QUARTERLY REPORT JANUARY - MARCH 1998

TONY'S EXPRESS AUTO SERVICE
3609 EAST 14TH STREET
OAKLAND, CALIFORNIA

FOR

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BY

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1 INTRODUCTION

The following Report documents the performance of a groundwater monitoring round at Tony's Express Auto Services, 3609 East 14th Street, Oakland, California. The property is primarily used as a service station.

During the groundwater monitoring round the following information and samples were gathered; with the results presented in this report.

1. Depth to water

2. Groundwater samples for TPHg and BTEX, certified analysis.

2 SITE HISTORY

In July 1993, Alpha Geo Services removed three fuel tanks and a waste oil tank from the site. During the tank pull, Soil Tech Engineering Inc. (STE) collected soil samples from the tank excavation area and the old piping associated with the tanks. Soil samples from the tank area were taken at approximately 12 feet below the surface and range in TPHg concentration from 2.1 to 640 mg/kg . The soil samples from the beneath the old piping, 2 to 5 feet below grade, range in concentration from 75 to 4,100 mg/kg TPHg. No gasoline range hydrocarbons were found in the sample from the waste oil tank excavation.

Since the initial tank pull, STE has installed a total of 11 groundwater monitor wells including MW09, which has been destroyed (see figure 3 for location of wells). MW09 was destroyed to allow for construction.

In addition to the borings completed as monitor wells, a number of other soil borings have been performed in order to determine the extent of contaminated soil at the site.

3 GROUNDWATER MONITORING ROUND

A groundwater monitoring round was preformed on March 4, 1998, see Appendix A for methods and procedures. All of the wells, except MW03, which contained a floating product sheen, were purged and water samples for TPHg/BTEX were collected, see appendix A for methods.

4 RESULTS

4.1 DEPTH TO WATER, GROUNDWATER GRADIENT.

The groundwater at this site is shallow and unconfined. During the initial construction of monitor wells MW01, MW02 and MW03, groundwater was encountered at 15 feet below the surface. The current depth to groundwater in the wells is between 6.93 and 8.81 feet below the surface and the

groundwater gradient is to the south, see Figure 4. The groundwater is above the slots in MW01, MW02 and MW03, the original groundwater monitor wells, and in MW10. This is the result ofprobably due to recovery recharge of the aquifer after the drought. The hydraulic gradient for the site has a slope of 0.019 ft/ft.

4.2 WATER SAMPLES

4.2.1 TPHg/BTEX

The water samples from all of the wells contained significant levels of TPHg and BTEX, see Table 2.

5 DISCUSSION

5.1 HYDROCARBONS

Significant levels of TPHg and BTEX continue to exist at this site. MW01 contained a thin film of floating product. The benzene and TPHg plumes continue offsite, see Figures 6 and 7.

5.2 BIOREMEDIATION

The results of the December 30, 1997, bioremediation sampling indicate that natural attenuation/bioremediation is active at this site.

All of the wells show the negative impact or slowing of the active biodegradation.

All of the tested wells have reduced levels of dissolved oxygen. Six of the nine wells have less than 0.1 mg/l of dissolve oxygen.

Both Nitrate and Sulfate have been reduced from the levels found in MW04, with Nitrate being reduced to non-detectable levels in three wells and Sulfate in four wells, see table 3.

The presence of Ferrous iron in the wells indicates that biodegradation has progressed to the point that the system is oxygen deficient and the bacteria have started to reduce the iron to provide oxygen for the degradation.

Biodegradation in MW02, which is in the heart of the plume, has consumed all of the available electron acceptors.

The carbon dioxide (CO_2) levels in the groundwater indicate that a portion of the hydrocarbons have been degraded. CO_2 and water are the final by-products of biodegradation of hydrocarbons. The carbon in CO_2 results from the oxidation of the hydrocarbon radical CH_2 and as such 1 mg of $CO2 = 0.41$ mg of CH_2 (CH_2 (12+1+1 = 14) / (CO_2 (12+16+16=34). The amount of CO_2 in MW08, 153 mg/l, indicates that at least 62.73 mg/l of hydrocarbons have been oxidized.

in the absence of O2 and naturally occurring $CO_3^=$

The presence of methane (CH_4) indicates that a number of the wells have progressed into methogenesis.

The levels of electron acceptors present and the presence of the reaction products, carbon dioxide, methane and ferrous iron indicate that the bacteria in the soil and the compounds in the groundwater have the capability to consume a significant amount of hydrocarbons.

Introducing ambient air (O_2) into the system during vapor vacuum extraction and/or sparging will greatly increase this bioactivity.

Comparison of the hydrocarbon degrader counts (amount of bacteria) to the TPHg concentration, electron acceptors, byproducts, and nutrients, indicate that the phosphate and ammonia concentrations can have a significant effect on the bio-activity. As shown in table 3, just a small change in the phosphate level from 0.1 mg/l in MW01 to 0.4 mg/l in MW02 increased the hydrocarbon degraders count from 60 to 220 cfu/ml. This indicates that the addition of a small amount of phosphate to the system should increase the biodegradation rate.

A RBCA Tier Two risk assessment was preformed for the site in order to develop a further understanding of the risk to be expected from this site. The biodegradation capacity of the groundwater was also determined as part of the risk assessment. The water was found to have the capacity to consume 15.53 mg/l of hydrocarbons. Four of the wells contain greater than 20 mg/l of TPHg. This indicates that it would be beneficial to increase the biodegradation capacity of the aquifer. **The most cost beneficial way to do this is by adding dissolved oxygen.**

5.3 REGULATORY RESPONSE

A workplan for the augmenting the natural biodegradation at this site was developed during the first Quarter of 1998 at the request of Mr. Barney Chan, Environmental Health Services. He requested the workplan because the December 30, 1997 Bioremediation sampling indicated that it would be beneficial to augment the electron acceptors and other nutrients in the aquifer.

6 CONCLUSIONS

1. Begin to add sodium hexametaphosphate and ammonium sulfate to the groundwater monitoring wells, in order increase the nutrition level.

2. Install and start air sparging to increase Oxygen levels in the groundwater plume.

3. Perform a vapor extraction pilot test in order to determine the effectiveness of vapor extraction to remove the hydrocarbon contamination remaining in the soil, and to further increase the amount of oxygen available in the groundwater.

If you have any questions concerning this report or if we can be of further assistance, please don't hesitate to contact us at (530) 668-5300.

7 CONCERNED PARTIES

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8 LIMITATIONS

This report is based upon the following:

- The observations of field personnel.
- The results of laboratory analyses performed by a state certified laboratory.
- Referenced documents.
- Our understanding of the regulations of the State of California and Alameda County, Hazardous Materials Section and/or City of Oakland, California.

Changes in groundwater conditions can occur due to variations in rainfall, temperature, local and regional water usage and local construction practices. In addition, variations in the soil and groundwater conditions could exist beyond the points explored in this investigation.

State certified analytical results are included in this report. This laboratory follows EPA and State of California approved procedures; however, WEGE is not responsible for errors in these laboratory results.

The services performed by Western Geo-Engineers, a corporation, under California Registered Geologist #3037 and/or Contractors License #513857, have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California and the Woodland area. Our work and/or supervision of remediation and/or abatement operations, active or preliminary, at this site is in no way meant to imply that we are owners or operators of this site. Please note that known contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

If you have any questions concerning this report or if we can be of further assistance, please don't hesitate to contact us at (530) 668-5300.

Respectfully,

Roy Butler
Project Geologist

Jack E. Napper
Registered Geologist #3037

Table 1, Tony's Express, Groundwater Elevations			
	DEPTH TO TOP SLOTS	DEPTH TO WATER	DEPTH TO WATER
DATE		12/30/97	03/04/98
MW01	10	9.3	7.53
MW02	10	9.05	7.44
MW03	10	9.74	8.21
MW04	7	9.43	7.96
MW05	6	9.15	7.53
MW06	6	9.3	8.30
MW07	6	8.65	6.93
MW08	7	8.95	7.38
MW09	8	DESTROYED	
MW10	8	8.78	7.23
MW11	8	10.2	8.81
	CASING ELEVATION	GROUND-WATER ELEVATION	GROUND-WATER ELEVATION
MW01	97.99	88.69	90.46
MW02	98.58	89.53	91.14
MW03	97.78	88.04	89.57
MW04	97.85	88.42	89.89
MW05	99.04	89.89	91.51
MW06	98.77	89.47	90.47
MW07	97.83	89.18	90.9
MW08	97.25	88.3	89.87
MW09	95.94		
MW10	94.54	85.76	87.31
MW11	95.94	85.74	87.13

Table 2, ug/l, Gasoline Range Hydrocarbons in Groundwater								
DATE	10/5/94	12/2/94	3/6/95	6/5/95	10/2/95	1/3/96	4/3/96	9/12/96
MW01, TPHg	320000	80000	32000	21000	5900	30000	31000	
MW01, Benzene	24000	3800	190	950	140	71	98	
MW01, Toluene	21000	6600	150	650	130	73	120	
MW01, Ethylbenzene	2600	2300	150	570	140	50	63	
MW01, Xylene	15000	11000	490	1500	390	120	170	
MW02, TPHg	260000	42000	490	8000	46000	3400	27000	19000
MW02, Benzene	17000	1700	3.2	220	160	7.6	100	210
MW02, Toluene	19000	2200	2.6	330	130	13	92	220
MW02, Ethylbenzene	570	1200	1.6	350	93	7.4	44	110
MW02, Xylene	15000	3600	5.9	660	240	26	130	400
MW03, TPHg	3000000	250000	21000	350000	15000	19000	70000	66000
MW03, Benzene	190000	19000	80	20000	510	290	310	430
MW03, Toluene	740000	22000	73	42000	410	270	260	420
MW03, Ethylbenzene	310000	4400	35	5800	210	97	89	210
MW03, Xylene	13000	28000	130	36000	650	890	280	510
MW04, TPHg					9300	1100	1900	2100
MW04, Benzene					23	4	12	46
MW04, Toluene					11	1.3	7.5	24
MW04, Ethylbenzene					9.9	0.9	5.2	31
MW04, Xylene					29	3.3	14	73
MW05, TPHg					1500	830	780	
MW05, Benzene					1.1	<0.5	1.3	
MW05, Toluene					1.3	<0.5	1	
MW05, Ethylbenzene					3.9	1.3	4.8	
MW05, Xylene					5.3	2.2	3.8	
MW06, TPHg					12000	68000	48000	23000
MW06, Benzene					350	60	140	150
MW06, Toluene					310	61	110	160
MW06, Ethylbenzene					200	27	62	110
MW06, Xylene					610	180	170	310
MW07, TPHg					3300	1500	1900	
MW07, Benzene					8.9	1.5	2.1	
MW07, Toluene					12	0.9	2.6	
MW07, Ethylbenzene					17	3	5.1	
MW07, Xylene					45	4.1	6.9	
MW08, TPHg					94000	23000	58000	46000
MW08, Benzene					310	19	250	210
MW08, Toluene					250	12	170	150
MW08, Ethylbenzene					180	8.8	140	160
MW08, Xylene					480	47	330	360
MW10, TPHg								26000
MW10, Benzene								98
MW10, Toluene								37
MW10, Ethylbenzene								63
MW10, Xylene								99
MW11, TPHg								2300
MW11, Benzene								7
MW11, Toluene								7.2
MW11, Ethylbenzene								12
MW11, Xylene								31

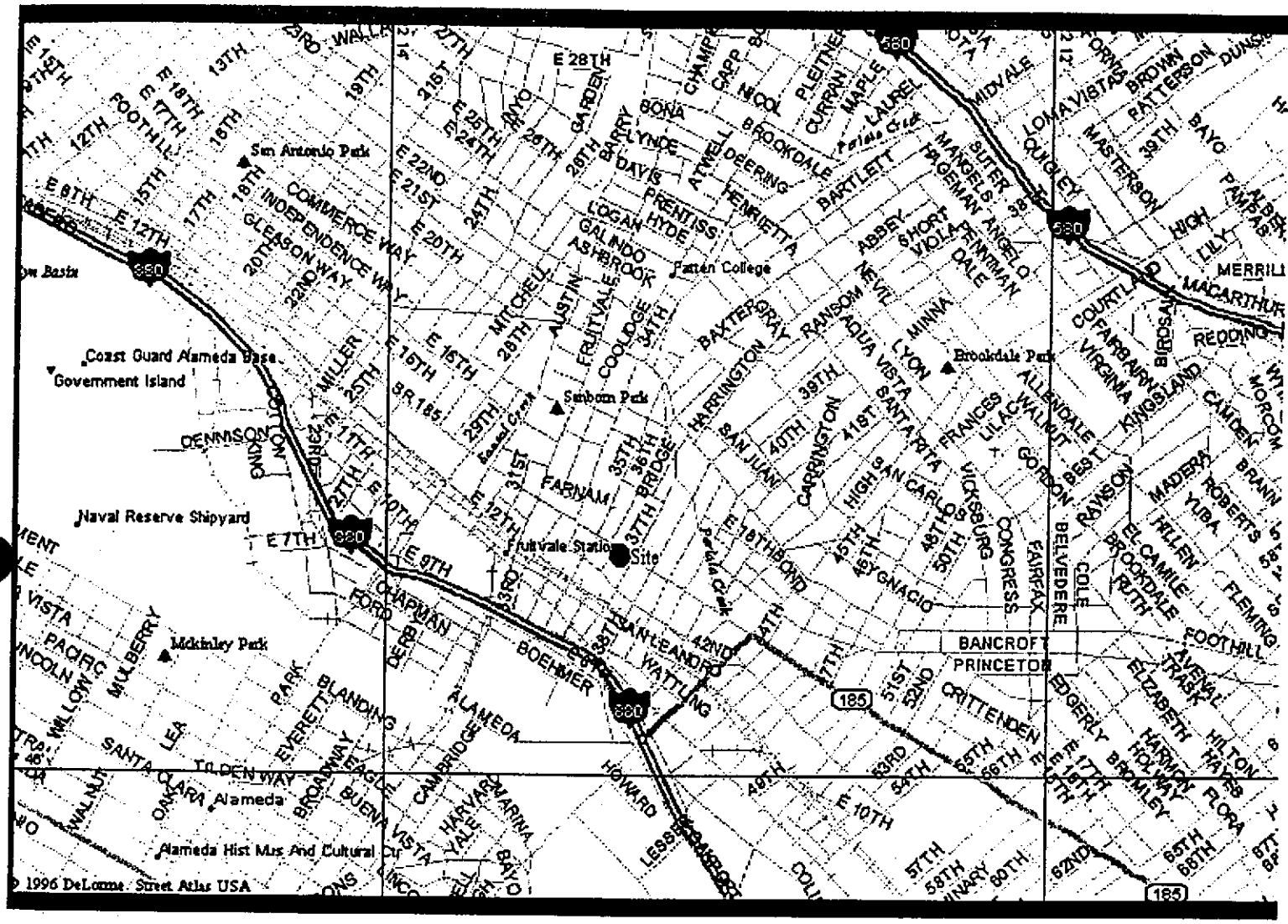
Table 2, ug/l, Gasoline Range Hydrocarbons in Groundwater				
DATE	12/9/96	4/10/97	12/30/97	3/4/98
MW01, TPHg			27000	
MW01, Benzene			2300	
MW01, Toluene			2100	
MW01, Ethylbenzene			1400	
MW01, Xylene			5100	
MW02, TPHg	6200	53000	35000	51000
MW02, Benzene	110	150	4900	4200
MW02, Toluene	6.6	110	4900	6000
MW02, Ethylbenzene	2.1	37	1600	1600
MW02, Xylene	14	1120	7000	8800
MW03, TPHg	54000	54000		150000
MW03, Benzene	320	130		7100
MW03, Toluene	280	120		9500
MW03, Ethylbenzene	90	38		2700
MW03, Xylene	250	120		12000
MW04, TPHg	4000	<50	2300	2000
MW04, Benzene	14	<0.5	410	600
MW04, Toluene	6.3	<0.5	270	950
MW04, Ethylbenzene	4.2	<0.5	100	100
MW04, Xylene	12	<0.5	1500	500
MW05, TPHg			790	400
MW05, Benzene			82	3
MW05, Toluene			66	<0.5
MW05, Ethylbenzene			59	14
MW05, Xylene			160	5
MW06, TPHg	57000	29000	36000	65000
MW06, Benzene	480	60	660	6100
MW06, Toluene	450	70	7600	11000
MW06, Ethylbenzene	160	24	1500	1800
MW06, Xylene	460	71	7700	9900
MW07, TPHg			1400	800
MW07, Benzene			130	25
MW07, Toluene			98	47
MW07, Ethylbenzene			75	22
MW07, Xylene			200	76
MW08, TPHg	27000	24000	28000	70000
MW08, Benzene	88	86	6000	8400
MW08, Toluene	43	55	1600	3500
MW08, Ethylbenzene	44	50	2100	3700
MW08, Xylene	80	100	4700	11000
MW10, TPHg	3000	1000	10000	9000
MW10, Benzene	8.1	21	5300	2600
MW10, Toluene	2.2	9.3	76	1200
MW10, Ethylbenzene	1.5	3.3	1100	1300
MW10, Xylene	5.1	33	780	3400
MW11, TPHg	650	<50	710	1800
MW11, Benzene	1.8	<0.5	66	160
MW11, Toluene	0.5	<0.5	97	31
MW11, Ethylbenzene	0.8	<0.5	59	120
MW11, Xylene	0.42	<0.5	190	250

Table 3. Bioremediation Sampling, Results December 30, 1997 Sampling

WELL	TPHg	Dissolved Oxygen	Nitrate as Nitrogen	Ferrous Iron	Sulfate	Methane	Carbon Dioxide	Ammonia Nitrogen	Ortho-Phosphate	Hydro-carbon degraders	ORP	K
UNITS	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	cfu/ml		feet/day
MW01	27	0.5	<0.1	3.04	<1	3.2	99.1	1.3	0.1	60	-110	0.4
MW02	35	<0.1	<0.1	>3.30	<1	1.24	117	1.3	0.4	220	-81	0.47
MW03	FLOATING PRODUCT NOT SAMPLED											
MW04	2.3	<0.1	4.5	0.39	42						72	2.01
MW05	0.79	<0.1	0.3	0.94	18	0.0113	62.7	0.8	0.4	160	46	2.01
MW06	36	<0.1	<0.1	0.30	5						14	10.42
MW07	1.4	1.2	0.2	0.23	32	0.449	64.2	0.2	0.2	60	-82	3.86
MW08	28	2.5	0.1	>3.30	0	3.54	153	0.8	0.3	300	1	1.16
MW09	WELL DESTROYED											
MW10	10	<0.1	0.3	2.21	<1						4	9.66
MW11	0.71	<0.1	3.5	0.32	35						66	2.54

TONY'S EXPRESS
AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA

Figure 1, Location Map

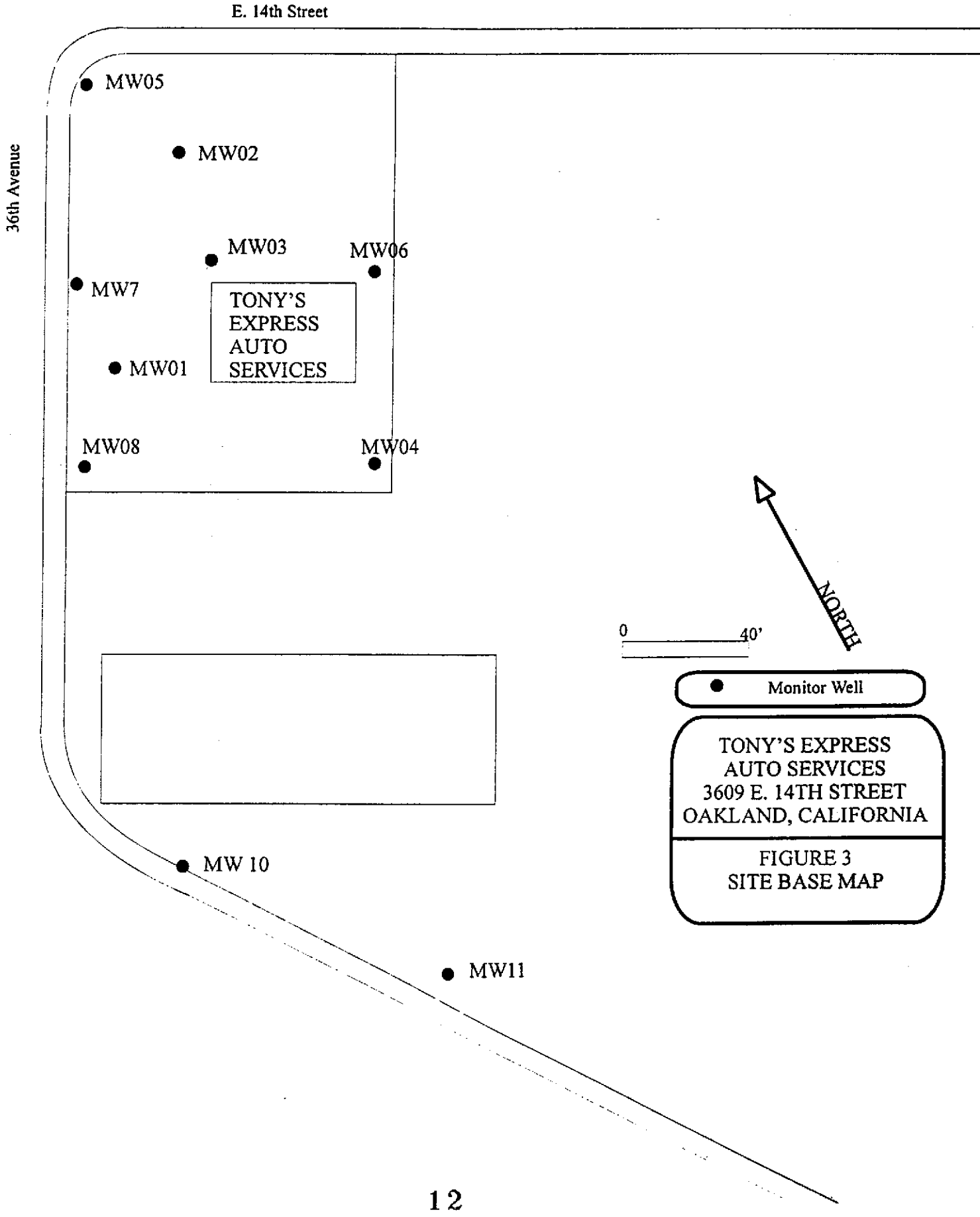


<Default> - 1 Markers, Length = 0 feet

Tony's - 037° 46' 31.3" N, 122° 13' 13.8" W

Name: OAKLAND EAST
Date: 5/11/98
Scale: 1 inch equals 1000 feet

Location: 037° 46' 31.7" N 122° 13' 15.9" W
Caption: Figure 2, USGS Topographic Map


E. 14th Street
36th Avenue
MW05
MW02
MW03
MW06
MW7
TONY'S EXPRESS AUTO SERVICES
MW01
MW08
MW04
MW 10
MW11
NORTH
0
40'
Monitor Well
TONY'S EXPRESS AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 3
SITE BASE MAP

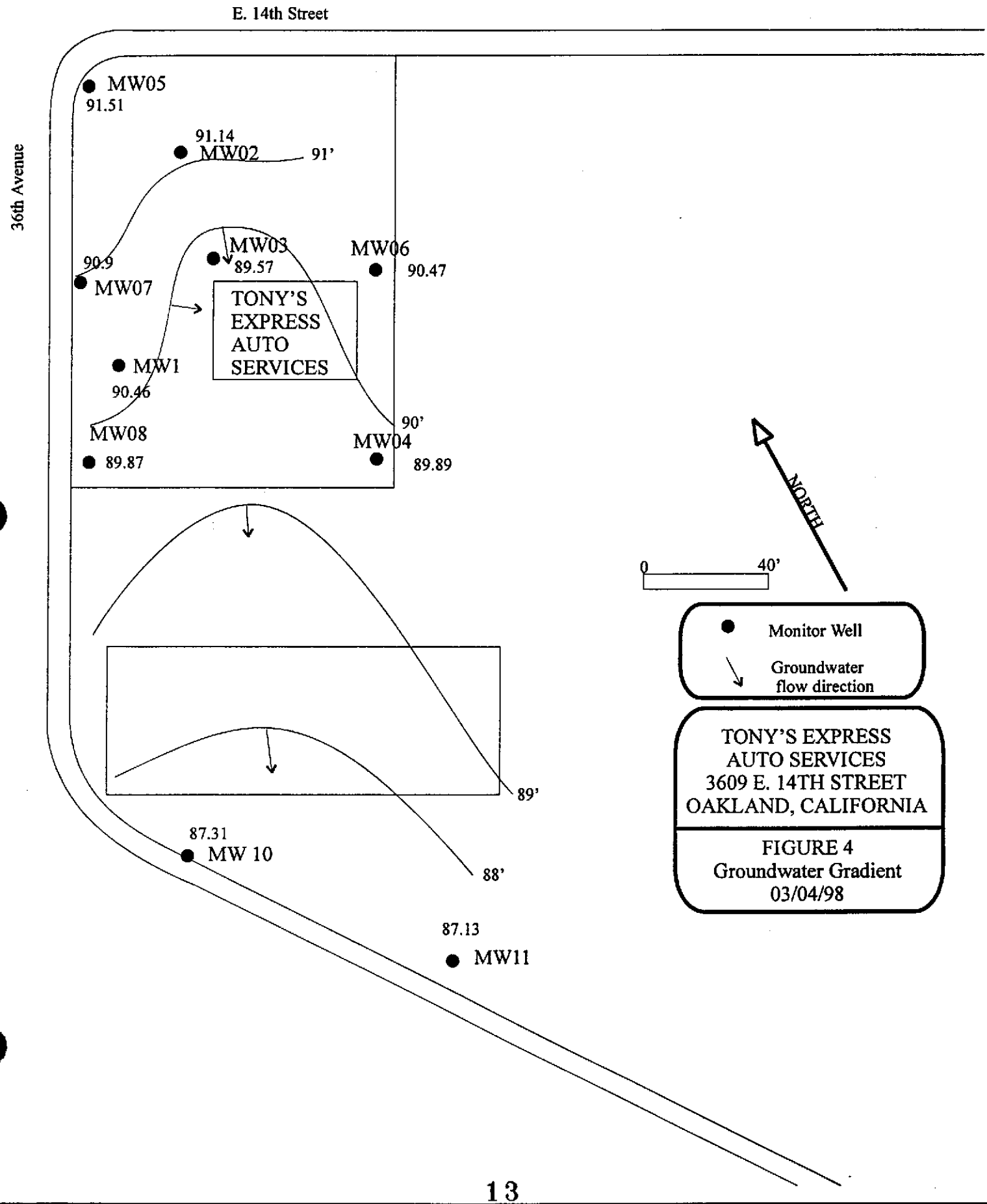
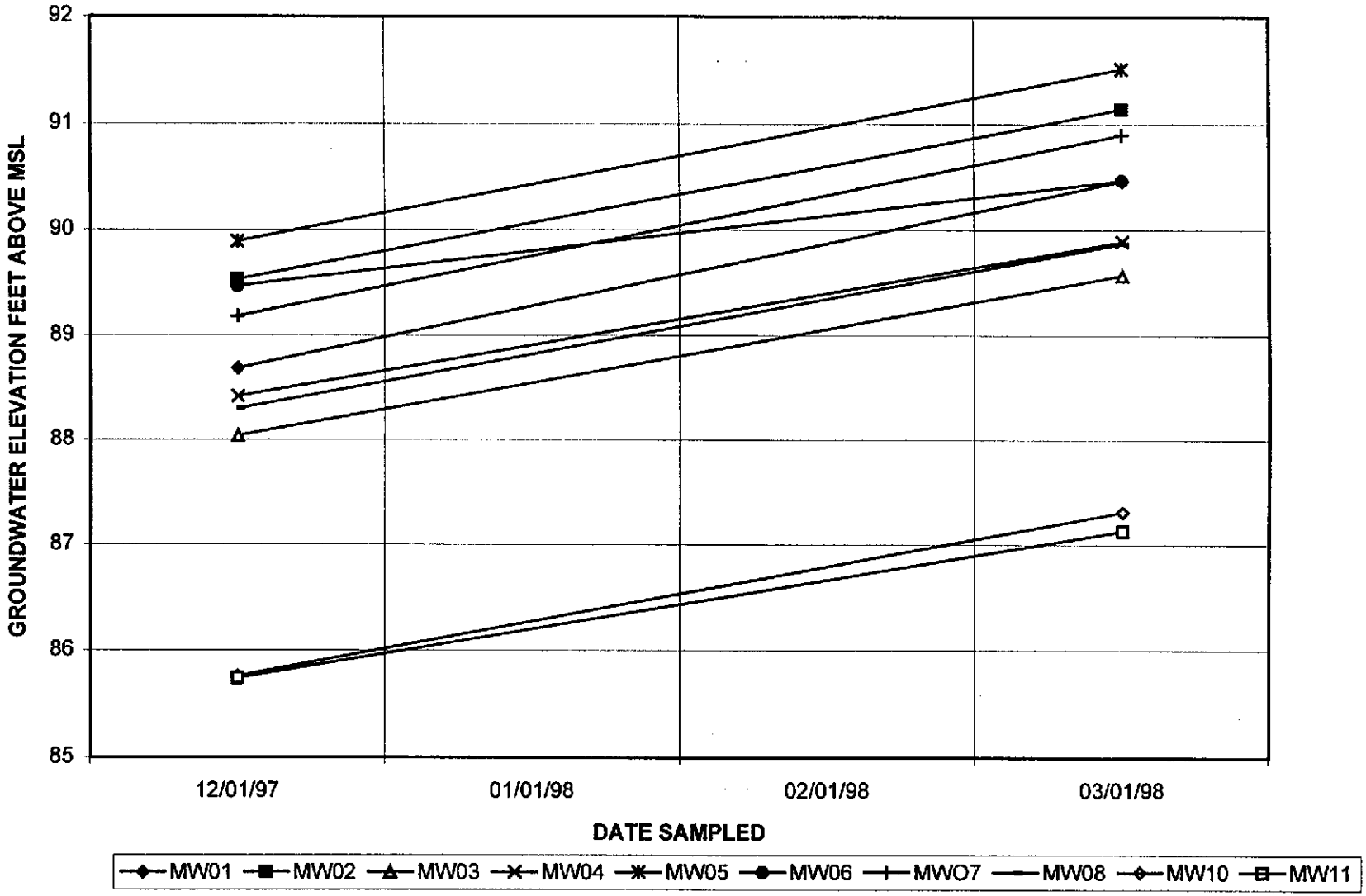
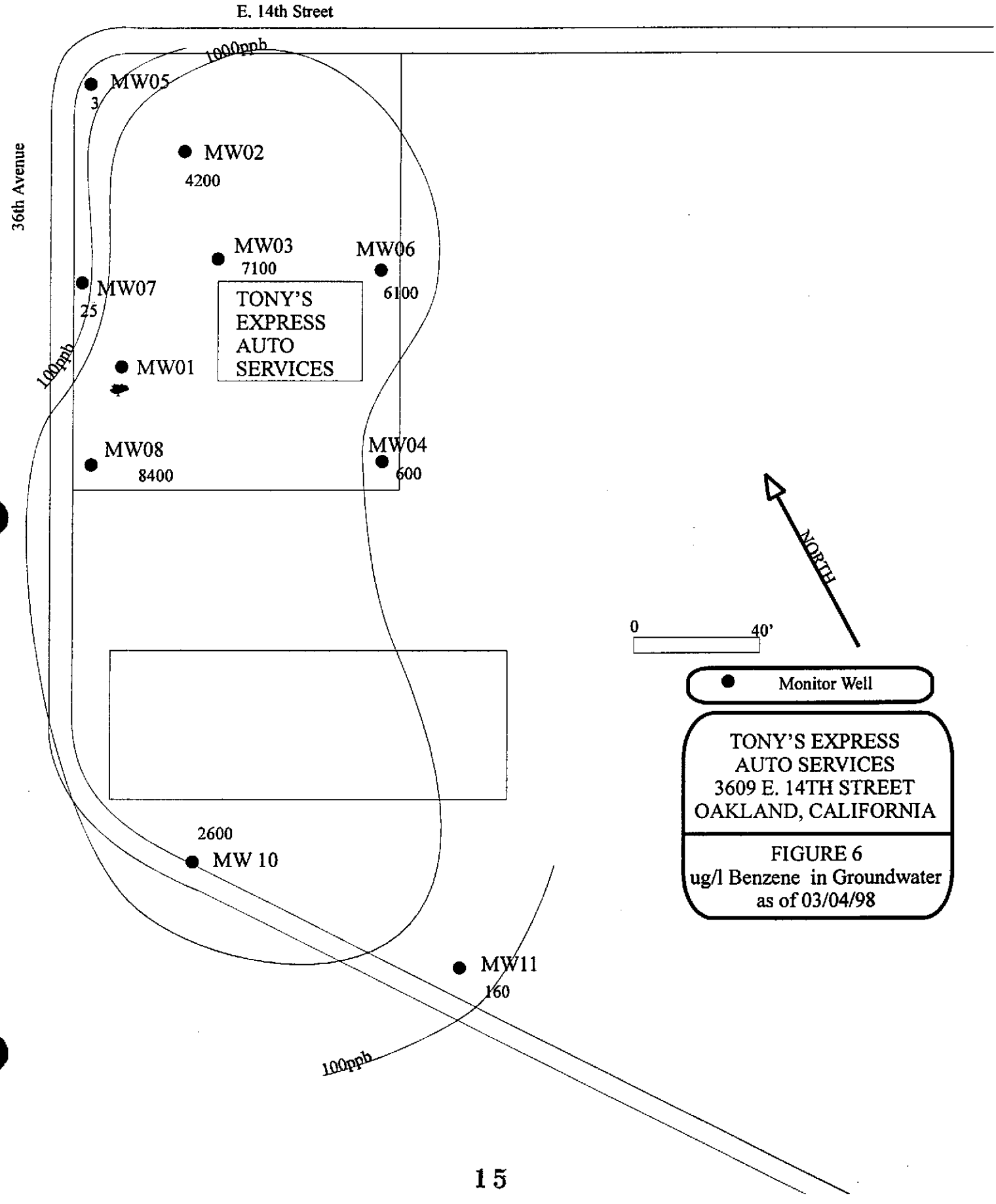
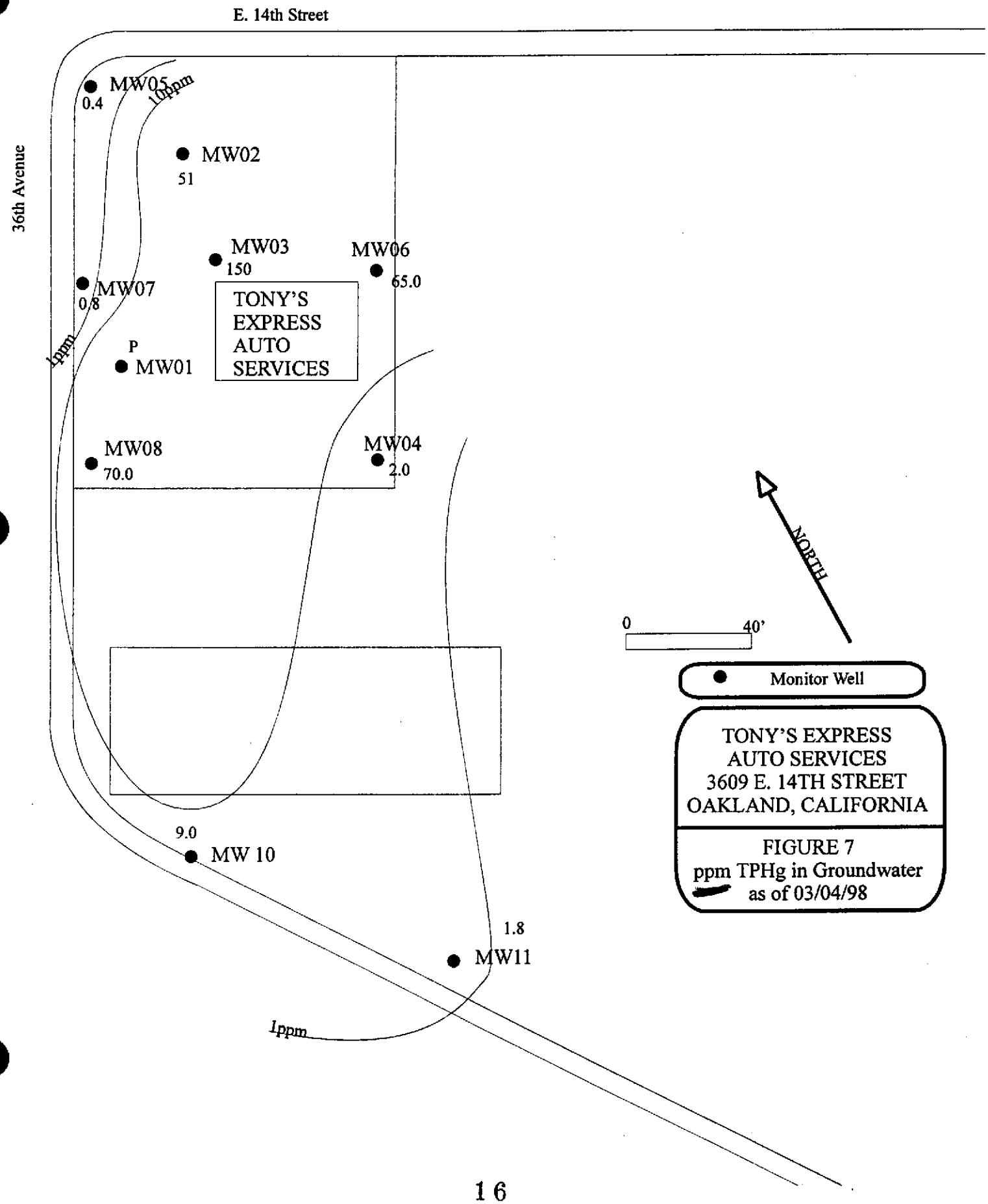

E. 14th Street
36th Avenue
MW05
91.51
91.14
MW02
91'
MW03
89.57
MW06
90.47
90.9
MW07
TONY'S EXPRESS AUTO SERVICES
MW1
90.46
MW08
89.87
90'
MW04
89.89
89'
87.31
MW 10
88'
87.13
MW11
NORTH
0
40'
Monitor Well
Groundwater flow direction
TONY'S EXPRESS AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 4
Groundwater Gradient
03/04/98

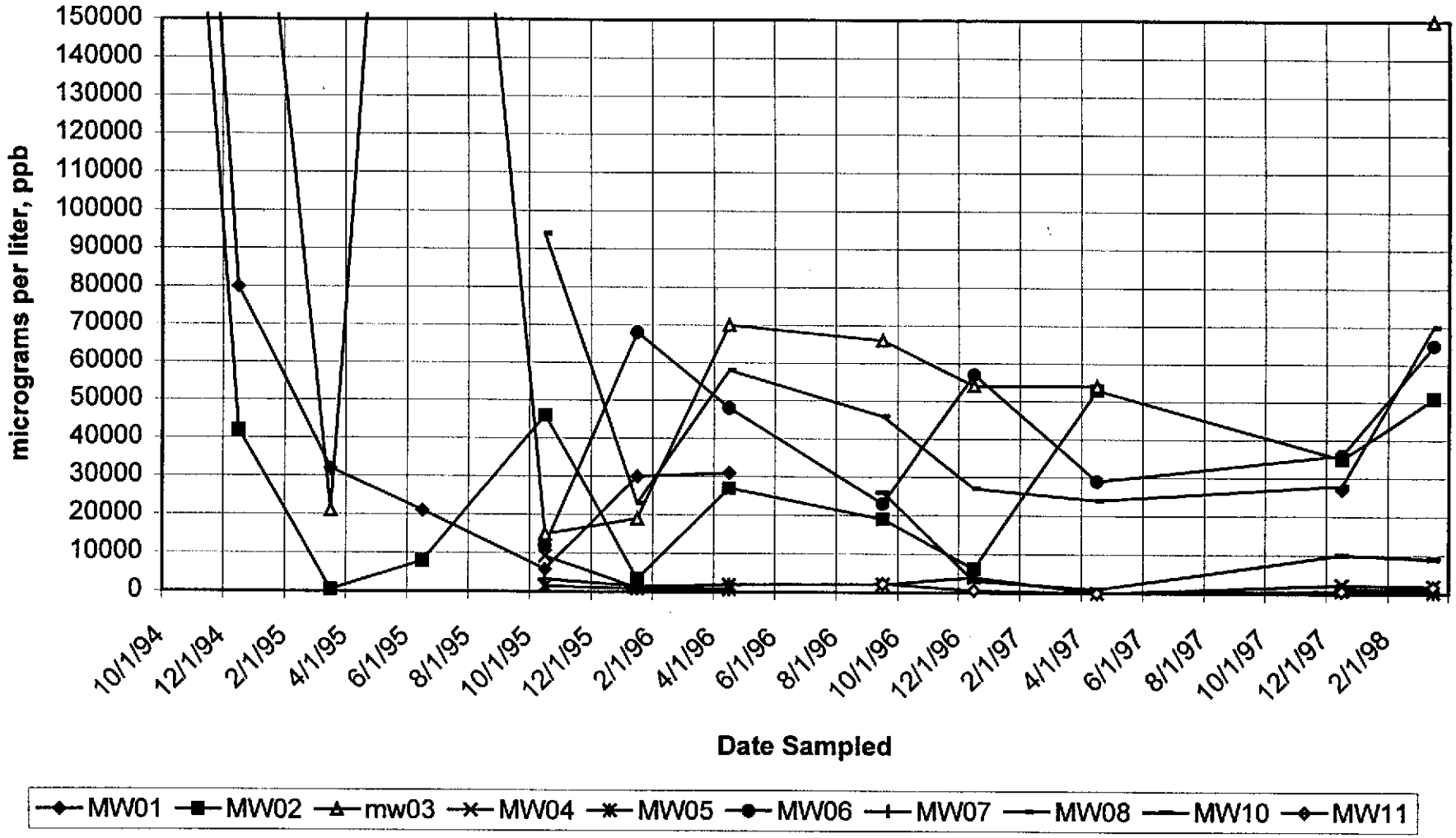
FIGURE 5
GROUNDWATER ELEVATION TONY'S




E. 14th Street
36th Avenue
1000ppb
100ppb
100ppb
MW05
3
MW02
4200
MW03
7100
MW06
6100
MW07
25
MW01
MW08
8400
MW04
600
TONY'S EXPRESS AUTO SERVICES
2600
MW 10
MW11
160
NORTH
0
40'
Monitor Well
TONY'S EXPRESS AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 6
ug/l Benzene in Groundwater
as of 03/04/98


E. 14th Street
36th Avenue
MW05
0.4
10ppm
MW02
51
MW03
150
MW06
65.0
MW07
0.8
1ppm
P
MW01
TONY'S
EXPRESS
AUTO
SERVICES
MW08
70.0
MW04
2.0
9.0
MW 10
1.8
MW11
1ppm
NORTH
0
40'
Monitor Well
TONY'S EXPRESS
AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 7
ppm TPHg in Groundwater
as of 03/04/98

Tony's Express Auto Services, Micrograms per liter TPHg
Figure 8



APPENDIX A

METHODS AND PROCEDURES
QA/QC

APPENDIX A:
METHODS AND PROCEDURES
QA/QC

This Appendix documents the specific methods, procedures, and materials used to collect and analyze groundwater samples.

GAUGING AND MEASURING MONITOR WELLS

Prior to sampling a well, WEGE personnel obtain three measurements:

1. the depth to groundwater (DTW);
2. the product thickness using a battery powered depth to water-product interface probe and/or by using a specially designed bailer;
3. the total depth of casing, to calculate the total water volume in the well.

The DTW-product interface probe is lowered into the well casing until the instrument signals when the top of free phase floating product (if present) and/or the top of water is reached. The distance from the top of free phase floating product and/or water to the top of casing is read from the tape that is attached to the probe. The probe is then lowered to the bottom of the well and the tape is read again. The tape is calibrated in 0.01-foot intervals for accuracy to 0.01 foot. The measured distance is subtracted from the established elevation at the top of casing to determine the elevation of groundwater with respect to mean sea level and the difference between the top of groundwater and the base of the well is noted to establish water volume in the well. The probe and tape is washed with TSP (Tri Sodium Phosphate) and rinsed in distilled water before each measurement. WEGE has designed and built bailers that will collect a sample of the contents of a well to show the exact thickness of any floating product.

Some of the abbreviations used in water sampling and or measuring or monitoring are: BGS, Below Ground Surface; DTW, Depth to Water (from surface reference i.e. usually TOC); TOC, Top of Casing; MSL, Mean Sea Level; AMSL and BMSL, Above and Below MSL; BS, Below Surface; TOW, Top of Water; TSP, Tri Sodium Phosphate.

PURGING STANDING WATER FROM MONITOR WELLS

If no product is present, WEGE personnel purge the well by removing groundwater until the water quality parameters (temperature, pH, and conductivity) stabilize, or until the well is emptied of water. Periodic measurements of groundwater temperature, pH, and conductivity are taken with a Hydac Monitor or other meter and recorded along with the volume of groundwater removed from the well. Purging is done by one or more methods singularly or in combination. Bailers, pneumatic or electric sample pumps, or vacuum pump tanks or trucks may be used. The usual amount of water removed is three borehole volumes, unless otherwise stated.

$$BV = (7.48/4) \times (CD2+P\ (BD2-CD)\ 2) \times (WD-GW)$$

BV borehole volume (gallons)
CD casing diameter (feet)
GW depth to groundwater (feet)
BD borehole diameter (feet)
WD well depth (feet)
P porosity of the gravel pack, 25%

Table of Common Boring and Casing Diameters

Boring diameter inches	Casing diameter inches	Volume gallons/ foot	3 VolumesX (WD-GW) gallons /foot
4	1	0.042	0.126
6	1	0.082	0.246
6	2	0.173	0.519
8	2	0.277	0.831
8	4	0.671	2.013
10	2	0.572	1.716
10	4	0.844	2.532

EXAMPLE: An 8 inch boring with 2 inch casing requires removal of 0.831 gallons of water per foot of water column.

The water collected during purging is either safely stored on- site in 55 gallon DOT 17H drums for later disposition, transported to an approved on-site/off-site treatment facility or to a sewer discharge system.

COLLECTION OF WATER SAMPLE FOR ANALYSIS

The groundwater in the well is allowed to recover to at least 80% of its volume prior to purging, if practical, before the groundwater sample is collected.

$$\text{Percent Recovery} = \left(1 - \frac{\text{Residual drawdown}}{\text{Maximum drawdown}}\right) \times 100.$$

A fresh bailer is used to collect enough water for the requirements of the laboratory for the analyses needed or required. The water samples are decanted from the bailer into the appropriate number and size containers. These containers are furnished pre-cleaned to exact EPA protocols, with and without preservatives added, by the analytical laboratory or a chemical supply company. The bottles are filled, with no headspace, and then capped with plastic caps with teflon liners.

The vials or bottles containing the groundwater samples are labeled with site name, station, date, time, sampler, and analyses to be performed, and documented on a chain of custody form. They are placed in ziplock bags and stored in a chest cooled to 4 °C with

ice. The preserved samples are COC (chain of custody) delivered to the chosen laboratory.

ANALYTICAL RESULTS

TPH is the abbreviations used for Total Petroleum Hydrocarbons used by the laboratories for water and soil analyses. The letter following TPH indicates a particular distinction or grouping for the results. The letters "g", "d", "k", or "o" indicate gasoline, diesel, kerosene, or oil, respectively, i.e. TPH-d for diesel ranges TPH.

BTEX or MTBE are acronyms or abbreviations used for Benzene, Toluene, Ethylbenzene and all of the Xylenes (BTEX) and Methyl tertiary-Butyl Ether (MTBE), respectively. MBTEX is the designation for the combination of the above five compounds.

Laboratory lower detection limits unless otherwise noted, due to matrix interference or elevated concentrations of target compounds, are as follows:

TPHg	50 ug/L	MTBE	0.5 ug/L
Benzene	0.5 ug/L	Toluene	0.5 ug/L
Ethyl Benzene	0.5 ug/L	Total Xylenes	1.0 ug/L

The less than symbol, <, used with a "parts per value" indicates the lower detection limit for a given analytical result and the level, if present, of that particular analyte is below or less than that lower detection limit.

Other abbreviations commonly used are ppm, ppb, mg/Kg, ug/Kg, ml/l and ul/l are parts per million, parts per billion, milligrams per kilogram, micrograms per kilogram, milliliters per liter, microliters per liter, respectively.

CHAIN OF CUSTODY DOCUMENTATION

All water samples that are collected by WEGE and transported to a certified analytical laboratory are accompanied by chain-of- custody (COC) documentation. This documentation is used to record the movement and custody of a sample from collection in the field to final analysis and storage. Samples to be analyzed at the certified laboratory were logged on the COC sheet provided by the laboratory. The same information provided on the sample labels (site name, sample location, date, time, and analysis to be performed) is also noted on the COC form. Each person relinquishing custody of the sample set signs the COC form indicating the date and time of the transfer to the recipient. A copy of the COC follows the samples or their extracts throughout the laboratory to aid the analyst in identifying the samples and to assure analysis within holding times. Copies of the COC documentation are included with the laboratory results in Appendix B of the sampling report.

APPENDIX B

CERTIFIED ANALYTICAL
LABORATORY REPORT

COC DOCUMENTATION

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

CERTIFICATE OF ANALYSIS

Lab Number: 98-253
Client: Western Geo-Engineers
Project: Tony's, 3609 E. 14th St, Oakland, CA

Date Reported: 03/16/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-253-01	Client ID: MW 02			03/04/98	WATER
Gasoline	8015M	51000	ug/L		03/10/98
Benzene	8020	4200	ug/L		
Ethylbenzene	8020	1600	ug/L		
Toluene	8020	6000	ug/L		
Xylenes	8020	8800	ug/L		
Sample: 98-253-02	Client ID: MW 03			03/04/98	WATER
Gasoline	8015M	150000	ug/L		03/10/98
Benzene	8020	7100	ug/L		
Ethylbenzene	8020	2700	ug/L		
Toluene	8020	9500	ug/L		
Xylenes	8020	12000	ug/L		
Sample: 98-253-03	Client ID: MW 04			03/04/98	WATER
Gasoline	8015M	2000	ug/L		03/10/98
Benzene	8020	600	ug/L		
Ethylbenzene	8020	100	ug/L		
Toluene	8020	950	ug/L		
Xylenes	8020	500	ug/L		

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-253
Client: Western Geo-Engineers
Project: Tony's, 3609 E. 14th St, Oakland, CA

Date Reported: 03/16/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-253-04 Client ID: MW 05				03/04/98	WATER
Gasoline	8015M	400	ug/L		03/10/98
Benzene	8020	3	ug/L		
Ethylbenzene	8020	14	ug/L		
Toluene	8020	ND			
Xylenes	8020	5	ug/L		
Sample: 98-253-05 Client ID: MW 06				03/04/98	WATER
Gasoline	8015M	65000	ug/L		03/10/98
Benzene	8020	6100	ug/L		
Ethylbenzene	8020	1800	ug/L		
Toluene	8020	11000	ug/L		
Xylenes	8020	9900	ug/L		
Sample: 98-253-06 Client ID: MW 07				03/04/98	WATER
Gasoline	8015M	800	ug/L		03/10/98
Benzene	8020	25	ug/L		
Ethylbenzene	8020	22	ug/L		
Toluene	8020	47	ug/L		
Xylenes	8020	76	ug/L		

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-253
Client: Western Geo-Engineers
Project: Tony's, 3609 E. 14th St, Oakland, CA

Date Reported: 03/16/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-253-07	Client ID: MW 08			03/04/98	WATER
Gasoline	8015M	70000	ug/L		03/10/98
Benzene	8020	8400	ug/L		
Ethylbenzene	8020	3700	ug/L		
Toluene	8020	3500	ug/L		
Xylenes	8020	11000	ug/L		
Sample: 98-253-08	Client ID: MW 10			03/04/98	WATER
Gasoline	8015M	9000	ug/L		03/10/98
Benzene	8020	2600	ug/L		
Ethylbenzene	8020	1300	ug/L		
Toluene	8020	1200	ug/L		
Xylenes	8020	3400	ug/L		
Sample: 98-253-09	Client ID: MW 11			03/04/98	WATER
Gasoline	8015M	1800	ug/L		03/10/98
Benzene	8020	160	ug/L		
Ethylbenzene	8020	120	ug/L		
Toluene	8020	31	ug/L		
Xylenes	8020	250	ug/L		

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CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 98-253
Client: Western Geo-Engineers
Project: Tony's, 3609 E. 14th St, Oakland, CA

Date Reported: 03/16/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Gasoline	8015M	50	ug/L	ND	88	8
Benzene	8020	0.5	ug/L	ND	87	12
Ethylbenzene	8020	0.5	ug/L	ND	91	13
Toluene	8020	0.5	ug/L	ND	94	5
Xylenes	8020	1.0	ug/L	ND	90	6

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

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APPENDIX C

MONITOR WELL
SAMPLING DATA SHEETS

WESTERN GEO-ENGINEERS

1386 EAST BEAMER
WOODLAND, CALIFORNIA
(916) 668-5300, FAX (916)

WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 10:55
WELL mw-01	SAMPLED BY. mp	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 7.54 DTB: 30.0
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP David LTT

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
	1st bailer			X1000
	8 gal			
		No test	product	
		purged		

FINAL VOLUME PURGED 8 gal
TIME SAMPLED No sample
SAMPLE ID. mw-01
SAMPLE CONTAINERS 2 VOAs
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY NTE
NOTES: 1st bailer 1/8 in Product Gs's

Product Removal

9

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA
(916) 668-5300, FAX (916)

WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 9:37
WELL mw-02	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 7.44 DTB: 30.0	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David LTT	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:39	1st bailer	70.4	6.56	.16 X1000
9:44	20 gal	70.1	6.56	.15
9:47	20	70.1	6.56	.15
9:48		69.7	6.54	.15
9:50		69.8	6.56	.15
			Sample	

FINAL VOLUME PURGED	41 1/4 gal
TIME SAMPLED	9:51
SAMPLE ID.	mw-02
SAMPLE CONTAINERS	2 VOAs
ANALYSIS TO BE RUN	TPHg/BTEX
LABORATORY	NSE
NOTES:	1st bailer clear smells like a sewer

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME ~~10~~ 9:56
WELL mw-03	SAMPLED BY. mp	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 8.21 DTB: 30.0
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP David LTT

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
	1st bailer	66.4	6.63	.15 x1000
9:58	20 gal	67.8	6.55	.16
10:03	20	70.3	6.51	.16
10:06		69.9	6.53	.16
10:07		70.2	6.54	.16
10:08		69.9	6.54	
10:09			Sampled	

FINAL VOLUME PURGED 41 1/2 gal
TIME SAMPLED 10:10
SAMPLE ID. mw-03
SAMPLE CONTAINERS 2 VOAs
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY NSE
NOTES: 1st bailer Rain Bow scheme
gas odor

WESTERN GEO-ENGINEERS

1386 EAST BEAMER
WOODLAND, CALIFORNIA
(916) 668-5300, FAX (916)

WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 12:~~PM~~ 31
WELL mw-04	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 7.96 DTB: 25.12	
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David LTT	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
12:~~PM~~32	1st bailer	68.0	6.11	.16 X1000
12:38	10 gal	68.2	7.22	.14
12:39		68.8	7.26	.14
12:~~40~~		68.6	7.25	.14
12:~~41~~		68.8	7.25	.14
12:~~42~~		68.9	7.26	.14
12:~~43~~		69.1	7.25	.14
			~~Sample~~	

FINAL VOLUME PURGED	11 3/4 gal
TIME SAMPLED	12:~~PM~~44
SAMPLE ID.	mw-04
SAMPLE CONTAINERS	2 VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer clear No odor

WESTERN GEO-ENGINEERS

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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 39:18
WELL mw-05	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 7.53	DTB: 27.60
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David LTT	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:19	1st bailer	70.2	7.14	.29 x1000
9:23	10 gal	72.1	6.80	.22
9:26		72.4	6.60	.20
9:27		72.6	6.59	.19
9:28		72.5	6.60	.19
9:30		72.5	6.61	.19
			~~Sample~~	

FINAL VOLUME PURGED 11 1/2 gal
TIME SAMPLED 9:31
SAMPLE ID. mw-05
SAMPLE CONTAINERS 2 VOAs
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY NSE
NOTES: 1st bailer Clear No odor

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 11:06
WELL MW-06	SAMPLED BY. MP	

WELL ELEVATION	
PRODUCT THICKNESS	
DEPTH TO WATER	DTW: 8.30 DTB: 26.33
FLUID ELEVATION	
BAILER TYPE	Disposable Bailer
PUMP	David LTT

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:08	1st bailer	71.7	6.37	.16 X1000
11:13	10 gal	71.1	6.90	.16
11:14		71.2	6.92	.17
11:15		71.3	6.91	.17
11:16		71.1	6.91	.17
11:18		71.2	6.91	.17
			Sample	

FINAL VOLUME PURGED	11 1/2 gal
TIME SAMPLED	11:19
SAMPLE ID.	MW-06
SAMPLE CONTAINERS	2 VOAs
ANALYSIS TO BE RUN	TPHg/BTEX
LABORATORY	NSE
NOTES:	1st bailer clear No odor

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WESTERN GEO-ENGINEERS
1386 EAST BEAMER
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 10:28
WELL mw-07	SAMPLED BY. cap	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 6.93 DTB: 26.12
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP David LTT

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
10:39	1st bailer	70.3	6.56	.15 x1000
10:38	20 gal	68.7	6.83	.15
10:39		70.2	6.86	.15
10:40		70.7	6.89	.15
10:41		70.5	6.88	.15
10:42		70.6	6.88	.15
			Sampled	

FINAL VOLUME PURGED 21 1/2 gal
TIME SAMPLED 10:43
SAMPLE ID. mw-07
SAMPLE CONTAINERS 2 VOAs
ANALYSIS TO BE RUN TPHg/BTEX / MTBE
LABORATORY NSE
NOTES: 1st bailer clear No odor

WESTERN GEO-ENGINEERS
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 11:25
WELL MW-02	SAMPLED BY. MP	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 7.38	DTB: 26.13
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David LTT	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:26	1st bailer	69.3	6.93	.17 X1000
11:33	10 gal	67.8	6.86	.16
11:35		67.8	6.86	.16
11:36		67.9	6.86	.16
11:37		68.2	6.86	.16
11:38		68.4	6.86	.16

FINAL VOLUME PURGED	11 1/2 gal
TIME SAMPLED	11:39
SAMPLE ID.	MW-02
SAMPLE CONTAINERS	2 VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer clear light sewer odor after purging 10 gal schene ~~sheen~~ & gas odor

9

WESTERN GEO-ENGINEERS
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 11:55
WELL mw-10	SAMPLED BY. mp	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 7.23 DTB: 24.33
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP David LTT

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:57	1st bailer	67.4	6.98	.14 X1000
12:06	8 gal	73.2	6.93	.17
12:07		72.8	7.09	.17
12:08		72.3	7.13	.16
12:09		72.1	7.12	.17
12:10		72.2	7.11	.17
12:11		72.3	7.11	.17
			Sample	

FINAL VOLUME PURGED 9 3/4 gal
TIME SAMPLED 12:13
SAMPLE ID. mw-10
SAMPLE CONTAINERS 2 VOAs
ANALYSIS TO BE RUN TPHg/BTEX / MTBE
LABORATORY NEI
NOTES: 1st bailer Clear No odor

WESTERN GEO-ENGINEERS

1386 EAST BEAMER
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 3-4-98	TIME 12:15
WELL mw-11	SAMPLED BY. mp	

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 8.81 DTB: 26.50
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP David LTT

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
12:20	1st bailer	76.2	7.20	.17 x1000
12:24	≠8 gal	75.4	7.10	.18
12:25		73.2	7.20	.18
12:26		73.6	7.19	.18
12:27		73.5	7.19	.18
12:28		73.6	7.19	.18
			~~Sample~~	

FINAL VOLUME PURGED 9 1/2 gal
TIME SAMPLED 12:30
SAMPLE ID. mw-11
SAMPLE CONTAINERS 2 VOAs
ANALYSIS TO BE RUN TPHg/BTEX / MTBE
LABORATORY NSEW
NOTES: 1st bailer clear No odor