20	25.0	µg/L	3/5/2008	125	0.23	25.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	93.4	60 - 130
Dibromofluoromethane	96.6	60 - 130
Toluene-d8	93.3	60 - 130



**APPENDIX D**  
**TRANSMITTAL LETTER**

# ROBINSON OIL CORPORATION



4250 WILLIAMS ROAD • SAN JOSE, CA 95129-3344  
(408) 257-2222 • FAX (408) 252-6591

**Rotten  
Robbie**

March 20, 2008

Mr. Ronald W. Michelson  
RM Associates  
16401 Meadow Vista Drive, Suite 102  
Pioneer, CA 95666  
FAX (209) 295-3974

Site Location: Rotten Robbie #64  
4186 East Avenue  
Livermore, CA

Report Title: Groundwater Monitoring Report No. 2 – 1<sup>st</sup> Quarter 2008

Report Date: March 19, 2008

Dear Mr. Michelson:

I have reviewed and approved the above referenced report. Please submit it to the regulatory agencies listed in the distribution section of the report. Should any of the listed regulatory agencies require it, I am prepared to declare, under penalty of perjury, that to the best of my knowledge the information in the above referenced report is true and correct.

Sincerely,

Thomas L. Robinson

