R.T. NAHAS COMPANY *Since 1947*

REAL ESTATE DEVELOPERS AND INVESTORS

20630 PATIO DRIVE
CASTRO VALLEY, CALIFORNIA 94546
TELEPHONE (510) 538-9600
FAX (510) 881-7618

December 2, 1997

Mr. Scott Seery
Hazardous Materials Specialist
Alameda County Health Care Services
1131 Harbor Bay Pkwy., Room 250
Oakland, CA 94502-6577

Dear Scott:

I am enclosing a copy of the Semi-Annual Groundwater Monitoring Report for the Unocal 76 Service Station location at 20405 and 20629 Redwood Road, Castro Valley.

Sincerely,

Randall E. Nahas

REN/hrs

Enclosure

Semi-Annual
Groundwater Monitoring Report
November 1997
Unocal 76 Service Station
20405 and 20629 Redwood Road
Castro Valley, California

11/97

BSK & ASSOCIATES
Geotechnical Consultants, Inc.

BSK JOB NO. P92057.3
November 25, 1997

BSK

BSK
1181 Quarry Lane, Building 300
Pleasanton, CA 94566
(510) 462-4000 • FAX (510) 462-6283

November 25, 1997

BSK JOB NO. P92057.3

R. T. Nahas Company/Eden Managements
20630 Patio Drive
Castro Valley, CA 94546

Attention: Mr. Randy T. Nahas

Subject: Semi-Annual
Groundwater Monitoring Report
Unocal 76 Service Station
20405 and 20629 Redwood Road
Castro Valley, California

Gentlemen:

As requested and authorized, we have performed groundwater monitoring well sampling at the above-referenced facility. This report presents the groundwater data obtained during this sampling event, conclusions based on this event's data, and recommendations for further action. The site location is shown on Figure 1, Vicinity Map.

GROUNDWATER MONITORING ACTIVITIES - NOVEMBER 1997

General

Semi-annual monitoring of groundwater Monitoring Wells MW-2, MW-3, MW-4, MW-5, and MW-6 (Figure 2, Site Plan) was performed on November 5, 1997. The groundwater monitoring well MW-7 was not sampled during this event, due to the presence of chlorinated hydrocarbons in the water purged from the well, which are at levels that are considered hazardous waste. The semi-annual sampling schedule was approved by Mr. Scott Seery, case officer for the ACDEH. Further, per letter dated April 13, 1995 from Mr. Seery to R.T. Nahas, sampling and monitoring may follow a semi-annual schedule. Field procedures and observations are provided in the following text and Tables.

Field Work

Wells MW-2 through MW-6 were purged by an electric submersible pump. Three to four well casing volumes were removed from each well. Purge effluent was field monitored for pH, temperature and conductivity during purging to assess the influx of fresh formation water into the well. Purged water was transferred to 55-gallon DOT-approved steel drums for holding. Each drum was labeled according to its contents, content source, and date of accumulation.

Prior to purging, the depth to water in each well was measured using a Solinst electric sounder, marked in twentieths of a foot. The water depth was then interpolated to the 0.01 foot increment from the tape. Each well was subsequently examined for floating and sinking immiscible product layers

and sheen, using a clear bailer having dual check valves for point-source sampling. The piezometric contour and elevation, and well water elevations, are presented in Figure 3, Potentiometric Surface Map.

Upon purge completion, each well was again measured to confirm a minimum of 80% well recovery prior to sampling. Water sampling was then performed with a Teflon® point-source bailer. Sampling for contaminants was performed in the order of decreasing contaminant volatility. Each water sample was decanted into the appropriate container with preservative (as necessary), sealed, labeled and refrigerated for delivery to our State-certified laboratory.

A Well Field Log was prepared for each well sampled, recording the water depth, well volume, pH, water temperature, conductivity and other data. The Well Field Logs are presented as Figures 4.1 through 4.6.

Site Hydrology

Groundwater measurements were made of the six wells on November 5, 1997 in order to assess the flow direction and gradient. On that date, groundwater flow was generally to the south, similar to the previous event. The gradient was generally flat at 0.9 percent. Groundwater flow direction and gradient are shown on Figure 3, Potentiometric Surface Map.

Chemical Analyses

Water samples obtained from Wells MW-2, MW-3, MW-5 and MW-6 were analyzed for constituents related to gasoline, Total Petroleum Hydrocarbons as Gasoline (TPHg), Benzene, Toluene, Ethylbenzene and Xylene (BTEX) and Methyl-t-Butyl Ether (MTBE). Well MW-4 was tested for waste-oil related contaminants: TPHg, BTEX, MTBE, TPH as Diesel (TPHd).

The contaminants tested for are those specified by the Tri-Regional Water Quality Control Board Recommendations of August 10, 1990, and listed in the ACDEH letter, dated April 26, 1990 and April 13, 1995 to R.T. Nahas Co. MTBE was added to the testing program to satisfy a July 30, 1996 memorandum by the CalEPA requesting that MTBE be added to the testing program at all LUFT sites. Current and former analysis results are presented for comparison in Table 1. The Chemical Test Data Sheets are presented in Appendix A, Figures A-1 through A-6. The Project Chain-of-Custody record is presented in Figures A-7.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Trace contaminant concentrations associated with gasoline (BTEX compounds) are generally at similar concentrations as the previous results from the April 1997 sampling event in Wells MW-2 and

MW-3. Total Petroleum Hydrocarbons as Diesel was not detected in Well MW-4. Total Petroleum Hydrocarbons as Gasoline, BTEX and MTBE were not detected in Wells MW-4, MW-5.

MTBE was detected in Wells MW-2, MW-3 and MW-6. Contaminant concentrations detected this event at well locations are depicted in Figure 5, Contaminant Concentrations - 11/5/97.

As shown graphically on Figures 6, the BTEX and MTBE concentrations in the groundwater samples from Well MW-2 has demonstrated a slight decrease in concentration since the previous sampling event. As shown graphically on Figure 7, the benzene and ethylbenzene concentrations in the groundwater samples from Well MW-3 has demonstrated a slight decrease in concentration since the previous sampling event. The concentrations of toluene, xylenes and MTBE have shown a slight increase in the groundwater samples from Well MW-3.

Recommendations

Pending completion and implementation of a corrective action plan, the six groundwater monitoring wells located at the Site should be sampled on a semi-annual basis as approved by ACDEH (letter dated April 13, 1995). The next semi-annual sampling event is scheduled for April 1998.

REPORT DISTRIBUTION

Copies of this report should be submitted to the Alameda County Department of Environmental Health for their review. We are providing you with extra copies for this purpose. We understand that copies of the report may be forwarded by ACDEH to the Regional Water Quality Control Board in Oakland for their review.

Alameda County Department of Environmental Health
1181 Harbor Bay Parkway
Alameda, CA 94502

LIMITATIONS

The findings and conclusions presented in this report are based on field review and observations, and from the limited testing program described in this report. This report has been prepared in accordance with generally accepted methodologies and standards of practice in the area. No other warranties, expressed or implied, are made as to the findings, conclusions and recommendations included in the report.

The findings of this report are valid as of the present. The passage of time, natural processes or human intervention on the property or adjacent property can cause changed conditions which can

invalidate the findings and conclusions presented in this report.

BSK is pleased to continue to be of service to you during this project. If you have questions concerning the contents of the report, please do not hesitate to contact us.

Respectfully submitted,
BSK & Associates

Alex Y. Eskandari, P.E.
Project Manager
C.E. No. 038101, R.E.A. No. 01528

Martin B. Cline, R.G.
Geologist
R.G. No. 6244

AYE/MC:mc
(F:\DOCUMENT\ENV\DATA\REPORTS\NAHAS\P92057.297)

Distribution:
R.T. Nahas Co. (4 copies)

The following are attached and complete this report:

TABLE	1	Summary of Groundwater Analysis
FIGURE	1	Vicinity Map
FIGURE	2	Site Plan
FIGURE	3	Potentiometric Surface Map
FIGURES	4.1-4.6	Well Field Logs
FIGURE	5	Contaminant Concentrations - 11/5/97
FIGURE	6	BTEX Concentrations in Groundwater - MW-2
FIGURE	7	BTEX Concentrations in Groundwater - MW-3

APPENDIX A

FIGURES	A-1	
through	A-6	Laboratory Chemical Test Data Sheets
FIGURE	A-7	Project Chain-of-Custody Record

BSK

TABLE 1, SUMMARY OF GROUNDWATER ANALYSIS, Results in ug/L

Sample Date	Well Number	Benzene	Toluene	Ethyl-Benzene	Xylenes	Methyl t-Butyl Ether	TPH Gasoline	TPH Diesel	Total Oil & Grease	EPA 601
November 1997	**MW-2**	**6.8**	**0.64**	**4.7**	**8.2**	**1200**	**360**	**--**	**--**	**--**
	MW-3	**1.7**	**1.4**	**2.3**	**8.3**	**65**	**62**	**--**	**--**	**--**
	MW-4	ND	ND	ND	ND	ND	ND	ND	--	--
	MW-5	ND	ND	ND	ND	ND	ND	ND	--	--
	MW-6	ND	ND	ND	ND	**9**	ND	ND	--	--
	MW-7	--	--	--	--	--	--	--	--	--
April 1997	MW-2	23	1.6	21	31.4	**1800**	470	--	--	--
	MW-3	7.3	ND	3.3	5.4	**230**	120	--	--	--
	MW-4	ND	ND	ND	ND	ND	ND	ND	--	--
	MW-5	ND	ND	ND	ND	ND	ND	--	--	--
	MW-6	ND	ND	ND	ND	ND	ND	--	--	--
	MW-7	--	--	--	--	--	--	--	--	--
October 1996	MW-2	9.4	0.5	7.2	9.4	1400	180	--	--	--
	MW-3	3.8	1.5	2.1	6.8	**56**	79	--	--	--
	MW-4	ND	ND	ND	ND	ND	ND	ND	--	--
	MW-5	ND	ND	ND	ND	ND	ND	--	--	--
	MW-6	ND	ND	ND	ND	17	ND	--	--	--
	MW-7	--	--	--	--	--	--	--	--	--
April 1996	MW-2	41	2.8	27	50	--	690	--	--	--
	MW-3	8.4	1.6	4.7	14	--	170	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	--	--
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	2.9	2.9	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	--	--	--	--
October 1995	MW-2	7.4	ND	5.1	5.5	--	450	--	--	--
	MW-3	9	3.9	8.5	34	--	340	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	--	--
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	--	--	--	--

TABLE 1, SUMMARY OF GROUNDWATER ANALYSIS, Results in ug/L

Sample Date	Well Number	Benzene	Toluene	Ethyl-Benzene	Xylenes	Methyl-t-Butyl Ether	TPH Gasoline	TPH Diesel	Total Oil & Grease	EPA 601
April 1995	MW-2	72	2.8	47	22	--	480	--	--	--
	MW-3	26	0.6	40	19	--	450	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	--
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	--	--	--	--
January 1995	MW-2	48	2.8	15	27	--	440	--	--	--
	MW-3	26	0.6	14	45	--	250	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	2000	--
October 1994	MW-2	2.8	ND	2.9	1.8	--	97	--	--	--
	MW-3	0.9	ND	ND	ND	--	ND	--	--	--
	MW-4	ND	36	ND	1.3	--	70	ND	ND	--
	MW-5	ND	71	0.4	1.7	--	87	--	--	--
	MW-6	0.4	140	0.5	2.3	--	160	--	--	--
July 1994	MW-2	14	0.7	5.8	12	--	180	--	--	--
	MW-3	7.2	0.4	1.6	4.6	--	52	--	--	--
	MW-4	ND	0.6	ND	ND	--	ND	86	ND	--
April 1994	MW-2	23	1.1	8.2	17	--	270	--	--	--
	MW-3	17	1	4.9	24	--	62	--	--	--
	MW-4	ND	ND	ND	0.4	--	ND	ND	ND	--
	MW-5	ND	0.4	ND	1	--	ND	--	--	--
	MW-6	ND	0.3	ND	0.4	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	360 (1)		--	--
January 1994	MW-2	13	3.4	4.9	9.2	--	130	--	--	--
	MW-3	5.5	2.1	2.6	14	--	69	--	--	--
	MW-7	ND	ND	ND	ND	--	330 (1)		--	--
October 1993	MW-2	4	ND	2.3	3.1	--	98	--	--	--
	MW-3	5	ND	0.6	1.2	--	ND	--	--	--
	MW-4	0.4	ND	ND	0.4	--	ND	ND	ND	Tetrachloroethene 0.7
						--				Trichloroethene 0.9
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	0.7	--	360 (1)		--	--

TABLE 1, SUMMARY OF GROUNDWATER ANALYSIS, Results in ug/L

Sample Date	Well Number	Benzene	Toluene	Ethyl-Benzene	Xylenes	Methyl-t-Butyl Ether	TPH Gasoline	TPH Diesel	Total Oil & Grease	EPA 601
July 1993	MW-2	17	1.1	6	12	--	220	--	--	--
	MW-3	24	11	14	82	--	330	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	1000	--
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	680 (1)		--	--
March 1993	MW-2	110	32	67	28	--	720	--	--	1,2-Dichloroethane 0.6
	MW-3	32	0.9	64	13	--	330	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	ND
	MW-5	ND	ND	ND	ND	--	ND	--	--	Tetrachloroethane 0.8
	MW-6	ND	ND	ND	ND	--	ND	--	--	Tetrachloroethane 3.5
	MW-7	ND	ND	ND	ND	--	830 (1)	--	--	Tetrachloroethene 3,700
						--				Trichloroethene 210
January 1993	MW-2	11	5.1	1.4	6.3	--	170	--	--	--
	MW-3	1.2	1	0.6	4.1	--	ND	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	--
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	1900 (1)		--	--
November 1992	MW-7	--	--	--	--	--	2700 (1)	ND	--	Chlorobenzene 2.0
										Chloroform 2.0
										cis-1,2-Dichloroethene 180
										trans-1,2-Dichloroethene 1.5
										Tetrachloroethene 14,000
										Trichloroethene 660
October 1992	MW-2	2.3	ND	2.3	3	--	ND	--	--	--
	MW-3	2.1	ND	ND	0.3	--	ND	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	120	ND	--
	MW-5	ND	0.4	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	3900 (1)		--	--

TABLE 1, SUMMARY OF GROUNDWATER ANALYSIS, Results in ug/L

Sample Date	Well Number	Benzene	Toluene	Ethyl-Benzene	Xylenes	Methyl-t-Butyl Ether	TPH Gasoline	TPH Diesel	Total Oil & Grease	EPA 601
July	MW-2	10	ND	0.6	2.3	--	84	--	--	--
1992	MW-3	1.3	0.4	ND	1.3	--	ND	--	--	--
	MW-5	ND	ND	ND	ND	--	ND	--	--	--
	MW-6	ND	ND	ND	ND	--	ND	--	--	--
	MW-7	ND	ND	ND	ND	--	830 (1)		--	--
April	MW-2	70	0.3	15	7	--	300	--	--	--
1992	MW-3	1	0.4	ND	0.9	--	ND	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	--
April	MW-5	ND	ND	ND	ND	--	ND	--	--	--
1992	MW-6	ND	0.3	ND	ND	--	ND	--	--	--
	MW-7	0.4	0.3	0.3	0.9	--	1300 (1)		--	--
January	MW-2	480	870	160	860	--	5200	--	--	--
1992	MW-3	4	10	2	8	--	60	--	--	--
October	MW-2	2.9	ND	2.5	6	--	170	--	--	--
1991	MW-3	ND	ND	ND	ND	--	ND	ND	ND	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	--
July	MW-2	14	1	17	8	--	220	--	--	--
1991	MW-3	14	14	33	8	--	220	--	--	--
April	MW-2	640	520	170	790	--	4800	--	--	--
1991	MW-3	450	270	150	760	--	3600	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	--
January	MW-2	50	33	22	110	--	430	--	--	--
1991	MW-3	29	3.3	9.7	34	--	110	--	--	--

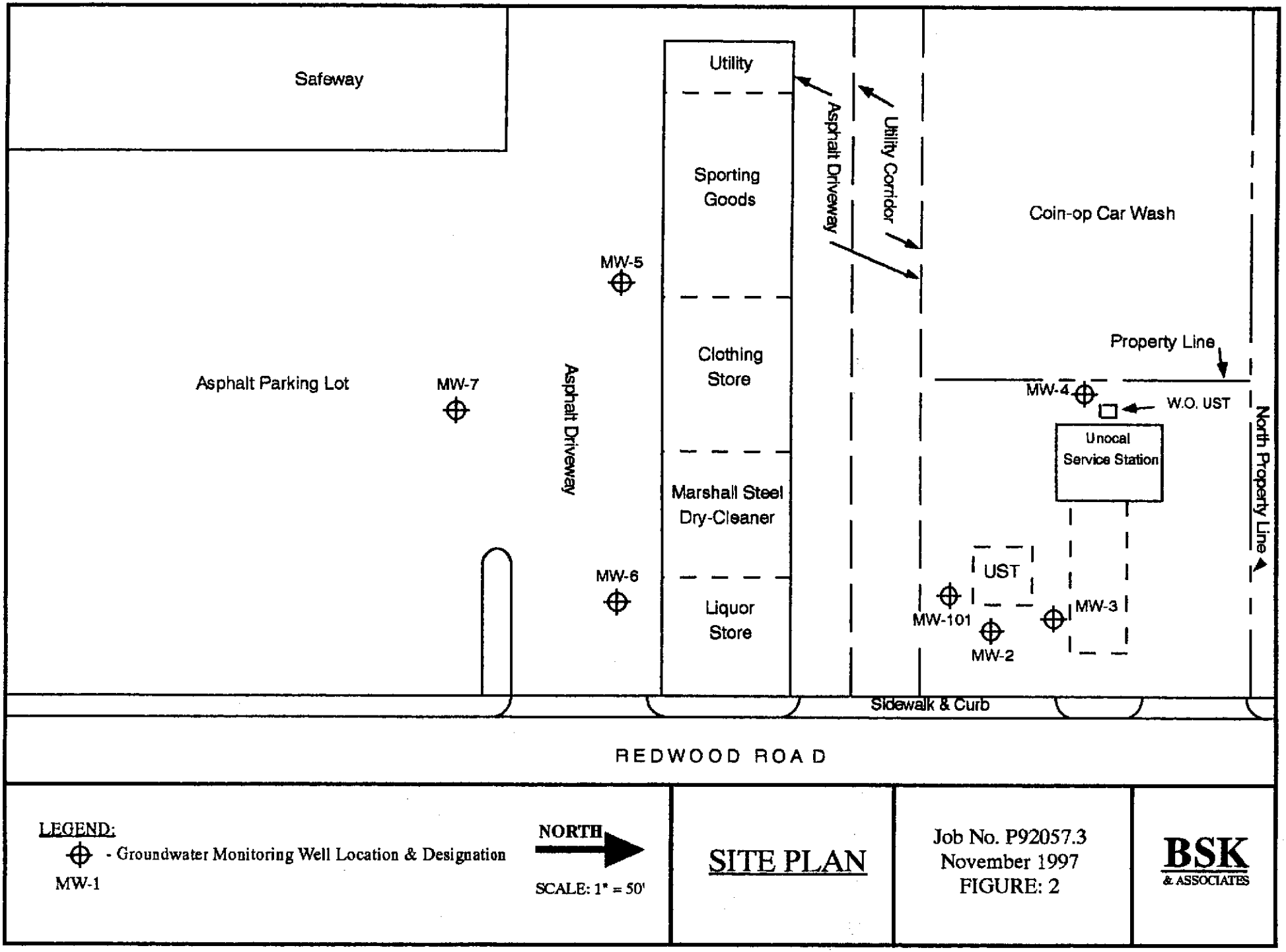
TABLE 1, SUMMARY OF GROUNDWATER ANALYSIS, Results in ug/L

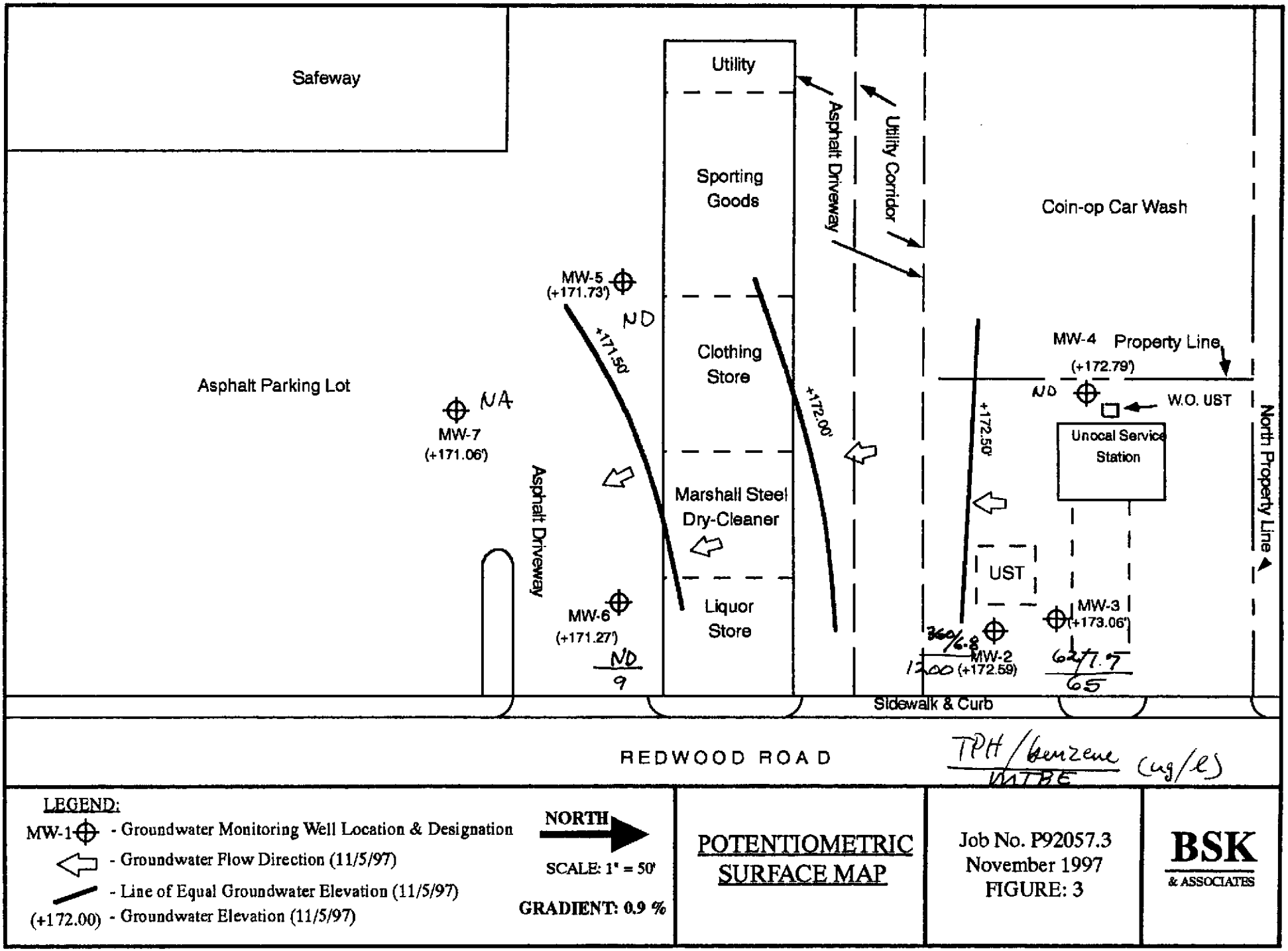
Sample Date	Well Number	Benzene	Toluene	Ethyl-Benzene	Xylenes	Methyl-t-Butyl Ether	TPH Gasoline	TPH Diesel	Total Oil & Grease	EPA 601
August 1990	MW-2	21	3.9	7.2	28	--	180	--	--	--
	MW-3	55	3.8	20	59	--	290	--	--	--
	MW-4	ND	ND	ND	ND	--	ND	ND	ND	--
Maximum Contaminant Level (MCL)		1	150	700	1750	NA	NA	NA	NA	Chlorobenzene - NA Chloroform - NA cis-1,2-Dichloroethene 6.0 trans-1,2-Dichloroethene 10.0 1,2-Dichloroethane 0.5 Tetrachloroethene 5.0 Trichloroethene 5.0

ND = None Detected
-- = Not Analyzed
NA = Not Available
1 = TPHg values have demonstrated to represent Perchloroethane presence
MCLs from California Code of Regulations Title 22, Article 5.5

Source: Thomas Guide, 1992, Alameda and Contra Costa Counties

TIEN'S UNOCAL STATION **20405 REDWOOD ROAD** **CASTRO VALLEY, CALIFORNIA**	**VICINITY MAP** **BSK Job No. P92057.3** November 1997 **FIGURE: 1**	**BSK** & ASSOCIATES


Safeway
Utility
Asphalt Driveway
Utility Corridor
Sporting Goods
Coin-op Car Wash
MW-5
Property Line
Clothing Store
Asphalt Parking Lot
MW-7
Asphalt Driveway
MW-4
W.O. UST
Unocal Service Station
North Property Line
Marshall Steel Dry-Cleaner
UST
MW-6
MW-101
MW-3
Liquor Store
MW-2
Sidewalk & Curb
REDWOOD ROAD
LEGEND:
- Groundwater Monitoring Well Location & Designation
MW-1
NORTH
SCALE: 1" = 50'
SITE PLAN
Job No. P92057.3
November 1997
FIGURE: 2
BSK
& ASSOCIATES


Safeway
Utility
Asphalt Driveway
Utility Corridor
Sporting Goods
Coin-op Car Wash
MW-5 (+171.73')
ND
+171.50'
Clothing Store
MW-4 Property Line (+172.79')
ND
W.O. UST
Asphalt Parking Lot
NA
MW-7 (+171.06')
+172.00'
+172.50'
Unocal Service Station
North Property Line
Asphalt Driveway
Marshall Steel Dry-Cleaner
UST
MW-6 (+171.27')
ND
9
Liquor Store
MW-3 (+173.06')
360/6.8
MW-2 (+172.59)
1200
627.7
65
Sidewalk & Curb
REDWOOD ROAD
TPH/benzene (ug/L)
MTBE
LEGEND:
MW-1 - Groundwater Monitoring Well Location & Designation
- Groundwater Flow Direction (11/5/97)
- Line of Equal Groundwater Elevation (11/5/97)
(+172.00) - Groundwater Elevation (11/5/97)
NORTH
SCALE: 1" = 50'
GRADIENT: 0.9 %
POTENTIOMETRIC SURFACE MAP
Job No. P92057.3
November 1997
FIGURE: 3
BSK & ASSOCIATES

BSK Job No.: P92057.3
Date: November 1997
Figure No.: 4.1

WELL FIELD LOG

Well Observation: x **Date:** 11/5/97
Sample Collection: x **Date:** 11/5/97

Project Name: Groundwater Monitoring
Location: Nahas/Union 76
Personnel: FRG/MBC
Weather: Clear, Mild

WELL INFORMATION:

Well Number	MW-2	**Date Purged**	11/5/97
Depth to Water - feet(TOC)	10.88	**Purge Method**	Submersible Pump
Well Depth (feet)	28.85		
Water Volume (gallons)	3.1	**Purge Begin**	13:22
Reference Elevation - feet(TOC)	+183.47	**Purge End**	13:32
Groundwater Elevation (feet)	+172.59	**Purge Rate**	1.3 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, No Odor
Bottom: None Observed, Faint Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
13:22	3.5	1012	6.83	72	
13:24	7.0	1011	6.82	72	
13:26	10.5	969	6.74	71	
13:29	14.0	951	6.72	71	

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
13:32	BTEX/MTBE & TPHg	2-40ml glass VOC with HCl	±12'

Field Observations: None

BSK Job No.: P92057.3
Date: November 1997
Figure No.: 4.2

WELL FIELD LOG

Well Observation: x **Date:** 11/5/97
Sample Collection: x **Date:** 11/5/97

Project Name: Groundwater Monitoring
Location: Nahas/Union 76
Personnel: FRG/MBC
Weather: Clear, Mild

WELL INFORMATION:

Well Number	MW-3	**Date Purged**	11/5/97
Depth to Water - feet(TOC)	10.97	**Purge Method**	Submersible Pump
Well Depth (feet)	28.85		
Water Volume (gallons)	3.5	**Purge Begin**	12:53
Reference Elevation - feet(TOC)	+184.03	**Purge End**	12:01
Groundwater Elevation (feet)	+173.06	**Purge Rate**	1.8 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, No Odor
Bottom: None Observed, No Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
12:55	3.5	902	7.51	74	
12:56	7.0	904	7.26	73	
12:58	10.5	897	7.22	72	
13:01	14.0	873	7.12	71	

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
13:05	BTEX/MTBE & TPHg	2-40ml glass VOC with HCl	±13'

Field Observations:

BSK Job No.: P92057.3
Date: November 1997
Figure No.: 4.3

WELL FIELD LOG

Well Observation: x **Date:** 11/5/97
Sample Collection: x **Date:** 11/5/97

Project Name: Groundwater Monitoring
Location: Nahas/Union 76
Personnel: FRG/MBC
Weather: Clear, Warm

WELL INFORMATION:

Well Number	MW-4	**Date Purged**	11/5/97
Depth to Water - feet(TOC)	11.82	**Purge Method**	Submersible Pump
Well Depth (feet)	24.55		
Water Volume (gallons)	2.5	**Purge Begin**	14:06
Reference Elevation - feet(TOC)	+184.61	**Purge End**	14:11
Groundwater Elevation (feet)	+172.79	**Purge Rate**	2.0 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, No Odor
Bottom: None Observed, No Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
14:08	2.5	584	8.10	71	
14:09	5.0	555	7.82	70	
14:10	7.5	544	7.57	69	
14:11	10.0	541	7.46	69	

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
14:15	BTEX & TPHg	2-40ml glass VOC with HCl	±13'
14:15	TPHd	2-250 ml Amber Glass, w/H_2SO_4	"

Field Observations:

BSK Job No.: P92057.3
Date: November 1997
Figure No.: 4.4

WELL FIELD LOG

Well Observation: x **Date:** 11/5/97
Sample Collection: x **Date:** 11/5/97

Project Name: Groundwater Monitoring
Location: Nahas/Union 76
Personnel: FRG/MBC
Weather: Clear, Mild

WELL INFORMATION:

Well Number	MW-5	**Date Purged**	11/5/97
Depth to Water - feet(TOC)	12.19	**Purge Method**	Submersible Pump
Well Depth (feet)	34.5		
Water Volume (gallons)	3.7	**Purge Begin**	11:14
Reference Elevation - feet(TOC)	+183.92	**Purge End**	11:21
Groundwater Elevation (feet)	+171.73	**Purge Rate**	2.0 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, No Odor
Bottom: None Observed, No Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
11:16	3.5	749	7.25	74	
11:18	7.0	724	7.03	73	
11:20	10.5	704	6.94	71	
11:21	14.0	699	6.89	71	

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
11:30	BTEX/MTBE & TPHg	2-40ml glass VOC with HCl	±13'

Field Observations: Well in busy parking lot.

BSK Job No.: P92057.3
Date: November 1997
Figure No.: 4.5

WELL FIELD LOG

Well Observation: x **Date:** 11/5/97
Sample Collection: x **Date:** 11/5/97

Project Name: Groundwater Monitoring
Location: Nahas/Union 76
Personnel: FRG/MBC
Weather: Clear, Mild

WELL INFORMATION:

Well Number	MW-6	**Date Purged**	11/5/97
Depth to Water - feet(TOC)	12.33	**Purge Method**	Submersible Pump
Well Depth (feet)	26.78		
Water Volume (gallons)	2.5	**Purge Begin**	10:31
Reference Elevation - feet(TOC)	+183.60	**Purge End**	10:40
Groundwater Elevation (feet)	+171.27	**Purge Rate**	2.0 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, No Odor
Bottom: None Observed, Trace Brown Clay, No Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micrombos)	pH	TEMP. (°F)	COLOR/COMMENTS
10:33	2.5	820	7.73	71	
10:34	5.0	805	7.33	72	
10:35	7.5	812	7.19	72	
10:36	10.0	810	7.14	72	

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
10:40	BTEX/MTBE & TPHg	2-40ml glass VOC with HCl	±14'

Field Observations: Well in busy parking lot.

BSK Job No.: P92057.3
Date: November 1997
Figure No.: 4.6

WELL FIELD LOG

Well Observation: x **Date:** 11/5/97
Sample Collection: **Date:**

Project Name: Groundwater Monitoring
Location: Nahas/Union 76
Personnel: FRG/MBC
Weather: Clear, Warm

WELL INFORMATION:

Well Number	MW-7	**Date Purged**	--
Depth to Water - feet(TOC)	11.36	**Purge Method**	--
Well Depth (feet)	28.0		
Water Volume (gallons)		**Purge Begin**	--
Reference Elevation - feet(TOC)	+182.42	**Purge End**	--
Groundwater Elevation (feet)	+171.27	**Purge Rate**	--
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: --
Bottom: --
Detection Method: Inaccessible due to dedicated pump assembly
Collection Method: --

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS

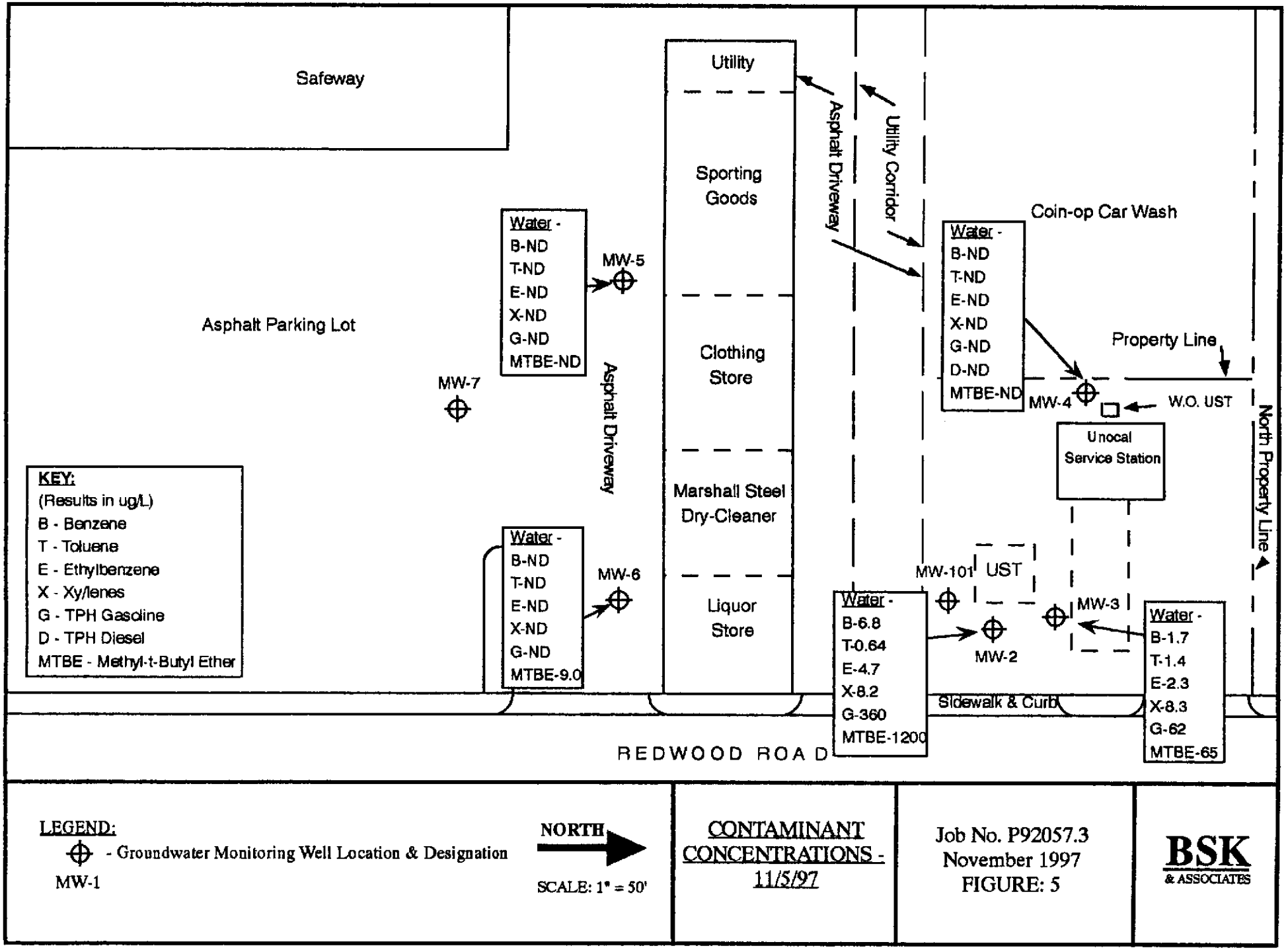
SAMPLE COLLECTION DATA

Sampling Equipment:

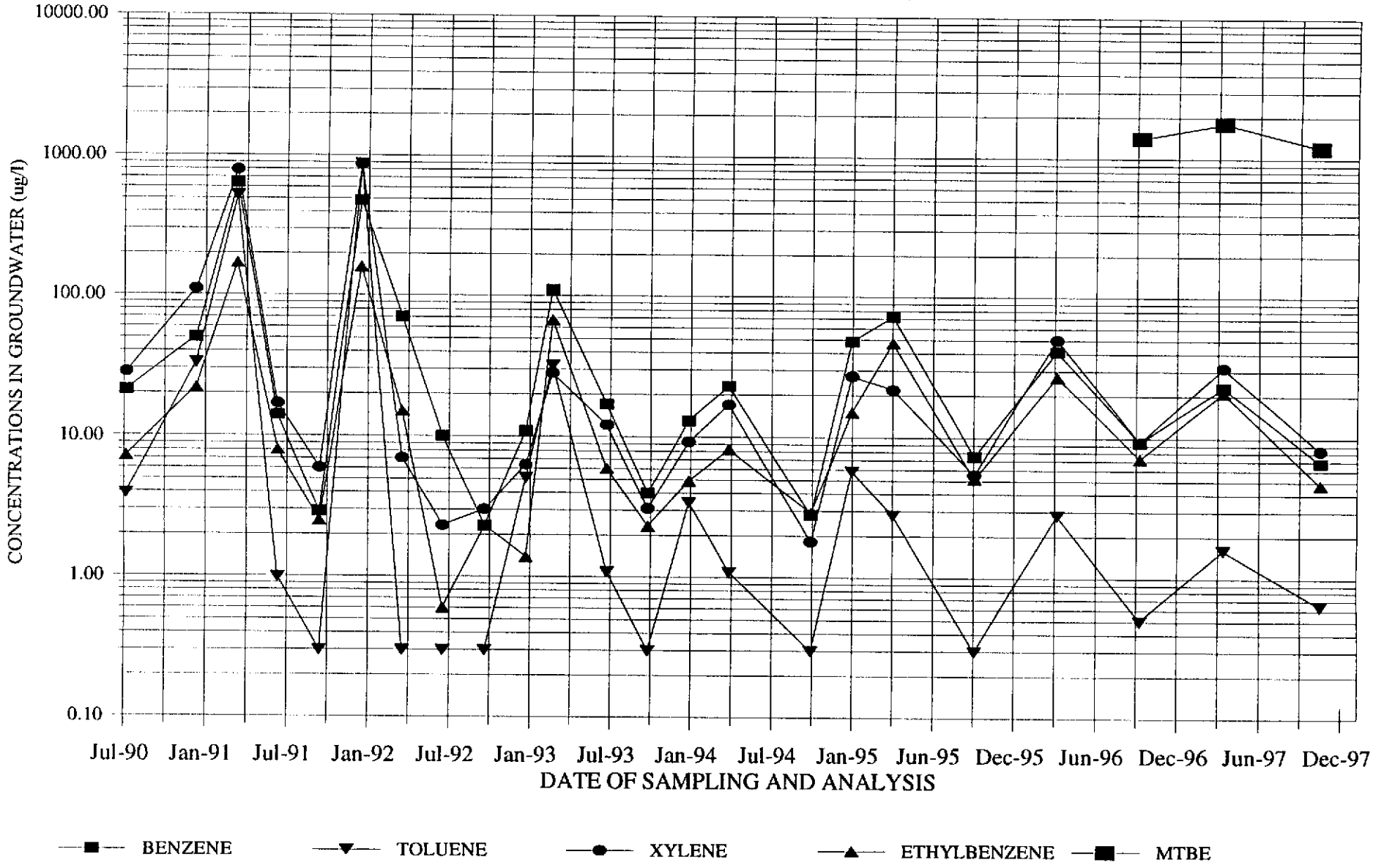
TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL

Field Observations: Well located in busy parking lot.

BSK


Safeway
Utility
Sporting Goods
Clothing Store
Marshall Steel Dry-Cleaner
Liquor Store
Asphalt Driveway
Utility Corridor
Asphalt Parking Lot
Asphalt Driveway
Coin-op Car Wash
Water -
B-ND
T-ND
E-ND
X-ND
G-ND
D-ND
MTBE-ND
MW-5
MW-7
MW-4
Property Line
W.O. UST
Unocal Service Station
North Property Line
KEY:
(Results in ug/L)
B - Benzene
T - Toluene
E - Ethylbenzene
X - Xylenes
G - TPH Gasoline
D - TPH Diesel
MTBE - Methyl-t-Butyl Ether
Water -
B-ND
T-ND
E-ND
X-ND
G-ND
MTBE-9.0
MW-6
MW-101
UST
MW-3
Water -
B-6.8
T-0.64
E-4.7
X-8.2
G-360
MTBE-1200
MW-2
Water -
B-1.7
T-1.4
E-2.3
X-8.3
G-62
MTBE-65
Sidewalk & Curb
REDWOOD ROAD
LEGEND:
- Groundwater Monitoring Well Location & Designation
MW-1
NORTH
SCALE: 1" = 50'
CONTAMINANT CONCENTRATIONS - 11/5/97
Job No. P92057.3
November 1997
FIGURE: 5
BSK
& ASSOCIATES

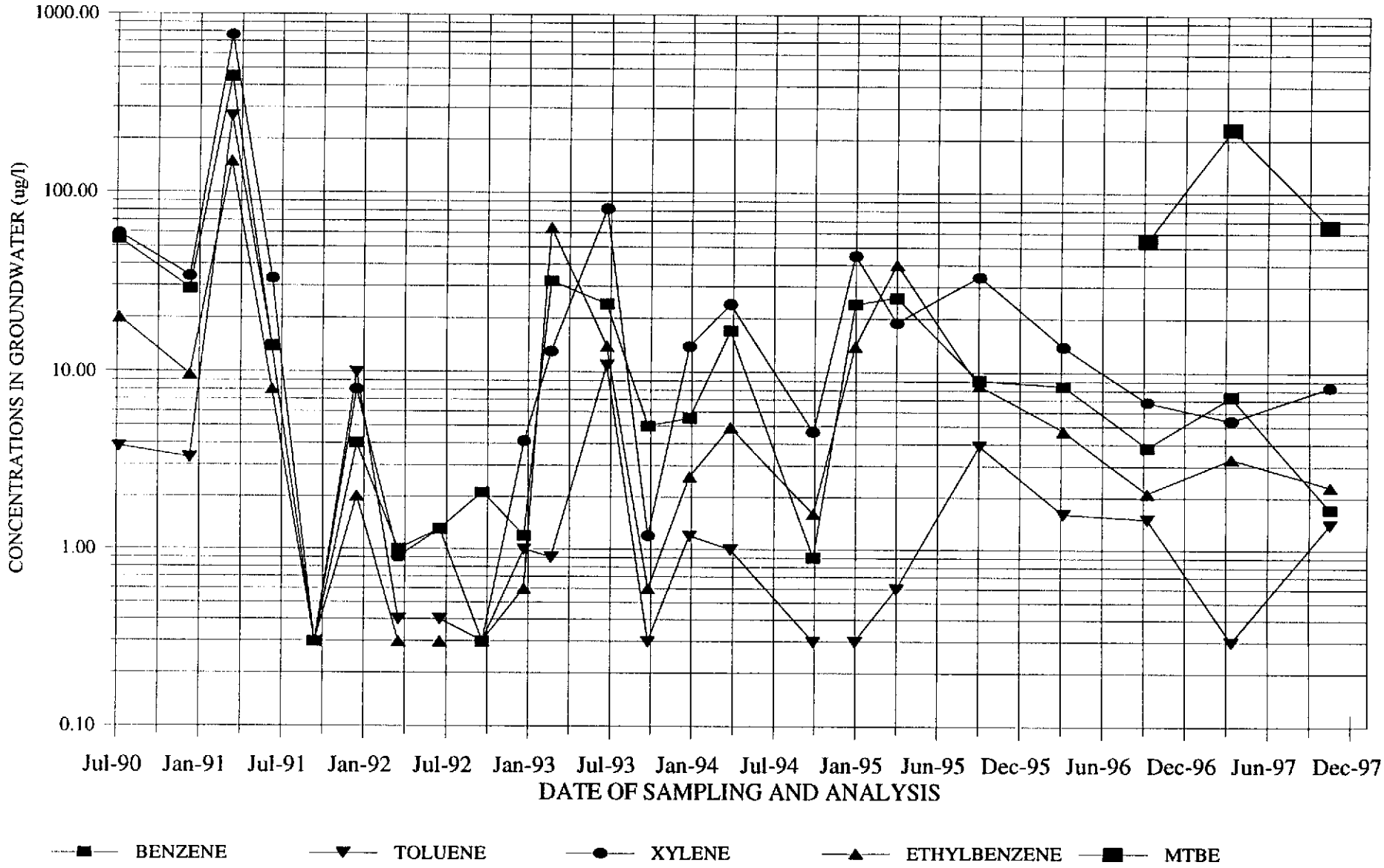
BTEX/MTBE CONCENTRATIONS IN GROUNDWATER(MW-2)



BSK Job No. P92057.3
NOVEMBER 1997
FIGURE 6

BSK

BTEX/MTBE CONCENTRATIONS IN GROUNDWATER(MW-3)



BSK Job No. P92057.3
NOVEMBER 1997
FIGURE 7

BSK

APPENDIX A

CHEMICAL TEST DATA SHEETS

AND

PROJECT-CHAIN-OF-CUSTODY RECORD

BSK

Figure A-1

BSK ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS
Cover Letter

November 21, 1997

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

BSK Submission Number : 9711000156
Date Received : 11/06/97

Dear Martin Cline,

BSK adheres to a quality assurance plan that has been approved by the State of California, Department of Health Services. Our ELAP certificate number is 1180.

This Certificate of Analysis has been prepared in response to your request for analytical services. Information was taken from your Chain-of-Custody or related correspondence. All sample handling and analytical procedures were completed within BSK Laboratories' standard acceptability criteria with any exceptions noted below.

If additional clarification of information contained within this certificate is needed, please contact our Client Service Department at 1-800-877-8310 or 209-497-2888.

Sincerely,

BSK Laboratories

Authorizing Signature(s)

Juliane Adams
Organic Laboratory Supervisor

Bradley Meadows
Inorganic Laboratory Supervisor

Cynthia Pigman
QA/QC Supervisor

Figure A-2

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 11/20/97

Submission Number : 9711000156
Lab Number : 37594
Project Number : P92057.3
Project Desc. : Nahas
Sample Description : MW-2

Sample Date : 11/05/97
Sample Time : 13:32
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	PQL	Dil	DLR
EPA 8015 / EPA 8020	Benzene	11/19/97	11/19/97	6.8	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Ethylbenzene	11/19/97	11/19/97	4.7	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Toluene	11/19/97	11/19/97	0.64	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Xylenes, Total	11/19/97	11/19/97	8.2	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Gasoline Chromatography inconsistant with the standard.	11/19/97	11/19/97	360	µg/L	50	1	50
EPA 8015/8020	Methyl-t-Butyl Ether	11/19/97	11/19/97	1200	µg/L	5	10	50

ND : None Detected
mg/L : Milligrams/Liter = ppm
µg/L : Micrograms/Liter = ppb
mg/kg : Milligrams/Kilogram = ppm
µg/kg : Micrograms/Kilogram = ppb

PQL : Practical Quantitation Limit
Dil : Dilution Factor
DLR : Reportable Detection Limit derived by (PQL x Dil)
Higher limits may result from exceptional sample matrices or interferences

Conversions:
1 ppm = 1000 ppb
1 ppb = 0.001 ppm

Figure A-3

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 11/20/97

Submission Number : 9711000156
Lab Number : 37593
Project Number : P92057.3
Project Desc. : Nahas
Sample Description : MW-3

Sample Date : 11/05/97
Sample Time : 13:05
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	PQL	Dil	DLR
EPA 8015 / EPA 8020	**Benzene**	11/19/97	11/19/97	**1.7**	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	**Ethylbenzene**	11/19/97	11/19/97	**2.3**	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	**Toluene**	11/19/97	11/19/97	**1.4**	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	**Xylenes, Total**	11/19/97	11/19/97	**8.3**	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	**Gasoline** Chromatography inconsistant with the standard.	11/19/97	11/19/97	62	µg/L	50	1	50
EPA 8015/8020	**Methyl-t-Butyl Ether**	11/19/97	11/19/97	**65**	µg/L	5	1	5

ND : None Detected
mg/L : Milligrams/Liter = ppm
µg/L : Micrograms/Liter = ppb
mg/kg : Milligrams/Kilogram = ppm
µg/kg : Micrograms/Kilogram = ppb

PQL : Practical Quantitation Limit
Dil : Dilution Factor
DLR : Reportable Detection Limit derived by (PQL x Dil)
Higher limits may result from exceptional sample matrices or interferences

Conversions:
1 ppm = 1000 ppb
1 ppb = 0.001 ppm

Figure A-4

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 11/20/97

Submission Number : 9711000156
Lab Number : 37595
Project Number : P92057.3
Project Desc. : Nahas
Sample Description : MW-4

Sample Date : 11/05/97
Sample Time : 14:15
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	PQL	Dil	DLR
EPA 8015 / EPA 8020	Benzene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Ethylbenzene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Toluene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Xylenes, Total	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Gasoline	11/19/97	11/19/97	ND	µg/L	50	1	50
EPA 8015/8020	Methyl-t-Butyl Ether	11/19/97	11/19/97	ND	µg/L	5	1	5
EPA 8015/DHS LUFT	Total Petroleum Hydrocarbons as Diesel	11/14/97	11/14/97	ND	µg/L	50	1	50

ND : None Detected
mg/L : Milligrams/Liter = ppm
µg/L : Micrograms/Liter = ppb
mg/kg : Milligrams/Kilogram = ppm
µg/kg : Micrograms/Kilogram = ppb

PQL : Practical Quantitation Limit
Dil : Dilution Factor
DLR : Reportable Detection Limit derived by (PQL x Dil)
Higher limits may result from exceptional sample matrices or interferences

Conversions:
1 ppm = 1000 ppb
1 ppb = 0.001 ppm

Figure A-5

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 11/20/97

Submission Number : 9711000156
Lab Number : 37592
Project Number : P92057.3
Project Desc. : Nahas
Sample Description : MW-5

Sample Date : 11/05/97
Sample Time : 11:30
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	PQL	Dil	DLR
EPA 8015 / EPA 8020	Benzene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Ethylbenzene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Toluene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Xylenes, Total	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Gasoline	11/19/97	11/19/97	ND	µg/L	50	1	50
EPA 8015/8020	Methyl-t-Butyl Ether	11/19/97	11/19/97	ND	µg/L	5	1	5

ND : None Detected
mg/L : Milligrams/Liter = ppm
µg/L : Micrograms/Liter = ppb
mg/kg : Milligrams/Kilogram = ppm
µg/kg : Micrograms/Kilogram = ppb

PQL : Practical Quantitation Limit
Dil : Dilution Factor
DLR : Reportable Detection Limit derived by (PQL x Dil)
Higher limits may result from exceptional sample matrices or interferences

Conversions:
1 ppm = 1000 ppb
1 ppb = 0.001 ppm

Figure A-6

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 11/20/97

Submission Number : 9711000156
Lab Number : 37591
Project Number : P92057.3
Project Desc. : Nahas
Sample Description : MW-6

Sample Date : 11/05/97
Sample Time : 10:40
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	PQL	Dil	DLR
EPA 8015 / EPA 8020	Benzene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Ethylbenzene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Toluene	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Xylenes, Total	11/19/97	11/19/97	ND	µg/L	0.3	1	0.3
EPA 8015 / EPA 8020	Gasoline	11/19/97	11/19/97	ND	µg/L	50	1	50
EPA 8015/8020	Methyl-t-Butyl Ether	11/19/97	11/19/97	9.0	µg/L	5	1	5

ND : None Detected
mg/L : Milligrams/Liter = ppm
µg/L : Micrograms/Liter = ppb
mg/kg : Milligrams/Kilogram = ppm
µg/kg : Micrograms/Kilogram = ppb

PQL : Practical Quantitation Limit
Dil : Dilution Factor
DLR : Reportable Detection Limit derived by (PQL x Dil)
Higher limits may result from exceptional sample matrices or interferences

Conversions:
1 ppm = 1000 ppb
1 ppb = 0.001 ppm

ANALYTICAL
BSK
LABORATORIES
1414 Stanislaus Street
Fresno, CA 93706
(209) 497-2888
(800) 877-8310
(209) 485-6935 FAX

9711000156- BSK_P

Analyses Request / Chain of Custody

Shaded areas for LAB use

Client Name	Report Attention:	Phone #
Nahas	Martin Cline	
Address	**Project, Quote or PO #**	**FAX #**
c/o BSK-Pleasanton	P92057.3	
City, State, Zip	**Copy to:**	**System #**

LAB use only Sample #	Type	# Cont.	Date Sampled	Time Sampled	Sampled by: M. Cline Sample Description/Location	Comment or Station Code	TPH-Gasoline	BTEX-MTBE	TPH-Diesel
1	L	2	11/5/97	10:40	MW-6	37591	X	X	
2	"	1		11:30	MW-5	37592	X	X	
3	"	1		13:05	MW-3	37593	X	X	
4	"	6		13:32	MW-2	37594	X	X	
5	L	4	↓	14:15	MW-4	37595	X	X	X

Matrix Type: L - Liquid S - Solid G - Gas
Type of Hazards Associated with Samples:

Additional Services:
Rush Priority: [ ] - 2 Day [ ] - 5 Day
[ ] - Formal Chain of Custody [ ] - QC Data package

Additional Services Authorized by:

(Signature)

Payment Received with Delivery
Date: _____ Amount: $_____
Check # _____ Initials _____
Receipt # _____

Signature	Print Name	Company	Date	Time
Requested / Relinquished by: Mart Cli	Martin Cline	BSK-P	11/6/97	08:00
Received / Relinquished by:				
Received / Relinquished by:				
Received / Relinquished by:				
Received By Laboratory by: Sandy Bacon	Sandy Bacon	BSK Lab	11/6/97	16:25

Figure A-7