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9:53 am, Dec 16, 2011

Alameda County
Environmental Health

December 15, 2011

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


Subject: Status Report
Second Half 2011
Former Unocal Service Station
20405 Redwood Road
Castro Valley, California

Dear Ms. Jakub:

Enclosed please find a copy of the subject Status Report dated December 14, 2011, 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,


Randall Nahas



**STATUS REPORT
SECOND HALF 2011**

**FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA**

BSK PROJECT E0805401S

PREPARED FOR:

**MR. RANDALL NAHAS
P.O. BOX 3049
SAN RAMON, CA 94583**

DECEMBER 14, 2011

Engineers, Geologists, Inspectors, and Scientists

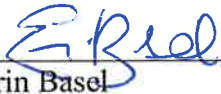
**STATUS REPORT
SECOND HALF 2011
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA**

Prepared for:


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BSK Project: E0805401S

December 14, 2011



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**STATUS REPORT
SECOND HALF 2011
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA**

1.0 INTRODUCTION

At the request of Mr. Randall Nahas, BSK Associates performed groundwater monitoring and prepared this report summarizing data collected from the semi-annual monitoring of six groundwater monitoring wells located at the Former Unocal Service Station, 20405 Redwood Road, Castro Valley, California (the site). The site vicinity is shown on Figure 1.

2.0 PROJECT HISTORY

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 soil borings MW-1 and MW-1A; however, they were not converted to monitoring wells (BSK, 1995). Summaries of soil sample analytical results are presented in Table 1 (petroleum hydrocarbons) and Table 2 (volatile and semi-volatile organic compounds). 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 Figure 2. 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 the chromatograph from a groundwater sample from well MW-7. The peak was not typical of petroleum hydrocarbons.

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 well MW-7 at concentrations of 14,000 µg/L and 660 µg/L, respectively. BSK Associates attributed the previous concentrations of TPHg to the presence of PCE and concluded gasoline contamination may not occur in a significant quantity in monitoring well MW-7. As a result, BSK Associates recommended ceasing any further investigation of the gasoline plume south of well MW-7 (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. Summaries of soil sample analytical results are presented in Table 1 (petroleum hydrocarbons) and Table 2 (volatile and semi-volatile organic compounds). Monitoring well groundwater sample analytical results are summarized in Table 3 (Philip Environmental, 1996).

December 1995, Feasibility Study: Excavation and on-site treatment of excavated soil was selected as the remedial alternative for soil impacts. 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 impacts at the site. (BSK, 1995).

June 1996, Revised Corrective Action Plan: Philip Environmental prepared a Revised Corrective Action Plan. The plan stated that 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 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 Environmental Inc., 1999).

November 1998, UST Removal: The concrete slabs and foundation of the building, fueling area, and pump islands, were broken up 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. Tables 1 and 2 provide summaries 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 (Life Springs Environmental Inc., 1999).

The UST pit was backfilled with aggregate base to within 5 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 Environmental Inc., 1999).

April 1999, Stockpiled Soil Remediation: Beginning in April 1999, impacted soil from the main UST excavation was laid out in shallow beds and aerated by periodic tilling.

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 than the first. Excavated soil from the waste oil UST and clarifier sump pits was disposed of at Vasco Road Sanitary Landfill in Livermore, California (Life Springs Environmental Inc., 2000). Soil samples were collected from native soil in both pits and analyzed for TPHd and total oil and grease. A section of the pipe trench area was 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 re-excavation and sample locations.

August 1999, Waste Oil and Clarifier Sump Pit Sampling and Soil Stockpiling: The aerated soil from previous excavations 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 Environmental Inc., 1999). Table 1 provides a summary of soil sample analytical results, Figure 3 shows the approximate sample locations.

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. Table 1 provides 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, Figure 3 shows the approximate sample location.

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 Environmental Inc., 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 also transported to the Vasco Road Sanitary Landfill in Livermore, California. Approximately 36.1 tons of soil were removed from both the waste oil pit and the clarifier sump pit during both re-excavation and over-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 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.

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 Environmental Inc., 2000).

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 Table 3 (petroleum hydrocarbon constituents) and Table 4 (volatile organic hydrocarbons). Groundwater elevation data are summarized in Table 5. Currently, groundwater monitoring is conducted on a semi-annual basis.

Monitoring wells MW-2 and MW-3 were not sampled from the second half of 2009 through the second half of 2010. Bark and debris covers the area around MW-2 and MW-3, which prevented BSK from locating the wells on several attempts. With assistance from Mr. Nahas, the wells were located in time to sample for this reporting period. In the Status Report for the second half of 2010, BSK recommended locating the wells and installing a crash post next to each vault box. Since the wells have been located and referenced to nearby features, installing crash posts should no longer be necessary.

3.0 PURPOSE AND SCOPE

The purpose of groundwater monitoring is to collect data on groundwater quality, groundwater depths, and direction of flow beneath the subject property with the intention of evaluating residual hydrocarbon contamination in groundwater beneath the site. BSK performed the following tasks:

- Measured depth to groundwater in five of the six monitoring wells on October 13, 2011. A car was parked over monitoring well MW-7 for the entire day, and BSK's sampling technician was unable to locate the car's owner to move it.
- Purged and sampled the five groundwater monitoring wells.
- Analyzed the groundwater samples for:
 - Total petroleum hydrocarbons as diesel (TPHd)
 - Total petroleum hydrocarbons as gasoline (TPHg)
 - Benzene, toluene, ethylbenzene, and xylenes (BTEX)
 - Fuel Oxygenates
 - Lead Scavengers
- Prepared this status report summarizing the condition of the wells, depth to groundwater, groundwater flow direction, and laboratory analytical results.

4.0 GROUNDWATER FLOW DIRECTION

Groundwater depths were measured in all monitoring wells except MW-7 prior to purging and sampling on October 13, 2011. Depths were measured relative to the north side of the top of each well casing.

Based on our measurements, groundwater generally flowed southeast with an approximate hydraulic gradient of 0.01 feet/foot. Figure 4 presents a groundwater elevation contour map for the recent monitoring event, and includes a rose diagram depicting a summary of groundwater flow directions since 1992. Table 5 summarizes groundwater elevations recorded during the investigation. Table 6 summarizes associated groundwater gradient and flow direction data.

5.0 GROUNDWATER SAMPLING AND ANALYTICAL RESULTS

Groundwater sampling was conducted on October 13, 2011. Each accessible well was purged of a minimum of three casing volumes using an electric submersible pump. Water temperature, pH, and conductivity were measured after removal of each approximate casing volume. Water sample logs are included in Appendix A.

After purging, water samples were collected from each accessible well using a clean disposable bailer. The samples were labeled with the sample identification, date and time collected, and project identification. Samples were preserved in a chilled cooler and transported with completed chain-of-custody forms to BSK's state-certified analytical laboratory. Equipment used during purging and sampling activities was cleaned with non-phosphate detergent wash and rinsed prior to use at each well location. The purged groundwater was stored in appropriately-labeled 55-gallon drums at the site.

The samples were analyzed by BSK's laboratory for TPHd and TPHg by EPA Method 8015B, and BTEX, fuel oxygenates, and lead scavengers by EPA Method 8260B. Tables 3 and 4 summarize past quarterly monitoring analytical results. Figures 5 through 9 present time series plots for monitoring wells MW-2, MW-3, MW-6, MW-7, and MW-101, respectively. Appendix B contains laboratory data reports and chain-of-custody documentation for the samples collected this quarter.

6.0 LIMITATIONS

This report has been prepared for the exclusive use of Mr. Randall Nahas. Unauthorized use of or reliance on the information contained in this report by others, unless given the express written consent by BSK Associates, is prohibited.

The conclusions presented in this report are professional opinions based on the indicated data described in this report. This report has been prepared in accordance with generally accepted methodologies and standards of professional practice. No other warranties, either expressed or implied, are made as to the findings or conclusions included in the report. Conclusions and recommendations are intended only for the purpose, site location and project indicated.

Opinions presented in this report apply to site conditions existing at the time of our study and those reasonably foreseeable. They cannot necessarily apply to site changes of which this office is not aware and has not evaluated. Changes in the conditions of the subject property may occur with time, because of natural processes or the works of man, on the subject site or on adjacent properties.

7.0 REFERENCES

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- BSK, 2003, *Report, Eighth Semi-Annual Groundwater Monitoring (Third Quarter 2003), Former Unocal 76 Service Station, 20405 and 20629 Redwood Road, Castro Valley, California*, BSK Associates, May 14, 1996.

TABLES

Table 1
Soil Sample Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Location	Depth (feet)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	Oil and Grease	Total Lead	MTBE
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	-	-	-

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Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Location	Depth (feet)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	Oil and Grease	Total Lead	MTBE
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	-	-	-
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

Table 1
Soil Sample Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Location	Depth (feet)	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	Oil and Grease	Total Lead	MTBE
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										

Table 2
Soil Sample Analytical Results
Volatile and Semi-Volatile Organic Compounds
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in mg/kg)

Well	Depth	Phenanthrene	Fluoranthene	Pyrene	bis(2-Ethylhexyl) phthalate
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					

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-2	12/89	72	-	-	<0.5	<0.5	<0.5	<0.5	-
	8/90	180	-	-	21	3.9	7.2	28	-
	1/91	430	-	-	50	33	22	110	-
	4/91	4,800	-	-	640	520	140	790	-
	7/91	220	-	-	14	1	17	8	-
	10/91	170	-	-	2.9	ND	2.5	6	-
	1/92	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
	9/00	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
	3/02	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	
8/25/09	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL	
8/4/10	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL	
1/7/11	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL	
4/8/11	<50	<50	-	0.4	<0.3	1.7	1.2	110	
10/13/11	430	220	-	-	<0.3	<0.3	<0.3	400	

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-3	12/89	<50	-	-	<0.5	<0.5	<0.5	<0.5	-
	8/90	290	-	-	55	3.8	20	59	-
	1/91	110	-	-	29	3.3	9.7	34	-
	4/91	3,600	-	-	450	270	150	760	-
	7/91	220	-	-	14	14	33	8.0	-
	10/91	ND	ND	ND	ND	ND	ND	ND	-
	1/92	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
	9/00	ND	-	-	ND	ND	ND	ND	98
	3/22/01	ND	-	-	ND	ND	ND	ND	190
	8/23/01	ND	-	-	ND	ND	ND	ND	26
	3/02	ND	-	-	ND	ND	ND	ND	26
	10/02	ND	-	-	ND	ND	ND	ND	15
	3/03	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	
8/25/09	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL	
8/4/10	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL	
1/7/11	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL	
4/8/11	<50	<50	-	<0.3	<0.3	<0.3	<0.4	19	
10/13/11	<50	130	-	<0.3	<0.3	<0.3	<0.4	15	

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
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	-
	1/91	-	-	-	-	-	-	-	-
	4/91	ND	ND	ND	ND	ND	ND	ND	-
	7/91	-	-	-	-	-	-	-	-
	10/91	ND	ND	ND	ND	ND	ND	ND	-
	1/92	-	-	-	-	-	-	-	-
	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.									

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
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	-
	7/94	-	-	-	-	-	-	-	-
	10/13/94	87	ND	ND	ND	36	ND	1.3	-
	1/95	-	-	-	-	-	-	-	-
	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
	9/00	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
	3/02	NS	NS	NS	NS	NS	NS	NS	NS
	10/02	NS	NS	NS	NS	NS	NS	NS	NS
	3/03	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
	8/25/09	<50	<50	-	<0.5	<0.5	<0.5	<0.5	<5.0
	8/4/10	<50	<100	-	<0.3	<0.3	<0.3	<0.3	<1.0
	1/7/11	<50	<50	-	<0.3	<0.3	<0.3	0.64	<1.0
	4/8/11	<50	<50	-	<0.3	<0.3	<0.3	<0.4	<0.5
	10/13/11	<50	120	-	<0.3	<0.3	<0.3	<0.4	<0.5

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
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	-
	7/94	-	-	-	-	-	-	-	-
	10/13/94	160	-	-	0.40	140	0.5	2.3	-
	1/95	-	-	-	-	-	-	-	-
	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
	9/00	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
	3/02	91	-	-	ND	ND	ND	ND	370
	10/02	83	-	-	ND	ND	ND	ND	260
	3/03	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*	97	<50	-	<0.3	<0.3	<0.3	<0.3	200
	8/25/09	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/10	<50	<100	-	<0.3	<0.3	<0.3	<0.3	54
1/7/11	<50	<50	-	<0.3	<0.3	<0.3	0.44	40	
4/8/11	<50	<50	-	<0.3	<0.3	<0.3	<0.4	68	
10/13/11	99	85	-	<0.3	<0.3	<0.3	<0.4	95	

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	
MW-7	4/13/92	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	
	1/93	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	-	-	-	-	-	-	-	-	
	1/95	-	-	-	-	-	-	-	-	
	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
	9/00	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
	3/02	280	-	-	-	0.35	ND	0.91	2.2	7.7
	10/02	IA	IA	IA	IA	IA	IA	IA	IA	IA
	3/03	IA	IA	IA	IA	IA	IA	IA	IA	IA
	9/17/03	IA	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*	400	<50	-	-	<0.3	<0.3	<0.3	<0.3	<5.0
	8/25/09	IA	IA	IA	IA	IA	IA	IA	IA	IA
8/4/10	430	<100	-	-	<0.3	<0.3	<0.3	<0.3	<1	
1/7/11	250	<50	-	-	<0.3	<0.3	<0.3	<0.3	<1	
4/8/11	130	<50	-	-	<0.3	<0.3	<0.3	<0.4	<0.5	
10/13/11	IA	IA	IA	IA	IA	IA	IA	IA	IA	

Table 3
Groundwater Monitoring Analytical Results
Petroleum Hydrocarbon Constituents
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	TPHg	TPHd	Total Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-101	9/95	9,400	-	-	170	94	150	710	-
	3/01/00	40,000	-	-	2,500	490	4,300	10,000	2,400 ¹ /1,400
	9/00	770	-	-	3.0	0.32	13	27	-
	3/01	34,000	-	-	1,400	62	3,400	7,700	970
	8/23/01	12,000	-	-	630	ND	1,500	480	1,400
	3/02	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
	3/03	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
	8/25/09	2,200	1,500	-	9.9	<0.5	14	5.6	440
	8/4/10	1,100	<100	-	11	<0.3	12	4.8	280
	1/7/11	1,600	2,300	-	75	0.72	150	110	420
	4/8/11	2,400	1,900	-	150	0.89	210	130	370
10/13/11	1,300	2,800	-	37	<0.3	44	15	500	
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.

CNL: Could not locate well.

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.

Table 4
Groundwater Monitoring Analytical Results
Volatile Organic Compounds
Former Unocal Service Station
20405 Redwood Road, Castro Valley, California
(Concentrations in µg/L)

Well	Date	Chlorobenzene	Chloroform	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloroethane	Tetrachloroethene	Trichloroethene
MW-2	3/4/93	<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								

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	-
	2/6/09		10.46	-
	8/25/09		10.53	-
	8/4/10		11.47	-
	4/8/11		9.01	-
10/13/11		10.41	-	

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	-	
2/11/09		U	-	
8/25/09		CNL	-	
8/4/10		CNL	-	
1/7/11		CNL	-	
4/8/11		9.35	174.12	
10/13/11		10.30	173.17	

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
	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	-	
2/11/09		U	-	
8/25/09		CNL	-	
8/4/10		CNL	-	
1/7/11		CNL	-	
4/8/11		9.66	174.37	
10/13/11		10.46	173.57	

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	

MW-4 abandoned December 1999.

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	
2/6/09	11.56	172.36		
8/25/09	11.90	172.02		
8/4/10	11.61	172.31		
1/7/11	10.45	173.47		
4/8/11	10.26	173.66		
10/13/11	11.53	172.39		

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
2/6/09		11.83	171.77	
8/25/09		Dry	-	
8/4/10		12.85	170.75	
1/7/11		10.75	172.85	
4/8/11		10.59	173.01	
10/13/11		11.81	171.79	

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
	2/6/09		10.76	171.66
	8/25/09	IA	-	
8/4/10	10.76	171.66		
1/7/11	9.67	172.25		
4/8/11	9.49	172.93		
10/13/11	IA	-		

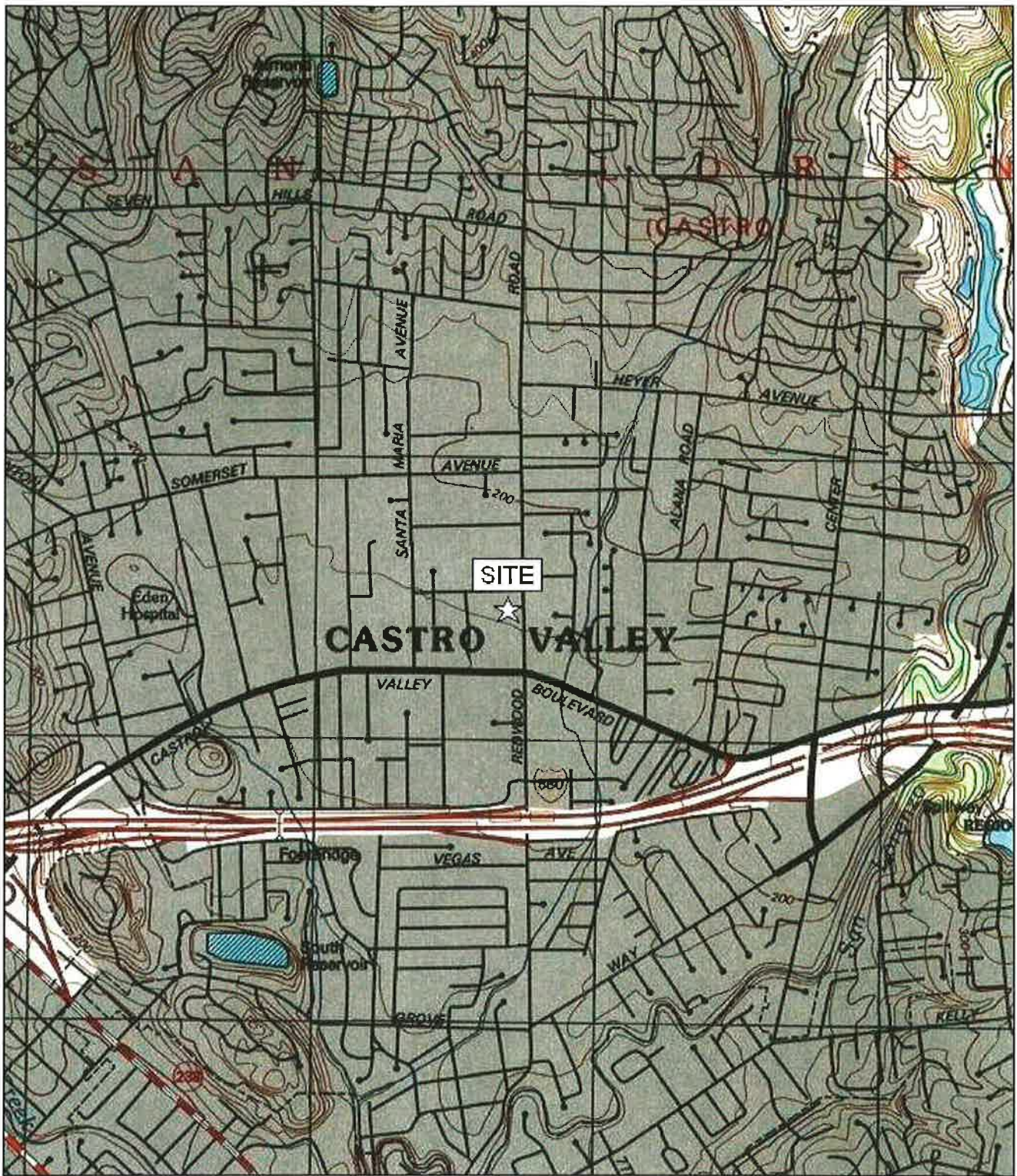
Notes:
IA: Well Inaccessible
CNL: Could not locate well
NS: Well Not Sampled
U: Data Unavailable
-: Unable to calculate elevation

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

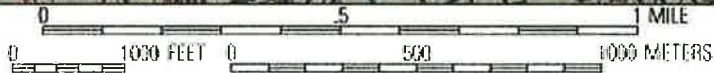
Date	Flow Direction	Gradient (Feet/Foot)
11/1/92	Southeast	0.006
1/27/93	Southeast	0.01
3/4/93	Southeast	0.01
7/1/93	Southeast	0.01
10/19/93	South	0.005
1/12/94	South	0.001
5/13/94	Southwest	0.007
10/13/94	South	0.001
1/31/95	South	0.002
5/17/95	South	0.009
10/30/95	South	0.007
4/12/96	South	0.008
11/5/96	South	0.008
4/9/97	South	0.01
8/23/01	South	0.008
9/17/03	Southeast	0.01
11/20/08	Southeast	0.01
2/5/09	South-southeast	0.01
8/25/09	-	-
8/4/10	East-southeast	0.01
1/7/11	South-southeast	0.02
4/8/11	South-southeast	0.01
10/13/11	South-southeast	0.01

Notes:
 -: Unable to calculate flow direction

FIGURES



TN * /MN
15°



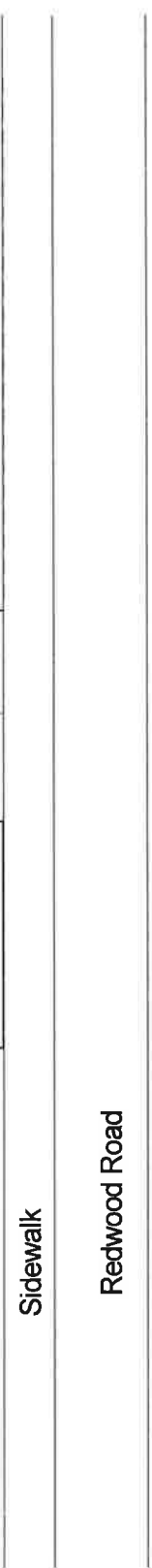
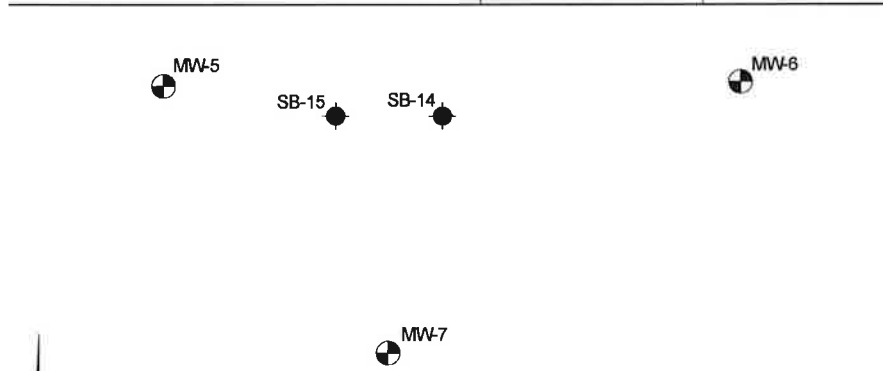
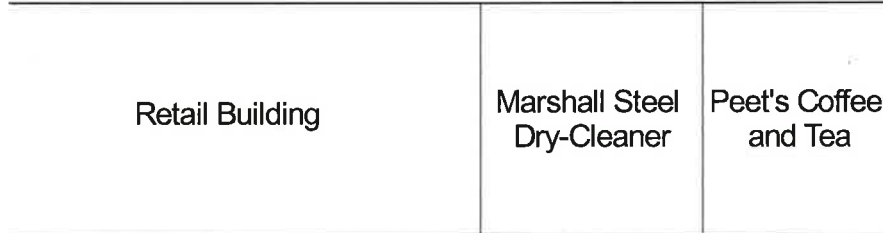
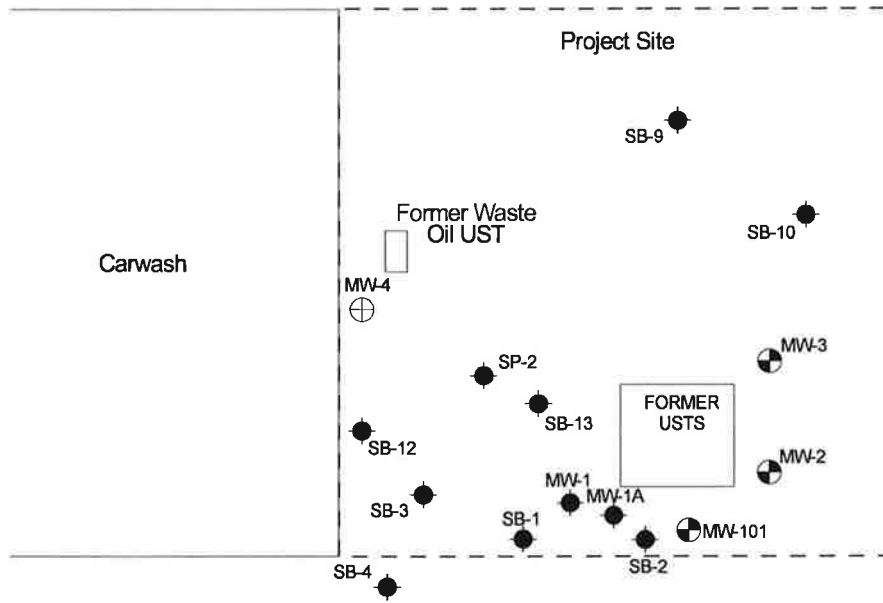
Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

BSK
Associates
Engineers & Laboratories

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

FIGURE 1

PROJECT: E0805401S

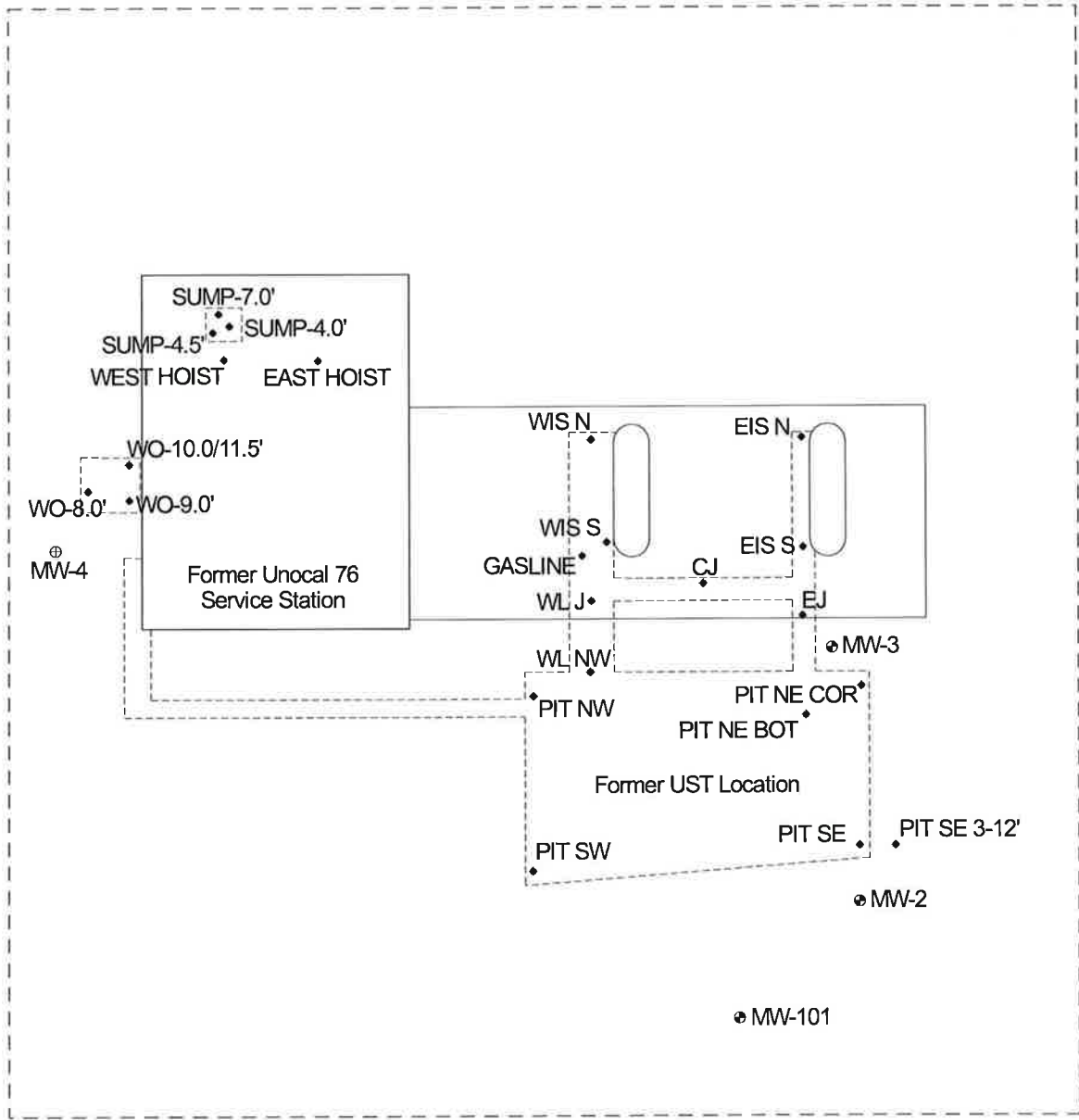


- LEGEND**
- ⊕ Monitoring Well
 - ⊕ Abandoned Monitoring Well
 - Soil Boring



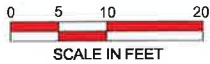
SITE PLAN
 FORMER UNOCAL SERVICE STATION
 20405 REDWOOD ROAD
 CASTRO VALLEY, CALIFORNIA

FIGURE 2
 PROJECT: E0805401S
 DATE: 1/6/10



Redwood Road

Driveway to Shopping Center



LEGEND	
◆	Soil Sample Location
⋮	Approximate Extent of Excavation
●	Monitoring Well Location
⊕	Abandoned Monitoring Well Location

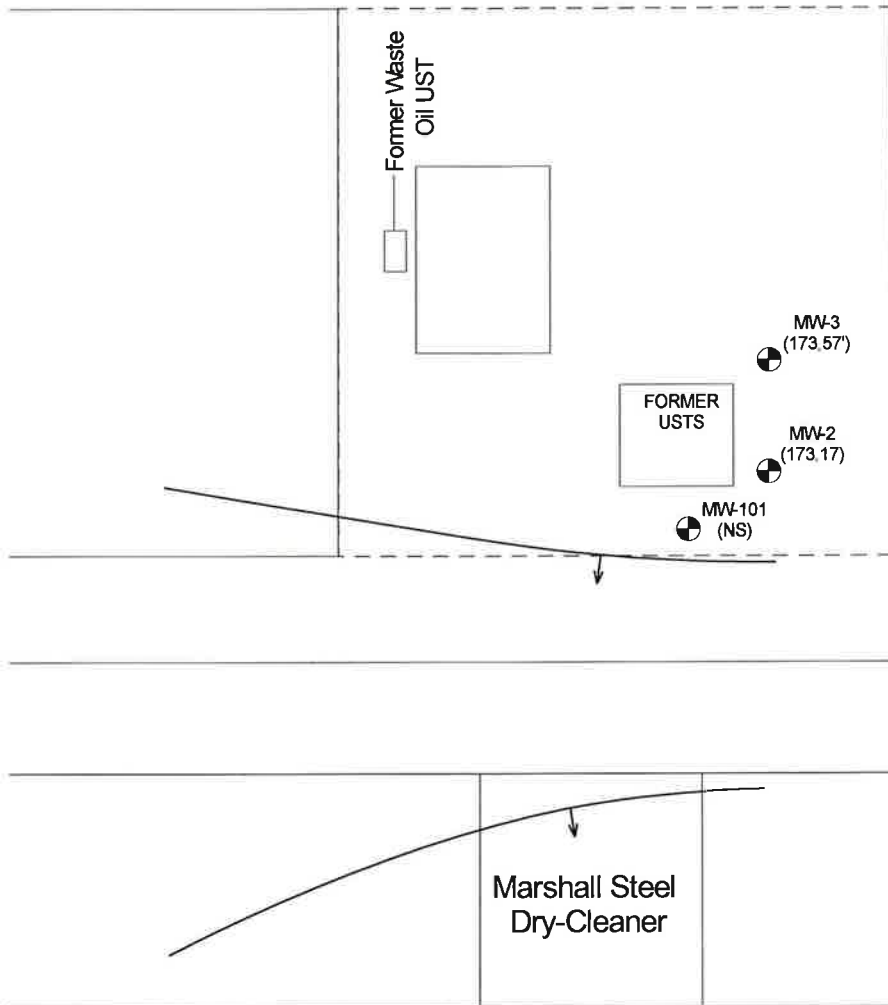


EXTENT OF EXCAVATIONS AND
EXCAVATION SOIL SAMPLE LOCATIONS
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

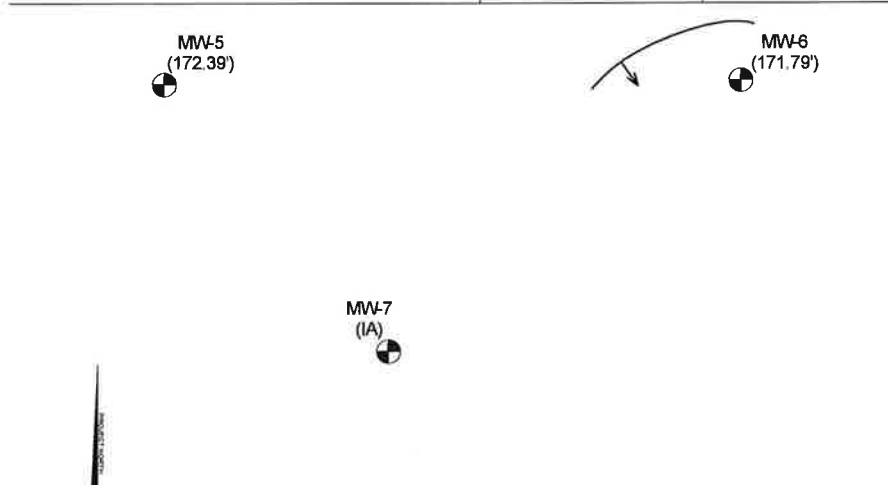
FIGURE 3

PROJECT: E0805401S

DATE: 2/12/09

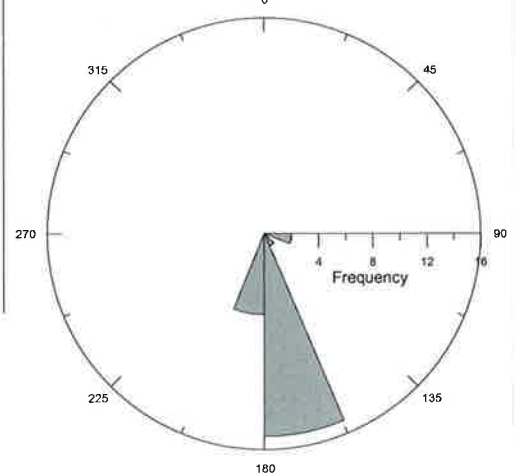


Redwood Road



Sidewalk

Groundwater Flow Direction
January 1992 to Present



LEGEND	
	Generalized Groundwater Contour Line Gradient = 0.01 feet/foot
	Monitoring Well (Groundwater Elevation, feet above MSL)
	NS - Not Surveyed IA - Inaccessible



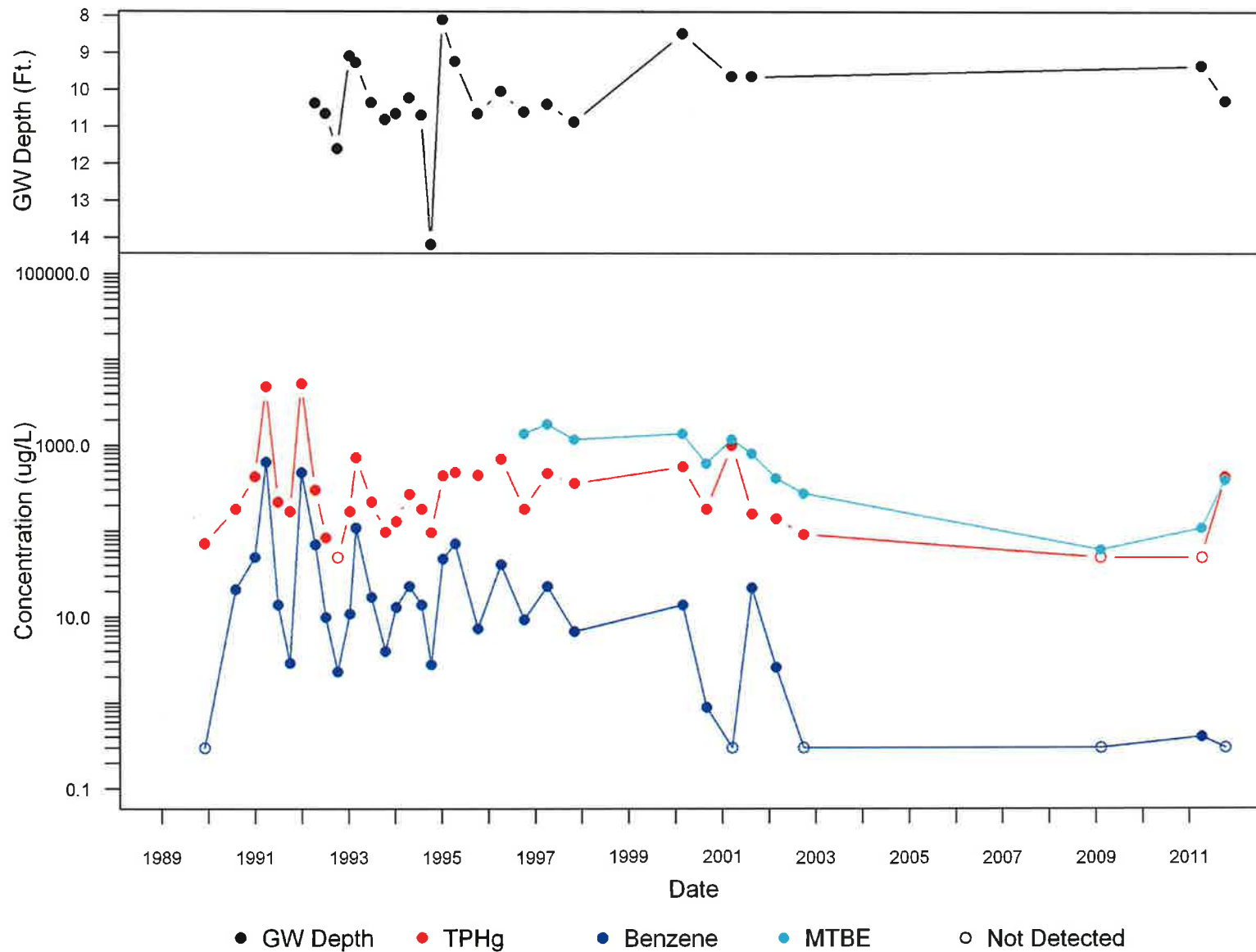
GENERALIZED GROUNDWATER ELEVATION MAP
OCTOBER 2011

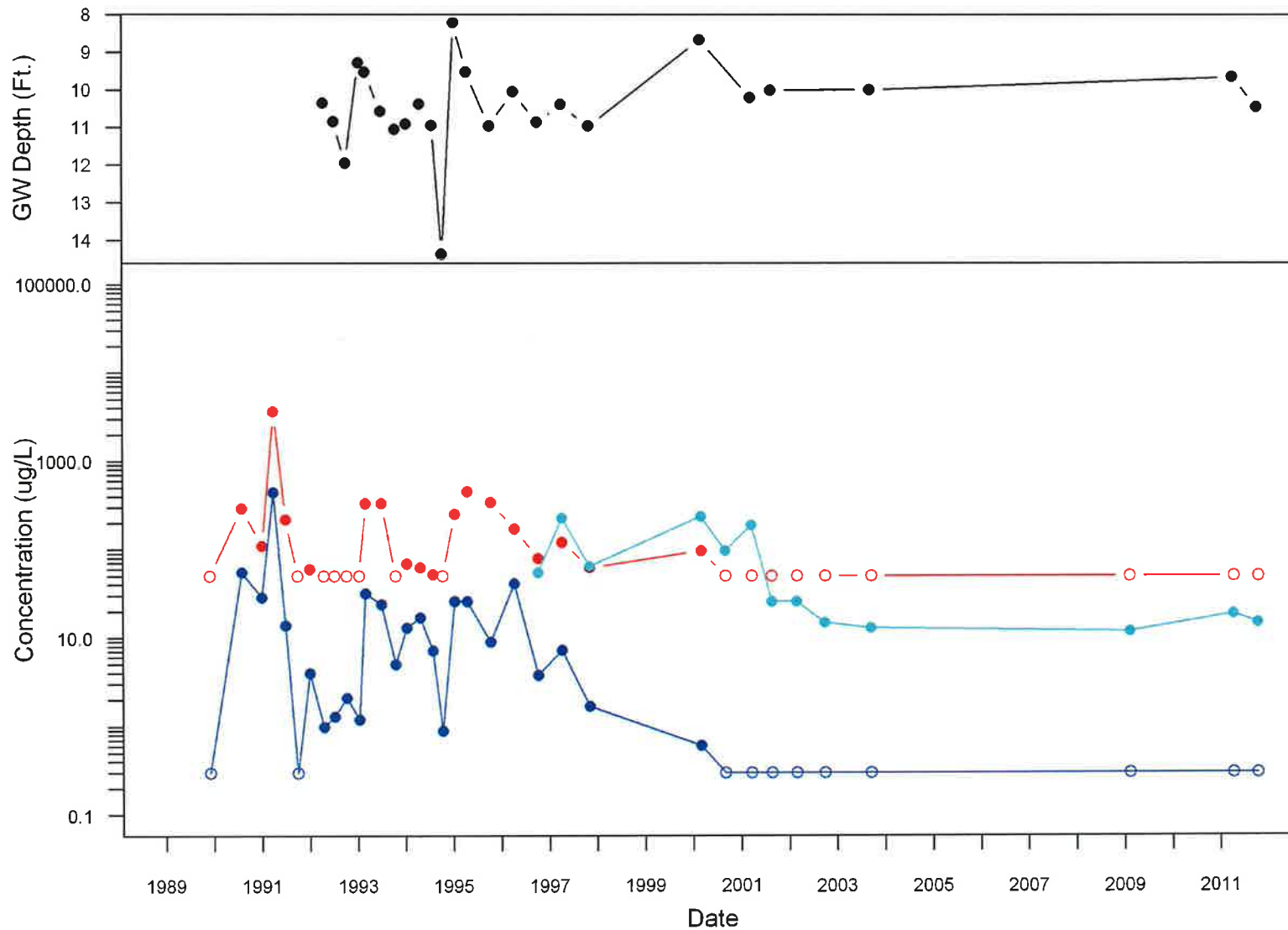
FORMER UNOCAL SERVICE STATION
20405 REDWOOD ROAD
CASTRO VALLEY, CALIFORNIA

FIGURE 4

PROJECT: E0805401S

DATE: 11/4/11





● GW Depth ● TPHg ● Benzene ● MTBE ○ Not Detected

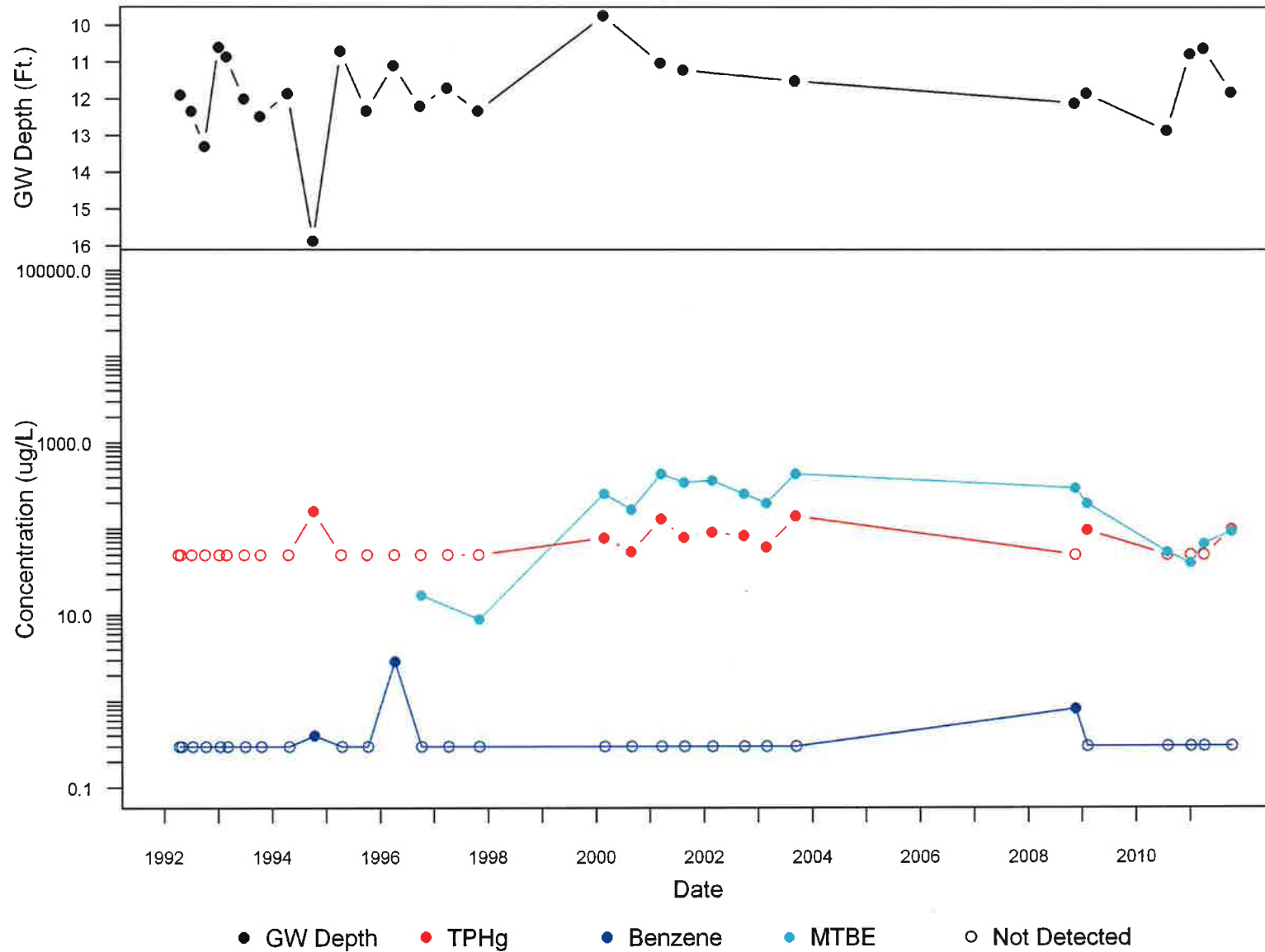


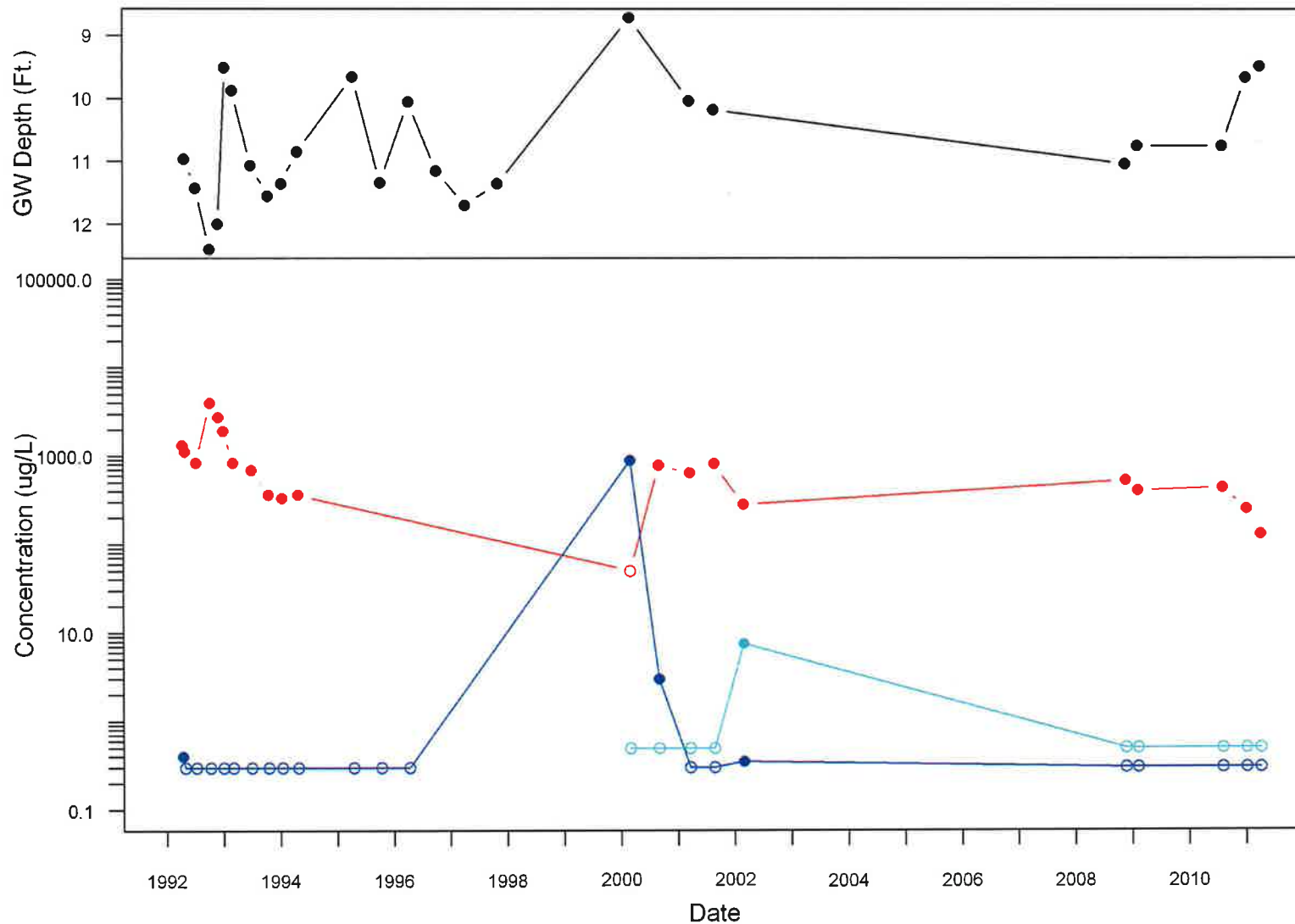
MW-3 TIME-SERIES PLOTS
 FORMER UNOCAL SERVICE STATION
 20405 REDWOOD ROAD
 CASTRO VALLEY, CALIFORNIA

FIGURE 6

PROJECT: E0503102S

DATE: 11/8/11





● GW Depth ● TPHg ● Benzene ● MTBE ○ Not Detected

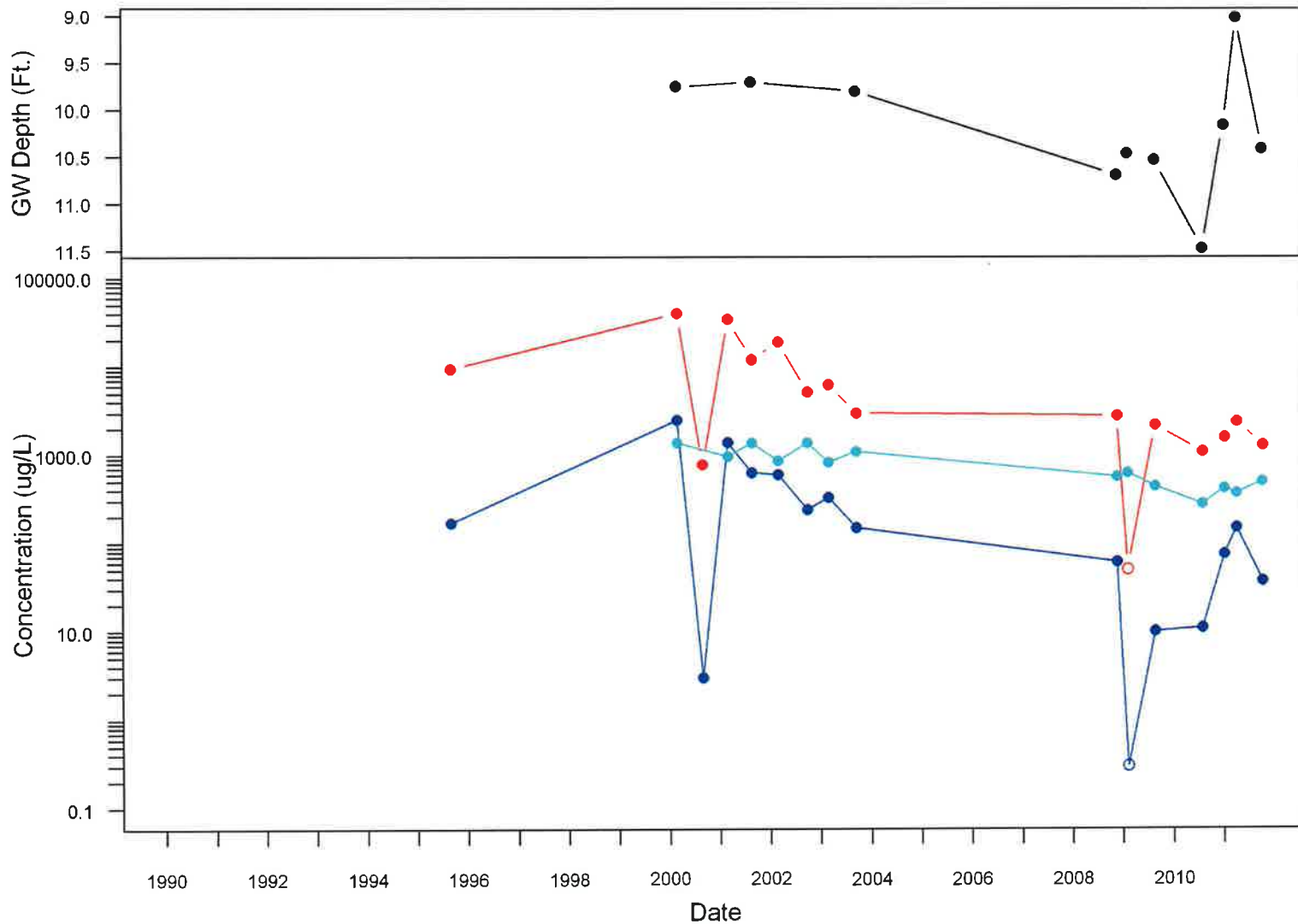


MW-7 TIME-SERIES PLOTS
 FORMER UNOCAL SERVICE STATION
 20405 REDWOOD ROAD
 CASTRO VALLEY, CALIFORNIA

FIGURE 8

PROJECT: E0805401S

DATE: 11/8/11



● GW Depth ● TPHg ● Benzene ● MTBE ○ Not Detected

APPENDIX A

WATER SAMPLE LOG

Project Name: <u>Unocal</u>	Job #: <u>E08054015</u>	Field Personnel: <u>E. Basel</u>
Day: Mon Tu Wed <u>Th</u> Fri Sat Sun <small>(circle one)</small>	Date: <u>10/13/11</u>	Weather: <u>Clear</u> Partly Cloudy Overcast Rain <small>(circle one)</small> Cold Cool Warm <u>Hot</u> Very Hot

Well: <u>HW-2</u>	Water Level Measurement Technique: (Circle) Electric Sounder Ser # _____ Not Measured
Static Depth to Water-Ft. (A) <u>10.30</u>	Purge Method: Grundfos Submersible Pump Pneumatic Pump (Circle) Electric Pump Hand Bailed
Total Depth of Casing-Ft. (B) <u>28.74</u>	
Total Ft. of Water (B-A) <u>18.44</u>	Other _____
Casing Dia.-in. <u>(2") 4" 6" 8"</u>	Dedicated System: Yes <input checked="" type="checkbox"/> No
Casing Capacity-gal/ft (C) <u>(.16) .653 1.46 2.50</u>	Dedicated System: Yes <input checked="" type="checkbox"/> No
Gallons per Casing Volume (B-A)*C <u>3.0</u>	pH Calibration: <u>4.0</u> X <u>7.0</u> X <u>10.0</u> EC Calibration(umhos) <u>1413</u>

Time	Gallons Purged	Casing Volumes	PH	EC (umhos)	Temp (°F) (°C)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
<u>16:03</u>	<u>0</u>	<u>0</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	Started Purge/Opened Sample Port
<u>16:05</u>	<u>3</u>	<u>1</u>	<u>6.66</u>	<u>687</u>	<u>21.0</u>	<u>→</u>	It turbid tan, vlt HC odor
<u>16:07</u>	<u>6</u>	<u>2</u>	<u>6.67</u>	<u>681</u>	<u>20.7</u>	<u>—</u>	less turbid, "
<u>16:10</u>	<u>9</u>	<u>3</u>	<u>6.65</u>	<u>688</u>	<u>20.6</u>	<u>—</u>	" "

Chloride	Sulfate	Nitrate	X4.4	Other Field Results:
Sampled/Stopped				

Purge Pump On <u>16:03</u>	Discharge Measurement: (Circle) <u>Bucket</u> Tank Flowmeter
Purge Pump Off <u>16:10</u>	Sample Collection Method: <input checked="" type="checkbox"/> Direct From Discharge Hose
Total Gallons Purged <u>9</u>	<input type="checkbox"/> Teflon Bailer <input checked="" type="checkbox"/> Disposable Bailer
Purge Rate (gpm) <u>1.3</u>	Ice Chest Coolant <input type="checkbox"/> Crushed Ice <input checked="" type="checkbox"/> Blue Ice Ice Chest Temp (°C) _____

Sample Time	Analyses	Amount/Container Used	Sample Description
<u>16:12</u>		2 x 1L plastic unpreserved	
		1 x 250mL plastic HNO3	Filtered
		1 x 250mL plastic H2SO4	Filtered
		1 x 250mL amber H2SO4	
		3 x 40mL VOA H3PO4, 1 Bacti	

Well Vault Type: _____	Floating Product: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Lock Number/Type: _____	Thickness: _____
Drums Filled/Used: _____	Description: _____

Notes: Crack lid gone + outer casing filled w/ aggregate dirt + asphalt

WATER SAMPLE LOG

Project Name: <u>Unocal</u>	Job #: <u>E08054018</u>	Field Personnel: <u>E. Basel</u>
Day: Mon Tu Wed <u>Thu</u> Fri Sat Sun <small>(circle one)</small>	Date: <u>10/13/11</u>	Weather: <u>Clear</u> Partly Cloudy Overcast Rain <small>(circle)</small> Cold Cool Warm Hot Very Hot

Well: <u>MW3</u>	Water Level Measurement Technique: (Circle) Electric Sounder Ser # <u>X</u> Not Measured
Static Depth to Water-Ft. (A) <u>10.46</u>	Purge Method: Grundfos Submersible Pump Pneumatic Pump (Circle) Electric <u>X</u> Pump Hand Bailed Other _____
Total Depth of Casing-Ft. (B) <u>28.93</u>	
Total Ft. of Water (B-A) <u>18.47</u>	Dedicated System: Yes <u>X</u> No
Casing Dia-in. <u>4" 6" 8"</u>	Dedicated System: Yes <u>X</u> No
Casing Capacity-gal/ft (C) <u>163.653 1.46 2.50</u>	pH Calibration: <u>4.0 X 7.0 X 10.0</u> EC Calibration(umhos) <u>1413</u>
Gallons per Casing Volume (B-A)*C <u>30</u>	

Time	Gallons Purged	Casing Volumes	pH	EC (umhos)	Temp (°F) (°C)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
<u>12:02</u>	<u>0</u>	<u>0</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	Started Purge/Opened Sample Port
<u>12:05</u>	<u>3</u>	<u>1</u>	<u>6.63</u>	<u>729</u>	<u>20.9</u>	<u>20.9</u>	<u>clear odorless</u>
<u>12:07</u>	<u>6</u>	<u>2</u>	<u>6.66</u>	<u>730</u>	<u>20.4</u>	<u>-</u>	<u>" "</u>
<u>12:09</u>	<u>9</u>	<u>3</u>	<u>6.66</u>	<u>723</u>	<u>20.5</u>	<u>-</u>	<u>" "</u>

Chloride	Sulfate	Nitrate	X4.4	Sampled/Stopped
				Other Field Results:

Purge Pump On	<u>12:02</u>	Discharge Measurement: (Circle) <u>Bucket</u> Tank Flowmeter
Purge Pump Off	<u>12:09</u>	Sample Collection Method: <u>X</u> Direct From Discharge Hose
Total Gallons Purged	<u>9</u>	<u>---</u> Teflon Bailer <u>X</u> Disposable Bailer
Purge Rate (gpm)	<u>1.3</u>	Ice Chest Coolant <u>---</u> Crushed Ice <u>X</u> Blue Ice Ice Chest Temp (°C) <u>---</u>

Sample Time	Analyses	Amount/Container Used	Sample Description
<u>12:11</u>		2 x 1L plastic unpreserved	
		1 x 250mL plastic HNO3	Filtered
		1 x 250mL plastic H2SO4	Filtered
		1 x 250mL amber H2SO4	
		3 x 40mL VOA H3PO4, 1 Bacti	

Well Vault Type:	Floating Product: <u>---</u> Yes <u>---</u> No <u>---</u> NA
Lock Number/Type:	Thickness: _____
Drums Filled/Used:	Description: _____

Notes: Lid cracked + off, area around casing filled w/dirt + chunks of asphalt

WATER SAMPLE LOG

Project Name: <u>Unocal</u>	Job #:	Field Personnel: <u>E. Basel</u>
Day: Mon Tu Wed <u>Thu</u> Fri Sat Sun <small>(circle one)</small>	Date: <u>10/13/11</u>	Weather: <u>Clear</u> Partly Cloudy Overcast Rain <small>(circle)</small> Cold <u>Cool</u> Warm Hot Very Hot

Well:	<u>HLW-5</u>	Water Level Measurement Technique: (Circle) Electric Sounder Ser # <u>X</u> Not Measured
Static Depth to Water-Ft. (A)	<u>11.53</u>	Purge Method: Grundfos Submersible Pump Pneumatic Pump (Circle) <u>Electric Pump</u> Hand Bailed Other _____ Dedicated System: Yes <u>NO</u>
Total Depth of Casing-Ft. (B)	<u>34.03</u>	
Total Ft. of Water (B-A)	<u>22.5</u>	
Casing Dia-in.	<u>2</u> 4" 6" 8"	Dedicated System: Yes <u>X</u> No
Casing Capacity-gal/ft (C)	<u>03</u> .653 1.46 2.50	pH Calibration: <u>4.0</u> X 7.0 X 10.0 EC Calibration(µmhos) <u>1413</u>
Gallons per Casing Volume	(B-A)*C <u>3.70</u>	

Time	Gallons Purged	Casing Volumes	PH	EC (µmhos)	Temp (°F) (°C)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
9:09	0	0	---	---	---	---	Started Purge/Opened Sample Port
9:11	4	1	6.57	556	21.1	—	clear odorless
9:14	8	2	6.58	559	20.8	—	" "
9:16	12	3	6.55	560	21.0	—	" "
9:19	16	4	6.54	558	20.8	—	" "

Chloride	Sulfate	Nitrate	X4.4	Sampled/Stopped
				Other Field Results:

Purge Pump On	9:09	Discharge Measurement: (Circle) <u>Bucket</u> Tank Flowmeter
Purge Pump Off	9:19	Sample Collection Method: <u>X</u> Direct From Discharge Hose
Total Gallons Purged	16	_____ Teflon Bailer <u>X</u> Disposable Bailer
Purge Rate (gpm)	1.6	Ice Chest Coolant _____ Crushed Ice <u>X</u> Blue Ice Ice Chest Temp (°C) _____

Sample Time	Analyses	Amount/Container Used	Sample Description
9:20		2 x 1L plastic unpreserved <u>6 VOA 5 HCl</u>	
		1 x 250mL plastic HNO3 <u>1 x 1L amber H2SO4</u>	Filtered
		1 x 250mL plastic H2SO4	Filtered
		1 x 250mL amber H2SO4	
		3 x 40mL VOA H3PO4, 1 Bacti	

Well Vault Type:	Floating Product: ___ Yes ___ No ___ NA
Lock Number/Type:	Thickness: _____
Drums Filled/Used:	Description: _____

Notes: Cap was not on the well casing

WATER SAMPLE LOG

Project Name: <u>Unocal</u>	Job #: <u>E0805405</u>	Field Personnel: <u>E. Basel</u>
Day: Mon Tu Wed <u>Thu</u> Fri Sat Sun <small>(circle one)</small>	Date: <u>10/13/11</u>	Weather: Clear <u>Partly Cloudy</u> Overcast Rain <small>(circle)</small> <u>60</u> Cool Warm Hot Very Hot

Well: <u>MW-5</u>	Water Level Measurement Technique: (Circle) Electric Sounder Ser # <u>X</u> Not Measured
Static Depth to Water-Ft. (A) <u>11.81</u>	Purge Method: Grundfos Submersible Pump Pneumatic Pump (Circle) <u>X</u> Electric Pump Hand Bailed
Total Depth of Casing-Ft. (B) <u>26.52</u>	Other _____
Total Ft. of Water (B-A) <u>14.71</u>	Dedicated System: Yes <u>X</u>
Casing Dia-in. <u>2</u> 4" 6" 8"	Dedicated System: Yes <u>X</u> No
Casing Capacity-gal/ft (C) <u>163</u> .653 1.46 2.50	pH Calibration: <u>4.0</u> X <u>7.0</u> X <u>10.0</u> EC Calibration(µmhos) <u>1413</u>
Gallons per Casing Volume (B-A)*C <u>2.39</u>	

Time	Gallons Purged	Casing Volumes	pH	EC (µmhos)	Temp (°F) (°C)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
8:16	0	0	---	---	---	---	Started Purge/Opened Sample Port
8:17	2.5	1	6.32	664	20.5	-	It cloudy odorless
8:19	5	2	6.43	700	20.8	-	less cloudy odorless
8:21	7.5	3	6.47	713	21.1	-	clear odorless

Chloride	Sulfate	Nitrate	X4.4	Sampled/Stopped
				Other Field Results:

Purge Pump On <u>8:16</u>	Discharge Measurement: (Circle) <u>Bucket</u> Tank Flowmeter
Purge Pump Off <u>8:21</u>	Sample Collection Method: <u>X</u> Direct From Discharge Hose
Total Gallons Purged <u>7.5</u>	<u>X</u> Teflon Bailer <u>X</u> Disposable Bailer
Purge Rate (gpm) <u>1.5</u>	Ice Chest Coolant _____ Crushed Ice <u>X</u> Blue Ice Ice Chest Temp (°C) _____

Sample Time	Analyses	Amount/Container Used	Sample Description
8:25		2 x 1L plastic unpreserved	6 VOAs w/HCl
		1 x 250mL plastic HNO3	1 x 1L amber Filtered
		1 x 250mL plastic H2SO4	w/H2SO4 Filtered
		1 x 250mL amber H2SO4	
		3 x 40mL VOA H3PO4, 1 Bacti	

Well Vault Type:	Floating Product: Yes No NA
Lock Number/Type:	Thickness: _____
Drums Filled/Used:	Description: _____

Notes: _____

WATER SAMPLE LOG

Project Name: <u>Unocal</u>	Job #: <u>E08054015</u>	Field Personnel: <u>E. Basel</u>
Day: Mon Tu Wed <u>Thur</u> Fri Sat Sun <small>(circle one)</small>	Date: <u>10/13/11</u>	Weather: <u>Clear</u> Partly Cloudy Overcast Rain <small>(circle)</small> Cold Cool Warm <u>Hot</u> Very Hot

Well: <u>HW 101</u>	Water Level Measurement Technique: (Circle) Electric Sounder Ser # <u>X</u> Not Measured
Static Depth to Water-Ft. (A) <u>10.41</u>	Purge Method: Grundfos Submersible Pump Pneumatic Pump (Circle) <u>Electric Pump</u> Hand Bailed
Total Depth of Casing-Ft. (B) <u>29.28</u>	Other _____
Total Ft. of Water (B-A) <u>18.87</u>	Dedicated System: Yes <u>X</u> No
Casing Dia-in. 2" <u>4</u> 6" 8"	Dedicated System: Yes <u>X</u> No
Casing Capacity-gal/ft (C) <u>.163</u> .653 1.46 2.50	pH Calibration: <u>4.0</u> X 7.0 X 10.0 EC Calibration(µmhos) <u>1413</u>
Gallons per Casing Volume (B-A)*C <u>12.3</u>	

Time	Gallons Purged	Casing Volumes	PH	EC (µmhos)	Temp (°F) (°C)	Turbidity NTU or D.O.mg/l	Remarks (Color, Odor, Turbidity, etc.)
<u>14:36</u>	0	0	---	---	---	---	Started Purge/Opened Sample Port
<u>14:46</u>	12.5	1	6.74	792	24.6	-	clear, slight HCl odor
<u>15:00</u>	25	2	6.77	818	22.0	-	clear, HCl odor
<u>15:14</u>	37.5	3	6.87	807	21.5	-	" "

Chloride	Sulfate	Nitrate	X44	Sampled/Stopped	Other Field Results:
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Purge Pump On <u>14:36</u>	Discharge Measurement: (Circle) <u>Bucket</u> Tank Flowmeter
Purge Pump Off <u>15:14</u>	Sample Collection Method: <u>X</u> Direct From Discharge Hose
Total Gallons Purged <u>37.5</u>	<u>X</u> Teflon Bailer <u>X</u> Disposable Bailer
Purge Rate (gpm) <u>1.3</u>	Ice Chest Coolant _____ Crushed Ice <u>X</u> Blue Ice Ice Chest Temp (°C) _____

Sample Time	Analyses	Amount/Container Used	Sample Description
<u>15:18</u>		2 x 1L plastic unpreserved	
		1 x 250mL plastic HNO3	Filtered
		1 x 250mL plastic H2SO4	Filtered
		1 x 250mL amber H2SO4	
		3 x 40mL VOA H3PO4, 1 Bacti	

Well Vault Type:	Floating Product: Yes ___ No ___ NA
Lock Number/Type:	Thickness: _____
Drums Filled/Used:	Description: _____

Notes: _____

APPENDIX B

Jeff Yeazell
BSK Associates - Sacramento
3140 Gold Camp Drive Suite 160
Rancho Cordova, CA 95670

Dear Jeff Yeazell,

Thank you for selecting BSK Analytical Laboratories for your analytical testing needs . We have prepared this report in response to your request for analytical services. Enclosed are the results of analyses for samples received by the laboratory on 10/18/2011 08:30.

If additional clarification of any information is required, please contact your Client Services Representative, John Montierth at (800) 877-8310 or (559) 497-2888.

BSK ANALYTICAL LABORATORIES



John Montierth
Client Services Representative

Case Narrative

Work Order Information

Client Name: BSK Associates - Sacramento
Client Code: BSKAs9293
Work Order: A1J1318
Project: Unocal Castro Valley
Client Project: E0805401S

Submitted by: E. Basel
Shipped by: ONTRAC
COC Number:
TAT: 10
PO #:

Analysis Comment

Date: 10/28/11

Initials: DAB

Comment: The surrogate recovery for sample A1J1318-01 was so high that we believe it may have been added incorrectly. Since there is no more sample available, we are unable to reextract. The sample did not match the diesel fuel fingerprint but did recover higher boiling point hydrocarbons in the diesel range and appeared more indicative of an oil. Due to the high surrogate recovery, the results may be biased high.

Sample Receipt Conditions

Cooler: Default Cooler **Temp. °C:** 0
Containers Intact
COC/Labels Agree
Received On Wet Ice
Packing Material - Bubble Wrap
Packing Material - Foam
Sample(s) were received in temperature range.
Initial receipt at BSK-SAC

Report Manager

Jeff Yeazell

Report Format

MultiOrder.rpt



Certificate of Analysis

Jeff Yeazell
 BSK Associates - Sacramento
 3140 Gold Camp Drive Suite 160
 Rancho Cordova, CA 95670

Report Issue Date: 10/31/2011 12:48
Received Date: 10/18/2011
Received Time: 08:30

Lab Sample ID: A1J1318-01
Sample Date: 10/13/2011 08:25
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-6

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Volatile Organics (BTEX and Oxygenates) by GC-MS</u>									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Benzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethylbenzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*m,p-Xylenes	EPA 8260B	ND	0.40	ug/L	1	A112607	10/19/11	10/19/11	
*Methyl-t-butyl ether	EPA 8260B	95	0.50	ug/L	1	A112607	10/19/11	10/19/11	
*o-Xylene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
*Toluene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	EPA 8260B	112 %	Acceptable range: 70-130 %						
Surrogate: Bromofluorobenzene	EPA 8260B	113 %	Acceptable range: 70-130 %						
Surrogate: Toluene-d8	EPA 8260B	94 %	Acceptable range: 70-130 %						
*Total Xylenes, EPA 8260B		ND	0.50						
<u>TPH-Diesel by GC-FID</u>									
*TPH as Diesel	EPA 8015B	85	50	ug/L	1	A112690	10/21/11	10/26/11	
Surrogate: Tetracosane	EPA 8015B	771 %	Acceptable range: 45-189 % Qualifiers - X						
<u>TPH-Gasoline by GC-MS</u>									
*TPH as Gasoline	LUFT GC/MS	99	50	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	LUFT GC/MS	122 %	Acceptable range: 70-130 %						
Surrogate: Bromofluorobenzene	LUFT GC/MS	97 %	Acceptable range: 70-130 %						
Surrogate: Toluene-d8	LUFT GC/MS	101 %	Acceptable range: 70-130 %						

Lab Sample ID: A1J1318-02
Sample Date: 10/13/2011 09:20
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-5

Organics



Certificate of Analysis

Jeff Yeazell
 BSK Associates - Sacramento
 3140 Gold Camp Drive Suite 160
 Rancho Cordova, CA 95670

Report Issue Date: 10/31/2011 12:48
Received Date: 10/18/2011
Received Time: 08:30

Lab Sample ID: A1J1318-02
Sample Date: 10/13/2011 09:20
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-5

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics (BTEX and Oxygenates) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Benzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethylbenzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*m,p-Xylenes	EPA 8260B	ND	0.40	ug/L	1	A112607	10/19/11	10/19/11	
*Methyl-t-butyl ether	EPA 8260B	ND	0.50	ug/L	1	A112607	10/19/11	10/19/11	
*o-Xylene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
*Toluene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	EPA 8260B	115 %							<i>Acceptable range: 70-130 %</i>
<i>Surrogate: Bromofluorobenzene</i>	EPA 8260B	109 %							<i>Acceptable range: 70-130 %</i>
<i>Surrogate: Toluene-d8</i>	EPA 8260B	94 %							<i>Acceptable range: 70-130 %</i>
*Total Xylenes, EPA 8260B		ND	0.50						
TPH-Diesel by GC-FID									
*TPH as Diesel	EPA 8015B	120	50	ug/L	1	A112690	10/21/11	10/26/11	X01
<i>Surrogate: Tetracosane</i>	EPA 8015B	84.9 %							<i>Acceptable range: 45-189 %</i>
TPH-Gasoline by GC-MS									
*TPH as Gasoline	LUFT GC/MS	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	LUFT GC/MS	124 %							<i>Acceptable range: 70-130 %</i>
<i>Surrogate: Bromofluorobenzene</i>	LUFT GC/MS	101 %							<i>Acceptable range: 70-130 %</i>
<i>Surrogate: Toluene-d8</i>	LUFT GC/MS	99 %							<i>Acceptable range: 70-130 %</i>

Lab Sample ID: A1J1318-03
Sample Date: 10/13/2011 12:11
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-3

Organics



Certificate of Analysis

Jeff Yeazell
 BSK Associates - Sacramento
 3140 Gold Camp Drive Suite 160
 Rancho Cordova, CA 95670

Report Issue Date: 10/31/2011 12:48
Received Date: 10/18/2011
Received Time: 08:30

Lab Sample ID: A1J1318-03
Sample Date: 10/13/2011 12:11
Sample Type: Grab

Client Project: E0805401S
Sampled by: E. Basel
Matrix: Water

Sample Description: MW-3

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Volatile Organics (BTEX and Oxygenates) by GC-MS</u>									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Benzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethylbenzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*m,p-Xylenes	EPA 8260B	ND	0.40	ug/L	1	A112607	10/19/11	10/19/11	
*Methyl-t-butyl ether	EPA 8260B	15	0.50	ug/L	1	A112607	10/19/11	10/19/11	
*o-Xylene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
*Toluene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	EPA 8260B	108 %							Acceptable range: 70-130 %
Surrogate: Bromofluorobenzene	EPA 8260B	113 %							Acceptable range: 70-130 %
Surrogate: Toluene-d8	EPA 8260B	92 %							Acceptable range: 70-130 %
*Total Xylenes, EPA 8260B		ND	0.50						
<u>TPH-Diesel by GC-FID</u>									
*TPH as Diesel	EPA 8015B	130	50	ug/L	1	A112690	10/21/11	10/26/11	X01
Surrogate: Tetracosane	EPA 8015B	87.6 %							Acceptable range: 45-189 %
<u>TPH-Gasoline by GC-MS</u>									
*TPH as Gasoline	LUFT GC/MS	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	LUFT GC/MS	120 %							Acceptable range: 70-130 %
Surrogate: Bromofluorobenzene	LUFT GC/MS	102 %							Acceptable range: 70-130 %
Surrogate: Toluene-d8	LUFT GC/MS	106 %							Acceptable range: 70-130 %

Lab Sample ID: A1J1318-04
Sample Date: 10/13/2011 15:18
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-101

Organics

Certificate of Analysis

Jeff Yeazell
BSK Associates - Sacramento
3140 Gold Camp Drive Suite 160
Rancho Cordova, CA 95670

Report Issue Date: 10/31/2011 12:48
Received Date: 10/18/2011
Received Time: 08:30

Lab Sample ID: A1J1318-04
Sample Date: 10/13/2011 15:18
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-101

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics (BTEX and Oxygenates) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*1,2-Dichloroethane	EPA 8260B	1.4	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Benzene	EPA 8260B	37	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethylbenzene	EPA 8260B	44	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*m,p-Xylenes	EPA 8260B	15	0.40	ug/L	1	A112607	10/19/11	10/19/11	
*o-Xylene	EPA 8260B	1.7	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
*Toluene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	EPA 8260B	104 %							Acceptable range: 70-130 %
Surrogate: Bromofluorobenzene	EPA 8260B	107 %							Acceptable range: 70-130 %
Surrogate: Toluene-d8	EPA 8260B	105 %							Acceptable range: 70-130 %
*Total Xylenes, EPA 8260B		17	0.50						
TPH-Diesel by GC-FID									
*TPH as Diesel	EPA 8015B	2800	50	ug/L	1	A112690	10/21/11	10/27/11	X02
Surrogate: Tetracosane	EPA 8015B	875 %							Acceptable range: 45-189 % Qualifiers - SR03
TPH-Gasoline by GC-MS									
*TPH as Gasoline	LUFT GC/MS	1300	50	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	LUFT GC/MS	142 %							Acceptable range: 70-130 % Qualifiers - SR03
Surrogate: Bromofluorobenzene	LUFT GC/MS	113 %							Acceptable range: 70-130 %
Surrogate: Toluene-d8	LUFT GC/MS	121 %							Acceptable range: 70-130 %

Lab Sample ID: A1J1318-04RE1
Sample Date: 10/13/2011 15:18
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-101

Organics

Certificate of Analysis

Jeff Yeazell
BSK Associates - Sacramento
3140 Gold Camp Drive Suite 160
Rancho Cordova, CA 95670

Report Issue Date: 10/31/2011 12:48
Received Date: 10/18/2011
Received Time: 08:30

Lab Sample ID: A1J1318-04RE1
Sample Date: 10/13/2011 15:18
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-101

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics (BTEX and Oxygenates) by GC-MS									
*Methyl-t-butyl ether	EPA 8260B	500	5.0	ug/L	10	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	EPA 8260B	109 %						Acceptable range: 70-130 %	
Surrogate: Bromofluorobenzene	EPA 8260B	111 %						Acceptable range: 70-130 %	
Surrogate: Toluene-d8	EPA 8260B	95 %						Acceptable range: 70-130 %	

Lab Sample ID: A1J1318-05
Sample Date: 10/13/2011 16:12
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-2

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics (BTEX and Oxygenates) by GC-MS									
*1,2-Dibromoethane (EDB)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*1,2-Dichloroethane	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Benzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*Di-isopropyl ether (DIPE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*Ethylbenzene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*m,p-Xylenes	EPA 8260B	ND	0.40	ug/L	1	A112607	10/19/11	10/19/11	
*o-Xylene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Amyl Methyl Ether (TAME)	EPA 8260B	ND	1.0	ug/L	1	A112607	10/19/11	10/19/11	
*tert-Butyl alcohol (TBA)	EPA 8260B	ND	50	ug/L	1	A112607	10/19/11	10/19/11	
*Toluene	EPA 8260B	ND	0.30	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	EPA 8260B	108 %						Acceptable range: 70-130 %	
Surrogate: Bromofluorobenzene	EPA 8260B	109 %						Acceptable range: 70-130 %	
Surrogate: Toluene-d8	EPA 8260B	100 %						Acceptable range: 70-130 %	
*Total Xylenes, EPA 8260B		ND	0.50						
TPH-Diesel by GC-FID									
*TPH as Diesel	EPA 8015B	220	50	ug/L	1	A112690	10/21/11	10/26/11	X01

Certificate of Analysis

Jeff Yeazell
BSK Associates - Sacramento
3140 Gold Camp Drive Suite 160
Rancho Cordova, CA 95670

Report Issue Date: 10/31/2011 12:48
Received Date: 10/18/2011
Received Time: 08:30

Lab Sample ID: A1J1318-05
Sample Date: 10/13/2011 16:12
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-2

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Surrogate: Tetracosane	EPA 8015B	248 %							
					Acceptable range: 45-189 %		Qualifiers -		SR03
TPH-Gasoline by GC-MS									
*TPH as Gasoline	LUFT GC/MS	430	50	ug/L	1	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	LUFT GC/MS	115 %							
					Acceptable range: 70-130 %				
Surrogate: Bromofluorobenzene	LUFT GC/MS	100 %							
					Acceptable range: 70-130 %				
Surrogate: Toluene-d8	LUFT GC/MS	100 %							
					Acceptable range: 70-130 %				

Lab Sample ID: A1J1318-05RE1
Sample Date: 10/13/2011 16:12
Sample Type: Grab

Client Project: E0805401S
Sampled by: Erin Basel
Matrix: Water

Sample Description: MW-2

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Volatile Organics (BTEX and Oxygenates) by GC-MS									
*Methyl-t-butyl ether	EPA 8260B	400	5.0	ug/L	10	A112607	10/19/11	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	EPA 8260B	105 %							
					Acceptable range: 70-130 %				
Surrogate: Bromofluorobenzene	EPA 8260B	98 %							
					Acceptable range: 70-130 %				
Surrogate: Toluene-d8	EPA 8260B	88 %							
					Acceptable range: 70-130 %				

Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Date Analyzed	Qual
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Batch: A112607

Analyst: AMN

Prepared: 10/19/2011

Blank (A112607-BLK1) EPA 8260B - Quality Control

1,2-Dibromoethane (EDB)	ND	1.0	ug/L							10/19/11	
1,2-Dichloroethane	ND	1.0	ug/L							10/19/11	
Benzene	ND	0.30	ug/L							10/19/11	
Di-isopropyl ether (DIPE)	ND	1.0	ug/L							10/19/11	
Ethyl tert-Butyl Ether (ETBE)	ND	1.0	ug/L							10/19/11	
Ethylbenzene	ND	0.30	ug/L							10/19/11	
m,p-Xylenes	ND	0.40	ug/L							10/19/11	
Methyl-t-butyl ether	ND	0.50	ug/L							10/19/11	
o-Xylene	ND	0.30	ug/L							10/19/11	
tert-Amyl Methyl Ether (TAME)	ND	1.0	ug/L							10/19/11	
tert-Butyl alcohol (TBA)	ND	50	ug/L							10/19/11	
Toluene	ND	0.30	ug/L							10/19/11	
TPH as Gasoline	ND	50	ug/L							10/19/11	
Surrogate: 1,2-Dichloroethane-d4	2.1			2.0		106	70-130			10/19/11	
Surrogate: 1,2-Dichloroethane-d4	2.3			2.0		115	70-130			10/19/11	
Surrogate: Bromofluorobenzene	2.3			2.0		115	70-130			10/19/11	
Surrogate: Bromofluorobenzene	2.0			2.0		102	70-130			10/19/11	
Surrogate: Toluene-d8	1.8			2.0		92	70-130			10/19/11	
Surrogate: Toluene-d8	2.1			2.0		105	70-130			10/19/11	

Blank Spike (A112607-BS1) EPA 8260B - Quality Control

1,2-Dibromoethane (EDB)	11	1.0	ug/L	10		114	70-130			10/19/11	
1,2-Dichloroethane	11	1.0	ug/L	10		108	70-130			10/19/11	
Benzene	12	0.30	ug/L	10		116	70-130			10/19/11	
Di-isopropyl ether (DIPE)	11	1.0	ug/L	10		106	70-130			10/19/11	
Ethyl tert-Butyl Ether (ETBE)	12	1.0	ug/L	10		118	70-130			10/19/11	
Ethylbenzene	11	0.30	ug/L	10		111	70-130			10/19/11	
m,p-Xylenes	22	0.40	ug/L	20		108	70-130			10/19/11	
Methyl-t-butyl ether	24	0.50	ug/L	20		119	70-130			10/19/11	
o-Xylene	11	0.30	ug/L	10		109	70-130			10/19/11	
tert-Amyl Methyl Ether (TAME)	12	1.0	ug/L	10		118	70-130			10/19/11	
tert-Butyl alcohol (TBA)	170	50	ug/L	100		170	60-140			10/19/11	BS06 High
Toluene	9.9	0.30	ug/L	10		99	70-120			10/19/11	
TPH as Gasoline	280	50	ug/L	250		111	70-130			10/19/11	
Surrogate: 1,2-Dichloroethane-d4	2.0			2.0		102	70-130			10/19/11	
Surrogate: 1,2-Dichloroethane-d4	2.2			2.0		110	70-130			10/19/11	
Surrogate: Bromofluorobenzene	2.3			2.0		114	70-130			10/19/11	
Surrogate: Bromofluorobenzene	2.1			2.0		106	70-130			10/19/11	
Surrogate: Toluene-d8	2.0			2.0		102	70-130			10/19/11	
Surrogate: Toluene-d8	2.1			2.0		103	70-130			10/19/11	

Blank Spike Dup (A112607-BSD1) EPA 8260B - Quality Control

1,2-Dibromoethane (EDB)	11	1.0	ug/L	10		113	70-130	0	30	10/19/11	
1,2-Dichloroethane	11	1.0	ug/L	10		113	70-130	4	30	10/19/11	
Benzene	12	0.30	ug/L	10		121	70-130	4	30	10/19/11	
Di-isopropyl ether (DIPE)	11	1.0	ug/L	10		112	70-130	6	30	10/19/11	

A112607 FINAL 10312011 1248

Organics Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Date Analyzed	Qual
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Batch: A112607

Analyst: AMN

Prepared: 10/19/2011

Blank Spike Dup (A112607-BSD1) EPA 8260B - Quality Control

Ethyl tert-Butyl Ether (ETBE)	12	1.0	ug/L	10		119	70-130	1	30	10/19/11	
Ethylbenzene	11	0.30	ug/L	10		113	70-130	2	30	10/19/11	
m,p-Xylenes	22	0.40	ug/L	20		109	70-130	1	30	10/19/11	
Methyl-t-butyl ether	24	0.50	ug/L	20		121	70-130	2	30	10/19/11	
o-Xylene	11	0.30	ug/L	10		112	70-130	3	30	10/19/11	
tert-Amyl Methyl Ether (TAME)	12	1.0	ug/L	10		121	70-130	2	30	10/19/11	
tert-Butyl alcohol (TBA)	170	50	ug/L	100		167	60-140	1	30	10/19/11	BS06 High
Toluene	9.9	0.30	ug/L	10		99	70-120	0	30	10/19/11	
Surrogate: 1,2-Dichloroethane-d4	2.0			2.0		100	70-130			10/19/11	
Surrogate: Bromofluorobenzene	2.2			2.0		112	70-130			10/19/11	
Surrogate: Toluene-d8	2.1			2.0		103	70-130			10/19/11	

Batch: A112690

Analyst: PYA

Prepared: 10/21/2011

Blank (A112690-BLK1) EPA 8015B - Quality Control

TPH as Diesel	ND	50	ug/L							10/26/11	
Surrogate: Tetracosane	9.5			10		95	45-189			10/26/11	

Blank Spike (A112690-BS1) EPA 8015B - Quality Control

TPH as Diesel	570	50	ug/L	500		113	60-140			10/26/11	
Surrogate: Tetracosane	11			10		107	45-189			10/26/11	

Blank Spike Dup (A112690-BSD1) EPA 8015B - Quality Control

TPH as Diesel	510	50	ug/L	500		102	60-140	10	30	10/26/11	
Surrogate: Tetracosane	10			10		102	45-189			10/26/11	

Certificate of Analysis

10/31/2011

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
- Sample(s) received, prepared, and analyzed within the method specified criteria unless otherwise noted within this report.
- The results relate only to the samples analyzed in accordance with test(s) requested by the client on the Chain of Custody document. Any analytical quality control exceptions to method criteria that are to be considered when evaluating these results have been flagged and are defined in the data qualifiers section.
- All results are expressed on wet weight basis unless otherwise specified.
- All positive results for EPA Methods 504.1, 502.2, and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Results contained in this analytical report must be reproduced in its entirety.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- BSK Analytical Laboratories certifies that the test results contained in this report meet all requirements of the NELAC Standards for applicable certified drinking water chemistry analyses unless qualified or noted in the Case Narrative.
- Analytical data contained in this report may be used for regulatory purposes to meet the requirements of the Federal or State drinking water, wastewater, and hazardous waste programs.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- * - This is not a NELAP accredited analyte.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- (2) The digestion used to produce this result deviated from EPA 200.2 by excluding hydrochloric acid in order to produce acceptable recoveries for affected metals.
- (2C) Result reported from secondary analytical column.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.

Certifications:

State of California - CDPH - ELAP	1180
State of California - CDPH - NELAP	04227CA
State of New Mexico - NMED-DWVB	
State of Nevada - NDEP	CA000792009A

Definitions and Flags for Data Qualifiers

mg/L:	Milligrams/Liter (ppm)	M:	Method Detection Limit	MDA:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)		:DL x Dilution	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	ND:	None Detected at RL	Absent:	Less than 1 CFU/100mLs
%:	Percent Recovered (surrogates)	pCi/L:	Picocuries per Liter	Present:	1 or more CFU/100mLs
		NR:	Non-Reportable	RL Mult:	RL Multiplier

- X02 Sample contains diesel & higher molecular weight hydrocarbons.
- X01 Does not match diesel fuel fingerprint. Contains higher molecular weight hydrocarbons.

BSK ANALYTICAL LABORATORIES

1414 Stanislaus, Fresno CA 93706
 (559) 497-2888, (800) 877-8310, FAX (559) 485-6935

BSK Submission: _____

COC Number: _____

Global ID Number: T0600101370

Analyses

A1J1318
 BSKAs9293

10/18/11

Page 14 of 16



Facility/Project Name			Report Attention			Method Preserved															
Unocal Castro Valley			Jeff Yeazell			HCl	HNO3	H2SO4	NONE	OTHER (List)	BTEX/TPH-G (8020/8015M)	TPH-Diesel (8015M)	Fuel Oxygenates (8260B)	Lead Scavengers (8260B)							Rush Priority (1-Day, 2-Day, 10)
Address			BSK Job No.:																		
			E0805401S																		
City, State, Zip			Copy to:																		
Phone			FAX																		
Lab Use Only		Sampling Info		Sampled by:																	
		E. Basel																			
S#	T	#C	Date	Time	Field Point Name																
1	L	7	10/13/11	8:25	MW-6	X		X		X	X	X	X								
2		1	10/13/11	9:20	MW-5	X		X		X	X	X	X								
3			10/13/11	12:11	MW-3	X		X		X	X	X	X								
4			10/13/11	15:18	MW-101	X		X		X	X	X	X								
5			10/13/11	16:12	MW-2	X		X		X	X	X	X								

QC Report Type: Level 2 3 4

Formal COC Required:

Electronic Data Format Required:

Email EDF To: jyeazell@bskinc.com

Low Level Fuel Oxygenates Detection Limits Req:

Signature	Print Name	Company	Date/Time
	E. Basel	BSK	10/14/11 11:57
Received / Relinquished by:			
Received / Relinquished by:			
Received / Relinquished by:			
	Eric E. Basel	BSK	10/18/11 8:30

Sample Integrity Pg. 1 of 2



Date Received 10/18/11

Section 1- Receiving Information

Sample Transport: ONTRAC UPS PMS Walk-In BSK-Courier GSO Fed Exp. Other: _____

Samples arrived at lab on same day sampled: Yes _____ No X Has Chilling Process Begun: Yes X No _____

Coolers/Ice Chests Description/Temperature(s): (If more than 5 received, list information in comment section)

- 1) 0 2) _____ 3) W 4) _____ 5) _____

Was Temperature In Range: Y N N/A Received On Ice: Wet Blue Received Ambient: Y N

Describe type of packing materials: Bubble Wrap Foam Packing Peanuts Paper Other: _____

Initial Receipt: BSK-Visalia BSK-Bakersfield BSK-SAC BSK-FAL

Were ice chest custody seals present? Y N Intact: Y N

Section 2- COC Info.	Completed		Info From Container	Completed		Info From Container
	Yes	No		Yes	No	
Was COC Received	<u>Y</u>					Analysis Requested
Date Sampled	<u>Y</u>				<u>Y</u>	Hold times less than 72hr
Time Sampled	<u>Y</u>					Client Name
Sample ID	<u>Y</u>					Address
Special Storage/Handling Ins.		<u>Y</u>			<u>Y</u>	Telephone #

Section 3- Bottles / Analysis	Yes	No	N/A	Comment
Did all bottles arrive unbroken and intact?	<u>Y</u>			
Were bottle custody seals present?		<u>Y</u>		
Were bottle custody seals intact?		<u>Y</u>		
Did all bottle labels agree with COC?	<u>Y</u>			
Were correct containers used for the tests requested?	<u>Y</u>			
Were correct preservations used for the tests requested?	<u>Y</u>			
Was a sufficient amount of sample sent for tests indicated?	<u>Y</u>			
Were bubbles present in VOA Vials? (Volatile Methods Only)		<u>Y</u>		
Were Ascorbic Acid Bottles received with the VOAs?			<u>Y</u>	

Section 4- Comments / Discrepancies

Sample(s) Split/Preserve: Yes No Container: _____ Preservation: _____ Dt/Time/Init _____

Container: _____ Preservation: _____ Dt/Time/Init _____

Was Client Service Rep. notified of discrepancies: Yes No N/A CSR: _____ Notified By/Time: _____

Explanations / Comments

Report Comment Entered:

Labeled by: [Signature] @ 1240 Labels checked by: [Signature] @ 1420 RUSH Paged by: _____ @ _____

Sample Integrity

Pg 2 of 2

BSK Bottles **Yes** No



250ml (A) 500ml (B) 1Liter (C) Amber Glass (AG)

Container(s) Received	1-5				
Bacti Na ₂ S ₂ O ₃					
None (p) <small>White Cap</small>					
None (p) <small>Blue Cap</small> w/NH4 + Buffer					
HNO ₃ (p) <small>Red Cap</small>					
H ₂ SO ₄ (p) <small>Yellow Cap</small>					
NaOH (p) <small>Green Cap</small>					
EDA (p) <small>Brown Cap/Label</small>					
Other:					
Dissolved Oxygen 300ml (g)					
250ml (AG) None					
250ml (AG) H ₂ SO ₄ COD <small>Yellow Label</small>					
250ml (AG) Na ₂ S ₂ O ₃ 515, 547 <small>Blue Label</small>					
250ml (AG) Na ₂ S ₂ O ₃ + MCAA 531.1 <small>Orange Label</small>					
250ml (AG) NH ₄ Cl 552 <small>Purple Label</small>					
250ml (AG) EDA DBPs <small>Brown Label</small>					
250ml (AG) Other:					
500ml (AG) None					
500ml (AG) H ₂ SO ₄ <small>Yellow Label</small>					
1 Liter (AG) None					
1 Liter (AG) H ₂ SO ₄ O&G /TPH Diesel <small>Yellow Label</small>	1				
1 Liter (AG) Na ₂ S ₂ O ₃ 548 / 525 / 521 <small>Blue Label</small>					
1 Liter (P) Na ₂ S ₂ O ₃ + H ₂ SO ₄ 549					
1 Liter (AG) NaOH+ZnAc Sulfide					
40ml VOA Vial Clear – HCL	6				
40ml VOA Vial Clear – Buffer pH 4					
40ml VOA Vial Clear – None					
40ml VOA Vial Amber – Na ₂ S ₂ O ₃					
40ml VOA Vial Clear - Na ₂ S ₂ O ₃ 504, 505					
40ml VOA Vial Clear – H ₃ PO ₄					
Other:					
½ Gallon (p)					
Asbestos 1Liter Plastic/Foil					
Radon 200ml Clear (g)					
Low Level Hg/Metals Double Baggie					
Bioassay Jug					
Ampule					
PT Sample Bottle					
250 Clear Glass Jar					
500 Clear Glass Jar					
1 Liter Clear Glass Jar					
Plastic Bag					
Soil Tube Brass / Steel / Plastic					
Tedlar Bags					

MS
10/18/11