

**CASE CLOSURE SUMMARY
UNDERGROUND FUEL STORAGE TANK LOCAL OVERSIGHT PROGRAM**

I. AGENCY INFORMATION

Date: 3/18/03

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502	Phone: (510) 567-6700
Responsible Staff Person: Barney Chan / Amir Gholami	Title: Hazardous Materials Specialist

II. CASE INFORMATION

Site Facility Name:		
Site Facility Address: 625 Hegenberger Road		
RB LUSTIS Case No.: ---	Local Case No.:	LOP Case No.:
URF Filing Date:	SWEEPS No.: ---	APN:
Responsible Parties	Addresses	Phone Number
Diversified Investment and Management Corporation	400 Oyster Point Boulevard, Suite 415 South San Francisco, CA 94080	650-266-8080

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
1	12,000	Gasoline	Removed	October 1993
2	12,000	Gasoline	Removed	October 1993
3	12,000	Gasoline	Removed	October 1993
4	260	Waste-oil	Removed	October 1993
Piping			Removed	October 1993

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Holes in tank and piping		
Site characterization complete? Yes	Date Approved By Oversight Agency: ----	
Monitoring wells installed? Yes	Number: 9	Proper screened interval? Yes
Highest GW Depth Below Ground Surface: 4.4 ft	Lowest Depth: 8.4 ft	Flow Direction: NW to WNW
Most Sensitive Current Use: Land vacant, groundwater not currently used		

Summary of Production Wells in Vicinity: Five (5) well locations identified within 4500 feet:

- Damon Well Field (+/- 4500 ft north), exact location unknown – not currently utilized
- Fitchburg Well Field (+/- 2500 ft northwest), exact location unknown – not currently utilized
- Oakland Coliseum Complex – monitoring wells only
- 7825 San Leandro Street (1250 ft northeast), industrial – screened 324-380 ft bgs
- 550 85th Avenue (1850 ft southeast) 2 industrial wells – screened 130 – 240 ft bgs

These wells do not appear to be receptors due to their distance and location to the site.

Are drinking water wells affected? No

Aquifer Name: East Bay Plain

Is surface water affected? No

Nearest SW Name: Small tidal channel about 1,600 ft west

Off-Site Beneficial Use Impacts (Addresses/Locations): none identified

Reports on file? Yes

Where are reports filed? Alameda County Environmental Health

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	4 tanks	Disposed of at H&H Ship service, San Francisco	Oct. 1993
Piping	Not reported	Assumed disposed of along with tanks	Oct. 1993
Free Product	None present	-----	-----
Soil	1,500 cubic yards	Onsite Aeration	April – August 1996
Groundwater	13,000 gallons directly	Onsite small batch bio-augmentation	June 2001 – Feb. 2002

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS—BEFORE AND AFTER CLEANUP

Contaminant	Soil (ppm)		Water (ppb)		Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After		Before	After	Before	After
TPH (Gas)	230	38	58000	2000	Benzene	0.055	0.007	16000	520
TPH (Diesel)	-	-	3700	ND	Toluene	0.76	0.011	13000	5.4
Oil & Grease	-	-	600	ND	Ethyl Benzene	1.7	<0.005	2400	22
Heavy Metals	-	-	-	-	Xylene	7.7	0.010	12000	56
TPH	-	-	-	-	MTBE (if not analyzed, explain below)	-	-	2100	470

Site History and Description of Corrective Actions:

The site is located on the northwestern corner of Collins Drive and Hegenberger Road in a commercial area of the City of Oakland.

Prior to 1993

Subsurface Consultants performed two phases of site investigation in 1988 and 1989, during which a total of 23 soil borings (labeled 1 through 23) were advanced, five of which were converted to groundwater monitoring wells (labeled MW-8, MW-10, MW-11, MW-12, and MW-16). The borings were located around the former tank hold and dispenser island.

Tank Removal - October 1993

3 underground gasoline storage tanks (12,000 gallons each), one 260 gallon waste oil tank (also identified as a "sump"), and related underground piping were removed from the site under the observation of Levine Fricke. Seventeen (17) soil samples and two groundwater samples collected by Levine Fricke during the tank removal activities confirmed that impacted soils and groundwater was present at the site.

Site Investigation - January 1995

In January 1995, Levine Fricke advanced an additional thirteen (13) soil borings (labeled LF24 through LF36), one of which was converted to a monitoring well (MW-24). Groundwater monitoring of the resulting six well network, which occurred on January 10, 1995, confirmed that a dissolved phase hydrocarbon plume was present, primarily in the area of MW-8. The quarterly monitoring of the six monitoring wells was performed by Levine Fricke through January 1995. AEI began monitoring the wells in October 1995. In March 1996, AEI destroyed one of the wells (designated MW-24) in anticipation of excavation activities.

Soil Treatment - April to August 1996

Beginning in April 1996, AEI excavated a total of 1,600 cubic yards of impacted soils from around the former tank hold and dispenser locations. The soil was aerated in two batches, measuring approximately 150' by 180' and 12 inches deep. Baseline samples were collected from the stockpiles. Bi-weekly tilling was performed between April 12, 1996 and June 19, 1996 for the first aeration batch and between July 17, 1996 and September 5, 1996 for the second. Following aeration, 22 samples collected from the treated soil. Based on these samples, Mr. Barney Chan of the ACHCSA authorized the reuse of the treated soil to backfill the excavation. The excavation was backfilled with pea gravel, to bridge the capillary fringe, to approximately ½ foot above static groundwater. The remainder of the excavation was filled with the treated soil.

August 1997 - June 2000

In August 1997, AEI submitted a Remedial Action Plan (RAP) to the ACHCSA, which described a plan to enhance in-situ biodegradation to reduce dissolved phase hydrocarbon concentrations within the area of the former excavation. On October 1, 1999, AEI installed one (1) 4" diameter well (EW-01). Two additional groundwater monitoring wells (MW-26 and MW-27) were installed on the western end of the site in June 2000. The wells were constructed of 2" diameter well casing, screened from 5 to 15 feet bgs. Also in June 2000, one soil boring (AEI-B28) was advanced. The boring was advanced to 44.5 feet bgs to determine the vertical extent of the plume. Three groundwater samples were analyzed, the results of which revealed significant attenuation with depth of the hydrocarbon plume.

Groundwater Treatment - June 2001 to February 2002

A groundwater treatment program was initiated in June 2001, and was based on the August 1997 RAP, with several modifications. The system was designed to supplement natural bacterial colonies present in the shallow water table aquifer with bacterial colonies cultured to metabolize aromatic hydrocarbons. The system consisted of an extraction well (EW-01), batch treatment tank, batch injection network of 12 batch injection points, and air sparging system consisting of a compressor and 12 sparge points. The goal of the treatment program was to reduce dissolved hydrocarbon concentrations, specifically TPH-g and BTEX, within the source area, thereby limiting the potential for future migration of the hydrocarbon plume from the site. The system operated from June 2001 through February 2002, during which time 27 batches were treated, totaling approximately 13,000 gallons, which were reinjected to create an active culture in the aquifer.

Supplemental Treatment (MW-8) - July to September 2002

On July 29, 2002, MW-8 was purged of approximately 5 gallons and a water sample was collected. Following sample collection, a total of nine (9) socks of Regensis Inc. Oxygen Release Compound (ORC) were suspended in the well, which were placed to cover the water column exposed by the well. The socks were allowed to remain in the well until September 11, 2002, when the next monitoring event of the entire well network occurred.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes		
Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, it does not appear that the release would present a risk to human health.		
Site Management Requirements: None		
Should corrective action be reviewed if land use changes? Yes		
Monitoring Wells Decommissioned: No	Number Decommissioned: 0	Number Retained: 8
List Enforcement Actions Taken: none		
List Enforcement Actions Rescinded: none		

V. ADDITIONAL COMMENTS, DATA, ETC.

<p>Considerations and/or Variances:</p> <p>Conclusion:</p> <p>This office does not believe that the levels of residual contamination pose a significant threat to water resources, public health and safety, and the environment under the current commercial land uses based upon the information available in our files to date. The source has been removed via excavation and treatment, groundwater treated, and residual pollution is expected to be reduced by natural attenuation.</p>

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Amir K. Gholami	Title: Hazardous Materials Specialist
Signature:	Date:
Reviewed by:	Title:
Signature:	Date:
Approved by:	Title:
Signature:	Date:

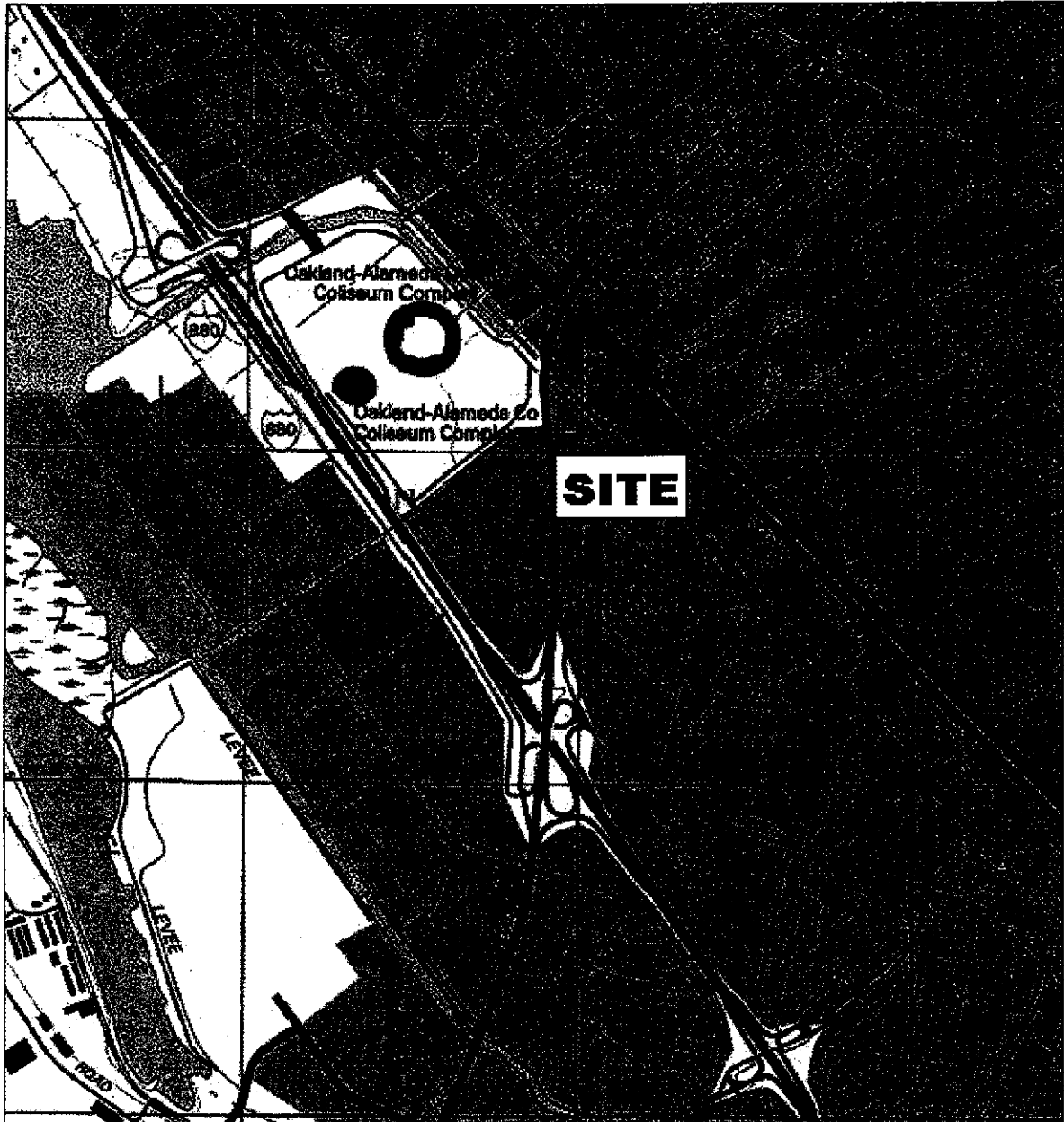
<p>This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.</p>
--

VII. REGIONAL BOARD NOTIFICATION

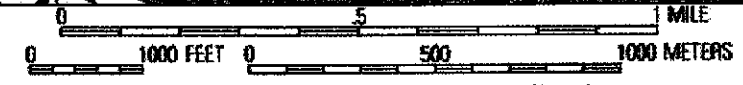
Regional Board Staff Name:	Title:
RB Response: Concur, based solely upon information contained in this case closure summary.	Date Submitted to RB:
Signature:	Date:

Attachments:

1. Site map
2. Site plan with former tanks & excavations
3. Well locations with water table contours
4. Dissolved hydrocarbon 9/11/02
5. Water table elevations
6. Water quality data
7. groundwater sample analytical data



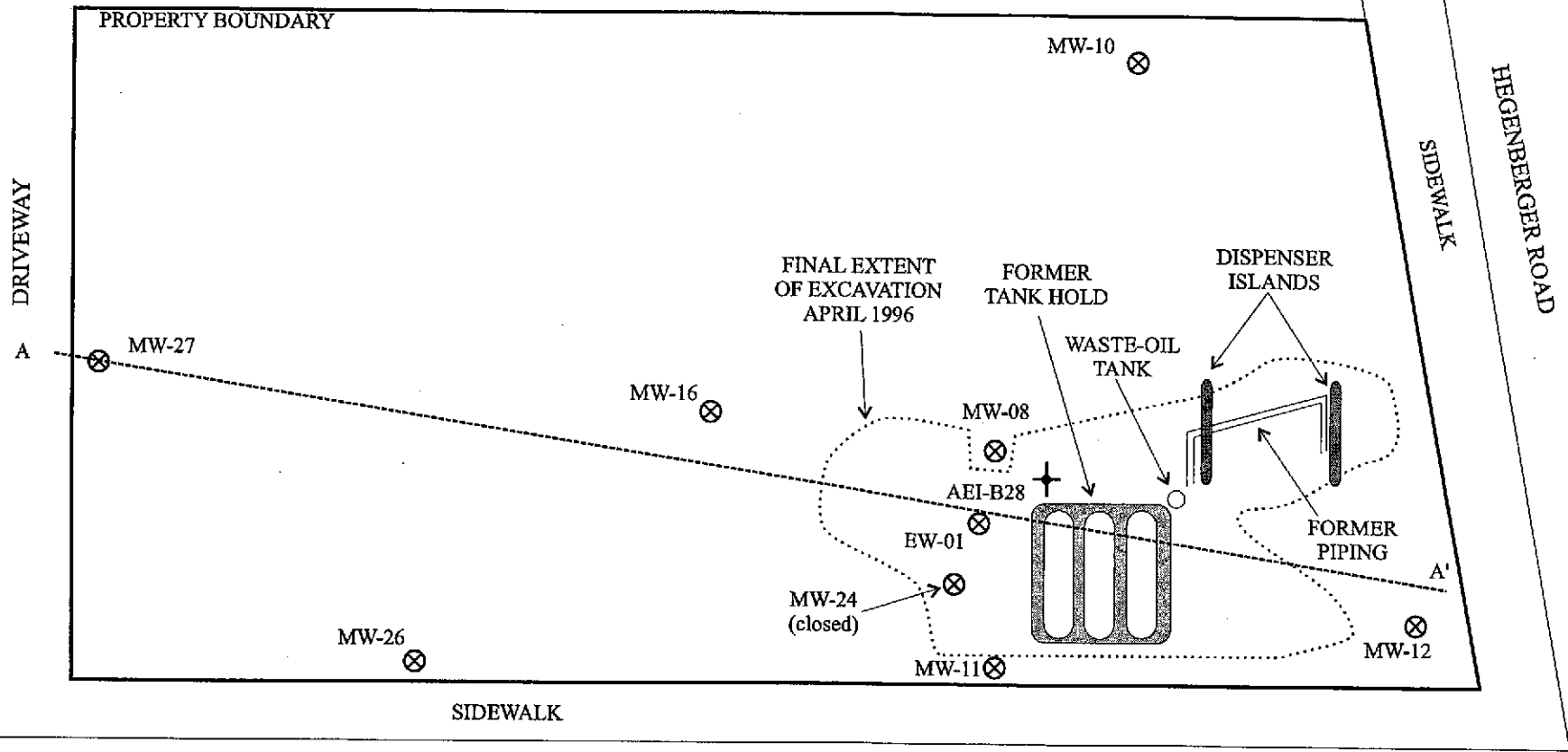
TN * / MN
15°



Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

AEI CONSULTANTS 3210 OLD TUNNEL RD, STE B, LAFAYETTE, CA	
SITE LOCATION MAP	
625 HEGENBERGER ROAD OAKLAND, CALIFORNIA	FIGURE 1 PROJECT NO. 6274

COMMERCIAL WAREHOUSE PROPERTY



COLLINS DRIVE



0' 25' 50'
SCALE: 1 in = 50 ft

KEY

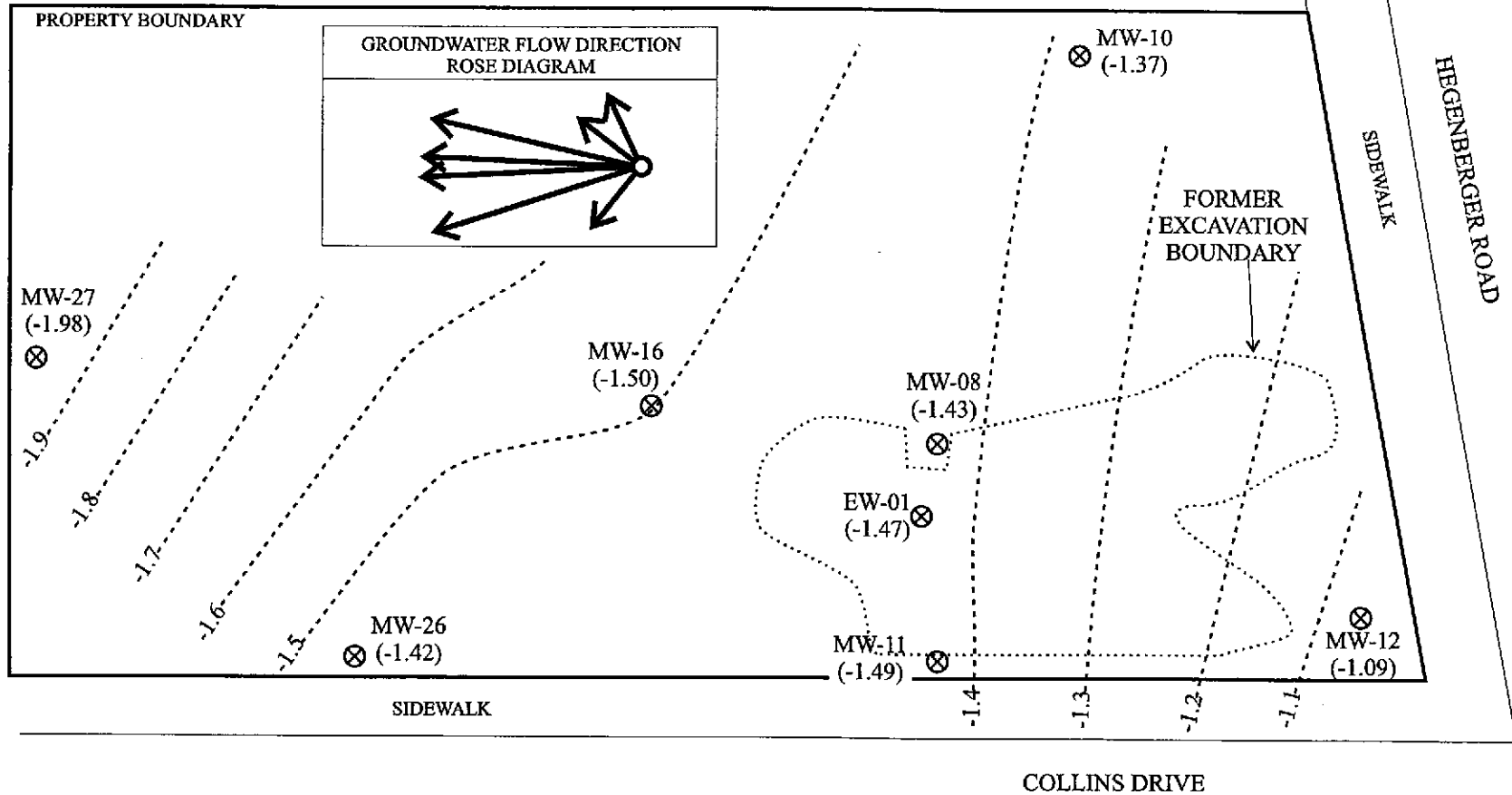
- ⊗ Monitoring Well Locations
- + Temporary Soil Boring (June 2000)

AEI CONSULTANTS
2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

SITE PLAN

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 3
AEI PROJECT NO 6274



0' 25' 50'

SCALE: 1 in = 50 ft

KEY	
	Monitoring Well
	Water Table contour in feet above mean sea level. Contour interval = 0.1 feet

ROSE DIAGRAM SCALE: 1/2 in = 1 episode
 NOTE: Rose diagram does not include effects of MW-26 & MW-27

AEI CONSULTANTS
 2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

WATER TABLE CONTOURS: 9/11/02

625 HEGENBERGER ROAD
 OAKLAND, CALIFORNIA

FIGURE 4
 AEI PROJECT NO 6274

PROPERTY BOUNDARY

MW-27
TPHg - <50
B - <0.5
T - <0.5
E - <0.5
X - <0.5
M - 0.52
TBA - <0.5

MW-16
TPHg - <50
B - <0.5
T - <0.5
E - <0.5
X - <0.5
M - 250
TBA - 33

EW-01
TPHg - 1,600
B - 400
T - 5.2
E - 22
X - 56
M - 470
TBA - 77

MW-10
TPHg - <50
B - <0.5
T - <0.5
E - <0.5
X - <0.5
M - 2.3
TBA - <0.5

MW-08
TPHg - 2,000
B - 520
T - 5.4
E - 11
X - 8.7
M - 270
TBA - <50

MW-26
TPHg - <50
B - <0.5
T - <0.5
E - <0.5
X - <0.5
M - 0.80
TBA - <0.5

MW-11
TPHg - <50
B - <0.5
T - <0.5
E - <0.5
X - <0.5
M - 250
TBA - 98

MW-12
TPHg - <50
B - <0.5
T - <0.5
E - <0.5
X - <0.5
M - 3.6
TBA - <0.5

FORMER EXCAVATION BOUNDARY

HEGENBERGER ROAD
SIDEWALK

SIDEWALK



0' 25' 50'
SCALE: 1 in = 50 ft

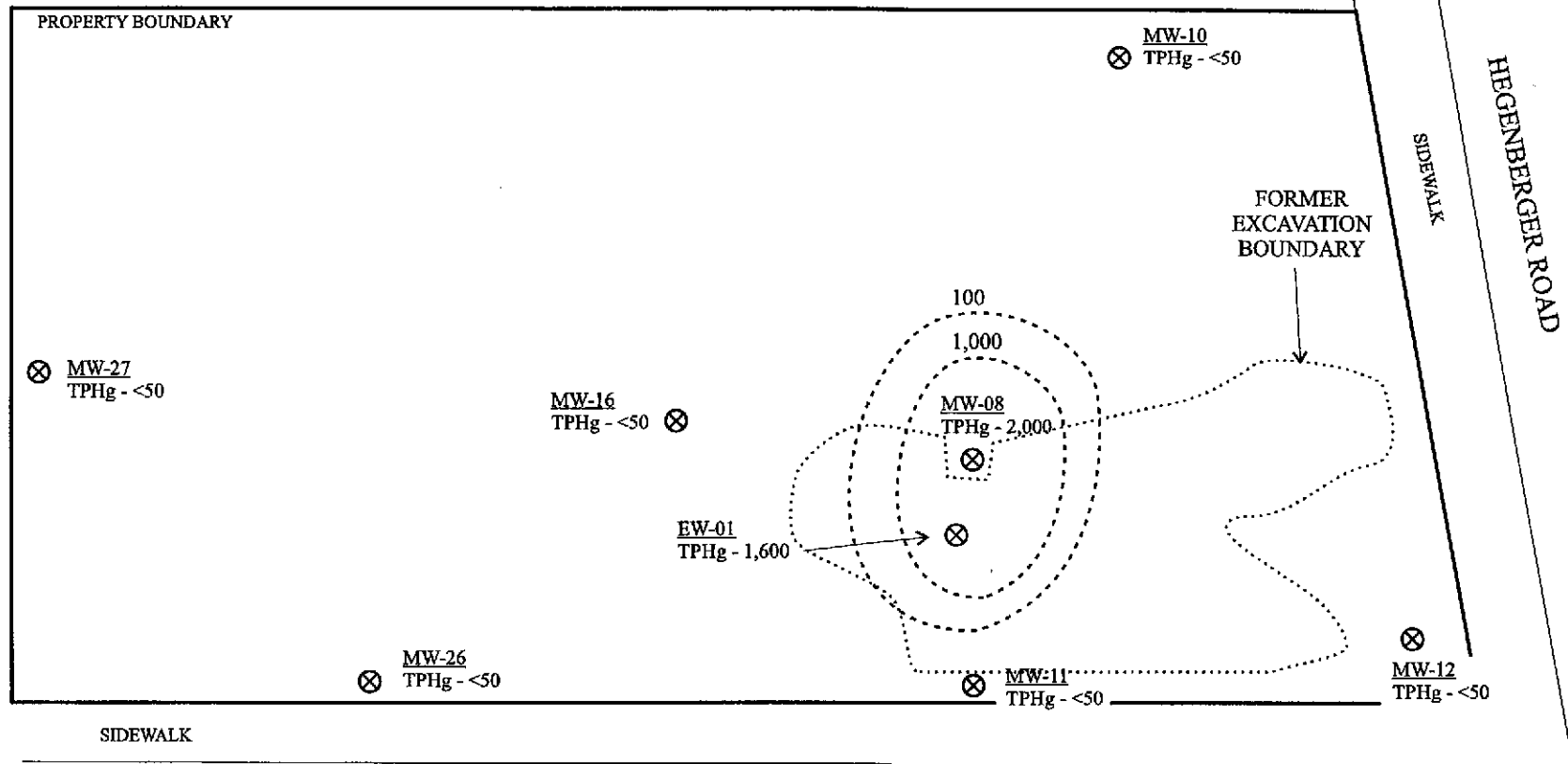
KEY	
	Well locations with dissolved phase hydrocarbons in µg/l
TPHg-TPH gasoline	
B-Benzene	T-Toluene
E-Ethylbenzene	X-Xylenes
M-MTBE (8260 result)	
TBA - t-Butyl alcohol	

AEI CONSULTANTS
2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

HYDROCARBON CONCENTRATIONS: 9/11/02

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 5
AEI PROJECT NO 6274



0° 25° 50°

SCALE: 1 in = 50 ft

KEY

⊗ Well locations with dissolved TPHg concentrations in $\mu\text{g/l}$

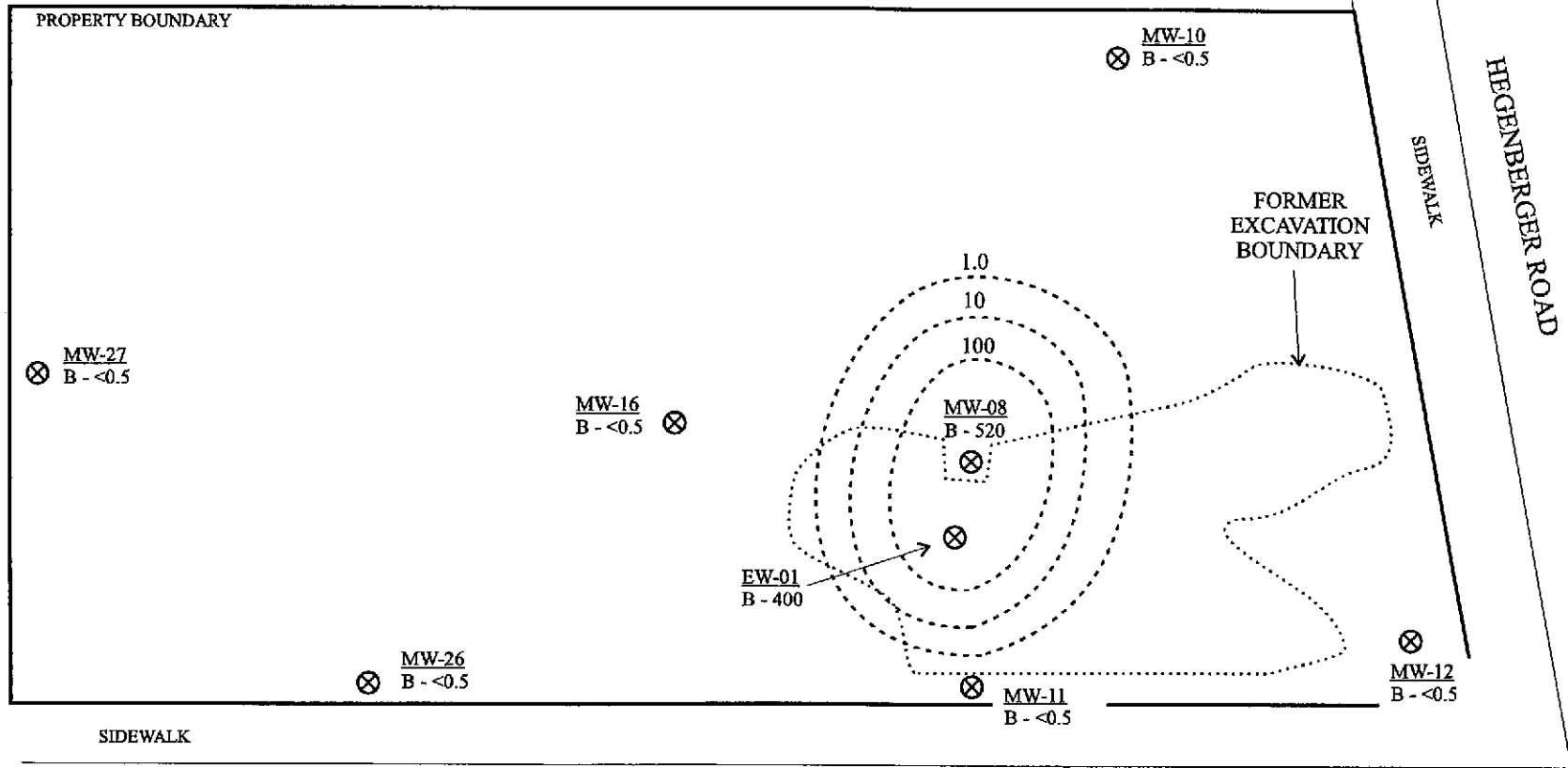
- - - - - 10
TPHg iso-concentration contour. Data as of 9/11/02
Interval: factor of 10

AEI CONSULTANTS
2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

TPHg Concentration Contours

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 6
AEI PROJECT NO 6274



0' 25' 50'
SCALE: 1 in = 50 ft

KEY

⊗ Well locations with dissolved Benzene (B) concentrations in $\mu\text{g/l}$

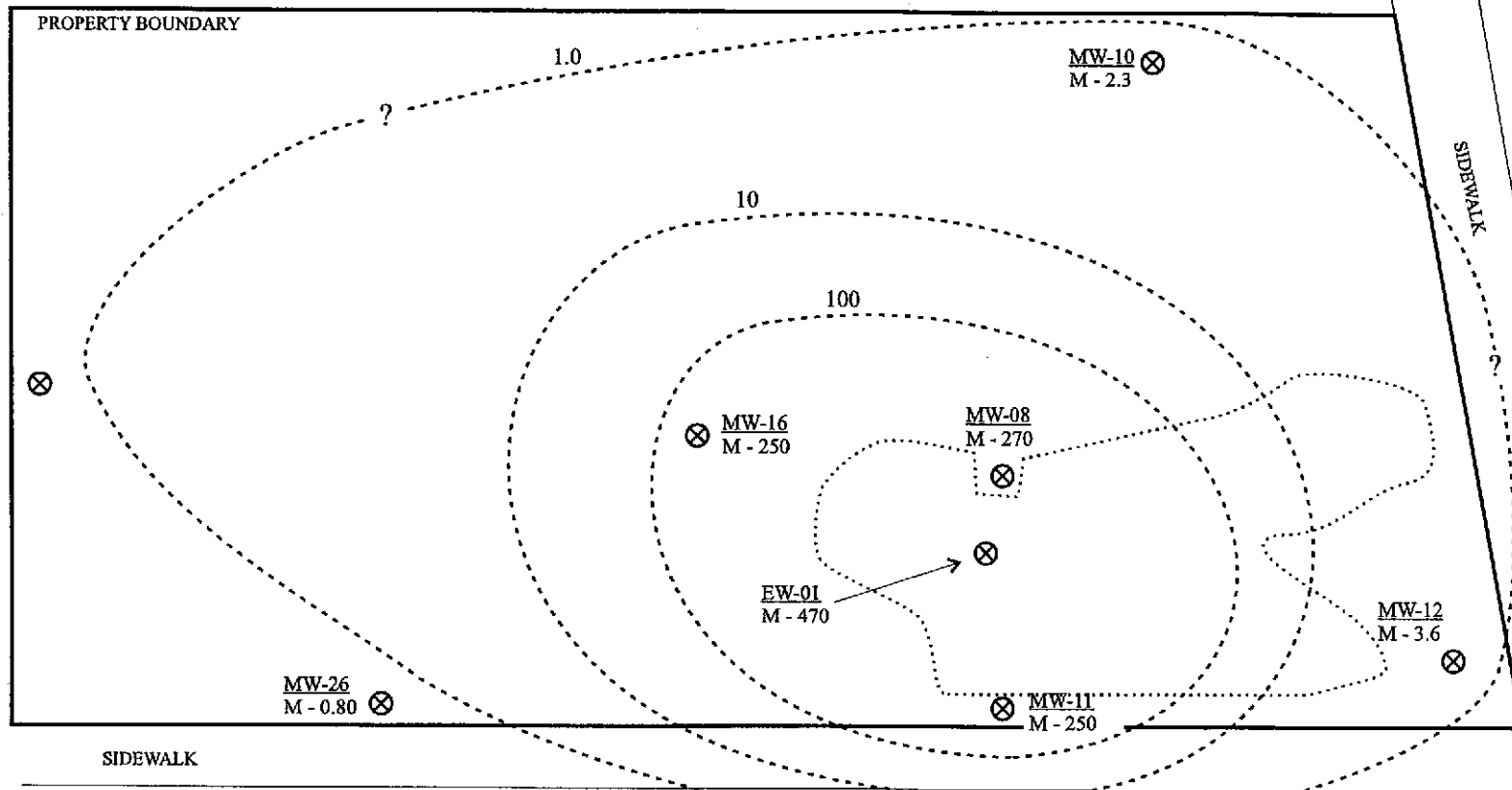
--- Benzene iso-concentration contour. Data as of 9/11/02
Interval: factor of 10

AEI CONSULTANTS
2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

Benzene Concentration Contours

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 7
AEI PROJECT NO 6274



0' 25' 50'
SCALE: 1 in = 50 ft

KEY

⊗ Well locations with dissolved MTVE (M) concentrations in µg/l

- - - - - 10
MTBE iso-concentration contour. Data as of 9/11/02
Interval: factor of 10

AEI CONSULTANTS
2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

MTBE Concentration Contours

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE 8
AEI PROJECT NO 6274

Table 3
Water Table Elevations

Well ID	Date	Well Elevation (ft msl)	Depth to Water (ft)	Groundwater Elevation (ft msl)
MW-8	12/22/1993	4.88	6.72	-1.84
MW-10	12/22/1993	4.21	6.00	-1.79
MW-11	12/22/1993	5.04	6.84	-1.80
MW-12	12/22/1993	4.58	6.07	-1.49
MW-16	12/22/1993	5.53	7.48	-1.95
MW-8	6/30/1994	4.88	6.55	-1.67
MW-10	6/30/1994	4.21	5.79	-1.58
MW-11	6/30/1994	5.04	6.73	-1.69
MW-12	6/30/1994	4.58	6.06	-1.48
MW-16	6/30/1994	5.53	7.28	-1.75
MW-8	9/27/1994	4.88	7.20	-2.32
MW-10	9/27/1994	4.21	6.39	-2.18
MW-11	9/27/1994	5.04	7.41	-2.37
MW-12	9/27/1994	4.58	6.57	-1.99
MW-16	9/27/1994	5.53	7.93	-2.40
MW-8	1/4/1995	4.88	6.21	-1.67
MW-10	1/4/1995	4.21	5.42	-1.58
MW-11	1/4/1995	5.04	6.45	-1.69
MW-12	1/4/1995	4.58	5.50	-1.48
MW-16	1/4/1995	5.53	7.03	-1.50
MW-8	1/10/1995	4.88	5.09	-2.32
MW-10	1/10/1995	4.21	4.67	-2.18
MW-11	1/10/1995	5.04	5.72	-2.37
MW-12	1/10/1995	4.58	4.46	-1.99
MW-16	1/10/1995	5.53	6.21	-2.40
MW-24	1/10/1995	5.49	5.97	-0.48
MW-8	10/2/1995	4.88	7.66	-2.78
MW-10	10/2/1995	4.21	6.87	-2.66
MW-11	10/2/1995	5.04	7.85	-2.81
MW-12	10/2/1995	4.58	6.99	-2.41
MW-16	10/2/1995	5.53	8.40	-2.87
MW-24	10/2/1995	5.49	8.31	-2.82
MW-8	1/8/1996	4.88	7.45	-2.57
MW-10	1/8/1996	4.21	6.82	-2.61
MW-11	1/8/1996	5.04	7.91	-2.87
MW-12	1/8/1996	4.58	6.65	-2.07
MW-16	1/8/1996	5.53	8.23	-2.70
MW-24	1/8/1996	5.49	8.08	-2.59
MW-8	4/25/1996	4.88	7.32	-2.44
MW-10	4/25/1996	4.21	7.48	-3.27
MW-11	4/25/1996	5.04	7.51	-2.47
MW-12	4/25/1996	4.58	6.56	-1.98
MW-16	4/25/1996	5.53	8.06	-2.53
MW-8	3/25/1997	4.88	6.75	-1.87
MW-10	3/25/1997	4.21	5.83	-1.62
MW-11	3/25/1997	5.04	6.83	-1.79
MW-12	3/25/1997	4.58	6.03	-1.45
MW-16	3/25/1997	5.53	7.35	-1.82
MW-8	7/3/1997	4.88	8.70	-3.82
MW-10	7/3/1997	4.21	5.87	-1.66
MW-11	7/3/1997	5.04	6.83	-1.79
MW-12	7/3/1997	4.58	6.03	-1.45
MW-16	7/3/1997	5.53	7.35	-1.82

Table 3: Continued

Well ID	Date	Well Elevation (ft msl)	Depth to Water (ft)	Groundwater Elevation (ft msl)
MW-8	10/2/1997	4.88	6.70	-1.82
MW-10	10/2/1997	4.21	5.90	-1.69
MW-11	10/2/1997	5.04	6.85	-1.81
MW-12	10/2/1997	4.58	6.08	-1.50
MW-16	10/2/1997	5.53	7.36	-1.83
MW-8	1/28/1998	4.88	5.20	-0.32
MW-10	1/28/1998	4.21	4.40	-0.19
MW-11	1/28/1998	5.04	5.33	-0.29
MW-12	1/28/1998	4.58	4.54	-0.04
MW-16	1/28/1998	5.53	5.90	-0.37
MW-8	2/9/2000	4.88	5.12	-0.24
MW-10	2/9/2000	4.21	5.25	-1.04
MW-11	2/9/2000	5.04	6.25	-1.21
MW-12	2/9/2000	4.58	5.33	-0.75
MW-16	2/9/2000	5.53	6.81	-1.28
MW-8	8/9/2000*	3.96	5.15	-1.19
MW-10	8/9/2000	4.20	5.33	-1.13
MW-11	8/9/2000	5.01	6.20	-1.19
MW-12	8/9/2000	4.58	5.14	-0.56
MW-16	8/9/2000	5.51	6.74	-1.23
MW-26	8/9/2000	5.12	5.81	-0.69
MW-27	8/9/2000	4.06	5.12	-1.06
EW-01	8/9/2000	5.19	6.38	-1.19
MW-8	5/31/2001	3.96	5.54	-1.58
MW-10	5/31/2001	4.20	5.81	-1.61
MW-11	5/31/2001	5.01	6.65	-1.64
MW-12	5/31/2001	4.58	6.28	-1.70
MW-16	5/31/2001	5.51	7.14	-1.63
MW-26	5/31/2001	5.12	6.25	-1.13
MW-27	5/31/2001	4.06	5.84	-1.78
EW-01	5/31/2001	5.19	6.84	-1.65
MW-8	4/8/2002	3.96	4.85	-0.89
MW-10	4/8/2002	4.20	4.93	-0.73
MW-11	4/8/2002	5.01	5.94	-0.93
MW-12	4/8/2002	4.58	5.08	-0.50
MW-16	4/8/2002	5.51	6.45	-0.94
MW-26	4/8/2002	5.12	5.88	-0.76
MW-27	4/8/2002	4.06	5.32	-1.26
EW-01	4/8/2002	5.19	6.11	-0.92
MW-8	7/29/2002	3.96	5.22	-1.26
MW-8	9/11/2002	3.96	5.39	-1.43
MW-10	9/11/2002	4.20	5.57	-1.37
MW-11	9/11/2002	5.01	6.50	-1.49
MW-12	9/11/2002	4.58	5.67	-1.09
MW-16	9/11/2002	5.51	7.01	-1.50
MW-26	9/11/2002	5.12	6.54	-1.42
MW-27	9/11/2002	4.06	6.04	-1.98
EW-01	9/11/2002	5.19	6.66	-1.47

Notes: All elevations are measured from the top of casing.

ft msl = feet above mean sea level

NA = Not Available

*All well elevations were re-surveyed 9/5/00 by Logan Survey (lic. # 5003)

Table 4
Groundwater Quality Data

Well ID	Date	Volume Withdrawn (gallons)	Temperature (deg. C)	Qualitative Turbidity	pH	Stabilized Dissolved Oxygen (mg/L)	Specific Conductivity μ Selms/cm	N (mg/L)	P (mg/L)	K (mg/L)
MW-8	12/22/1993	4.5	19.4	turbid*	-	-	-	-	-	-
MW-10	12/22/1993	7.0	20.8	moderately turbid	-	-	-	-	-	-
MW-11	12/22/1993	4.5	20.2	turbid	-	-	-	-	-	-
MW-12	12/22/1993	5.3	20.3	moderately turbid	-	-	-	-	-	-
MW-16	12/22/1993	4.5	20.5	turbid	-	-	-	-	-	-
MW-8	6/30/1994	8.0	21.0	turbid*	-	-	-	-	-	-
MW-10	6/30/1994	6.0	21.0	turbid	-	-	-	-	-	-
MW-11	6/30/1994	6.0	20.2	turbid	-	-	-	-	-	-
MW-12	6/30/1994	6.0	20.6	moderately turbid	-	-	-	-	-	-
MW-16	6/30/1994	4.5	21.8	turbid	-	-	-	-	-	-
MW-8	9/27/1994	4.5	21.6	turbid*	-	-	-	-	-	-
MW-10	9/27/1994	6.0	22.6	turbid	-	-	-	-	-	-
MW-11	9/27/1994	3.0	21.0	turbid	-	-	-	-	-	-
MW-12	9/27/1994	6.0	22.5	turbid	-	-	-	-	-	-
MW-16	9/27/1994	3.0	22.6	turbid	-	-	-	-	-	-
MW-8	1/10/1995	5.3	17.2	turbid*	-	-	-	-	-	-
MW-10	1/10/1995	6.0	19.5	turbid	-	-	-	-	-	-
MW-11	1/10/1995	5.3	18.6	turbid	-	-	-	-	-	-
MW-12	1/10/1995	6.0	19.3	turbid	-	-	-	-	-	-
MW-16	1/10/1995	6.0	19.3	turbid	-	-	-	-	-	-
MW-24	1/10/1995	41.0	18.9	turbid	-	-	-	-	-	-
MW-8	10/2/1995	11.0	22.8	moderately turbid	6.49	-	-	-	-	-
MW-10	10/2/1995	11.0	22.6	turbid	7.20	-	-	-	-	-
MW-11	10/2/1995	12.0	22.0	moderately turbid	6.85	-	-	-	-	-
MW-12	10/2/1995	11.0	22.9	turbid	7.20	-	-	-	-	-
MW-16	10/2/1995	11.0	22.6	turbid	7.20	-	-	-	-	-
MW-24	10/2/1995	20.0	22.8	turbid	7.10	-	-	-	-	-
MW-8	1/8/1996	12.0	17.30**	slightly turbid	6.74**	-	-	-	-	-
MW-10	1/8/1996	10.0	17.90**	slightly turbid	6.62**	-	-	-	-	-
MW-11	1/8/1996	5.5	17.60**	slightly turbid	6.65**	-	-	-	-	-
MW-12	1/8/1996	10.0	18.00**	slightly turbid	6.49**	-	-	-	-	-
MW-16	1/8/1996	5.0	19.00**	slightly turbid	7.50**	-	-	-	-	-
MW-24	1/8/1996	35.0	17.60**	slightly turbid	6.67**	-	-	-	-	-
MW-8	4/25/1996	5.0	21.1	clear	6.53	-	-	-	-	-
MW-10	4/25/1996	5.0	22.8	slightly turbid	6.70	-	-	-	-	-
MW-11	4/25/1996	5.5	21.4	clear	6.58	-	-	-	-	-
MW-12	4/25/1996	5.0	22.4	clear	6.50	-	-	-	-	-
MW-16	4/25/1996	5.0	25.3	slightly turbid	7.12	-	-	-	-	-
MW-8	3/25/1997	10.0	18.2	clear	6.67	0.23	-	-	-	-
MW-10	3/25/1997	12.0	19.7	slightly turbid	6.79	0.35	-	-	-	-
MW-11	3/25/1997	10.0	18.6	clear	6.64	0.19	-	-	-	-
MW-12	3/25/1997	10.0	18.4	clear	6.67	0.19	-	-	-	-
MW-16	3/25/1997	10.0	17.9	slightly turbid	7.02	0.10	-	-	-	-
MW-8	7/3/1997	12.0	19.6	clear	6.43	0.04	-	<0.5	1.8	-
MW-10	7/3/1997	12.0	21.5	slightly turbid	6.67	0.17	-	-	-	-
MW-11	7/3/1997	12.0	19.4	clear	6.36	0.05	-	<0.5	1.8	-
MW-12	7/3/1997	12.0	20.6	clear	6.50	0.10	-	-	-	-
MW-16	7/3/1997	12.0	19.7	clear	6.76	0.06	-	-	-	-
MW-8	10/2/1997	4.5	21.2	clear	6.93	-	-	-	-	-
MW-10	10/2/1997	5.0	23.0	slightly turbid	7.26	-	-	-	-	-
MW-11	10/2/1997	7.0	22.9	clear	6.73	-	-	-	-	-
MW-12	10/2/1997	4.5	20.9	clear	7.15	-	-	-	-	-
MW-16	10/2/1997	7.0	19.1	slightly turbid	7.22	-	-	-	-	-
MW-8	1/28/1998	15.0	18.5	slightly greenish	6.86	0.10	-	-	-	-
MW-10	1/28/1998	15.0	20.9	moderately turbid	7.05	0.09	-	-	-	-
MW-11	1/28/1998	15.0	20.1	slightly greenish	6.74	0.11	-	-	-	-
MW-12	1/28/1998	14.0	19.8	moderately turbid	6.90	0.11	-	-	-	-
MW-16	1/28/1998	16.0	19.1	slightly turbid	7.20	0.18	-	-	-	-

TABLE 4: Continued

Well ID	Date	Volume Withdrawn (gallons)	Stabilized Temperature (deg. C)	Qualitative Turbidity	Stabilized pH	Stabilized Dissolved Oxygen (mg/L)	Specific Conductivity μ S/cm	N (mg/L)	P (mg/L)	K (mg/L)
MW-8	2/9/2000	5.0	63.00***	slightly greenish	8.35	1.24	3120	19	3.4	35
MW-10	2/9/2000	5.0	67.7	slightly turbid	8.56	0.70	5610	15	6.4	66
MW-11	2/9/2000	5.0	63.5	slightly turbid	8.35	0.62	2980	<0.2	2.1	49
MW-12	2/9/2000	5.0	62.8	clear	8.41	1.28	2150	10	3.1	33
MW-16	2/9/2000	5.0	63.2	slightly turbid	8.63	3.13	1640	<0.2	1.8	12
EW-01	2/9/2000	32.0	60.0	slightly turbid	8.48	0.51	3190	21	1.7	51
MW-8	8/9/2000	5.0	18.9	Slightly turbid	6.68	1.55	365	-	-	-
MW-10	8/9/2000	5.0	21.9	Turbid - clears	6.68	1.63	565	-	-	-
MW-11	8/9/2000	5.5	19.7	Slightly turbid	6.48	1.48	268	-	-	-
MW-12	8/9/2000	5.0	21.3	clear	6.72	1.69	217	-	-	-
MW-16	8/9/2000	4.0	20.5	Turbid - clears	6.62	1.33	286	-	-	-
MW-26	8/9/2000	5.0	21.3	Turbid - clears	6.99	2.78	123	-	-	-
MW-27	8/9/2000	5.0	24.4	clear	6.93	2.21	146	-	-	-
EW-01	8/9/2000	31.0	18.4	Turbid - clears	6.69	1.32	471	-	-	-
MW-8	5/31/2001	4.25	18.8	clears	7.09	0.93	1339	-	-	-
MW-10	5/31/2001	4.75	20.6	clears quickly	6.98	0.86	>2000	-	-	-
MW-11	5/31/2001	5.0	18.8	clears quickly	7.09	1.28	1331	-	-	-
MW-12	5/31/2001	5.0	19.8	clears quickly	7.07	1.47	962	-	-	-
MW-16	5/31/2001	3.0	20.3	Slightly turbid	7.03	1.44	1307	-	-	-
MW-26	5/31/2001	5.0	19.6	clears quickly	7.01	1.20	615	-	-	-
MW-27	5/31/2001	5.0	22.1	clears quickly	7.06	1.74	790	-	-	-
EW-01	5/31/2001	30.0	17.8	clears quickly	7.09	1.50	>2000	-	-	-
MW-8	4/8/2002	5.0	17.3	Clears	7.30	1.02	>4000	-	-	-
MW-10	4/8/2002	5.5	19.2	Clears	7.31	1.15	>4000	-	-	-
MW-11	4/8/2002	5.0	18.0	Clears quickly	7.28	0.96	2645	-	-	-
MW-12	4/8/2002	5.0	17.9	Clears quickly	7.29	2.86	2604	-	-	-
MW-16	4/8/2002	3.0	18.0	Clear	7.29	0.81	3293	-	-	-
MW-26	4/8/2002	5.0	17.5	Greyish, clear by 2 g	7.31	0.88	1428	-	-	-
MW-27	4/8/2002	6.0	15.9	Black, clear by 3 g	7.32	1.13	1290	-	-	-
EW-01	4/8/2002	32.0	17.6	Clears quickly	7.32	1.30	>4000	-	-	-
MW-8	9/11/2002	10.0	19.8	clears quickly	6.97	3.41	>3999	-	-	-
MW-10	9/11/2002	6.0	21.4	clears quickly	7.19	1.73	>3999	-	-	-
MW-11	9/11/2002	5.0	20.0	clears quickly	7.00	1.77	2686	-	-	-
MW-12	9/11/2002	5.0	21.1	clears quickly	7.32	1.30	2488	-	-	-
MW-16	9/11/2002	3.0	20.2	Black, clear by 1 g	7.34	1.21	3123	-	-	-
MW-26	9/11/2002	4.5	2.8	Greyish, clear by 2 g	6.97	0.42	1367	-	-	-
MW-27	9/11/2002	6.0	21.0	Greyish, clear by 1 g	7.31	1.64	3990	-	-	-
EW-01	9/11/2002	31.0	19.8	clears quickly	7.03	0.60	>3999	-	-	-

Notes: * A slight hydrocarbon sheen was reported. - = Data not obtained or available
 ** Only one measurement collected.
 *** Temperature expressed in degrees Fahrenheit
 N = Nitrogen (total)
 P = Phosphorous (total)
 K = Potassium

Table 5: Continued

Date	TPH-g	TPH-d	TPH-o	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	MTBE	DIPE	ETBE	TAME	TBA	EBD	1,2-DCA	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
	EPA method 8015M			EPA method 8020					EPA method 8260B							
MW-16	5/28/1993	<50	<50	-	2.8	0.3	<0.7	<0.9	-	-	-	-	-	-	-	
	12/22/1993	2200	520	<200	<0.5	<0.7	<0.5	<0.2	-	-	-	-	-	-	-	
	6/30/1994	<50	<50	900	8	<0.5	<0.5	<0.2	-	-	-	-	-	-	-	
	9/27/1994	70	590	<200	17	<0.5	<0.5	<0.2	-	-	-	-	-	-	-	
	1/10/1995	300	700	<200	190	<0.5	<0.5	<0.2	-	-	-	-	-	-	-	
	10/2/1995	550	<50	<500	7.7	0.7	3.5	13	-	-	-	-	-	-	-	
	1/8/1996	360	140	<250	<0.5	<0.5	4	9.7	-	-	-	-	-	-	-	
	4/25/1996	1100	330	-	390	3.7	3.2	14	-	-	-	-	-	-	-	
	3/25/1997	310	120	-	<0.5	<0.5	<0.5	1.4	2100	-	-	-	-	-	-	
	7/3/1997	250	130	-	<0.5	<0.5	<0.5	<0.5	1900	-	-	-	-	-	-	
	10/2/1997	290	180	-	<0.5	<0.5	<0.5	<0.5	2000	-	-	-	-	-	-	
	1/28/1998	150	130	-	<0.5	<0.5	<0.5	<0.5	1900	-	-	-	-	-	-	
	9/9/1999	<50	-	-	<0.5	<0.5	<0.5	<0.5	880	-	-	-	-	-	-	
	2/9/2000	<50	-	-	<0.5	0.6	<0.5	8.7	88	-	-	-	-	-	-	
	8/9/2000	<50	-	-	<0.5	<0.5	<0.5	<0.5	800	-	-	-	-	-	-	
	5/31/2001	<50	-	-	<0.5	<0.5	<0.5	<0.5	69	-	-	-	-	-	-	
	8/10/2001	<50	-	-	<0.5	<0.5	<0.5	<0.5	300	-	-	-	-	-	-	
	9/25/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12/14/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4/8/2002	<50	-	-	1.7	0.61	0.78	1.4	45	-	-	-	-	-	-		
9/11/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	280	250	<2.5	<2.5	<2.5	33	<2.5		
EW-01	2/9/2000	2600	-	-	800	48	21	91	750	-	-	-	-	-	-	
	8/9/2000	6700	-	-	2700	19	120	31	1300	-	-	-	-	-	-	
	5/31/2001	3,100	-	-	580	24	36	32	850	-	-	-	-	-	-	
	8/10/2001	210	-	-	14	2.2	1.0	1.1	620	-	-	-	-	-	-	
	9/25/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12/14/2001	2,400	-	-	320	57	23	70	510	-	-	-	-	-	-	
	4/8/2002	230	-	-	37	3.1	1.5	1	190	-	-	-	-	-	-	
	9/11/2002	1600	-	-	400	5.2	22	56	630	470	<5.0	<5.0	<5.0	77	<5.0	
MW-26	8/9/2000	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-	
	5/31/2001	<50	-	-	<0.5	<0.5	<0.5	<0.5	8.3	-	-	-	-	-	-	
	8/10/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9/25/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12/14/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	4/8/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-	
9/11/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	0.30	<0.5	<0.5	<0.5	<0.5	<0.5		
MW-27	8/9/2000	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-	
	5/31/2001	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-	
	8/10/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9/25/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12/14/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	4/8/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-	
	9/11/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	0.52	<0.5	<0.5	<0.5	<0.5	<0.5	

TPH-g = TPH as gasoline

TPH-d = TPH as diesel

TPH-o = TPH as motor oil

Table 5
Groundwater Sample Analytical Data

Date	TPH-g	TPH-d	TPH-o	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	MTBE	DIPE	ETBE	TAME	TBA	EBD	1,2-DCA
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	EPA method 8015M			EPA method 8020				EPA method 8260B							
MW-8	5/28/1993	19000	1000	-	6400	28	160	36	-	-	-	-	-	-	-
	12/22/1993	56000	300	<200	16000	5999.3	650	2700	-	-	-	-	-	-	-
	6/30/1994	41000	<500	500	11000	4800	2200	8200	-	-	-	-	-	-	-
	9/27/1994	28000	620	<200	8500	260	1600	5300	-	-	-	-	-	-	-
	1/10/1995	58000	70	<200	10000	11000	2400	12000	-	-	-	-	-	-	-
	10/2/1995	28000	<50	<500	51	16	54	80	-	-	-	-	-	-	-
	1/8/1996	72000	3700	<250	8600	13000	2200	12000	-	-	-	-	-	-	-
	1/8/1996	62000	-	-	7200	9500	1600	8000	-	-	-	-	-	-	-
	4/25/1996	33000	3100	-	7600	2300	1500	4800	-	-	-	-	-	-	-
	3/25/1997	23000	1900	-	8300	80	350	380	1500	-	-	-	-	-	-
	7/3/1997	14000	1400	-	6600	32	190	100	1300	-	-	-	-	-	-
	7/3/1997	15000	1400	-	7300	34	160	110	1700	-	-	-	-	-	-
	10/2/1997	7600	810	-	3500	14	37	21	890	-	-	-	-	-	-
	1/28/1998	21000	2700	-	5500	270	730	780	900	-	-	-	-	-	-
	9/9/1999	2500	-	-	790	2.8	4.7	8	380	-	-	-	-	-	-
	2/9/2000	39000	-	-	6400	4300	950	390	460	-	-	-	-	-	-
	8/9/2000	5500	-	-	1700	15	130	370	540	-	-	-	-	-	-
	5/31/2001	14,000	-	-	2,800	63	610	540	370	-	-	-	-	-	-
	8/10/2001	4,400	-	-	1,200	41	160	170	380	-	-	-	-	-	-
	9/25/2001	2,100	-	-	470	7.2	6.5	7.1	210	-	-	-	-	-	-
12/14/2001	1800	-	-	230	34	67	150	26	-	-	-	-	-	-	
4/8/2002	32000	-	-	2000	820	1100	2300	62	-	-	-	-	-	-	
7/29/2002	4300	-	-	1200	21	58	69	280	-	-	-	-	-	-	
9/11/2002	2000	-	-	520	5.4	11	8.7	430	270	<5.0	<5.0	<5.0	<5.0	<5.0	
MW-10	5/28/1993	<50	54	-	<0.3	<0.3	<0.3	<0.9	-	-	-	-	-	-	-
	12/22/1993	<50	580	<200	<0.5	<0.7	<0.5	<0.2	-	-	-	-	-	-	-
	6/30/1994	<50	<50	600	<0.5	<0.5	<0.5	<0.2	-	-	-	-	-	-	-
	9/27/1994	<50	610	<200	<0.5	<0.5	<0.5	<0.2	-	-	-	-	-	-	-
	1/10/1995	<50	600	<200	<0.5	<0.5	<0.5	<0.2	-	-	-	-	-	-	-
	10/2/1995	350	<50	<500	4.4	2.6	2.3	6.4	-	-	-	-	-	-	-
	1/8/1996	50	<50	<230	5.8	7.1	1.2	6.4	-	-	-	-	-	-	-
	4/25/1996	<50	<50	-	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-
	3/25/1997	<50	<50	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	7/3/1997	<50	<50	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	10/2/1997	<50	110	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	1/28/1998	<50	<50	-	5.7	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	8/19/1999	<50	-	-	5.7	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	2/9/2000	<50	-	-	5.7	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	8/9/2000	<50	-	-	5.7	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	5/31/2001	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	8/10/2001	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
	9/25/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/14/2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/8/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	-	-	-	-	-	-
9/11/2002	<50	-	-	<0.5	<0.5	<0.5	<0.5	<5.0	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	