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

April 21, 1993

Mr. Scott Seery
Alameda County Health Care Services
80 Swan Way
Oakland, CA 94621

RE: Frank Tien's Unocal Station
20405 Redwood Road
Castro Valley, CA

Dear Scott:

Enclosed is the Eleventh Quarterly Groundwater Monitoring Report on the Unocal Service Station, prepared by BSK Associates.

Sincerely,

Randall E. Nahas

REN/hrs

Enclosure

BSK & ASSOCIATES

GEOTECHNICAL CONSULTANTS, INC.

BSK JOB NO. P92057.3

ELEVENTH QUARTERLY GROUNDWATER MONITORING REPORT UNOCAL 76 SERVICE STATION 20405 AND 20629 REDWOOD ROAD CASTRO VALLEY, CALIFORNIA APRIL 1993

BSK & Associates

BSK & Associates
1181 Quarry Lane
Building 300
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April 19, 1993

BSK JOB P92057.3

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

Subject: Eleventh Quarterly Groundwater Monitoring Report
Unocal 76 Service Station
20405 and 20629 Redwood Road
Castro Valley, California

Gentlemen:

As requested and authorized, we performed groundwater monitoring well quarterly sampling on **March 4, 1993** at the above-referenced facility. This quarterly report presents the project background, groundwater data obtained during this sampling event, conclusions based on this quarter's data, and recommendations for further action.

BACKGROUND

BSK & Associates installed three groundwater monitoring wells (MW-2, MW-3 and MW-4) in December 1989 at the Unocal 76 Service Station located at 20405 Redwood Road, Castro Valley, California. The service station location is shown on Figure 1, Vicinity Map. The monitoring facilities were installed in order to comply with the California UST Monitoring requirements of Alternative 6, Subchapter 16, Title 23, California Code of Regulations. The results of well installations, soil sampling and chemical testing of the soil and water samples were summarized in our Report P89134, dated February 5, 1990. The groundwater monitoring well locations are shown on Figure 2, Site Plan.

BSK performed an assessment of the lateral extent of shallow soil contamination in April 1991 (see our Report P90165, dated April 1991). During the investigation, shallow soil contamination was observed to occur from the pump islands to the south property boundary, and within the east and west property boundaries.

The seventh quarterly monitoring report was included with the results of additional lateral contamination characterization in the off-site area to the south (BSK Report P92057.3, dated May 29, 1992). The report indicated the extension of a groundwater contaminant plume south of the site, between Wells MW-6 and MW-5, but north of MW-7.

Review of Subsurface Conditions

The site subsurface soil conditions, as exposed by Borings MW-1A, MW-2, MW-3, and MW-4 of our previous investigation (P89134), consist primarily of silty and sandy clays. Four to five feet of black organic-rich silty clay fill are found immediately below the ground surface, followed by three to five feet of greenish-gray sandy/silty clay native material. In the western portion of the study area, the greenish clay is underlain by seven to eleven feet of yellow-brown sandy clay, grading to a clayey sand with depth. In the eastern portion of the tank area, the sandy clay and clayey sand are split by a six foot layer of silty clay. Light brown silty clay was encountered in each boring between 17 and 24 feet, and continued to the final depth explored. It is apparent from the boring logs that this lowermost clay layer slopes to the northeast.

In the areas of Wells MW-5 through MW-7, subsurface conditions comprised 10 to 20 feet of dark gray to yellow-gray silty clay, the upper 10 feet of which may be fill. The silty clay is underlain by 4 to 5 feet of orange-brown clayey silt to silty sand. This unit often contains fine, wet to saturated pores. At fifteen to twenty feet in depth, a silty to sandy grayish clay is encountered. This clay is very stiff to hard, often porous, and contains thin saturated lenses of fine sand and silt. At approximately 25 feet, clayey sand to sand was encountered. This unit is soft to firm and contains many fine lenses of sand, silt, and clay. The sand and silt are typically saturated.

Groundwater within the site has been encountered at both 13 to 15 feet and 19 to 23 feet. The lower water levels occur in clayey sands along the east and west boundaries of the site, and likely in its northern one-third. This water horizon is considered the first primary aquifer. A shallow "perched" water is found in clayey sand at 13 to 15 feet, occurring throughout the south-central portion of the site. Hydrostatic pressure in both units results in a piezometric surface 10 to 12 feet below ground surface. The similar piezometric surface suggests that the "perched" water is connected to the underlying aquifer. Additional evidence for this connection is the lack of a confining layer below the upper clayey sand in several borings in the south-central portion of the site.

Groundwater flow direction at the site has been towards the southwest since December 1989. Gradient has varied at the site from 0.4% to 2.0%. Electrical conductivity is a relatively low 500 to 1,000 micromhos, and pH has generally been slightly acidic. Seasonal precipitation appears to result in more southerly flow, a flatter gradient, and 1 to 2 feet higher water levels in early spring. This data is derived from measurements made of the lower groundwater unit.

During soil boring investigations, soil contamination by petroleum hydrocarbons was observed olfactorily and by Photo-Ionization Detector (PID) in 13 borings in the project area. Hydrocarbons were detected at depths ranging from just below the asphalt pavement to 17 feet (the greatest depth of several borings in the area of greatest contamination). PID values reached 3,600 ppm, total ionizable hydrocarbons, in soil (the PID was calibrated daily to a 100 ppm isobutylene standard with a 10.6 eV lamp). The greatest concentrations were observed between 10 feet in depth and first encountered groundwater (where encountered). It was noted that contamination was not always accompanied by soil staining, and volatilization was rapid upon exposure to air.

Groundwater contamination has been encountered at the site in samples obtained quarterly from Wells MW-2 and MW-3, and in Well MW-7. Wells MW-2 and MW-3 are adjacent to, and up and cross-gradient to what is believed to be the contaminant source area. Well MW-7 is down gradient from the source area; however, it appears that contamination encountered in Well MW-7 is not related to the Unocal contaminant plume.

ELEVENTH QUARTERLY MONITORING ACTIVITIES

General

Quarterly monitoring of groundwater monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6 and MW-7 was performed on March 4, 1993. Representatives for Safeway and Saroni Retail Center observed sampling procedures at Well MW-7, and obtained a sample split. The representative for Saroni also obtained sample splits for Wells MW-5 and MW-6, as BSK sampled the wells. Scott Seery of the Alameda County Environmental Health Department observed sampling procedures at Well MW-5. Field procedures and observations are provided in the following text and figures.

Field Work

Wells MW-2, MW-3, MW-4, MW-5, MW-6 were purged by a Teflon®-bladder pump affixed with polypropylene tubing for sample integrity. Well MW-7 was purged by a dedicated polyethelene bailer. Three to four well casing volumes were removed from each well. Purge

effluent was field monitored for pH and Temperature during purging, to assess the influx of fresh formational water into the well. Purged water was then transferred to a 55-gallon DOT-approved steel drum 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 sounding tape, 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 clean PVC bailer having dual check valves for point-source sampling. Groundwater flow direction and gradient data were determined from the depth measurements, and 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 the bladder pump, except for MW-7, which was sampled with the dedicated polyethylene bailer. Sampling for contaminants was performed in the order of their volatility, with the most volatile constituents sampled first. Each water sample obtained for a specific contaminant, or contaminants, was placed into the appropriate receptacle 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, water temperature 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 existing wells on March 4, 1993, in order to assess the flow direction and gradient in the area. On this date, groundwater flow was generally south-southeast. The gradient was approximately 0.7 to 1.2 percent. The flow direction and gradient are similar to the previous quarter. Groundwater levels have fallen 0.12 to 0.33 feet since January 1993. Groundwater flow direction and gradient are shown on Figure 3, Potentiometric Surface Map.

Temperature and pH data are presented in the Well Field Logs, Figures 4.1 through 4.6, little significant change has occurred in these parameters.

The changes in flow direction and water level since January 1993 are likely due to variation in recent precipitation occurrence and amount.

Chemical Analyses

Water samples obtained from Wells MW-2, MW-3, MW-4, MW-5 and MW-7 were analyzed for constituents related to gasoline, since the wells are located adjacent to and downgradient from two 10,000 gallon underground gasoline tanks. The samples were tested for the following contaminants: Total Petroleum Hydrocarbons as Gasoline (TPH-G) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX). Well MW-4 is adjacent to a 500-gallon waste oil tank, and was tested for Total & Hydrocarbon Oil & Grease, Total Petroleum Hydrocarbons as Diesel (TPH-D), Total Petroleum Hydrocarbons as Gasoline, and BTEX. Selected wells were also analyzed for volatile halocarbons (EPA Method 601) and volatile organics (EPA Method 624) due to the presence of some of these contaminants in the vicinity of Well MW-7. Method 624 was chosen for MW-7 because the methodology provides a verification of the constituent identified. Method 601 was used for the remaining selected wells because of the lower detection limit.

The contaminants tested for are those specified by the Tri-Regional Water Quality Control Board Recommendations of August 10, 1990, and listed in the Alameda County Department of Environmental Health letter, dated April 26, 1990 to R.T. Nahas Co. Volatile halocarbon and organic analyses were agreed upon by representatives of the Nahas Company, the Sorani Retail Center, Safeway, Marshall Steel Cleaners and the Alameda County Environmental Health Department. Current and former analyses results are presented for comparison in the following tables. The Chemical Test Data Sheets are presented in Appendix A, Figures A-1 and A-13. Project Quality Assurance/Quality Control documentation, and the Chain-of-Custody record are shown in Figures A-14 through A-20.

WATER ANALYSES - BTEX

TABLE 1

(Results in ppb)

Sample Date	Sample Location	Benzene (1)*	Toluene (100)+	Xylene (1750)*	Ethylbenzene (680)*
August 1990	Well MW-2	21	3.9	28	7.2
	Well MW-3	55	3.8	59	20
	Well MW-4	ND	ND	ND	ND
January 1991	Well MW-2	50	33	110	22
	Well MW-3	29	3.3	34	9.7
April 1991	Well MW-2	640	520	790	170
	Well MW-3	450	270	760	150
	Well MW-4	ND	ND	ND	ND
July 1991	Well MW-2	14	1	17	8
	Well MW-3	14	14	33	8
October 1991	Well MW-2	2.9	ND	6	2.5
	Well MW-3	ND	ND	ND	ND
	Well MW-4	ND	ND	ND	ND
January 1992	Well MW-2	480	870	860	160
	Well MW-3	4	10	8	2
April 1992	Well MW-2	70	0.3	7.0	15
	Well MW-3	1.0	0.4	0.9	ND
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	0.3	ND	ND
	Well MW-7	0.4	0.3	0.9	0.3
July 1992	Well MW-2	10	ND	2.3	0.6
	Well MW-3	1.3	0.4	1.3	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND

WATER ANALYSES

TABLE 1 (Continued)

(Results in ppb)

Sampling Date	Sample Location	Benzene (1)*	Toluene (100)+	Xylene (1750)*	Ethylbenzene (680)*
October 1992	Well MW-2	2.3	ND	3.0	2.3
	Well MW-3	2.1	ND	0.3	ND
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	0.4	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND
January 1993	Well MW-2	11	5.1	6.3	1.4
	Well MW-3	1.2	1.0	4.1	0.6
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND
March 1993	Well MW-2	110	32	28	67
	Well MW-3	32	0.9	13	64
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	ND	ND	ND
	Well MW-6	ND	ND	ND	ND
	Well MW-7	ND	ND	ND	ND

ND = None Detected
*DHS: Primary Drinking Water Standard (3/89)
+DHS: Action Level

WATER ANALYSES - TPH and OIL & GREASE

TABLE 2

(Results in ppb)

Sampling Date	Sample Location	TPH as Gasoline (100)*	TPH as Diesel (100)*	Oil and Grease Total Hydrocarbon (100)*	
August 1990	Well MW-2	180	--	--	--
	Well MW-3	290	--	--	--
	Well MW-4	ND	ND	ND	--
January 1991	Well MW-2	430	--	--	--
	Well MW-3	110	--	--	--
April 1991	Well MW-2	4800	--	--	--
	Well MW-3	3600	--	--	--
	Well MW-4	ND	ND	ND	--
July 1991	Well MW-2	220	--	--	--
	Well MW-3	220	--	--	--
October 1991	Well MW-2	170	--	--	--
	Well MW-3	ND	ND	ND	--
	Well MW-4	ND	ND	ND	--
January 1992	Well MW-2	5200	--	--	--
	Well MW-3	60	--	--	--
April 1992	Well MW-2	300	--	--	--
	Well MW-3	ND	--	ND	--
	Well MW-4	ND	ND	ND	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	1300	--	--	--
July 1992	Well MW-2	84	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	830	--	--	--

WATER ANALYSES

TABLE 2 (Continued)

(Results in ppb)

Sample Date	Sample Location	TPH as Gasoline (100)*	TPH as Diesel (100)*	Oil & Grease Total (100)*	Oil & Grease Hydrocarbon (100)*
October 1992	Well MW-2	ND	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-4	ND	120	ND	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	3900	--	--	--
January 1993	Well MW-2	170	--	--	--
	Well MW-3	ND	--	--	--
	Well MW-4	ND	ND	ND	--
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	1900	--	--	--
March 1993	Well MW-2	720	--	--	--
	Well MW-3	330	--	--	--
	Well MW-4	ND	ND	ND	ND
	Well MW-5	ND	--	--	--
	Well MW-6	ND	--	--	--
	Well MW-7	830	--	--	--

-- = Not Tested
ND = None Detected
* = Quantified Action Levels are not provided for these parameters. The amount given is often informally used by regulatory agencies as a threshold value.

WATER ANALYSIS - VOLATILES

TABLE 3

(Results in ppb)

Sample Date	Sample Location	Volatile Halocarbon\Organic (Action Level-ppb)*
March 1993	MW-2	1,2-Dichloroethane - 0.6(0.5)
	MW-3	--
	MW-4	ND
	MW-5	Tetrachloroethene - 0.8(5.0)
	MW-6	Tetrachloroethene - 3.5(5.0)
	MW-7	Trichloroethene - 210(5.0),
	MW-7	Tetrachloroethene - 3700(5.0)

fuel additive?

ND = None Detected
-- = Not Tested
* = California Department of Health Services Drinking Water Standards Revised 10/23/91

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

On the basis of our findings to date, an unauthorized motor-fuel release to soil and groundwater has occurred at the site, in the vicinity of the two 10,000-gallon underground gasoline storage tanks.

Contaminant concentrations associated with gasoline have risen in Monitoring Wells MW-2 and MW-3 since the last quarterly sampling event (January 1993). At this time, Benzene concentrations continue to meet or exceed State and Federal Standards in Wells MW-2 and MW-3. The TPH-G concentration measured at Well MW-7 is believed to be related to Perchloroethylene contamination, as established in our Special Sampling report, dated December 23, 1992 (note the lack of BTEX concentrations in this well, despite the substantial quantity of TPH-Gasoline). Although no standard has been devised for Total Petroleum Hydrocarbon concentrations as Gasoline or Diesel, the quantities observed in Wells MW-2, MW-3 and MW-7 exceed general informal regulatory action levels. Total Petroleum Hydrocarbons as Diesel were not detected in Well MW-4 for the second consecutive quarter.

Volatile organic/halocarbon compounds were detected in Wells MW-2, MW-5, MW-6 and MW-7. Trace quantities were detected in the first three wells. Substantial quantities were detected in Well MW-7. The concentration of 1,2-Dichloroethane detected in Well MW-2 is just above the detection limit, but exceeds drinking water standards. Its potential source is unknown, but there may be an association with gasoline. The concentrations of Tetrachloroethene (a.k.a. Perchloroethene, PCE) detected in Wells MW-5 and MW-6 do not exceed drinking water standards, and may represent the east and west edges of a plume of Perchloroethene (Perc). The concentrations of PCE and Trichloroethene (TCE) in Well MW-7 are reduced from the quantities detected in November 1992 by BSK (Special Sampling letter report, dated December 23, 1993). The concentrations are still above drinking water standards, however. TCE may be a decay product of Perchloroethene.

The southern limit of the gasoline contaminant plume is believed to be located north of Well MW-7, concluded from the lack of aromatic hydrocarbons and other gasoline related compounds detected at MW-7 since April 1992.

The absence of PCE and the decay products of PCE in Wells MW-2 and MW-4 suggest that these compounds are not present in the vicinity of these wells. Known groundwater flow patterns would suggest that a PCE source in the MW-2 area would be predominantly detected in Well MW-6, rather than MW-7, suggesting some other source area for contamination detected in Well MW-7.

At this time, it appears that Marshall Steel Cleaners is the most likely source for Perchloroethene contamination in groundwater in the study area as detected in Well MW-7.

Recommendations

With respect to the findings of this quarterly sampling, and the conclusions of this report, it is recommended that quarterly groundwater monitoring for gasoline constituents continue for Wells MW-2, MW-3, MW-6 and MW-7. Bi-annual monitoring for gasoline may be considered appropriate for Wells MW-4 and MW-5, due to their location to the gasoline plume, groundwater flow directions, and absence of detected contaminants.

BSK additionally recommends the further characterization of the Gasoline plume by temporary well-points in the southern one-half of the Nahas property to: 1) Further define the gasoline contaminant plume; 2) Further assess the existence of PCE on the Nahas property, and; 3) Provide remedial design information.

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 ACEH to the Regional Water Quality Control Board in Oakland for their review.

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.

The following are attached and complete this report:

FIGURE	1	Vicinity Map
FIGURE	2	Site Plan
FIGURE	3	Potentiometric Surface Map
FIGURES	4.1 through 4.6	Well Field Logs

APPENDIX "A"

FIGURES	A-1 through A-13	Eleventh Quarterly Laboratory Chemical Test Data Sheets
FIGURES	A-14 through A-20	Project Quality Assurance/Quality Control, and Chain-of-Custody

Respectfully submitted,

BSK & Associates

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

Tim W. Berger, C.E.G. No. 1828
Project Geologist

AYE/TWB:ndp/slc
(rpts\env\P92057.Q11)

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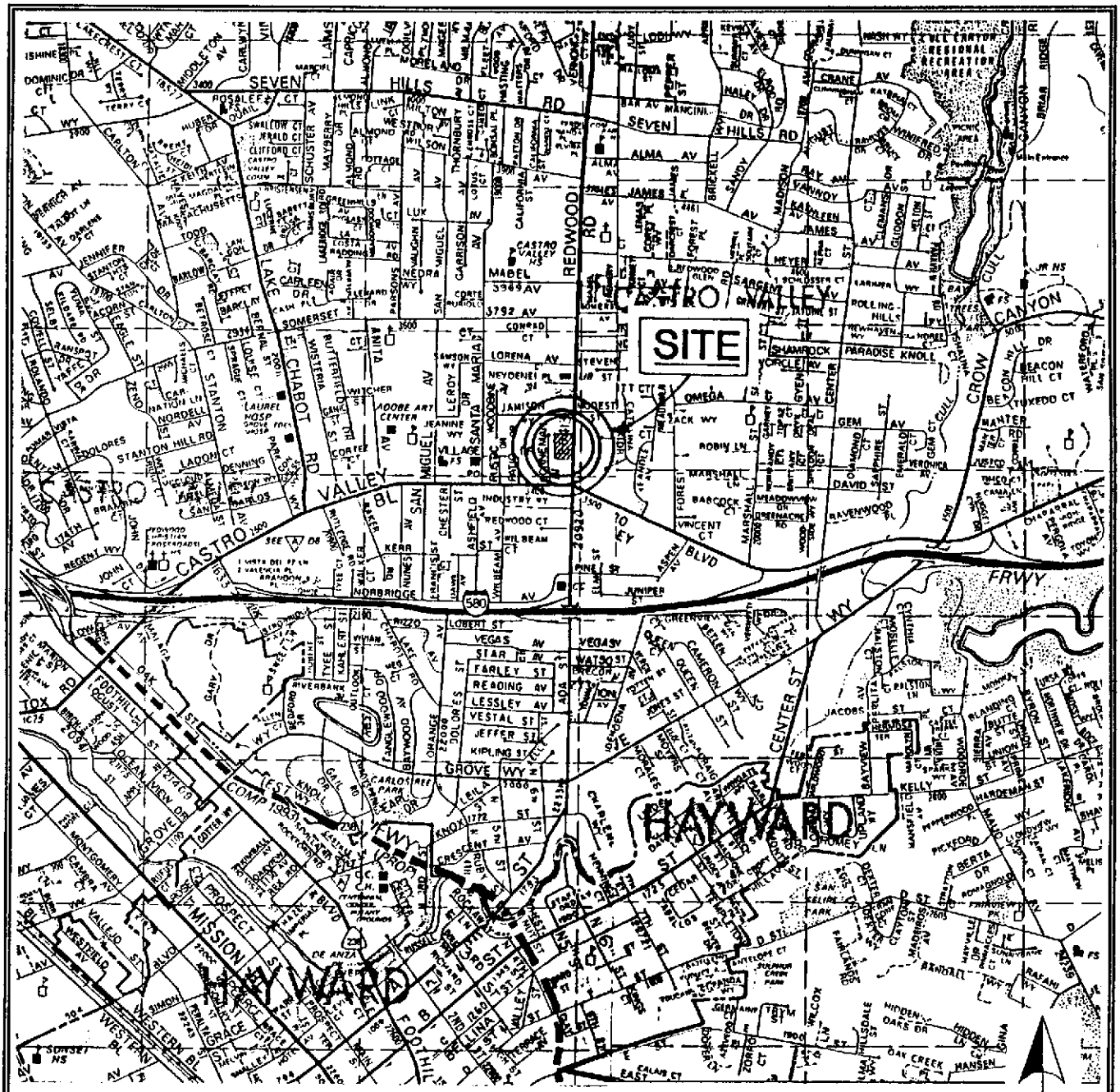
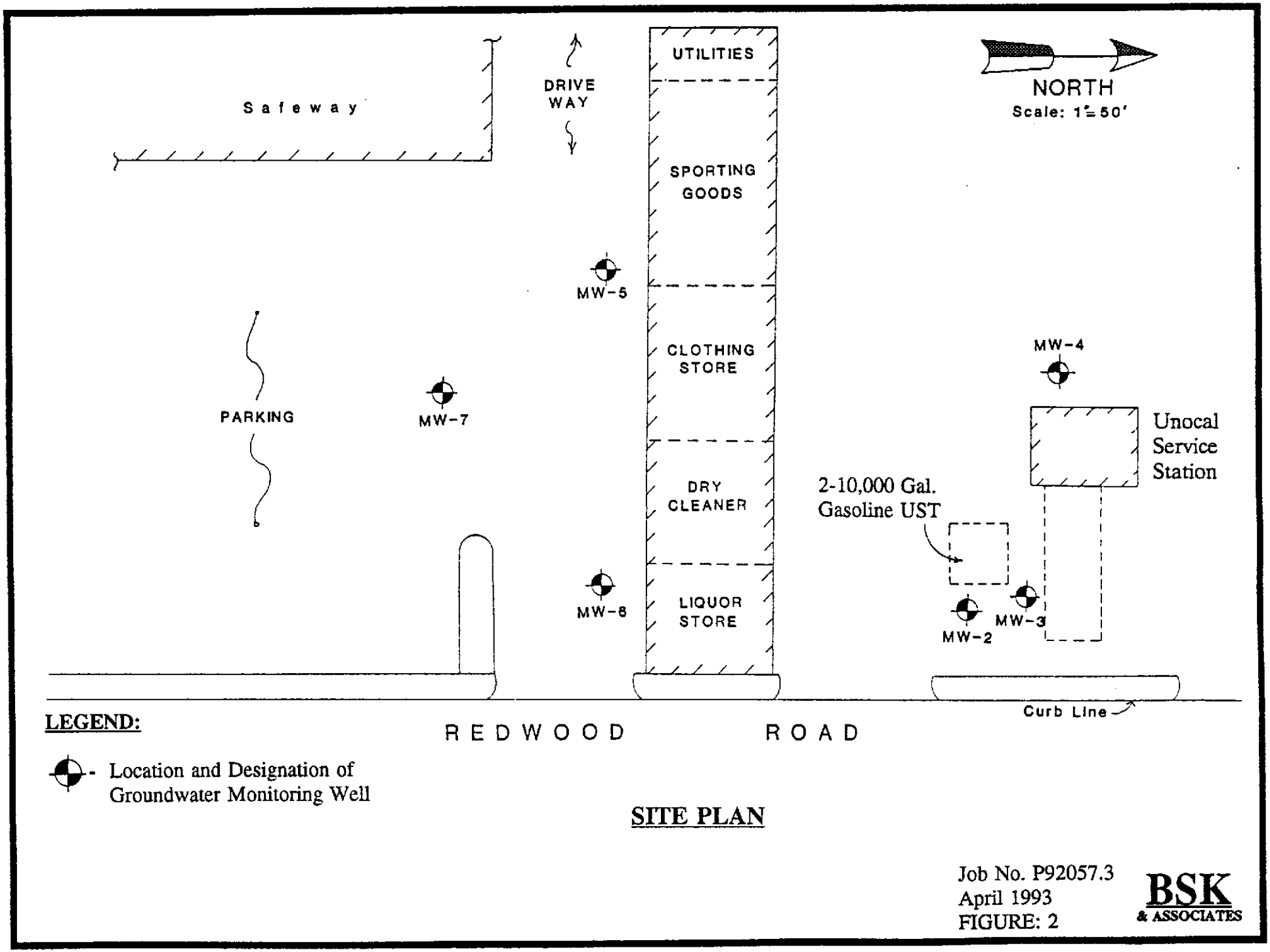
R.T. Nahas Co. (4 copies)

BSK & Associates



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

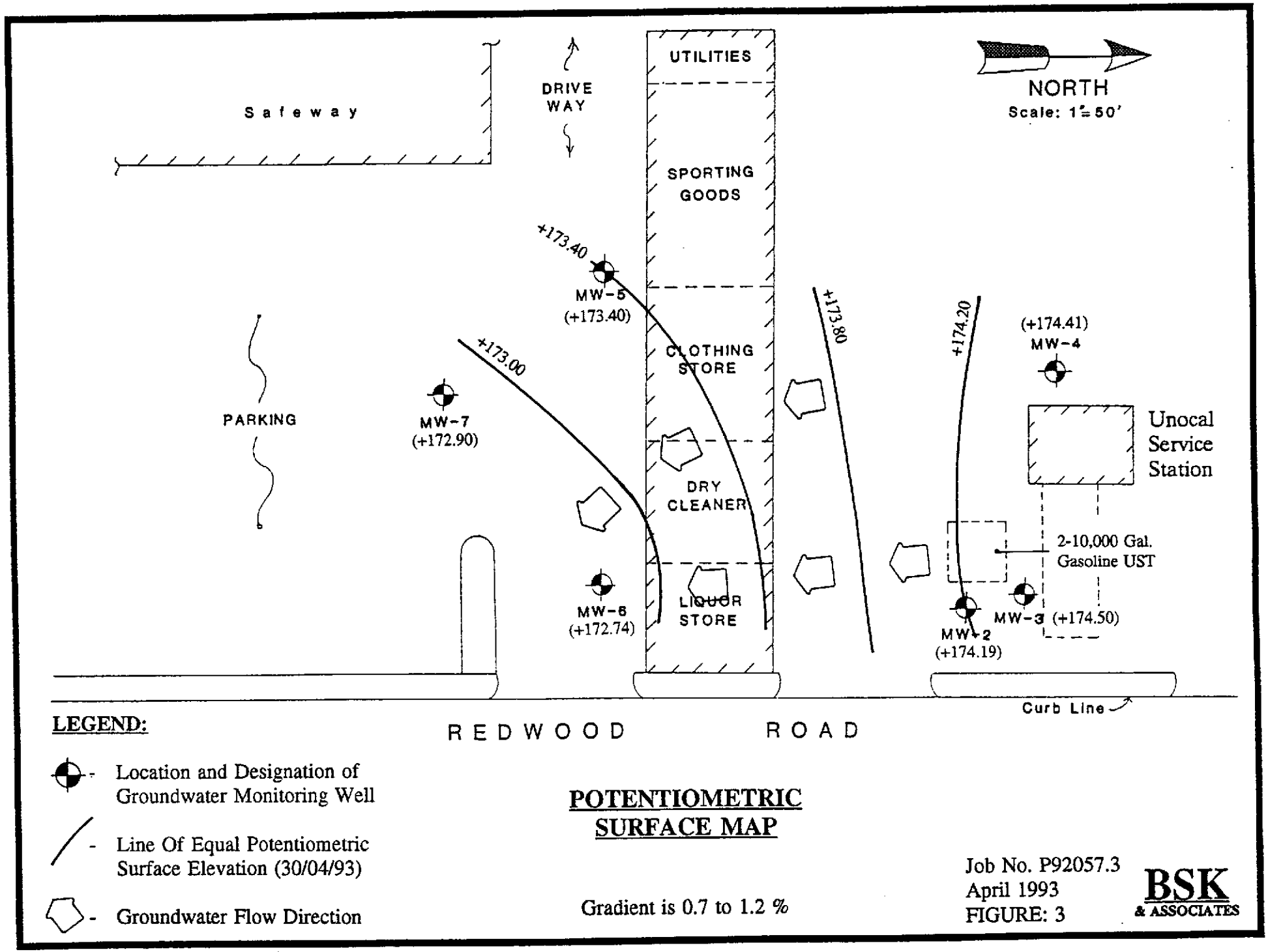
ELEVENTH QUARTERLY GROUNDWATER MONITORING REPORT UNOCAL 76 SERVICE STATION 20405 AND 20629 REDWOOD ROAD CASTRO VALLEY, CALIFORNIA	**VICINITY MAP** **BSK Job No. P92057.3** **April 1993** **FIGURE: 1**	**BSK** **& ASSOCIATES**



SITE PLAN

Job No. P92057.3
April 1993
FIGURE: 2

BSK & ASSOCIATES



LEGEND:

- Location and Designation of Groundwater Monitoring Well
- Line Of Equal Potentiometric Surface Elevation (30/04/93)
- Groundwater Flow Direction

POTENTIOMETRIC SURFACE MAP

Gradient is 0.7 to 1.2 %

Job No. P92057.3
April 1993
FIGURE: 3

BSK & ASSOCIATES

WELL FIELD LOG

Well Development:		**Date:**
Well Observation:	x	**Date:** 03/04/93
Sample Collection:	x	**Date:** 03/04/93

Project Name:	Eleventh Quarterly Sampling
Location:	Nahas/Union 76
Personnel:	TWB/EK
Weather:	Clear, warm, 70's

WELL INFORMATION:

Well Number	MW-2	**Date Purged**	03/04/93
Depth to Water - feet(TOC)	9.28	**Purge Method**	Teflon Bladder Pump
Well Depth (feet)	30		
Water Volume (gallons)	3.3	**Purge Begin**	14:50
Reference Elevation - feet(TOC)	+183.47	**Purge End**	15:12
Groundwater Elevation (feet)	+174.19	**Purge Rate**	0.5 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None, no odor, clear
Bottom: None, clear
Detection Method: Visual, olfactory
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	Ph	TEMP. (°F)	COLOR/COMMENTS
14:55	1.0	NA	6.23	72.00	Clear
15:01	5.0	NA	6.06	71.6	Odor and sheen noted in drummed effluent
15:08	7.5	NA	6.06	71.2	"
15:12	10.0	NA	6.04	70.9	"
15:15					Water Depth - 9.79'

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bladder Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
15:19	BTEX & TPH-G	2-40ml glass VOA with Hcl	
"	EPA M-601	2-40 ml glass VOA with Hcl	

Field Observations: None

BSK Job No.: P92057.3
Date: April 1993
Figure No.: 4.1

WELL FIELD LOG

Well Development:		**Date:**
Well Observation:	x	**Date:** 03/04/93
Sample Collection:	x	**Date:** 03/04/93

Project Name: Eleventh Quarterly Sampling
Location: Nahas/Union 76
Personnel: TWB/EK
Weather: Clear, warm, 70's

WELL INFORMATION:

Well Number	MW-3	**Date Purged**	03/04/93
Depth to Water - feet(TOC)	9.53	**Purge Method**	Teflon Bladder Pump
Well Depth (feet)	30		
Water Volume (gallons)	3.3	**Purge Begin**	13:35
Reference Elevation - feet(TOC)	+184.03	**Purge End**	14:02
Groundwater Elevation (feet)	+175.50	**Purge Rate**	0.4 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None, no odor, clear
Bottom: Clear, with 2-3 mm brown algae (approx. 1%)
Detection Method: Visual
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	Ph	TEMP. (°F)	COLOR/COMMENTS
13:38	1.0	NA	5.86	74.2	Clear
13:47	5.0	NA	5.86	73.8	", with sulfide odor
13:55	7.5	NA	5.86	73.5	", sheen on drummed water
14:02	10.0	NA	5.86	73.1	Clear
14:04					Depth to Water - 9.59'

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Point-Source Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
14:08	BTEX & TPH-G	2-40ml glass VOA with Hcl	

Field Observations: Six feet from active gas pump island

BSK Job No.: P92057.3
Date: April 1993
Figure No.: 4.2

WELL FIELD LOG

Well Development:		**Date:**
Well Observation:	x	**Date:** 03/04/93
Sample Collection:	x	**Date:** 03/04/93

Project Name:	Eleventh Quarterly Sampling
Location:	Nahas/Union 76
Personnel:	TWB/EK
Weather:	Clear, warm, 70's

WELL INFORMATION:

Well Number	MW-4	**Date Purged**	03/04/93
Depth to Water - feet(TOC)	10.20	**Purge Method**	Teflon Bladder Pump
Well Depth (feet)	25		
Water Volume (gallons)	2.4	**Purge Begin**	12:12
Reference Elevation - feet(TOC)	+184.61	**Purge End**	12:34
Groundwater Elevation (feet)	+174.41	**Purge Rate**	0.5 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None, clear
Bottom: None, clear
Detection Method: Visual
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	Ph	TEMP. (°F)	COLOR/COMMENTS
12:12	0	NA	6.31	74.30	Very light brown
12:20	5.0	NA	6.16	73.0	Clear
12:28	7.5	NA	6.08	72.1	Clear
12:34	10.0	NA	6.04	71.3	Clear
12:43					Depth to water - 10.24'

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bladder Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
12:37	BTEX & TPH-G	2-40ml glass VOA with HCl	
"	TPH-D	2-250 ml Amber Glass, w/H_2SO_4	
"	Oil & Grease	1 Liter Amber Glass, w/H_2SO_4	
"	EPA 601	2-40 ml glass VOA with HCl	

Field Observations:

BSK Job No.: P92057.3
Date: April 1993
Figure No.: 4.3

WELL FIELD LOG

Well Development: **Date:**
Well Observation: x **Date:** 03/04/93
Sample Collection: x **Date:** 03/04/93

Project Name: Eleventh Quarterly Sampling
Location: Nahas/Union 76
Personnel: TWB/EK
Weather: Clear, warm, mid 60's

WELL INFORMATION:

Well Number	MW-5	**Date Purged**	03/04/93
Depth to Water - feet(TOC)	10.53	**Purge Method**	Teflon Bladder Pump
Well Depth (feet)	34.5		
Water Volume (gallons)	3.7	**Purge Begin**	10:32
Reference Elevation - feet(TOC)	+183.92	**Purge End**	10:59
Groundwater Elevation (feet)	+173.40	**Purge Rate**	0.4 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None, clear
Bottom: None, clear
Detection Method: Visual
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
10:35	1.0	NA	6.26	71.0	Clear
10:46	5.0	NA	6.10	70.7	"
10:53	7.5	NA	6.09	70.5	"
10:59	10.0	NA	6.09	70.3	"
11:14					Depth to water - 10.86'

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bladder Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
11:18	BTEX & TPH-G	2-40ml glass VOA with HCl	
"	EPA 601	2-40ml glass VOA with HCl	

Field Observations: Well in busy parking lot. Well sampling observed by D. Henninger and S. Seery. Split taken by Henninger.

BSK Job No.: P92057.3
Date: April 1993
Figure No.: 4.4

WELL FIELD LOG

Well Development:		**Date:**
Well Observation:	x	**Date:** 03/04/93
Sample Collection:	x	**Date:** 03/04/93

Project Name: Eleventh Quarterly Sampling
Location: Nahas/Union 76
Personnel: TWB/EK
Weather: Clear, warm, 60's

WELL INFORMATION:

Well Number	MW-6	**Date Purged**	01/12/93
Depth to Water - feet(TOC)	10.86	**Purge Method**	Teflon Bladder Pump
Well Depth (feet)	29.0		
Water Volume (gallons)	2.7	**Purge Begin**	09:08
Reference Elevation - feet(TOC)	+183.60	**Purge End**	09:24
Groundwater Elevation (feet)	+172.74	**Purge Rate**	0.6 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None
Bottom: None
Detection Method: Visual
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
09:10	1.0	NA	6.48	67.3	Light orange-brown
09:14	5.0	NA	6.28	65.8	Clear
09:20	7.5	NA	6.20	66.3	"
09:24	10.0	NA	6.18	66.9	"
09:28					Depth to water - 10.91

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Bladder Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
09:30	BTEX & TPH-G	2-40ml glass VOA with HCl	
"	EPA 601	2-40ml glass VOA with HCl	

Field Observations: Well in busy parking lot. Well sampling observed by D. Henninger, split taken by Henninger

BSK Job No.: P92057.3
Date: April 1993
Figure No.: 4.5

WELL FIELD LOG

Well Development:		**Date:**
Well Observation:	x	**Date:** 03/04/93
Sample Collection:	x	**Date:** 03/04/93

Project Name:	Eleventh Quarterly Sampling
Location:	Nahas/Union 76
Personnel:	TWB/EK
Weather:	Clear, warm, 60's

WELL INFORMATION:

Well Number	MW-7	**Date Purged**	01/12/93
Depth to Water - feet(TOC)	09.88	**Purge Method**	Dedicated Disposable Polyethelene Bailer
Well Depth (feet)	28.0		
Water Volume (gallons)	2.9	**Purge Begin**	07:43
Reference Elevation - feet(TOC)	+182.78	**Purge End**	08:08
Groundwater Elevation (feet)	+172.90	**Purge Rate**	0.4 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: None, clear
Bottom: None, cloudy light brown
Detection Method: Visual
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
07:43	0	NA	6.30	64.0	Light Orange
07:49	2.5	NA	6.08	66.0	"
07:57	5.0	NA	6.12	66.1	"
08:03	7.5	NA	6.17	65.3	Light brown
08:08	10.0	NA	6.22	64.5	"
08:10					Depth to water - 9.95

SAMPLE COLLECTION DATA

Sampling Equipment: Dedicated Disposable Polyethelene Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
08:18	BTEX & TPH-G	2-40ml glass VOA with HCl	water surface
08:17	EPA 624	2-40ml glass VOA with HCl	casing bottom

Field Observations: Sampling observed by D. Miller and D. Henninger, splits taken by Henninger

BSK Job No.: P92057.3
Date: April 1993
Figure No.: 4.6

APPENDIX A

CHEMICAL TEST DATA SHEETS

QUALITY ASSURANCE / QUALITY CONTROL DOCUMENTS

AND

PROJECT-CHAIN-OF-CUSTODY RECORD

FIGURE: A-1

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1519
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-1
Project Number : P92057.3
Sample Description: MW-2, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	110	0.3
Toluene	32	0.3
Ethylbenzene	28	0.3
Total Xylene Isomers	67	0.3
Total Petroleum Hydrocarbons (G)	720	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

FIGURE: A-2

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1519
Date Received : 03/05/93
Date of Analysis : 03/12/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-1
Project Number : P92057.3
Sample Description: MW-2, #1

Sample Type : LIQUID

Analyses for Volatile Halocarbons by EPA Method 601
Prepared by EPA Method 5030

Results Reported in Micrograms per Liter (µg/L)

Compounds	Results	DLR	Compound	Results	DLR
Bromodichloromethane	ND	0.5	1,2-Dichloroethane	0.6	0.5
Bromoform	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromomethane	ND	1.0	cis-1,2 Dichloroethene.....	ND	0.5
Carbon tetrachloride	ND	0.5	trans-1,2-Dichloroethene...	ND	0.5
Chlorobenzene	ND	0.5	1,2-Dichloropropane	ND	0.5
Chloroethane	ND	0.5	cis-1,3-Dichloropropene ...	ND	0.5
Chloroform	ND	0.5	trans-1,3-Dichloropropene..	ND	0.5
Chloromethane	ND	0.5	Methylene chloride	ND	0.5
Dibromochloromethane	ND	0.5	1,1,2,2-tetrachloroethane..	ND	0.5
1,2-Dichlorobenzene	ND	0.5	Tetrachloroethene	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
Dichlorodifluoromethane ...	ND	2.0	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
			Vinyl chloride	ND	1.0

Sample DLR = DLR x DLR Multiplier,
DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

--: Not Analyzed

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

R910909 601.T

FIGURE: A-3

ANALYTICAL BSK LABORATORIES
Environmental Services

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Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1408
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-2
Project Number : P92057.3
Sample Description: MW-3, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	32	0.3
Toluene	0.9	0.3
Ethylbenzene	13	0.3
Total Xylene Isomers	64	0.3
Total Petroleum Hydrocarbons (G)	330	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

91 1009 BTPL.t

FIGURE: A-4

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1237
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-3
Project Number : P92057.3
Sample Description: MW-4, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	ND	0.3
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Total Xylene Isomers	ND	0.3
Total Petroleum Hydrocarbons (G)	ND	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

R91 1009 BTPL.t

FIGURE: A-5

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1237
Date Received : 03/05/93
Date of Analysis : 03/12/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-3
Project Number : P92057.3
Sample Description: MW-4, #1

Sample Type : LIQUID

Analyses for Volatile Halocarbons by EPA Method 601
Prepared by EPA Method 5030

Results Reported in Micrograms per Liter (µg/L)

Compounds	Results	DLR	Compound	Results	DLR
Bromodichloromethane	ND	0.5	1,2-Dichloroethane	ND	0.5
Bromoform	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromomethane	ND	1.0	cis-1,2 Dichloroethene.....	ND	0.5
Carbon tetrachloride	ND	0.5	trans-1,2-Dichloroethene...	ND	0.5
Chlorobenzene	ND	0.5	1,2-Dichloropropane	ND	0.5
Chloroethane	ND	0.5	cis-1,3-Dichloropropene ...	ND	0.5
Chloroform	ND	0.5	trans-1,3-Dichloropropene..	ND	0.5
Chloromethane	ND	0.5	Methylene chloride	ND	0.5
Dibromochloromethane	ND	0.5	1,1,2,2-tetrachloroethane..	ND	0.5
1,2-Dichlorobenzene	ND	0.5	Tetrachloroethene	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
Dichlorodifluoromethane ...	ND	2.0	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
			Vinyl chloride	ND	1.0

Sample DLR = DLR x DLR Multiplier,
DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

--: Not Analyzed

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

R910909 601.T

FIGURE: A-6

ANALYTICAL BSK LABORATORIES
Environmental Services

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Telephone (209) 485-8310
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1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1237
Date Received : 03/05/93
Date of Analysis : 03/15/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-3
Project Number : P92057.3
Sample Description: MW-4, #1

Sample Type : LIQUID

Analyses for TPH (Total Petroleum Hydrocarbons) as Diesel by Method DHS GC/FID.

Results Reported in Micrograms per Liter (µg/L)

Analyte	Results	DLR
TPH(D)	ND	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

*-This sample contains lower molecular weight hydrocarbons.

**-This sample contains higher molecular weight hydrocarbons.

***-This sample contains both higher and lower molecular weight hydrocarbons.

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

FIGURE: A-7

ANALYTICAL BSK LABORATORIES
Environmental Services

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Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1237
Date Received : 03/05/93
Date of Analysis : 03/08/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-3
Project Number : P92057.3
Sample Description: MW-4, #1

Sample Type : LIQUID

Analyses For Total & Hydrocarbon Oil & Grease By Standard Method 503B,& E

Results Reported in Milligrams Per Liter (mg/L)

Analyte	Results	DLR
Total Oil and Grease.....	ND	1
Hydrocarbon Oil and Grease	ND	1

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

920302 OGTHL

FIGURE: A-8

ANALYTICAL BSK LABORATORIES
Environmental Services

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Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1118
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-4
Project Number : P92057.3
Sample Description: MW-5, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	ND	0.3
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Total Xylene Isomers	ND	0.3
Total Petroleum Hydrocarbons (G)	ND	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

FIGURE: A-9

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1118
Date Received : 03/05/93
Date of Analysis : 03/12/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-4
Project Number : P92057.3
Sample Description: MW-5, #1

Sample Type : LIQUID

Analyses for Volatile Halocarbons by EPA Method 601
Prepared by EPA Method 5030

Results Reported in Micrograms per Liter (µg/L)

Compounds	Results	DLR	Compound	Results	DLR
Bromodichloromethane	ND	0.5	1,2-Dichloroethane	ND	0.5
Bromoform	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromomethane	ND	1.0	cis-1,2 Dichloroethene.....	ND	0.5
Carbon tetrachloride	ND	0.5	trans-1,2-Dichloroethene...	ND	0.5
Chlorobenzene	ND	0.5	1,2-Dichloropropane	ND	0.5
Chloroethane	ND	0.5	cis-1,3-Dichloropropene ...	ND	0.5
Chloroform	ND	0.5	trans-1,3-Dichloropropene..	ND	0.5
Chloromethane	ND	0.5	Methylene chloride	ND	0.5
Dibromochloromethane	ND	0.5	1,1,2,2-tetrachloroethane..	ND	0.5
1,2-Dichlorobenzene	ND	0.5	Tetrachloroethene	0.8	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
Dichlorodifluoromethane ...	ND	2.0	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
			Vinyl chloride	ND	1.0

Sample DLR = DLR x DLR Multiplier,
DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

--: Not Analyzed

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

R910909 601.T

FIGURE: A-10

ANALYTICAL BSK LABORATORIES
Environmental Services

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Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 0930
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-5
Project Number : P92057.3
Sample Description: MW-6, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	ND	0.3
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Total Xylene Isomers	ND	0.3
Total Petroleum Hydrocarbons (G)	ND	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

FIGURE: A-11

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 0930
Date Received : 03/05/93
Date of Analysis : 03/12/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-5
Project Number : P92057.3
Sample Description: MW-6, #1

Sample Type : LIQUID

Analyses for Volatile Halocarbons by EPA Method 601
Prepared by EPA Method 5030

Results Reported in Micrograms per Liter (µg/L)

Compounds	Results	DLR	Compound	Results	DLR
Bromodichloromethane	ND	0.5	1,2-Dichloroethane	ND	0.5
Bromoform	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromomethane	ND	1.0	cis-1,2 Dichloroethene.....	ND	0.5
Carbon tetrachloride	ND	0.5	trans-1,2-Dichloroethene...	ND	0.5
Chlorobenzene	ND	0.5	1,2-Dichloropropane	ND	0.5
Chloroethane	ND	0.5	cis-1,3-Dichloropropene ...	ND	0.5
Chloroform	ND	0.5	trans-1,3-Dichloropropene..	ND	0.5
Chloromethane	ND	0.5	Methylene chloride	ND	0.5
Dibromochloromethane	ND	0.5	1,1,2,2-tetrachloroethane..	3.5	0.5
1,2-Dichlorobenzene	ND	0.5	Tetrachloroethene	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	2.0	1,1,2-Trichloroethane	ND	0.5
Dichlorodifluoromethane ...	ND	0.5	Trichloroethene	ND	1.0
1,1-Dichloroethane			Trichlorofluoromethane		
			Vinyl chloride		

Sample DLR = DLR x DLR Multiplier,
DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

--: Not Analyzed

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

P930908.601.T

FIGURE: A-12

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 0818
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-6
Project Number : P92057.3
Sample Description: MW-7, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	ND	0.3
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Total Xylene Isomers	ND	0.3
Total Petroleum Hydrocarbons (G)	830	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

FIGURE: A-13

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 0818
Date Received : 03/05/93
Date of Analysis : 03/16/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-6
Project Number : P92057.3
Sample Description: MW-7, #1

Sample Type : LIQUID

Volatile Organic Compounds By EPA Method 624

Results Reported in Micrograms per Liter (µg/L)

Compound Name	Results	DLR	Compound Name	Results	DLR
Chloromethane	ND	40.0	trans 1,3-Dichloropropene	ND	20.0
Bromomethane	ND	40.0	Trichloroethene	210	20.0
Vinyl Chloride	ND	40.0	Dibromochloromethane	ND	10.0
Chloroethane	ND	40.0	1,1,2-Trichloroethane	ND	10.0
Methylene Chloride	ND	125.0	Benzene	ND	10.0
Acetone	ND	125.0	cis 1,3-Dichloropropene	ND	10.0
Carbon Disulfide	ND	40.0	Bromoform	ND	10.0
1,1-Dichloroethene	ND	20.0	2-Hexanone	ND	125.0
1,1-Dichloroethane	ND	20.0	4-Methyl-2-pentanone	ND	125.0
trans 1,2-Dichloroethene	ND	20.0	Tetrachloroethene	3700	10.0
cis 1,2-Dichloroethene	ND	20.0	Toluene	ND	10.0
Chloroform	ND	20.0	Chlorobenzene	ND	10.0
1,2-Dichloroethane	ND	20.0	Ethyl Benzene	ND	10.0
1,1,1-Trichloroethane	ND	20.0	Styrene	ND	10.0
Carbon Tetrachloride	ND	20.0	Total Xylenes	ND	10.0
Vinyl Acetate	ND	125.0	o-dichlorobenzene	ND	10.0
Bromodichloromethane	ND	20.0	m-dichlorobenzene	ND	10.0
1,1,2,2-Tetrachloroethane	ND	20.0	p-dichlorobenzene	ND	10.0
1,2-Dichloropropane	ND	20.0			

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.

ND: None Detected

--: Not Analyzed

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

FIGURE: A-14

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

March 19, 1993

Tim Berger
BSK-Pleasanton

received
3/05/93

Project Number: P92057.3
Project Name: Nahas
Case Number: Ch930567
Page 1 of 5

BSK Analytical Laboratories received and analyzed the following:

BSK Case Number	Date Received	Quantity	Matrix
Ch930567	03/05/93	7	Liquid

Analysis was performed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule.

The quality control data is enclosed.

Thomas E. Vahlstrom
Laboratory Director

Cynthia Pigman
QA/QC Supervisor

FIGURE: A-15

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

Analysis: BTEX/TPH(G)/ EPA 601/ EPA 624/ Oil and Grease/ TPH(D)
Date of Receipt: 03/05/93
Project Number: P92057.3
Project Name: Nahas
Case Number: Ch930567

Sample Cross Reference

BSK Sample Number	Client Description	Matrix	Date Collected
0567-1	MW-2, #1	Liquid	03/04/93
0567-2	MW-3, #1	Liquid	03/04/93
0567-3	MW-4, #1	Liquid	03/04/93
0567-4	MW-5, #1	Liquid	03/04/93
0567-5	MW-6, #1	Liquid	03/04/93
0567-6	MW-7, #1	Liquid	03/04/93
0567-7	MW-1, #1	Liquid	03/04/93

Analytical Schedule

Analysis	Technique/Description
BTEX, TPH(Gas)	Varian 3300 GC; DB/WAX Column
EPA 601	Varian 3400 GC; LSC 2000; ALS 2016; OI ELCD; OI PID
Volatile Organics - EPA 624	Hewlett Packard 5890; Tekmar LSC 2000/2016; Hewlett Packard MSD Detector
Oil and Grease	IR Spectrophotometer
TPH-Diesel	Varian 3400 GC; DB-1 Column, 15m.

FIGURE: A-16

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

Analysis: BTEX/ Hydrocarbon Oil and Grease/ TPH(D)
Date of Receipt: 03/05/93
Project Number: P92057.3
Project Name: Nahas
Case Number: Ch930567

BTEX - Reagent Spike Results

Analyte	Sample Conc. Before Spike	Conc. of Spike	Spike Results % Recovery	RPD Result
Benzene	ND	10 ppb	90[1], 100[2]	10
Toluene	ND	10 ppb	87[1], 98[2]	12
Ethylbenzene	ND	10 ppb	88[1], 97[2]	10
p-Xylene	ND	10 ppb	89[1], 100[2]	12
m-Xylene	ND	10 ppb	87[1], 97[2]	10
o-Xylene	ND	10 ppb	92[1], 102[2]	11

Hydrocarbon Oil and Grease - Reagent Spike Results

Sample Concentration	Spike Results % Recovery	RPD Result
ND	86[1], 93[2]	8

TPH Diesel - Reagent Spike Results

Sample Conc.	Spike Conc.	Spike Results % Recovery	RPD
ND	2500 ppb	102[1], 102[2]	0

FIGURE: A-17

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

Analysis: EPA 601
Date of Receipt: 03/05/93
Project Number: P92057.3
Project Name: Nahas
Case Number: Ch930567

EPA 601 - Volatile Halocarbons Reagent Spike Results

Analyte	Sample Conc. Before Spike	Conc. of Spike	Spike Results % Recovery	RPD Results
1,1-Dichloroethene	ND	10 ppb	98[1], 109[2]	10
Dichloromethane	ND	10 ppb	90[1], 91[2]	1
trans-1,2-Dichloroethene	ND	10 ppb	100 [1], 98[2]	1
1,1-Dichloroethane	ND	10 ppb	99[1], 101[2]	2
1,1,1-Trichloroethane	ND	10 ppb	95[1], 98[2]	3
Carbontetrachloride	ND	10 ppb	100[1], 98[2]	2
Trichloroethylene	ND	10 ppb	97[1], 98[2]	1
1,2-Dichloropropane	ND	10 ppb	94[1], 96[2]	2
cis-1,3-Dichloropropene	ND	10 ppb	97[1], 95[2]	2
trans-1,3-Dichloropropene	ND	10 ppb	93[1], 87[2]	5
1,1,2-Trichloroethane	ND	10 ppb	95[1], 94[2]	2
Perchloroethylene	ND	10 ppb	93[1], 100[2]	7
Chlorobenzene	ND	10 ppb	100[1], 98[2]	2
1,1,2,2-Trichloroethane	ND	10 ppb	90[1], 77[2]	16
1,3-Dichlorobenzene	ND	10 ppb	88[1], 91[2]	4
1,4-Dichlorobenzene	ND	10 ppb	102[1], 104[2]	2
1,2-Dichlorobenzene	ND	10 ppb	99[1], 94[2]	5

FIGURE: A-18

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

Analysis: EPA 624 - Volatile Organics
Date of Receipt: 03/05/93
Project Number: P92057.3
Project Name: Nahas
Case Number: Ch930567

EPA 624 Volatile Organics - Reagent Spike Results

Compound	Amount Spiked (ppb)	% Recovery	RPD	Recovery Limits	RPD Limit
1,1-Dichloroethene	50	122(1), 125(2)	2	83 - 129	7
Methylene Chloride	50	114(1), 120(2)	5	0 - 218	154
Chloroform	50	115(1), 114(2)	1	83 - 122	23
1,1,1-Trichloroethane	50	115(1), 113(2)	2	77 - 124	22
Benzene	50	103(1), 103(2)	0	91 - 115	4
Trichloroethene	50	110(1), 110(2)	0	90 - 115	4
Toluene	50	108(1), 112(2)	3	89 - 116	5
Chlorobenzene	50	107(1), 106(2)	1	89 - 115	4

FIGURE: A-19

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Street
Fresno, California 93706
Telephone (209) 485-8310
FAX (209) 485-6935
1-800-877-8310

BSK-Pleasanton
Nahas

Date Sampled : 03/04/93
Time Sampled : 1514
Date Received : 03/05/93
Date of Analysis : 03/09/93
Report Issue Date: 03/18/93

Case Number : Ch930567
Lab ID Number : 0567-7
Project Number : P92057.3
Sample Description: MW-1, #1

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020 and TPH(G) by EPA Method 8015 Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene	ND	0.3
Toluene	0.8	0.3
Ethylbenzene	0.9	0.3
Total Xylene Isomers	1.2	0.3
Total Petroleum Hydrocarbons (G)	ND	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

BSK Log Number 0584

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-4721

Client Name: Nahas	Project or PO.#: P92057.3
Address: 1181 Quarry Lane, Bldg 300	Phone #: 510 462 4000
City, State, Zip: Pleasanton, CA 94566	Report, attention: Tim Berger

Sampled by: Tim Berger, Ed Keach

Date sampled	Time sampled	Type (See key below)	Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	BTEX + TPH-Gas	EPA 601	EPA 624	Oil & Grease 5520 C&F	TPH - Diesel			Hazardous sample Special handling required	Remarks
							Analysis required								3-11-93 3-17-93
3/4/93	15:19	AQ	MW-2, #1	4	-1	P	X	X							Record Temp. on
	14:08		MW-3, #1	2	-2		X								Arrival & coolant type
	12:37		MW-4, #1	7	-3		X	X		X	X				Level 2 QA/QC
	11:18		MW-5, #1	4	-4		X	X							
	09:30 PST		MW-6, #1	4	-5		X	X							Temp on arrival 4°C
	08:18		MW-7, #1	4	-6		X		X						Bad Doc 3-5-93
	15:14		MW-1, #1	2	-7	P	X								

IMPORTANT NOTICE: No samples will be analyzed without an authorized signature in this section.

I am hereby requesting BSK's Normal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in the U.S. E.P.A. SW 846 and that there is no extra charge for this service.

By: Tim Berger
Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of $50.00 per work order or $5.00 a bottle, whichever is greater.

By: _____
Authorized Signature

	Signature	Print Name	Company	Date	Time
Relinquished by	Tim Berger	Tim Berger	BSK-P	3/5/93	0900
Received by	Cecil Harris	C. Harris	BSK P	3-5-93	05:30
Relinquished by					
Received by					
Relinquished by					
Received by					

BSK & Associates Chemical Laboratories

1414 Stanislaus Street Fresno, California 93706

Telephone (209) 485-8310 • Fax (209) 485-7427

KEY: Type: AQ-Aqueous SL-Sludge SO-Soil PE-Petroleum OT-Other
Seals: P-Present A-Absent B-Broken
DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR
Note:
Samples are discarded 14 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

FIGURE: A-20