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Real Estate Services

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11:31 am, Mar 19, 2009

Alameda County
Environmental Health

March 9, 2009

Alameda County Environmental Health
Attn: Barbara Jakub, P.G.
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Site Conceptual Model
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Dear Ms. Jakub:

Enclosed please find a copy of the subject Site Conceptual Model dated February 13, 2009, prepared by BSK Associates.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,

Randal Nahas

SITE CONCEPTUAL MODEL
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

BSK Project E0805401S

Submitted to:

Mr. Randall Nahas
P.O. Box 3059
San Ramon, CA 94583

March 6, 2009

BSK

SITE CONCEPTUAL MODEL
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

Prepared for:

Mr. Randall Nahas
P.O. Box 3059
San Ramon, CA 94583

BSK Project: E0805401S

March 6, 2009

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SITE CONCEPTUAL MODEL
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

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Site Conceptual Model
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
1 Hydrocarbon Source		
1.1	Identify/Describe Release Source and Volume (if known)	Two 10,000-gallon gasoline USTs and one 300-gallon used oil UST were formerly on the site. The source of the petroleum may be due a gasoline spill or leaking tank/piping assembly (Philip Environmental, 1996).The volume of the release is not known.
1.2	Steps Taken to Stop Release	The service station building was demolished and fuel dispensers removed in the summer of 1997. In November 1998, the three USTs and associated piping were removed and transported to Ecology Control Industries (ECI) in Richmond, California. The two hydraulic hoists and clarifier sump were also removed (Life Springs Environmental, Inc., 1999).
2 Site Characterization		
2.1	Current Site Use/Status	The site is currently an empty lot covered in bark mulch. It is surrounded by retail establishments and associated parking to the north, east and south, and by Redwood Road to the west. The site vicinity is shown on Figure 1. A site plan is shown on Figure 2.
2.2	Site Investigations	***December 1989, Soil Investigation and Monitoring Well Installation:*** In December 1989, three groundwater monitoring wells (MW-2, MW-3 and MW-4) were installed at the locations shown on Figure 2. Soil samples were collected from MW-1 and MW-1A; however, they were not converted to monitoring wells (BSK, 1995). Summaries of soil sample analytical results are presented in Tables 1 and 2. Monitoring well groundwater sample analytical results are summarized in Table 3.
		March 1991, Soil Investigation: Thirteen soil borings (SB-1 through SB-13) were advanced at the locations shown on Figure 2 to depths ranging between approximately 10 and 20 feet bgs (BSK, 1996). Soil sample analytical results are summarized in Table 1.
		March through April 1992, Soil Borings and Monitoring Well Installation: Soil borings MW-5, MW-6, MW-7, SB-14, and SB-15 were drilled at the locations shown on Figure2. A summary of soil sample analytical results is presented in Table 1. Borings MW-5, MW-6, and MW-7 were completed as groundwater monitoring wells.
		October 1992 Chromatograph Evaluation: BSK identified a non-standard peak in chromatograph from a groundwater sample from MW-7. The peak was not typical of petroleum hydrocarbons.

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
2.2 (cont.)	Site Investigations	***November 1992, Groundwater Sampling:*** Groundwater samples from monitoring well MW-7 were analyzed for volatile halocarbons by EPA Method 601. Analytical results are summarized in Table 3. Tetrachloroethylene (PCE) and trichloroethylene (TCE) were detected in groundwater samples from MW-7 at concentrations of 14,000 µg/L and 660 µg/L, respectively. BSK attributed the previous concentrations of TPHg to the presence of PCE and concluded gasoline impacts may not occur in a significant quantity in monitoring well MW-7 and attributed the impacts to another source (BSK, 1992b).
		November 1993, Soil Borings: Soil borings SP-1 and SP-2 were advanced at the locations shown on Figure 2. Soil and groundwater samples were collected from each boring. Soil sample and groundwater analytical results are summarized in Tables 1 and 2, respectively (Philip Environmental, 1996).
		December 1995, Feasibility Study: Excavation and on-site treatment of excavated soil was determined to be the most viable remedial alternative for soil impact. As a part of the feasibility study, an aquifer pump test was conducted. Groundwater extraction well MW-101 was installed at the location shown on Figure 2. Pump-and-treat was determined to be a feasible remedial alternative for groundwater contamination at the site. (BSK, 1995).
		June 1996, Revised Corrective Action Plan: Philip Environmental prepared a Revised Corrective Action Plan. The plan reports the site operator and property owner planned to cease operation of the site as a service station, which would require closure of the underground storage tanks. Philip Environmental recommended removal of the USTs, soil excavation and limited groundwater extraction (Philip Environmental 1996). As part of the Revised Corrective Action Plan, Tier I and Tier II Risk Assessments were conducted. Results of the Tier I Risk Assessment show benzene levels in soil at the site exceeded the risk based screening levels for volatilization from soil to outdoor air, vapor intrusion from soil to on-site buildings, soil ingestion, and leachate from soil to water exposure pathways. Toluene levels in soil at the site exceeded the risk based screening levels for the vapor intrusion from soil to on-site buildings exposure pathway. Results of the Tier II Risk Assessment indicated that concentrations of phase separated hydrocarbons and benzene in soil and groundwater exceed Tier II site specific screening levels in the area adjacent to the USTs and the southern property boundary (Philip Environmental, 1996).
		Summer 1997, Service Station Building Demolition: The service station building was demolished and fuel dispensers removed (Life Springs 1999a).

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
2.2 (cont.)	Site Investigations	***November 1998, UST Removal:*** The concrete slabs and foundation of the building, fueling area, and pump islands, were removed and hauled to a recycling facility. The three USTs and associated piping were removed and transported to Ecology Control Industries (ECI) in Richmond, California. Two hydraulic hoists and clarifier sump were also removed. No holes were observed in the gasoline USTs, but small holes were observed in the waste oil UST. The excavated soil (approximately 175 cubic yards) was stockpiled. Figure 3 shows the approximate extent of the excavation. Soil samples were collected after excavation. Sample locations are shown on Figure 3. Table 1 provides a summary of soil sample analytical results. The release of petroleum hydrocarbons at the site appears to have primarily impacted the backfill material surrounding the two 10,000 gallon gasoline USTs. The UST pit was backfilled with aggregate base to within five feet of ground surface. Winter weather conditions led Life Springs Environmental Inc. to place impacted soil back in the excavations of the waste oil UST and clarifier sump (Life Springs 1999).
		April 1999, Stockpiled Soil Remediation: Beginning in April 1999, impacted soil from the main UST excavation was laid out in shallow beds and periodically tilled.
		May 1999, Soil Re-Excavation and Sampling: The waste oil UST and clarifier sump areas were re-excavated, with the second excavation extending slightly deeper then the original excavation. Excavated soil from the waste oil UST and clarifier sump pits was disposed of at Vasco Road Sanitary Landfill in Livermore, California (Life Springs 2000). Soil samples were collected from native soil in both pits and analyzed for TPHd and total oil and grease. A section of the trench area was also re-excavated to a depth of 3 feet bgs. Excavated soil from the trench was laid out in shallow beds for aeration. A soil sample was collected from the trench re-excavation (sample name: GASLINE). The sample was analyzed for TPHg/BTEX and MTBE. Table 1 provides a summary of soil sample analytical results. Figure 3 shows the approximate extent of excavation and sample locations.
		August 1999, Soil Stockpile and Waste Oil and Clarifier Sump Pit Sampling: The aerated soil was stockpiled. Soil samples were collected from the bottom of the waste oil and clarifier sump pits at depths of 10 and 7 feet bgs respectively. (Life Springs 1999). Table 1 provides a summary of soil sample analytical results.
		September 1999, Waste Oil Pit Sampling: A soil sample was collected from within the waste oil pit at a depth of 11.5 bgs and analyzed for chlorinated hydrocarbons and TPHd. Tables 1 and 2 provide a summary of soil sample analytical results. Figure 3 shows the approximate sample location.
		October 1999, Clarifier Sump Pit Sampling: A soil sample was collected within the clarifier sump pit at a depth of 9.5 feet bgs. Table 1 provides a summary of soil sample analytical results.

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
2.2 (cont.)	Site Investigations	***November 1999, Permission to Re-Use Stockpiled Soil:*** Permission was granted by Alameda County Environmental Health Services for the re-use of the stockpiled soil that had been remediated by aeration (Life Springs 2000). ***December 1999:*** ***Waste Oil and Clarifier Sump Pit Deepening and Sampling:*** The waste oil pit was deepened to 10 feet bgs and the clarifier sump pit was deepened to 14 feet bgs. Soil removed from the over-excavation was transported to the Vasco Road Sanitary Landfill in Livermore, California. Approximately 36 tons of soil were removed from both the waste oil pit and the clarifier sump pit during both excavation events. Soil samples were collected from the native soil in the bottom of each pit. The two excavations along with the final five feet of the main UST excavation were filled in with the remediated soil from the main excavation. Table 1 provides a summary of soil sample analytical results. Figure 3 shows the approximate extent of the over-excavation and sample locations. ***MW-4 Abandonment, MW-2 and MW-101 Repair:*** Monitoring well MW-4 was abandoned by pressure grouting and drilling out. The vault boxes for monitoring wells MW-2 and MW-101 were replaced (Life Springs 2000).
2.3	Groundwater Monitoring Program	From August 1990 through 1999, groundwater monitoring activities were performed on a quarterly basis. Groundwater monitoring was performed semi-annually starting in 1999 through September 2003. Groundwater monitoring was not conducted from the third quarter of 2003 through the third quarter of 2008. Groundwater monitoring analytical data are summarized in Tables 3 and 4. Groundwater elevation data are summarized in Table 5. Groundwater flow direction and gradient data are summarized in Table 6
2.4	Soil Definition Status	Based on excavation confirmation soil sample results, it appears that petroleum hydrocarbon-impacted soil in the vicinity of the former USTs and piping has been adequately removed. Significant residual contamination in soil appears to be limited to the clarifier sump and west hoist area.
2.5	Separate-Phase Hydrocarbon Definition Status	Separate-phase hydrocarbons have not been observed in groundwater.

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
2.6	TPHg, TPHd, BTEX, and MTBE Groundwater Definition Status	TPH concentrations are generally highest in MW-101, near the former UST location. TPHg was detected in groundwater samples from downgradient well MW-7, although it is likely that PCE from the drycleaner release may be contributing to the TPH detections. Benzene was not detected above the maximum contaminant level (MCL) of 1.0 µg/L in the November 2008 and February 2009 groundwater samples from the seven monitoring wells. Toluene, ethylbenzene, and xylenes were not detected above 0.3 µg/L in the corresponding samples. Figure 4 presents a generalized TPHg groundwater contour map for the February 2009 groundwater monitoring event. The highest historical MTBE concentrations have generally been detected in groundwater samples from monitoring well MW-101. Elevated concentrations of MTBE have been detected in recent groundwater samples from MW-6. However, considering the groundwater flow direction and the recent non-detects of MTBE in MW-7, it is not likely the MTBE plume extends south of MW-7. The MTBE plume may extend west of the property boundary, underneath the street. It is not likely the MTBE plume extends north or west of the property boundary. Figure 5 presents a generalized MTBE groundwater contour map for the February 2009 groundwater monitoring event.
2.7	TPHg, TPHd, BTEX and MTBE Plume Stability and Concentration Trends	Figures 6 through 10 show time-series plots for TPHg, benzene and MTBE concentrations in monitoring wells MW-2, MW-3, MW-6, MW-7, and MW-101, respectively. In general, concentrations in groundwater exhibit a decreasing trend; the exception being MTBE in monitoring well MW-6, which has generally exhibited a flat trend line.
2.8	Groundwater Flow Direction, Depth Trends and Gradient Trends	Groundwater at the site generally flows to the southwest. Depth to groundwater has generally ranged between 8 to 15 feet bgs, with gradients ranging between 0.001 and 0.012 feet/foot. A rose diagram summarizing historical flow direction data is shown on Figure 2.
2.9	Stratigraphy and Hydrogeology	The site is located within the eastern San Francisco bay area and within the Castro Valley Basin. Deposits in the area consist mostly of Pleistocene alluvial fan and fluvial deposits (Graymer, R.W., 2000). The deposits are usually less than 100 feet deep and consist mostly of fine silt and sand. Underlying bedrock is not considered water-bearing (BSK, 1991). Soils at the site consist mostly of silts and clays with intermittent lenses of clayey and silty sand. Groundwater beneath the site has generally been encountered at both 13 to 15 feet and 19 to 23 feet bgs. The shallower groundwater occurs throughout the south-central portion of the site. The deeper groundwater depths occur along the east and west boundaries of the site. Hydrostatic pressure in both units results in a piezometric surface at 10 to 12 feet bgs. There is lack of evidence for a confining layer between the two aquifers, therefore, the two aquifers are likely connected (BSK, 1992).

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
2.10	Preferential Pathways Analysis	Figure 13 present potential preferential pathways identified on the site. Three storm drain inlets are located south of the site, one on the south edge of the site, the second 25 feet south of the first, and the third is located approximately 120 feet west of the second. The Stormwater line appears to be situated in an east-west direction. According to previous sit plans, another storm drain inlet was located in the northwest portion of the site, with the storm drain line running west to the carwash property.
2.11	Other Pertinent Issues	None
3 Remediation Status		
3.1	Remedial Actions Taken	Three USTs (two 10,000-gallon gasoline and one 300-gallon waste oil) and associated piping and dispensers were removed from the site. Two hydraulic hoists and clarifier sump were also removed. The UST pit was ultimately backfilled with aggregate base within five feet of the adjacent ground surface, followed by previously-excavated soil that had been remediated on-site by rototilling/aeration. Approximately 36 tons of soil was removed from both the waste oil pit and the clarifier sump pit during two excavation and sampling events.
3.2	Remediation Effectiveness	Soil excavation has removed the bulk of the contaminated soil from the fuel and waste oil UST areas; however, it appears there is some remaining impacted soil in the vicinity of boring SB-13 (up to 1,100 mg/kg TPHg and 7.8 mg/kg benzene). Soil in the clarifier sump area is contaminated with significant amounts of TPHd and oil and grease at approximately 15 feet bgs. Soil in the former west hoist area was not removed and is contaminated with significant amounts of TPHd and hydraulic oil at approximately 8.5 feet bgs. Soil sample analytical results are summarized in Table 1.
4 Well and Sensitive Receptor Survey		
4.1	Groundwater Use	Groundwater in the vicinity of the site does not currently appear to be a drinking water source.
4.2	Well Survey Results	A DWR well search and field survey was conducted by in January 2009. From the information provided by the DWR well search, two supply wells were identified within one-quarter-mile of the site. The two wells are located approximately 800 feet east and 1,200 feet east/southeast of the site, respectively. Both wells are generally cross-gradient of from site. The nearest well is screened from 10 feet to 28 feet bgs. The second well is screened from 6 feet to 57 feet bgs.
4.3	Likelihood of Impact to Wells	Considering that the groundwater generally flows to the south/southeast, the irrigation wells identified within the well survey radius are not likely to be affected by groundwater contamination migrating from site.

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
4.4	Likelihood of Impact to Surface Water	No surface water bodies exist within 2,000 feet of the site.
5 Risk Assessment		
5.1	Site Conceptual Exposure Model (current and future uses)	This site is currently an empty lot surrounded by commercial/retail facilities. The site land use is expected to remain commercial.
5.2	Exposure Pathways	Since residual soil contamination is generally greater than 10 feet deep, the soil ingestion and dermal exposure pathways are not complete. Groundwater is not a drinking water source in the vicinity of the site; therefore, groundwater ingestion and dermal exposure pathways are not complete. Vapor intrusion into future on-site structures and the existing downgradient retail is a potential exposure pathway.
5.3	Risk Assessment Status	Tier I and II risk assessments were conducted by Philip Environmental in June, 1996. The risk assessment should be re-evaluated using current standards and practices, as well as current site conditions.
5.4	Identified Human Exceedances	Evaluated by Philip Environmental in 1996; no longer current.
5.5	Identified Ecological Exceedances	Not evaluated.

6 Additional Recommended Tasks

- Continued semi-annual groundwater monitoring and sampling for all wells.
- Resurvey the monitoring wells.
- The risk assessment conducted by Philip Environmental is out of date. We recommend conducting a new risk assessment using current standards and practices. Shallow soil vapor sampling should be conducted to evaluate potential risk to nearby indoor receptors.
- Evaluate remedial alternatives for the groundwater plume located near MW-101, conduct feasibility studies as necessary.

7 References

BSK 1992a, *Off Site Soil and Groundwater Contamination Characterization and Seventh Quarterly Groundwater Monitoring Report, Unocal Service Station 20405 and 20629 Redwood Road, Castro Valley, California*, BSK & Associates, May 29, 1992.

BSK 1992b, *Letter Report, Well MW-7 Special Sampling, Unocal Service Station/Safeway Parking Lot, 20405 and 20629 Redwood Road, Castro Valley, California*, BSK & Associates, December 23, 1992.

BSK 1995, *Feasibility Study, Soil and Groundwater Remediation, Tien's Unocal Station, 20405 Redwood Road, Castro Valley, California*, BSK & Associates, December 11, 1995.

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION

Philip Environmental 1996, *Revised Corrective Action Plan, R.T. Nahas Property/Tien Unocal 76 Service Station, 20405 Redwood Road, Castro Valley, California,* Philip Environmental, June 14, 1996.

Life Springs 1999a, *Technical Report, Tank Closure, Underground Fuel Tank Site, R.T. Nahas Company Property, Formerly Frank Tien Unocal 76 Service Station, 20405 Redwood Road, Castro Valley, California, 94546,* Life Springs Environmental, Inc., February 18, 1999.

Life Springs 1999b, *Soil Remediation Status Report, R.T. Nahas Property, Castro Valley*, Life Springs Environmental, Inc., August 17, 1999.

Life Springs 1999c, *Soil Remediation Status Report #2, R.T. Nahas Property, Castro Valley*, Life Springs Environmental, Inc., October 26, 1999.

Life Springs 2000, *Technical Report, Soil Remediation Closure Report, Underground Fuel Tank Site, R.T. Nahas Company Property, Formerly Frank Tien Unocal 76 Service Station, 20405 Redwood Road, Castro Valley, California, 94546,* Life Springs Environmental, Inc., April 13, 2000.

Graymer, R.W., 2000, Geologic map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and San Francisco Counties, California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-2342, scale 1:50000.

FIGURES

Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

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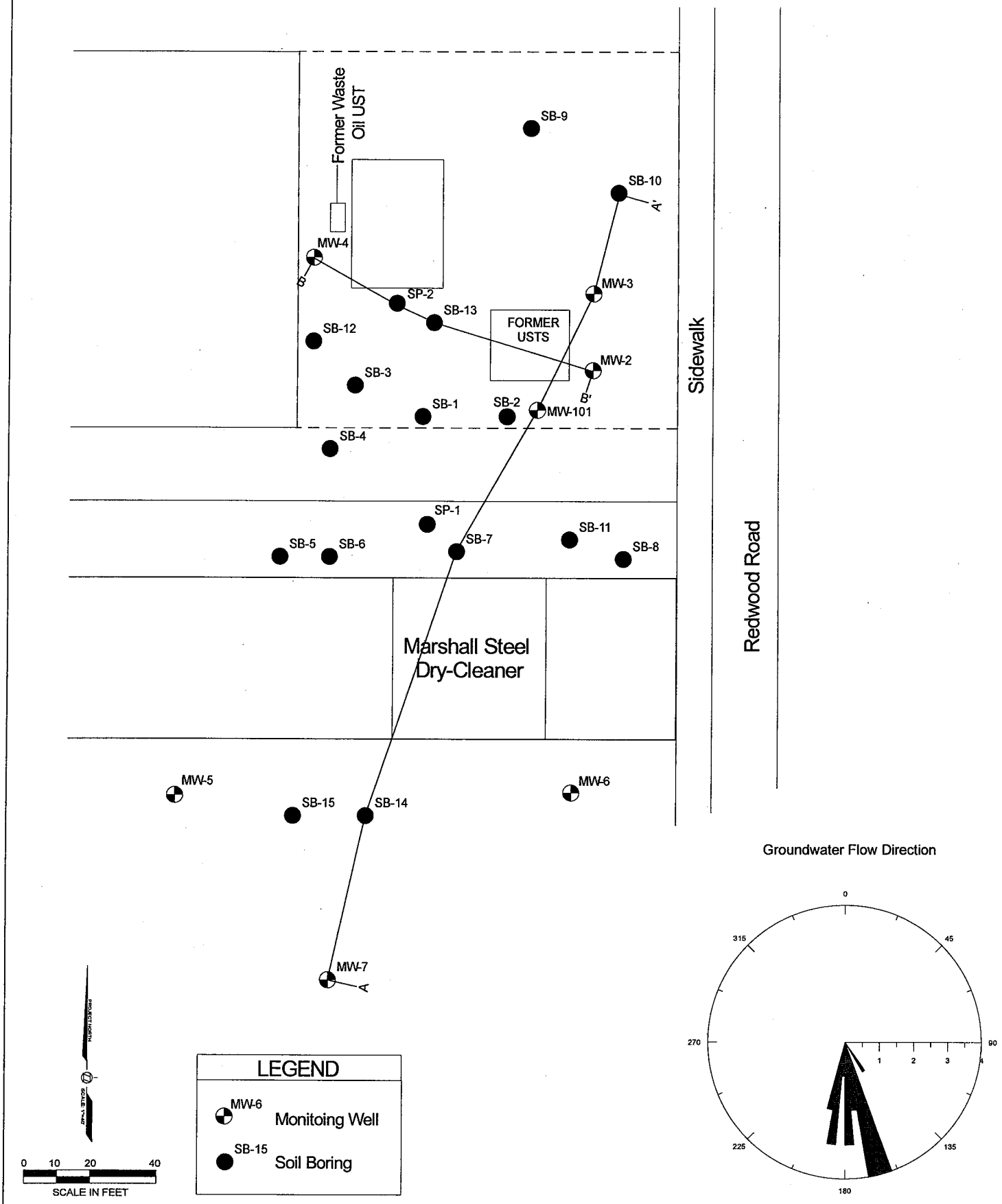
SITE VICINITY MAP

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 1

PROJECT: E0805401S



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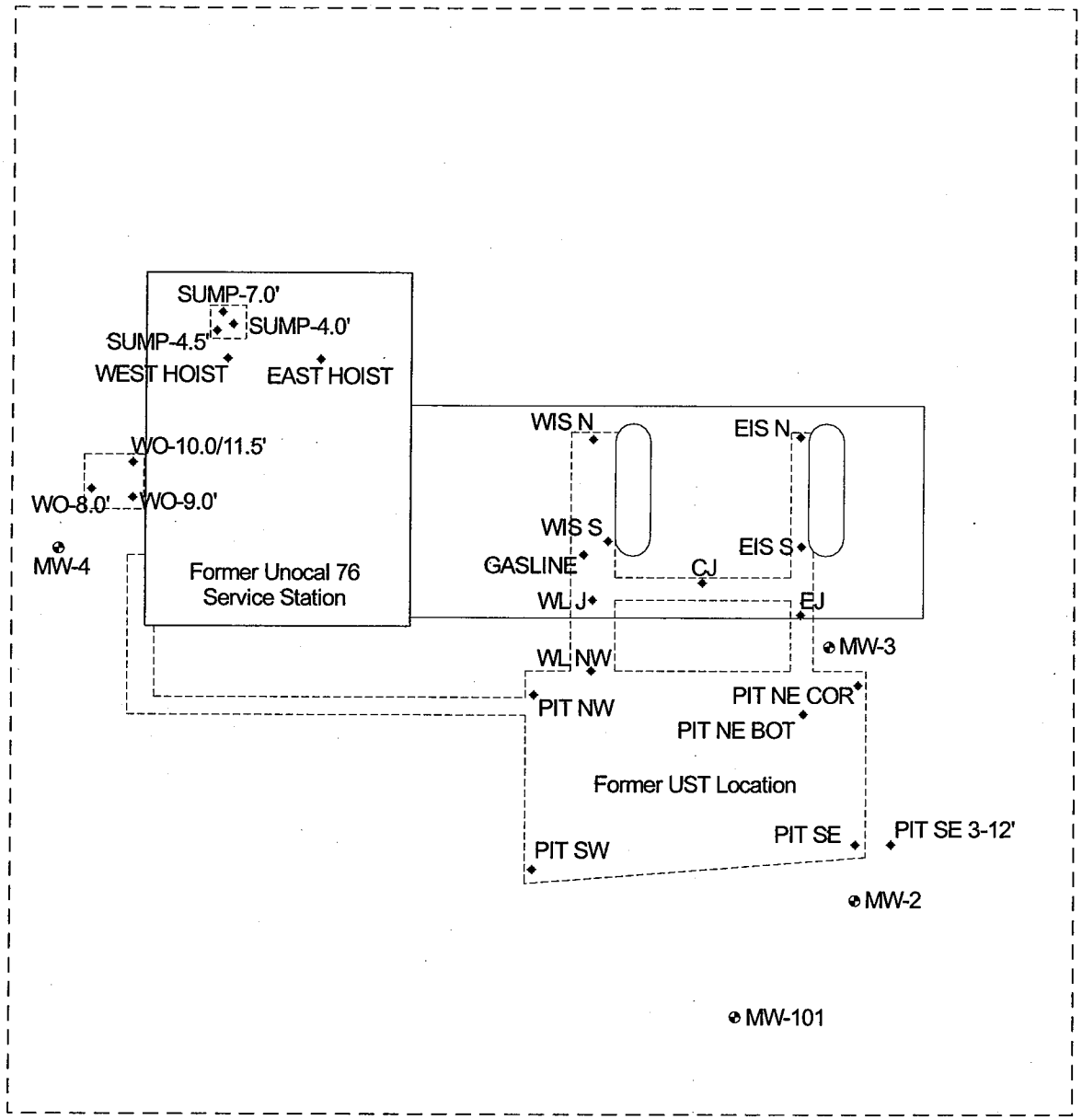
SITE PLAN

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 2

PROJECT: E0805401S

DATE: 1/21/09



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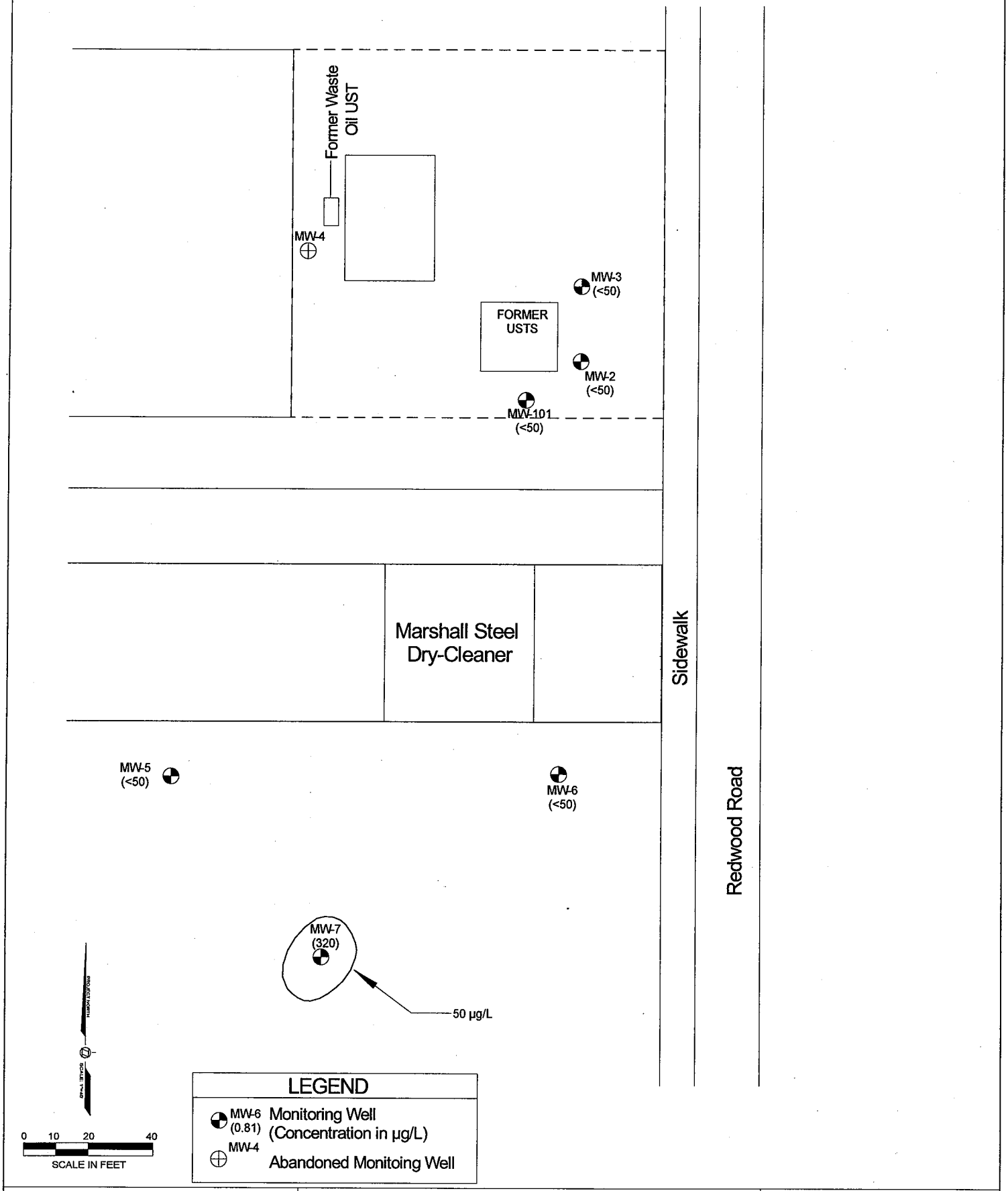
EXTENT OF EXCAVATIONS AND EXCAVATION SOIL SAMPLE LOCATIONS

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 3

PROJECT: E0805401S

DATE: 2/12/09



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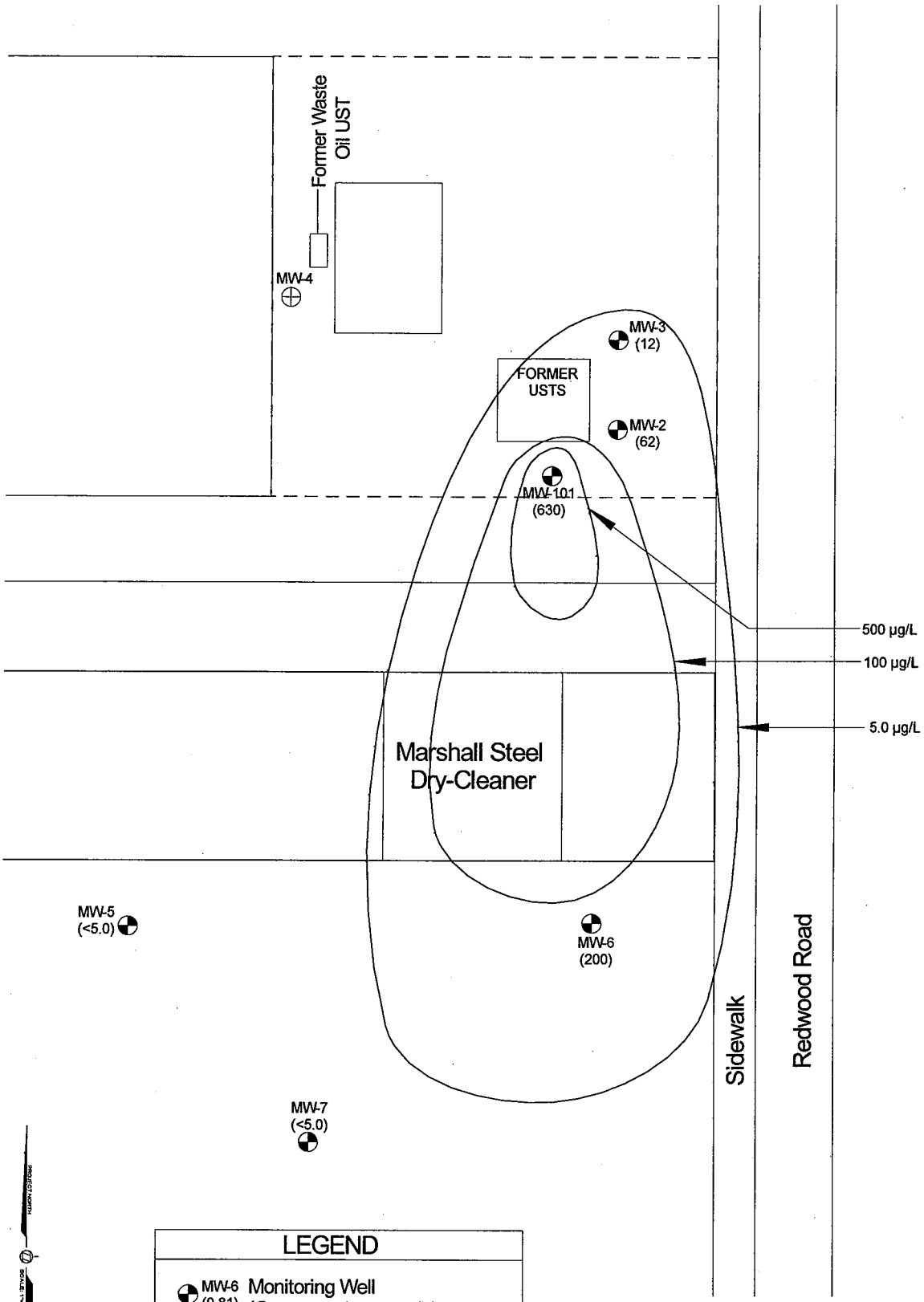
TPHg IN GROUNDWATER FEBRUARY 2009

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 4

PROJECT: E0805401S

DATE: 3/4/09



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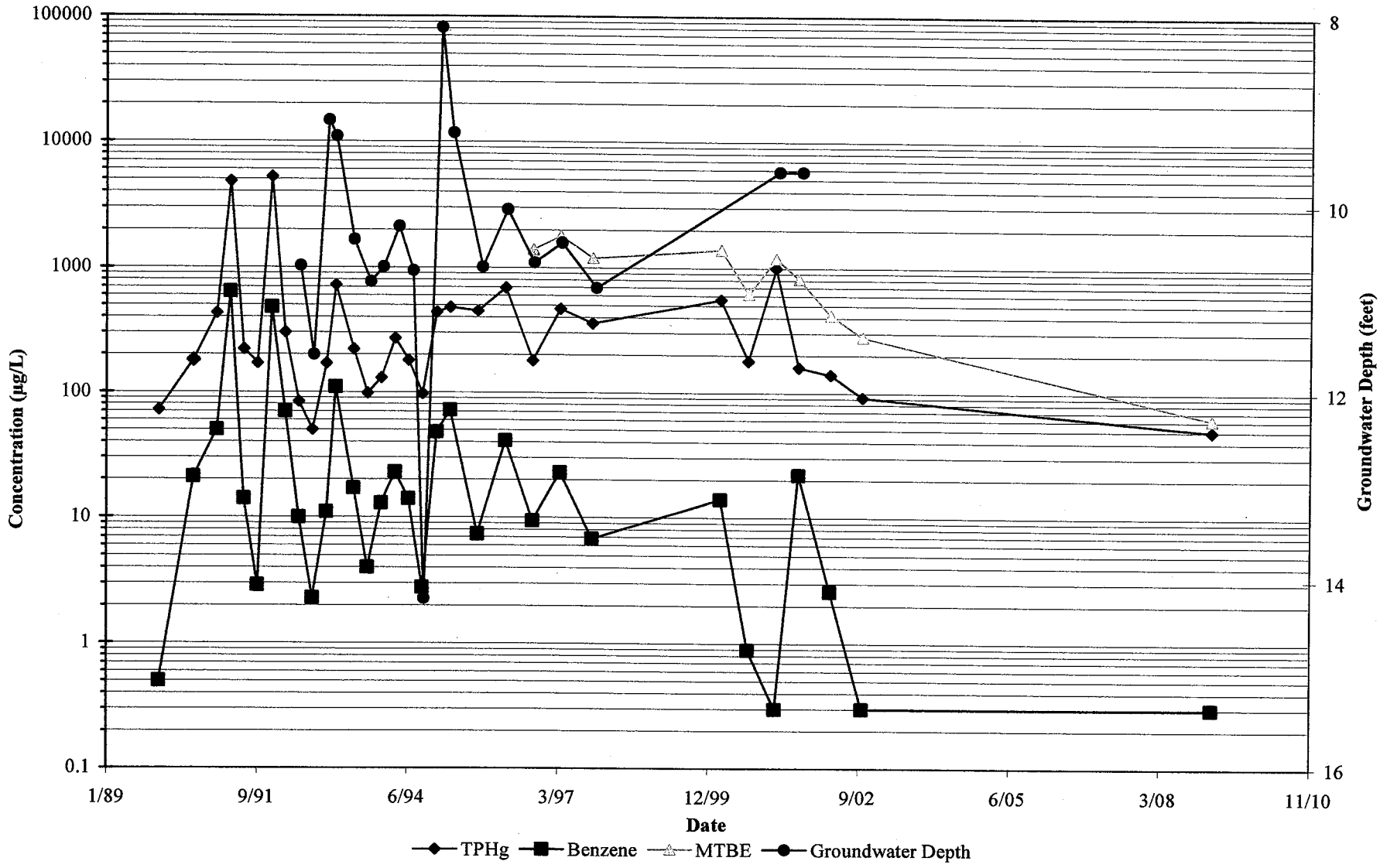
MTBE IN GROUNDWATER FEBRUARY 2009

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 5

PROJECT: E0805401S

DATE: 3/4/09



Non-detects plotted as ½ of the reportable detection limits (typically 50 µg/L for TPH, 0.3 µg/L for Benzene, and 5 µg/L for MTBE).

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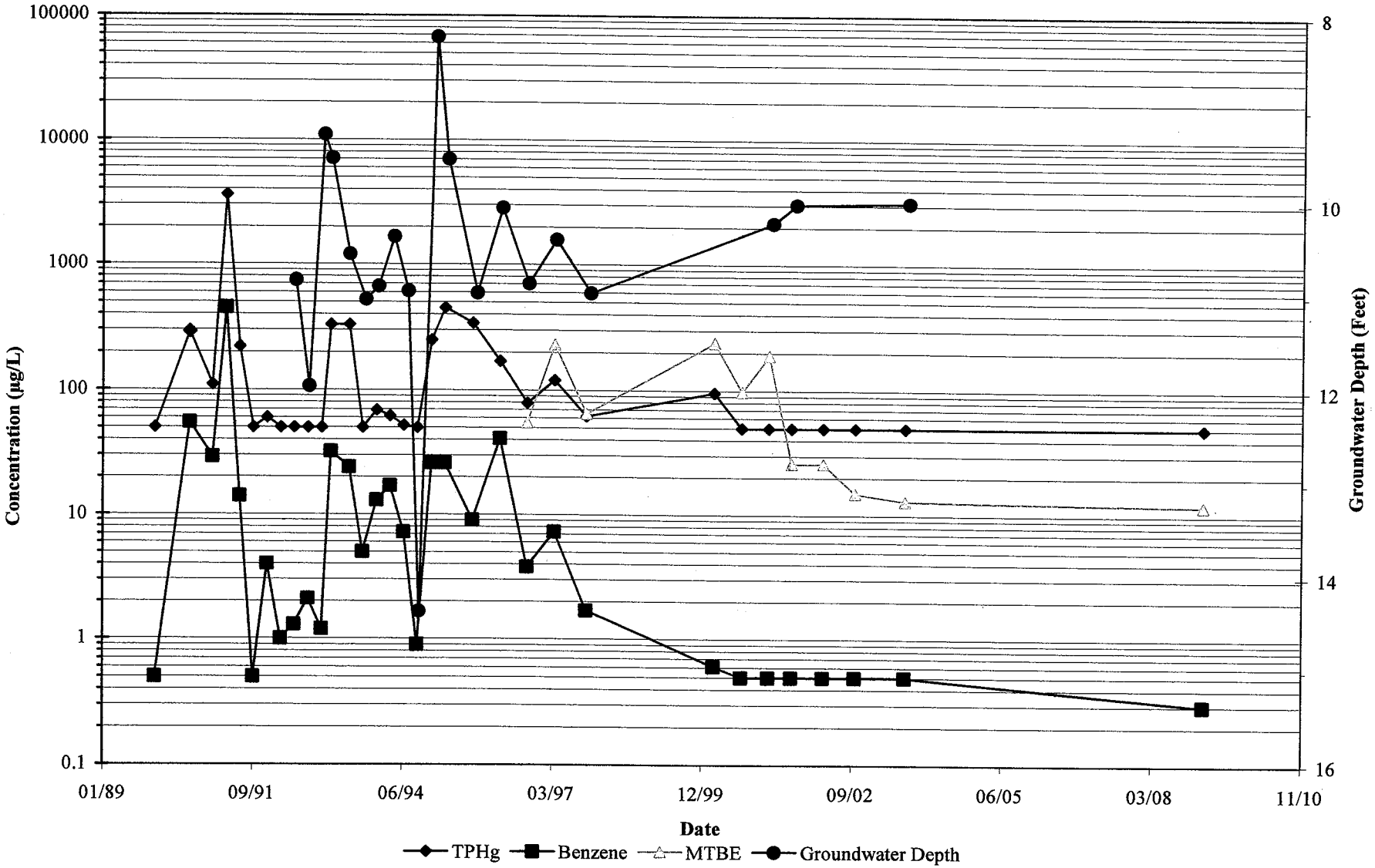
MW-2 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 6
PROJECT: E0503102S
DATE: 3/5/09



Non-detects plotted as ½ of the reportable detection limits (typically 50 µg/L for TPH, 0.3 µg/L for Benzene, and 5 µg/L for MTBE).

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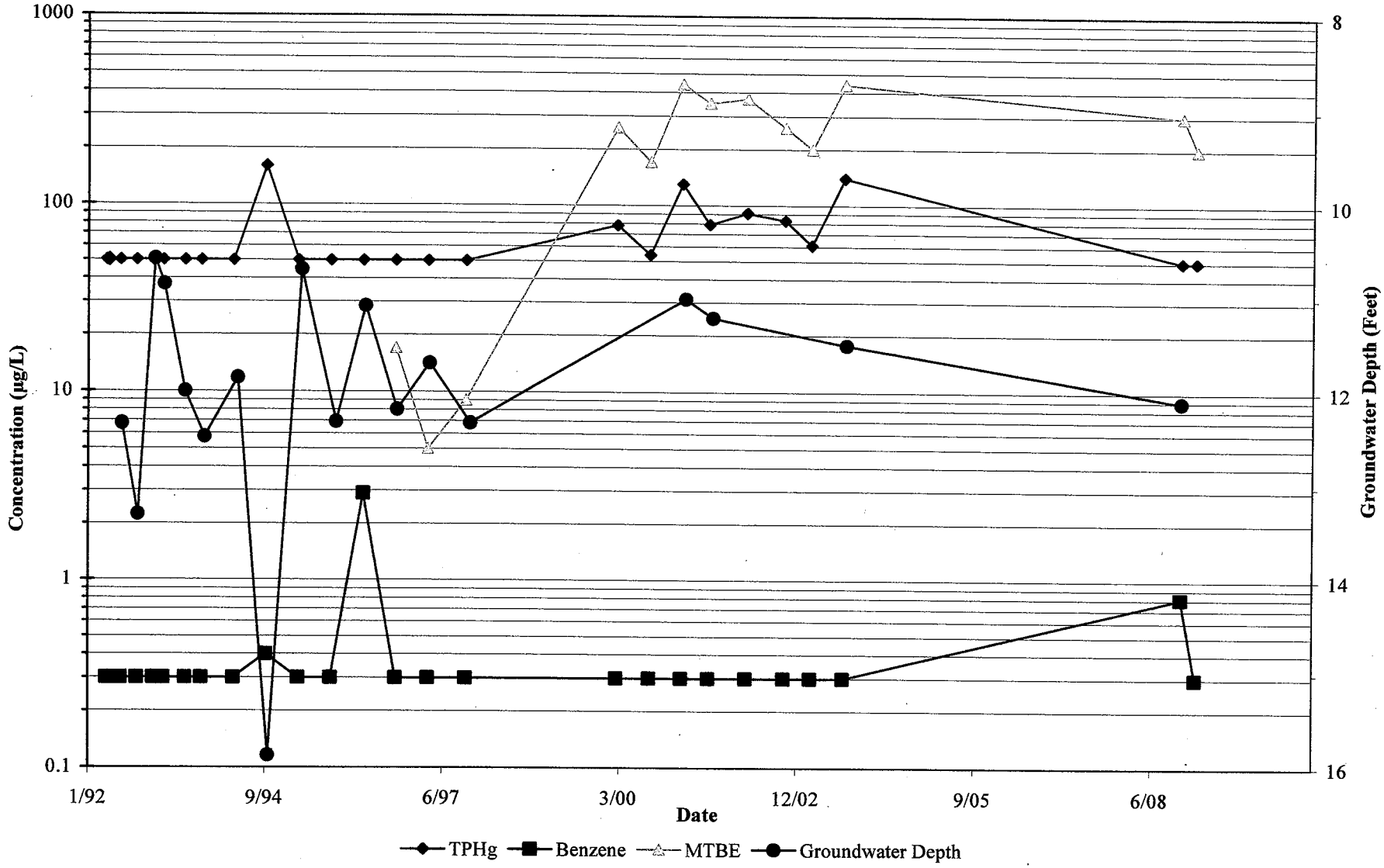
MW-3 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 7
PROJECT: E0503102S
DATE: 3/5/09



Non-detects plotted as ½ of the reportable detection limits (typically 50 µg/L for TPH, 0.3 µg/L for Benzene, and 5 µg/L for MTBE).

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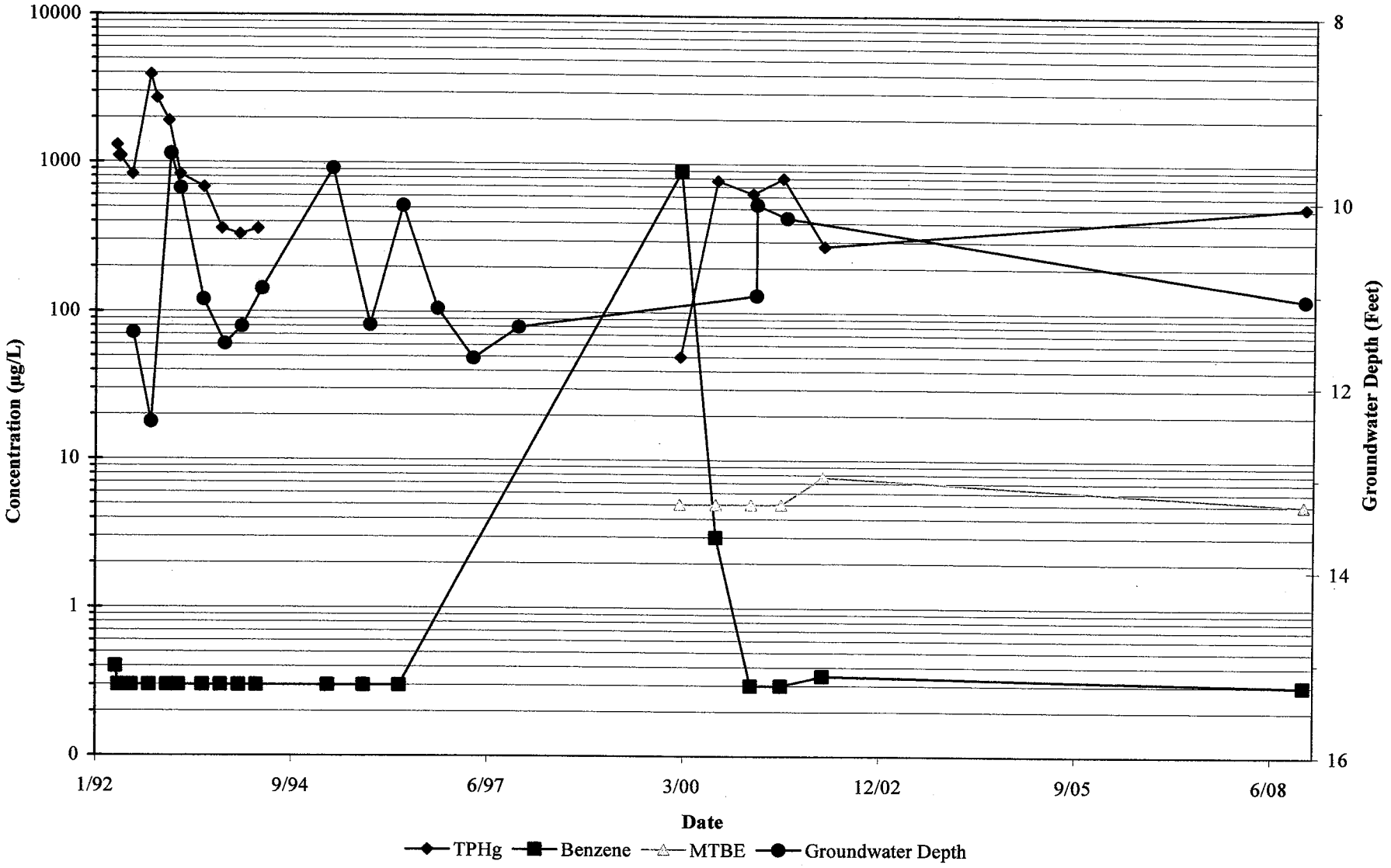
MW-6 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 8
PROJECT: E0503102S
DATE: 3/5/09



Non-detects plotted as ½ of the reportable detection limits (typically 50 µg/L for TPH, 0.3 µg/L for Benzene, and 5 µg/L for MTBE).

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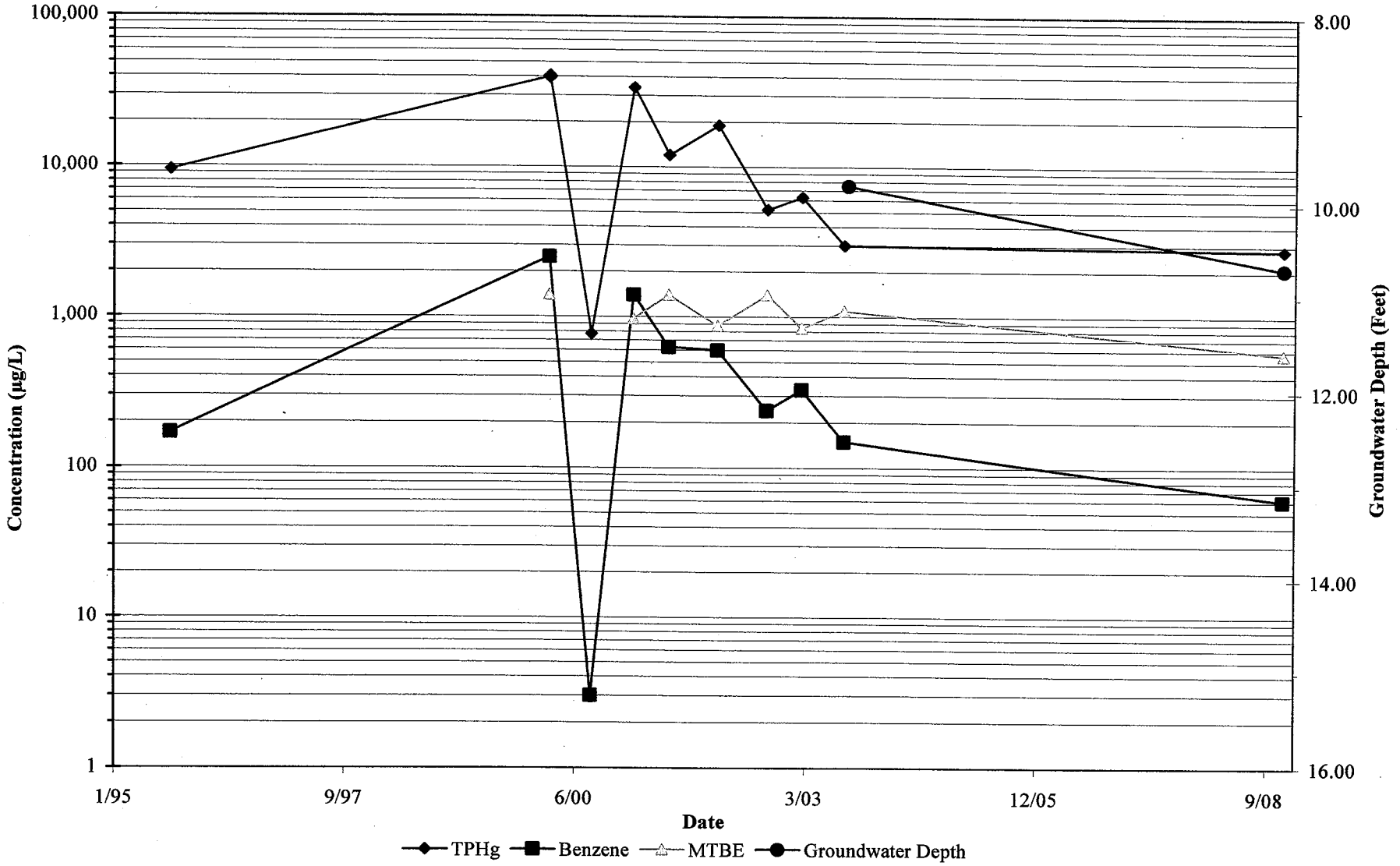
MW-7 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 9
PROJECT: E0503102S
DATE: 3/5/09



Non-detects plotted as ½ of the reportable detection limits (typically 50 µg/L for TPH, 0.3 µg/L for Benzene, and 5 µg/L for MTBE).

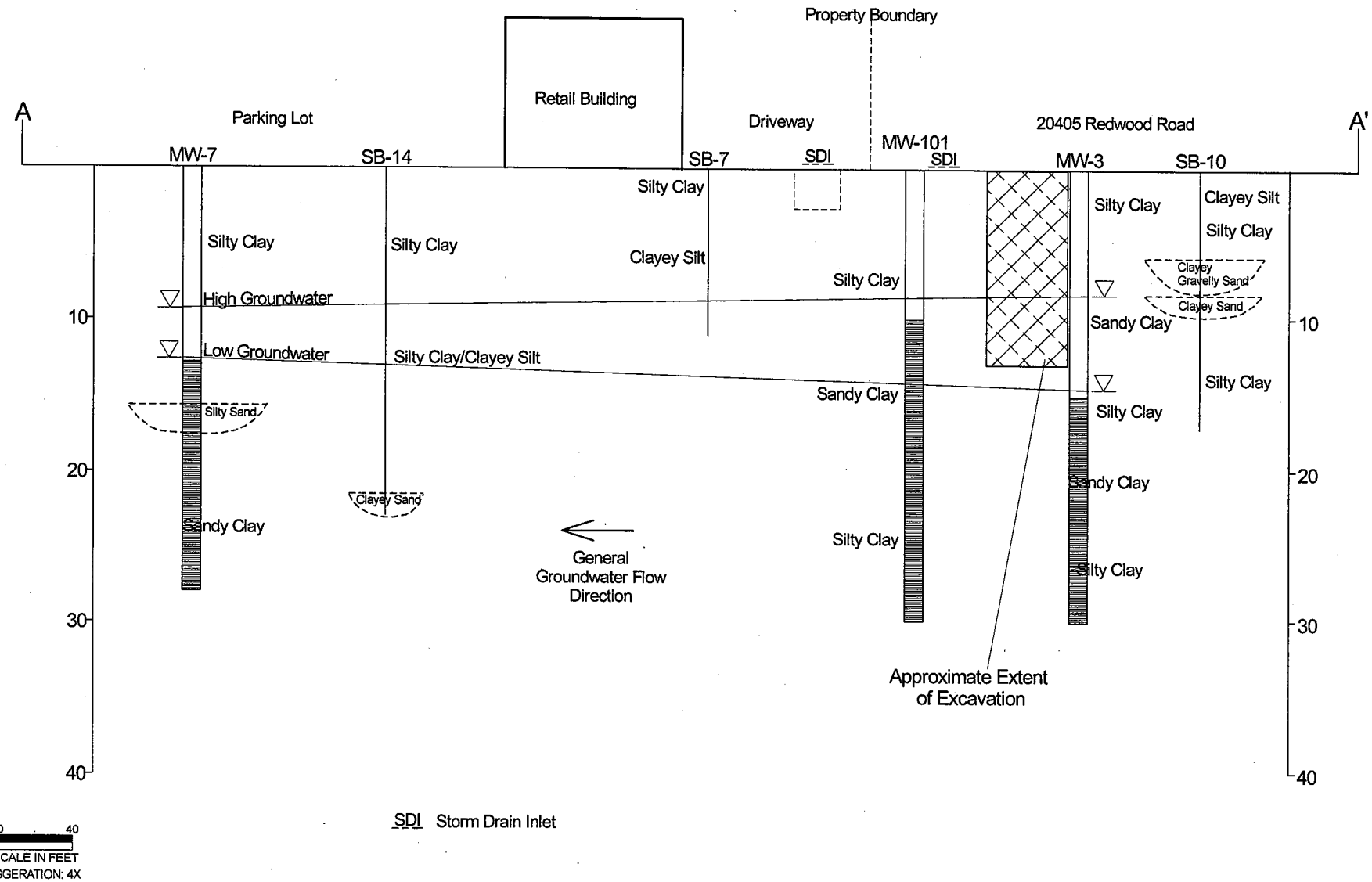
BSK Associates Engineers & Laboratories

MW-101 TIME-SERIES PLOTS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 10

PROJECT: E0503102S

DATE: 3/5/09



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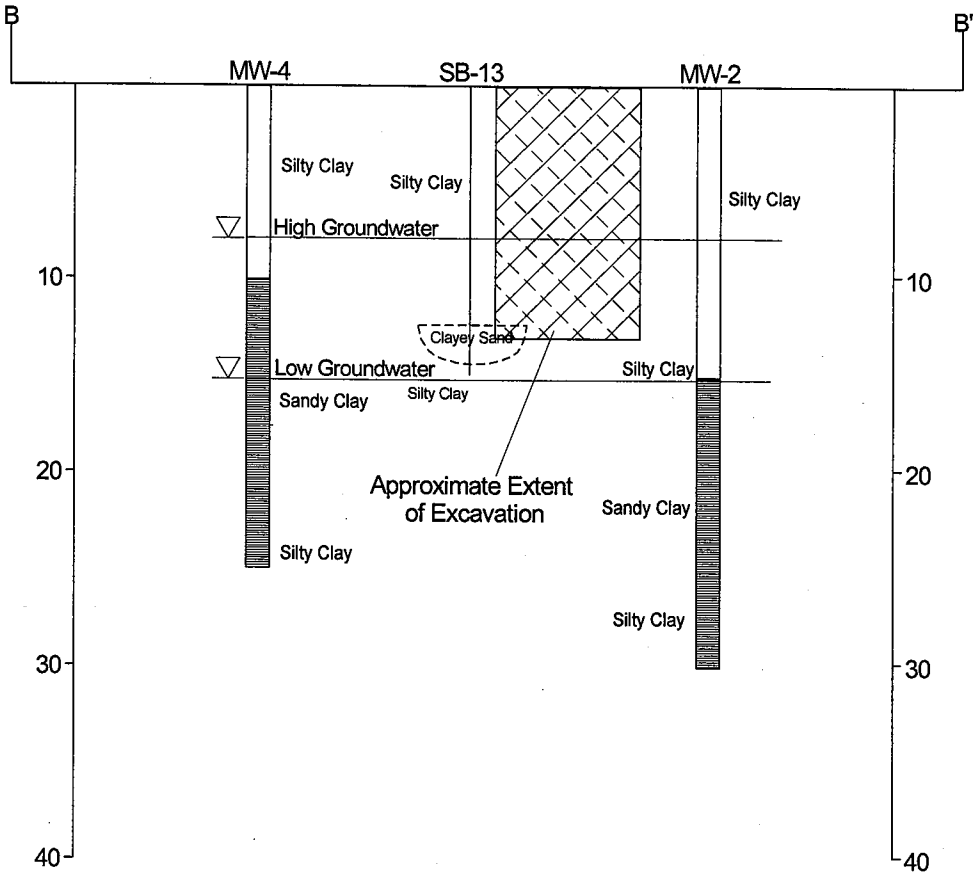
CROSS SECTION A-A'

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 11

BSK PROJECT E0805401S

3/5/09



0 20 40
HORIZONTAL SCALE IN FEET

VERTICAL EXAGGERATION: 4X

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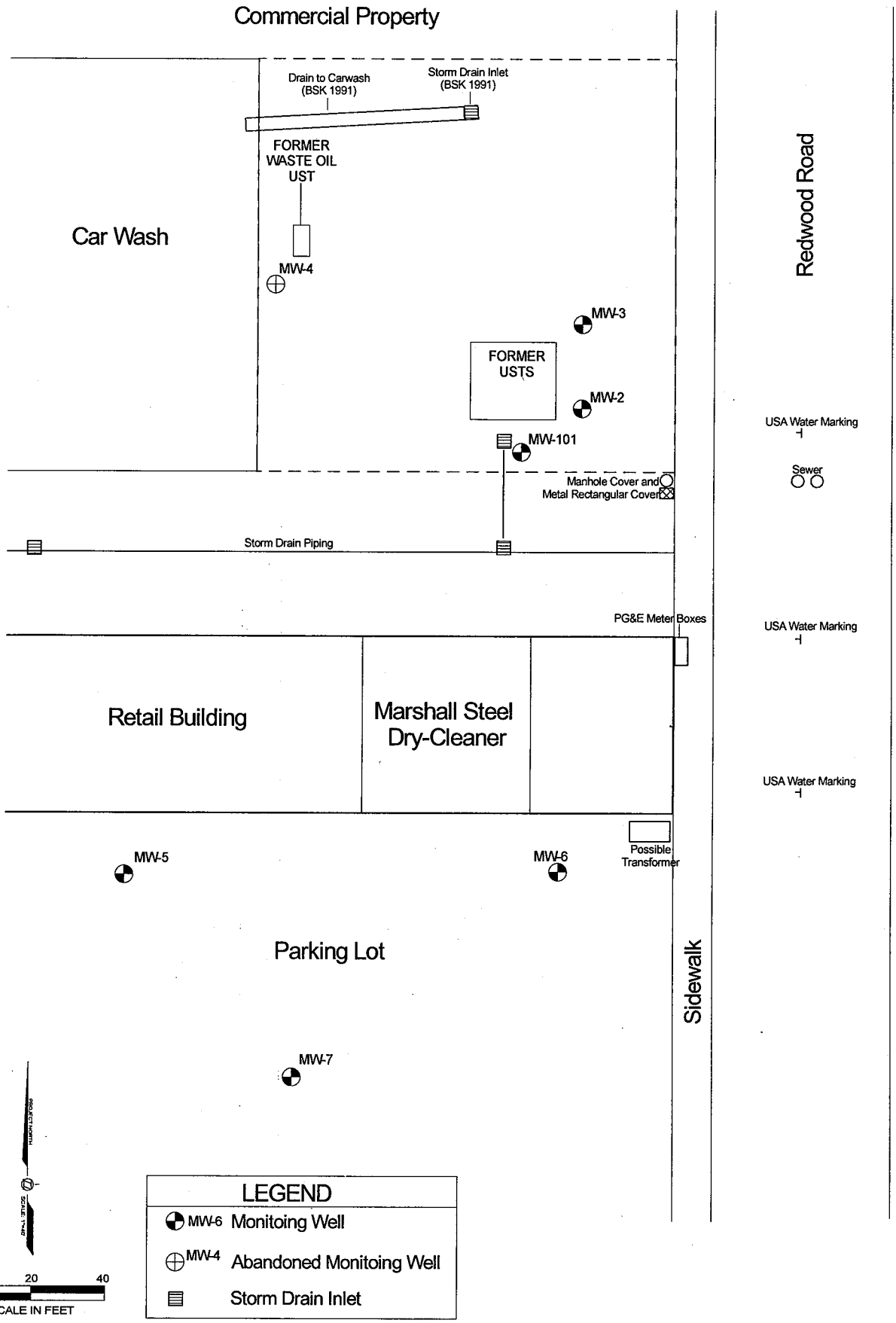
CROSS SECTION B-B'

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 12

BSK PROJECT E0805401S

3/5/09



BSK Associates
Engineers & Laboratories

NEARBY SENSITIVE RECEPTORS AND UNDERGROUND UTILITIES

FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 13

BSK PROJECT E0805401S

3/5/09

TABLES

Table 1
Soil Sample Analytical Results
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Location	Depth (feet bgs)	TPHg (mg/kg)	TPHd (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Oil and Grease (mg/kg)	Total Lead (mg/kg)	MTBE (mg/kg)
December 1989, Soil Investigation and Monitoring Well Installation										
MW-1	5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	10	**89**	-	**1.8**	**7.8**	**3.8**	**20**	-	-	-
	15	<10	-	**0.09**	<0.02	<0.02	<0.02	-	-	-
	19	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
MW-1A	5	<10	<10	<0.02	<0.02	<0.02	<0.02	-	<2.0	-
	10	**110**	**50**[b]	**2.2**	**11**	**5.4**	**25**	-	<2.0	-
	13	**11**	<10	**0.64**	**0.71**	**0.64**	**3.5**	-	<2.0	-
	16.5	<10	<10	<0.02	<0.02	<0.02	<0.02	-	<2.0	-
MW-2	5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	10	<10	-	**0.05**	<0.02	<0.02	**0.03**	-	-	-
	15	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	20	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
MW-3	5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	10	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
	15	**92**	-	ND	ND	**0.97**	**4.0**	-	-	-
	19	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
MW-4[a]	5	-	<10	<0.02	<0.02	<0.02	<0.02	<100	-	-
	8.5	-	<10	<0.02	<0.02	<0.02	<0.02	<100	-	-
	13	-	<10	<0.02	<0.02	<0.02	<0.02	<100	-	-
March 1991, Soil Investigation										
SB-1	14.5	<10	-	**0.05**	**0.03**	<0.02	**0.06**	-	-	-
SB-2	10.5	**440**	-	**4.5**	**18**	**11**	**55**	-	<2.0	-
	13	**810**	**340**[b]	**5.3**	**4.2**	**13**	**76**	-	-	-
SB-3	13.5	**15**	<10	**0.09**	**0.18**	**0.19**	**1.1**	-	<2.0	-
	17	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-4	14	<10	<10	<0.02	<0.02	<0.02	**0.1**	-	-	-
SB-5	14.5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-6	15	**310**	-	**0.8**	**15**	**6.2**	**36**	-	-	-
SB-8	20.5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-10	16	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-11	10.5	**31**	-	**0.09**	**0.03**	**0.49**	**1.8**	-	-	-
SB-12	15.5	<10	-	<0.02	<0.02	<0.02	<0.02	-	-	-
SB-13	10.5	**1100**	-	**5.5**	**67**	**27**	**140**	-	-	-
	14	**530**	-	**7.8**	**48**	**14**	**73**	-	-	-
March through April 1992, Soil Borings and Monitoring Well Installation										
SB-14	21	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
SB-15	20.5	<1	**3**	<0.005	**0.007**	<0.005	<0.008	-	-	-
MW-5	21	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
MW-6	16	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
MW-7	15.5	<1	<1	<0.005	<0.005	<0.005	<0.005	-	-	-
November 1993, Soil Borings										
SP-2	14	**9**	-	**0.14**	**0.52**	**0.19**	**1.0**	-	-	-
SP-1	16	-	-	**0.18**	<0.005	**0.075**	**0.055**	-	-	-
December 1995, Monitoring Well Installation										
MW-101	10	**120**	-	<0.005	**0.95**	**2.1**	**11**	-	-	-
	15	**63**	-	ND	**1.5**	**0.87**	**9.8**	-	-	-

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Table 1
Soil Sample Analytical Results
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Location	Depth (feet bgs)	TPHg (mg/kg)	TPHd (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Oil and Grease (mg/kg)	Total Lead (mg/kg)	MTBE (mg/kg)
November 1998, UST Removal										
WO	8	<1.0	270	<0.005	0.0061	0.027	0.079	2300	9.0	<0.005
PIT NE COR	12	47	-	<0.62	<0.62	0.74	3.4	-	-	<0.62
PIT NE BOT	13	14	-	<0.62	<0.62	<0.62	<0.62	-	-	<0.62
PIT SE	12	31	-	<0.62	1.8	<0.62	3.0	-	-	<0.62
PIT SE	unk	100	-	<2.5	<2.5	2.6	14	-	-	<2.5
PIT SW	11.5	22	-	<0.62	<0.62	<0.62	3.0	-	-	<0.62
PIT NW	12	2.6	-	0.088	0.0054	0.11	0.52	-	-	0.014
WL NW	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	0.018
WL J	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
WIS S	2	410	-	3.6	11	12	72	-	-	0.80
WIS N	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
EJ	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
EIS S	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
EIS N	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
CJ	2	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	<0.005
WEST HOIST[3]	8.5	-	1000*,[1]	-	-	-	-	-	-	-
EAST HOIST[3]	8.5	-	<1.0**	-	-	-	-	-	-	-
SUMP	4.5	<1.0	120[1]	<0.005	<0.005	<0.005	<0.005	96	7.9	<0.005
May 1999, Soil Re-excavation and Sampling										
GASLINE	3	<1.0	-	<0.005	<0.005	<0.005	<0.005	-	-	-
SUMP	4	-	2700[1]/4800[c]	-	-	-	-	-	-	-
WO	9	-	38[1]	-	-	-	-	140	-	-
August 1999, Waste Oil and Clarifier Sump Pit Sampling										
SUMP	7	-	84	-	-	-	-	88	-	-
WO	10	-	560	-	-	-	-	1400	-	-
September 1999, Waste Oil Pit Sampling										
WO	11.5	<1.0	1.2[1]	<0.005	<0.005	<0.005	<0.005	<50	-	-
October 1999, Clarifier Sump Pit Sampling										
SUMP[3]	9.5	71[1]	270[2]	<0.62	<0.62	<0.62	<0.62	220	-	<0.62
December 1999, Waste Oil and Clarifier Sump Pit Deepening and Sampling										
WO[3]	11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<50	-	<0.005
SUMP[3]	15	6.3[1]	690[1]	<0.005	<0.005	0.14	0.25	1200	-	<0.005

Notes:
-: Not analyzed.
unk: Unknown.
[1]: Hydrocarbon reported does not match the pattern of Chromalab, Inc. standard.
[2]: Estimated concentration reported due to overlapping fuel patterns.
[3]: Exact location not mapped.
* West Hoist also had 2000 mg/kg hydraulic oil.
**East Hoist <50 mg/kg hydraulic oil.
[a]: Soil samples at were also analyzed for VOCs by EPA method 8010. None were detected.
[b]: Sample contains lower molecular weight hydrocarbons.
[c]: Reported as motor oil

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Table 2
Soil Sample Analytical Results
Volatile and Semi-Volatile Organic Compounds
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Depth	Phenanthrene (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	bis(2-Ethylhexyl) phthalate (mg/kg)
December 1989, Soil Investigation and Monitoring Well Installation					
MW-4*	5	-	-	-	-
	8.5	-	-	-	-
	13	-	-	-	-
November 1993, Soil Borings					
SP-2*	1	-	-	-	-
SP-1*	16	-	-	-	-
November 1998, UST Removal					
WO	8	**0.10**	**0.17**	**0.22**	**0.6**
SUMP	4.5	<0.10	<0.10	<0.10	<0.50
August 1999, Waste Oil and Clarifier Sump Pit Sampling					
SUMP	7	<0.10	<0.10	<0.10	<0.50
WO	10	<0.10	**0.13**	**0.20**	**0.82**
September 1999, Waste Oil Pit Sampling					
WO	11.5	<0.10	<0.10	<0.10	<0.50

Notes:
-: Not analyzed
*: Samples were analyzed for VOCs by EPA Method 8260 only; none were detected above reportable detection limits

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Table 3
Groundwater Monitoring Analytical Results - Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-2	12/89	72	-	-	<0.5	<0.5	<0.5	<0.5	-
	08/90	180	-	-	21	3.9	7.2	28	-
	01/91	430	-	-	50	33	22	110	-
	04/91	4,800	-	-	640	520	140	790	-
	07/91	220	-	-	14	1	17	8	-
	10/91	170	-	-	2.9	ND	2.5	6	-
	01/92	5,200	-	-	480	870	160	860	-
	4/20/92	300	-	-	70	0.3	15	7	-
	7/9/92	84	-	-	10	ND	0.6	2.3	-
	10/8/92	ND	-	-	2.3	ND	2.3	3	-
	1/12/93	170	-	-	11	5.1	1.4	6.3	-
	3/4/93	720	-	-	110	32	67	28	-
	7/1/93	220	-	-	17	1.1	6	12	-
	10/19/93	98	-	-	4.0	ND	2.3	3.1	-
	1/12/94	130	-	-	13	3.4	4.9	9.2	-
	4/25/94	270	-	-	23	1.1	8.2	17	-
	7/28/94	180	-	-	14	0.7	5.8	12	-
	10/13/94	97	-	-	2.8	ND	2.9	1.8	-
	1/10/95	440	-	-	48	2.8	15	27	-
	4/19/95	480	-	-	72	2.8	47	22	-
	10/12/95	450	-	-	7.4	ND	5.1	5.5	-
	4/12/96	690	-	-	41	2.8	27	50	-
	10/8/96	180	-	-	9.4	0.5	7.2	9.4	1,400
	4/9/97	470	-	-	23	1.6	21	31.4	1,800
	11/5/97	360	-	-	6.8	0.64	4.7	8.2	1,200
	3/1/00	560	-	-	14	0.92	16	24	1,400
	09/00	180	-	-	0.89	ND	1	0.65	620
	3/22/01	1,000	-	-	ND	ND	ND	ND	1,300[1]/1,200
	8/23/01	160	-	-	22	1.5	17	27	690[1]/820
	03/02	140	-	-	2.6	0.31	2	1.7	420
	10/02	92	-	-	ND	ND	ND	ND	280
	03/03	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	IA	IA	IA	IA	IA	IA	IA	IA
	11/20/08	IA	IA	IA	IA	IA	IA	IA	IA
	2/11/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	62

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Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethlybenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-3	12/89	<50	-	-	<0.5	<0.5	<0.5	<0.5	-
	08/90	290	-	-	55	3.8	20	59	-
	01/91	110	-	-	29	3.3	9.7	34	-
	04/91	3,600	-	-	450	270	150	760	-
	07/91	220	-	-	14	14	33	8.0	-
	10/91	ND	ND	ND	ND	ND	ND	ND	-
	01/92	60	-	-	4.0	10	2.0	8.0	-
	4/20/92	ND	-	-	1.0	0.4	ND	0.9	-
	7/9/92	ND	-	-	1.3	0.40	ND	1.3	-
	10/8/92	ND	-	-	2.1	ND	ND	0.30	-
	1/12/93	ND	-	-	1.2	1.0	0.60	4.1	-
	3/4/93	330	-	-	32	0.90	64	13	-
	7/1/93	330	-	-	24	11	14	82	-
	10/19/93	ND	-	-	5.0	ND	0.60	1.2	-
	1/12/94	69	-	-	13	3.4	4.9	9.2	-
	4/25/94	62	-	-	17	1.0	4.9	24	-
	7/28/94	52	-	-	7.2	0.4	1.6	4.6	-
	10/13/94	ND	-	-	0.9	ND	ND	ND	-
	1/10/95	250	-	-	26	0.60	14	45	-
	4/19/95	450	-	-	26	0.60	40	19	-
	10/12/95	340	-	-	9.0	3.9	8.5	34	-
	4/12/96	170	-	-	41	2.8	27	50	-
	10/8/96	79	-	-	3.8	1.5	2.1	6.8	55
	4/9/97	120	-	-	7.3	ND	3.3	5.4	230
	11/5/97	62	-	-	1.7	1.4	2.3	8.3	65
	3/1/00	96	-	-	0.61	ND	ND	ND	240
	09/00	ND	-	-	ND	ND	ND	ND	98
	3/22/01	ND	-	-	ND	ND	ND	ND	190
	8/23/01	ND	-	-	ND	ND	ND	ND	26
	03/02	ND	-	-	ND	ND	ND	ND	26
	10/02	ND	-	-	ND	ND	ND	ND	15
	03/03	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	ND	-	-	ND	ND	ND	ND	13
	11/20/08	IA	IA	IA	IA	IA	IA	IA	IA
	2/11/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	12

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Table 3
Groundwater Monitoring Analytical Results - Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethlybenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-4	12/89	<50	<100	<5,000	<0.5	<0.5	<0.5	<0.5	-
	08/90	ND	ND	ND	ND	ND	ND	ND	-
	01/91	-	-	-	-	-	-	-	-
	04/91	ND	ND	ND	ND	ND	ND	ND	-
	07/91	-	-	-	-	-	-	-	-
	10/91	ND	ND	ND	ND	ND	ND	ND	-
	01/92	-	-	-	-	-	-	-	-
	4/20/92	ND	ND	ND	ND	ND	ND	ND	-
	7/9/92	-	-	-	-	-	-	-	-
	10/8/92	ND	**120**	ND	ND	ND	ND	ND	-
	1/12/93	ND	ND	ND	ND	ND	ND	ND	-
	3/4/93	ND	ND	ND	ND	ND	ND	ND	-
	7/1/93	ND	ND	**1,000**	ND	ND	ND	ND	-
	10/19/93	ND	ND	ND	**0.40**	ND	ND	**0.40**	-
	4/25/94	ND	ND	ND	ND	ND	ND	**0.40**	-
	7/28/94	ND	**86**	ND	ND	**0.60**	ND	ND	-
	10/13/94	**70**	ND	ND	ND	**36**	ND	**1.3**	-
	1/10/95	ND	ND	**2,000**	ND	ND	ND	ND	-
	4/19/95	ND	ND	ND	ND	ND	ND	ND	-
	10/12/95	ND	ND	-	ND	ND	ND	ND	-
	4/12/96	ND	ND	-	ND	ND	ND	ND	-
	10/8/96	ND	ND	-	ND	ND	ND	ND	ND
	4/9/97	ND	ND	-	ND	ND	ND	ND	ND
	11/5/97	ND	ND	-	ND	ND	ND	ND	ND
	Abandoned December 1999.								

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20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethlybenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-5	4/13/92	ND	-	-	ND	ND	ND	ND	-
	4/27/92	ND	-	-	ND	ND	ND	ND	-
	7/9/92	ND	-	-	ND	ND	ND	ND	-
	10/8/92	ND	-	-	ND	**0.40**	ND	ND	-
	1/12/93	ND	-	-	ND	ND	ND	ND	-
	3/4/93	ND	-	-	ND	ND	ND	ND	-
	7/1/93	ND	-	-	ND	ND	ND	ND	-
	10/19/93	ND	-	-	ND	ND	ND	ND	-
	4/25/94	ND	-	-	ND	**0.40**	ND	**1.0**	-
	07/94	-	-	-	-	-	-	-	-
	10/13/94	**87**	ND	ND	ND	**36**	ND	**1.3**	-
	01/95	-	-	-	-	-	-	-	-
	4/19/95	ND	-	-	ND	ND	ND	ND	-
	10/12/95	ND	-	-	ND	ND	ND	ND	-
	4/12/96	ND	-	-	ND	ND	ND	ND	-
	10/8/96	ND	-	-	ND	ND	ND	ND	ND
	4/9/97	ND	-	-	ND	ND	ND	ND	ND
	11/5/97	ND	ND	-	ND	ND	ND	ND	ND
	3/1/00	ND	-	-	ND	ND	ND	ND	ND
	09/00	ND	-	-	ND	ND	ND	ND	ND
	3/22/01	ND	-	-	ND	ND	ND	ND	ND
	8/23/01	NS	NS	NS	NS	NS	NS	NS	NS
	03/02	NS	NS	NS	NS	NS	NS	NS	NS
	10/02	NS	NS	NS	NS	NS	NS	NS	NS
	03/03	NS	NS	NS	NS	NS	NS	NS	NS
	9/17/03	NS	NS	NS	NS	NS	NS	NS	NS
	11/20/08*	<50	<50	-	**0.31**	<0.3	<0.3	**0.38**	<5.0
	2/6/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	<5.0

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Table 3
Groundwater Monitoring Analytical Results - Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethlybenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-6	4/13/92	ND	-	-	ND	0.30	ND	ND	-
	4/27/92	ND	-	-	ND	ND	ND	ND	-
	7/9/92	ND	-	-	ND	ND	ND	ND	-
	10/8/92	ND	-	-	ND	ND	ND	ND	-
	1/12/93	ND	-	-	ND	ND	ND	ND	-
	3/4/93	ND	-	-	ND	ND	ND	ND	-
	7/1/93	ND	-	-	ND	ND	ND	ND	-
	10/19/93	ND	-	-	ND	ND	ND	ND	-
	4/25/94	ND	-	-	ND	0.30	ND	0.40	-
	07/94	-	-	-	-	-	-	-	-
	10/13/94	160	-	-	0.40	140	0.5	2.3	-
	01/95	-	-	-	-	-	-	-	-
	4/19/95	ND	-	-	ND	ND	ND	ND	-
	10/12/95	ND	-	-	ND	ND	ND	ND	-
	4/12/96	ND	-	-	2.9	2.9	ND	ND	-
	10/8/96	ND	-	-	ND	ND	ND	ND	17
	4/9/97	ND	-	-	ND	ND	ND	ND	ND
	11/5/97	ND	ND	-	ND	ND	ND	ND	9.0
	3/1/00	78	-	-	ND	0.49	ND	ND	260
	09/00	54	-	-	ND	ND	ND	ND	170
	3/22/01	130	-	-	ND	ND	ND	ND	440
	8/23/01	79	-	-	ND	ND	ND	ND	280[1]/350
	03/02	91	-	-	ND	ND	ND	ND	370
	10/02	83	-	-	ND	ND	ND	ND	260
	03/03	61	-	-	ND	ND	ND	ND	200
	9/17/03	140	-	-	ND	ND	ND	ND	440
	11/20/08*	<50	<50	-	0.81	<0.3	<0.3	<0.3	300
	2/6/09*	<50	<50	-	<0.3	<0.3	<0.3	<0.3	200

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Table 3
Groundwater Monitoring Analytical Results - Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethlybenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-7	04/13/92	**1,300**	-	-	**0.40**	**0.30**	**0.30**	**0.9**	-
	4/27/92	**1,100**	-	-	ND	ND	ND	ND	-
	7/9/92	**830**	-	-	ND	ND	ND	ND	-
	10/8/92	**3,900**	-	-	ND	ND	ND	ND	-
	11/30/92	**2,700**	ND	-	-	-	-	-	-
	1/12/93	U	U	U	U	U	U	U	U
	01/93	**1,900**	-	-	ND	ND	ND	ND	-
	3/4/93	**830**	-	-	ND	ND	ND	ND	-
	7/1/93	**680**	-	-	ND	ND	ND	ND	-
	10/19/93	**360**	-	-	ND	ND	ND	**0.70**	-
	1/12/94	**330**	-	-	ND	ND	ND	ND	-
	4/25/94	**360**	-	-	ND	ND	ND	ND	-
	7/28/94	-	-	-	-	-	-	-	-
	10/13/94	-	-	-	-	-	-	-	-
	01/95	-	-	-	-	-	-	-	-
	4/19/95	-	-	-	ND	ND	ND	ND	-
	10/12/95	-	-	-	ND	ND	ND	ND	-
	4/12/96	-	-	-	ND	ND	ND	ND	-
	10/8/96	-	-	-	-	-	-	-	-
	4/9/97	-	-	-	-	-	-	-	-
	11/5/97	-	-	-	-	-	-	-	-
	3/1/00	ND	-	-	**890**	ND	ND	ND	ND
	09/00	**770**	-	-	**3.0**	**0.32**	**13**	**27**	ND
	3/22/01	**630**	-	-	ND	ND	ND	ND	ND
	8/23/01	**800**	-	-	ND	ND	ND	ND	**7.3[1]/ND**
	03/02	**280**	-	-	**0.35**	ND	**0.91**	**2.2**	**7.7**
	10/02	IA	IA	IA	IA	IA	IA	IA	IA
	03/03	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	IA	IA	IA	IA	IA	IA	IA	IA
	11/20/08	**520**	**70**	-	<0.3	<0.3	<0.3	<0.3	<5.0
	2/6/09*	**320**	<50	-	<0.3	<0.3	<0.3	<0.3	<5.0

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Table 3
Groundwater Monitoring Analytical Results - Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	TPHg (µg/L)	TPHd (µg/L)	Total Oil and Grease (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW-101	09/95	**9,400**	-	-	**170**	**94**	**150**	**710**	-
	03/01/00	**40,000**	-	-	**2,500**	**490**	**4,300**	**10,000**	**2,400[1]/1,400**
	09/00	**770**	-	-	**3.0**	**0.32**	**13**	**27**	-
	03/01	**34,000**	-	-	**1,400**	**62**	**3,400**	**7,700**	**970**
	08/23/01	**12,000**	-	-	**630**	ND	**1,500**	**480**	**1,400**
	03/02	**19,000**	-	-	**600**	**25**	**1,600**	**3,100**	**1,600[1]/870**
	10/02	**5,200**	-	-	**240**	**0.74**	**230**	**76**	**1,500[1]/1,400**
	03/03	**6,300**	-	-	**330**	ND	**440**	**370**	**1,400[1]/840**
	9/17/03	**3,000**	-	-	**150**	ND	**100**	**110**	**850[1]/1,100**
	11/20/08*	**2,800**	**5,400**	-	**61**	<0.3	**38**	**1.6**	**570**
	2/6/09*	<50	**3,600**	-	<0.3	<0.3	<0.3	<0.3	**630**
SP-1	11/1993	**49,000**	-	-	**3,900**	**13,000**	**2,800**	**15,000**	-
SP-2	11/1993	**1,400**	-	-	**54**	**240**	**87**	**390**	-

Notes:
ND: Not detected.
<: Not detected above laboratory's indicated reportable detection limit.
NS: No sample collected.
IA: Well inaccessible at time of sampling.
U: Unavailable.
-: Not analyzed.
*: Other fuel oxygenates and 1,2-DCA not detected above 5 µg/L (50 µg/L for TBA).
[1]: MTBE by EPA method 8015/8020; otherwise by EPA Method 8260.

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Table 4
Groundwater Monitoring Analytical Results
Volatile Organic Compounds
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date	Chlorobenzene	Chloroform	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloroethane	Tetrachloroethene	Trichloroethene
MW-2	Mar-93	<0.5	<0.5	<0.5	<0.5	**0.6**	<0.5	<0.5
	10/19/93	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4	12/14/89	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	3/4/93	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/19/93	<0.5	<0.5	<0.5	<0.5	<0.5	**0.7**	**0.9**
MW-5	3/4/93	<0.5	<0.5	<0.5	<0.5	<0.5	**0.8**	<0.5
MW-6	3/4/93	<0.5	<0.5	<0.5	<0.5	<0.5	**3.5**	<0.5
MW-7	11/30/92	**2.0**	**2.0**	**180**	**1.5**	-	**14,000**	**660**
	3/4/93	-	<20	-	<20	<20	**3,700**	**210**
SP-1	11/18/93	unknown	unknown	**28**	**15**	**12**	**22**	**20**
SP-2	11/18/93	unknown	unknown	ND	ND	ND	ND	ND

Notes:
<: Not detected above laboratory's indicated reportable detection limit.
-: Not analyzed

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-101	09/95	U	U	-
	3/1/00		9.75	-
	09/00		U	-
	03/01		U	-
	08/23/01		9.70	-
	03/02		U	-
	10/02		U	-
	03/03		U	-
	9/17/03		9.80	-
	11/20/08		10.69	-

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-2	12/89	U	U	-
	08/90		U	-
	01/91		U	-
	04/91		U	-
	07/91		U	-
	10/91		U	-
	01/92		U	-
	4/20/92	183.10	10.36	172.74
	7/9/92		10.65	172.45
	10/8/92	183.47	11.60	171.87
	1/12/93		9.11	174.36
	3/4/93		9.28	174.19
	7/1/93		10.37	173.10
	10/19/93		10.82	172.65
	1/12/94		10.66	172.81
	4/25/94		10.23	173.24
	7/28/94		10.70	172.77
	10/13/94		14.19	169.28
	1/10/95		8.12	175.35
	4/19/95		9.24	174.23
	10/12/95		10.66	172.81
	4/12/96		10.05	173.42
	10/8/96		10.61	172.86
	4/9/97		10.40	173.07
	11/5/97		10.88	172.59
	3/1/00		8.49	174.98
	09/00		U	-
	3/22/01		9.65	173.82
	8/23/01		9.65	173.82
	03/2002		U	-
	10/2002		U	-
	03/2003		IA	-
	9/17/03		IA	-
	11/20/08		IA	-

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-3	12/89	U	U	-
	08/90		U	-
	01/91		U	-
	04/91		U	-
	07/91		U	-
	10/91		U	-
	01/92		U	-
	4/20/92	183.52	10.34	173.18
	7/9/92		10.84	172.68
	10/8/92	184.03	11.96	172.07
	1/12/93		9.28	174.75
	3/4/93		9.53	174.50
	7/1/93		10.56	173.47
	10/19/93		11.04	172.99
	1/12/94		10.90	173.13
	4/25/94		10.37	173.66
	7/28/94		10.95	173.08
	10/13/94		14.37	169.66
	1/10/95		8.23	175.80
	4/19/95		9.54	174.49
	10/12/95		10.97	173.06
	4/12/96		10.06	173.97
	10/8/96		10.87	173.16
	4/9/97		10.40	173.63
	11/5/97		10.97	173.06
	3/1/00		8.68	175.35
	09/00		U	-
	3/22/01		10.22	173.81
	8/23/01		10.02	174.01
	03/02		U	-
	10/02		U	-
	03/03		U	-
	9/17/03		10.00	174.03
	11/20/08		IA	-

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-4	12/89	U	U	-
	08/90		U	-
	01/91		U	-
	04/91		U	-
	07/91		U	-
	10/91		U	-
	01/92		U	-
	4/20/92		10.89	
	7/9/92	184.33	10.65	173.68
	10/8/92	184.61	12.78	171.83
	1/12/93		9.67	174.94
	3/4/93		10.20	174.41
	7/1/93		11.41	173.20
	10/19/93		11.92	172.69
	4/25/94		10.94	173.67
	7/28/94		11.74	172.87
	10/13/94		15.31	169.30
	1/10/95		8.02	176.59
	4/19/95		9.97	174.64
	10/12/95		11.70	172.91
	4/12/96		10.33	174.28
	10/8/96		11.65	172.96
	4/9/97		10.93	173.68
	11/5/97		11.82	172.79

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-5	4/27/92	183.62	11.72	171.90
	7/9/92		12.24	171.38
	10/8/92	183.92	13.24	170.68
	1/12/93		10.30	173.62
	3/4/93		10.53	173.39
	7/1/93		11.85	172.07
	10/19/93		12.32	171.60
	4/25/94		11.58	172.34
	07/94		U	-
	10/13/94		15.71	168.21
	01/95		U	-
	4/19/95		10.41	173.51
	10/12/95		12.12	171.80
	4/12/96		10.85	173.07
	10/8/96		12.00	171.92
	4/9/97		11.40	172.52
	11/5/97		12.19	171.73
	3/1/00		9.45	174.47
	09/00		U	-
	3/22/01		11.04	172.88
	8/23/01		11.06	172.86
	03/02		NS	-
	10/02		NS	-
	03/03		NS	-
	9/17/03		11.03	172.89
	11/20/08		11.80	172.12

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-6	4/27/92	U	11.90	171.80
	7/9/92	183.70	12.34	171.36
	10/8/92	183.96	13.3	170.66
	1/12/93	183.60	10.59	173.01
	3/4/93		10.86	172.74
	7/1/93		12.00	171.60
	10/19/93		12.48	171.12
	4/25/94		11.86	171.74
	07/94		U	-
	10/13/94		15.87	167.73
	01/95		U	-
	4/19/95		10.70	172.90
	10/12/95		12.32	171.28
	4/12/96		11.09	172.51
	10/8/96		12.19	171.41
	4/9/97		11.70	171.90
	11/5/97		12.33	171.27
	3/1/00		9.73	173.87
	09/00		U	-
	3/22/01		11.01	172.59
	8/23/01		11.21	172.39
	03/02		U	-
	10/02		U	-
	03/03		U	-
	9/17/03		11.50	172.10
	11/20/08		12.10	171.50

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Table 5
Summary of Groundwater Elevation Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Well	Date Measured	Casing Elevation (Feet above MSL)	Depth to Groundwater (Feet)	Groundwater Elevation (Feet above MSL)
MW-7	4/27/92	182.52	10.97	171.55
	7/9/92		11.43	171.09
	10/8/92	182.78	12.40	170.38
	11/30/92		12.00	170.78
	1/12/93		9.51	173.27
	01/93		U	-
	3/4/93		9.88	172.90
	7/1/93		11.07	171.71
	10/19/93		11.55	171.23
	1/12/94	182.42	11.36	171.06
	4/25/94		10.85	171.57
	7/28/94		NS	-
	10/13/94		NS	-
	01/95		U	-
	4/19/95		9.66	172.76
	10/12/95		11.34	171.08
	4/12/96		10.06	172.36
	10/8/96		11.16	171.26
	4/9/97		11.70	170.72
	11/5/97		11.36	171.06
	3/1/00		8.72	173.70
	09/00		U	-
	3/22/01		10.04	172.38
	8/23/01		10.18	172.24
	03/02		U	-
	10/02		IA	-
	03/03		IA	-
	9/17/03		IA	-
	11/20/08		11.05	171.37

Notes:
IA: Well Inaccessible
NS: Well Not Sampled
U: Data Unavailable
-: Unable to calculate elevation

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Table 6
Summary of Groundwater Flow Direction and Gradient Data
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Date	Flow Direction	Gradient (Feet/Foot)
11/1/1992	Southeast	0.006
1/27/1993	Southeast	0.010
3/4/1993	Southeast	0.012
7/1/1993	Southeast	0.012
10/19/1993	South	0.005
1/12/1994	South	0.001
5/13/1994	Southwest	0.007
10/13/1994	South	0.001
1/31/1995	South	0.002
5/17/1995	South	0.009
10/30/1995	South	0.007
4/12/1996	South	0.008
11/5/1996	South	0.008
4/9/1997	South	0.010
8/23/2001	South	0.008
9/17/2003	Southeast	0.012
11/20/2008	Southeast	0.010