R.T. NAHAS COMPANY

REAL ESTATE DEVELOPERS AND INVESTORS

20630 PATIO DRIVE
CASTRO VALLEY, CALIFORNIA 94546
TELEPHONE (510) 538-9600
FAX (510) 881-7610

December 28, 1992

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

RE: Frank Tien Unocal Service Statin

Dear Scott:

Enclosed is a report done by BSK on December 23 detailing their further analysis of samples from monitoring well #7 in the Safeway parking lot. It appears that it isn't the spill from the gas station that is causing the peak in this well.

I look forward to your response.

Sincerely,

Randall E. Nahas

REN/hrs
Enclosure

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

December 23, 1992

BSK JOB P92057.3

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

Subject: Letter Report
Well MW-7 Special Sampling
Unocal 76 Service Station/
Safeway Parking Lot
20405 and 20629 Redwood Road
Castro Valley, California

Gentlemen:

As requested, and in response to the November 17, 1992 letter from Alameda County Environmental Health to Randall Nahas, BSK & Associates has performed sampling and analysis services for groundwater monitoring well, MW-7, in the Safeway parking lot at 20629 Redwood Road, Castro Valley, California. This sampling was performed in addition to regular quarterly sampling services provided by BSK, for a motor fuel release in the vicinity of Frank Tien Unocal Service Station, at 20405, Redwood Road, Castro Valley.

BACKGROUND

BSK & Associates installed groundwater monitoring well MW-7, in April 1992, as part of an investigation of groundwater contamination related to Frank Tien Unocal. Since it's installation, Well MW-7 has been sampled, and the water analyzed for three quarters, as part of the quarterly monitoring required by the Alameda County Environmental Health Department (ACEHD) for this project. Each monitoring event revealed significant quantities of low boiling point hydrocarbons (TPH-G), and no aromatic hydrocarbons, which would be typically associated with TPH-G.

During the last monitoring event in October 1992, BSK Analytical Laboratories utilized a new procedure during the TPH-G/BTEX analysis, enabling them to notice a unique peak in the chromatograph. The peak was determined to not be associated with Benzene, Toluene, Ethylbenzene or the Xylenes. This one peak also accounted for the concentration of TPH-G.

Upgradient, and between the Unocal station and Well MW-7, is a dry-cleaner (see Figure 1, Site Plan). The dry-cleaner was determined to be using Tetrachloroethene, also known as Perchloroethene (PCE), or "perc." Because of the dry-cleaners proximity to the well, it was decided to try to speciate the unknown compound in Well MW-7 by testing for dry-cleaning chemicals, such as Perc, and Stoddard Solvent.

METHODOLOGY

Monitoring well MW-7 was purged and sampled November 30, 1992.

Well MW-7 was purged by bladder pump. Four to five well casing volumes were removed from the well. Purge effluent was field monitored for Ph, Conductivity 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 the well was measured using a Solinst electric sounding tape, marked in twentieths of a foot. The water depth was then interpolated to a hundredth of a foot increment from the tape. The well was subsequently examined for floating and sinking immiscible product layers, sheen, and odor, using a clean PVC bailer having dual check valves for point-source sampling. Upon purge completion, the 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-of-concern 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, sealed, labeled and refrigerated for delivery to our State-certified laboratory.

A Well Field Log was prepared, recording the water depth, well volume, water temperature and other data. The Well Field Log is presented as Figures 2.

CHEMICAL ANALYSIS

Chemical analysis for dry-cleaning chemicals was performed using EPA Method 601, for Volatile Halocarbons, and Total Petroleum Hydrocarbons (TPH) in the high boiling point (Diesel), and low boiling point (Gasoline) ranges for Stoddard Solvent.

The results of the analyses are summarized in the following Table:

TABLE 1

SPECIAL GROUNDWATER ANALYSIS - WELL MW-7

Constituent (Maximum Contaminant Level-MCL,PPB*)	Analytical Result, in Parts Per Billion
TPH-Gasoline (NA)	2700
TPH-Diesel (NA)	ND
Tetrachloroethene (PCE) (5)	14,000
Trichloroethene (TCE) (5)	660
cis-1,2 Dichloroethene (6)	180
trans-1,2 Dichlorocthene (10)	1.5
Chloroform (100)	2
Chlorobenzene (30)	2

(*) California Department of Health Services (DHS), 1991

The Chemical-Test-Data-Sheets, and Project Chain-Of-Custody are attached to this report.

DISCUSSION AND RECOMMENDATIONS

As determined from the analytical test results, it is apparent that there is a significant concentration of Volatile Halocarbons in the groundwater in the area of Well MW-7. The greatest concentration was determined to be perchloroethene, which is used as the dry-cleaning solvent up-gradient from the well. The other Volatile Halocarbons detected are considered likely to be degradation products of the PCE. Chloroform and Chlorobenzene may have formed by the reaction of the chlorinated solvents with soil organic matter.

Total Petroleum Hydrocarbon concentrations in the water sample were not detected in the range of Stoddard Solvent. The concentration as Gasoline is related to the Volatile Halocarbons in the sample. The lesser concentration of hydrocarbons recovered, with respect to the 602 Method, is related to the inadequacy of the TPH test method to detect halocarbons. *

Based on the results of this Special Sampling, and the non-detection of aromatic hydrocarbons in the water of MW-7 in the past, BSK believes that gasoline contamination in groundwater may not occur in significant quantity at that well location, and that TPH-G concentrations detected there are related to another source; possibly the nearby dry-cleaner. Therefore, BSK does not recommend the further investigation of gasoline plume extent south of Well MW-7. However, since Well MW-7 is still the one down-gradient well existing for the gasoline plume at this time, we recommend its continued quarterly monitoring.

In order to further define the gasoline contaminant plume, and determine a possible impact to the property north of the dry-cleaner from PCE leakage, if present, BSK recommends the installation of a shallow groundwater monitoring well on the north side of the building housing the dry-cleaner, in the vicinity of the dry-cleaner. Placement of a well in this location may also facilitate future remedial efforts at the Unocal 76 Service Station site.

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 Site Plan

FIGURE 2 Well Field Log

CHEMICAL TEST DATA SHEETS
PROJECT CHAIN-OF-CUSTODY

Respectfully submitted,

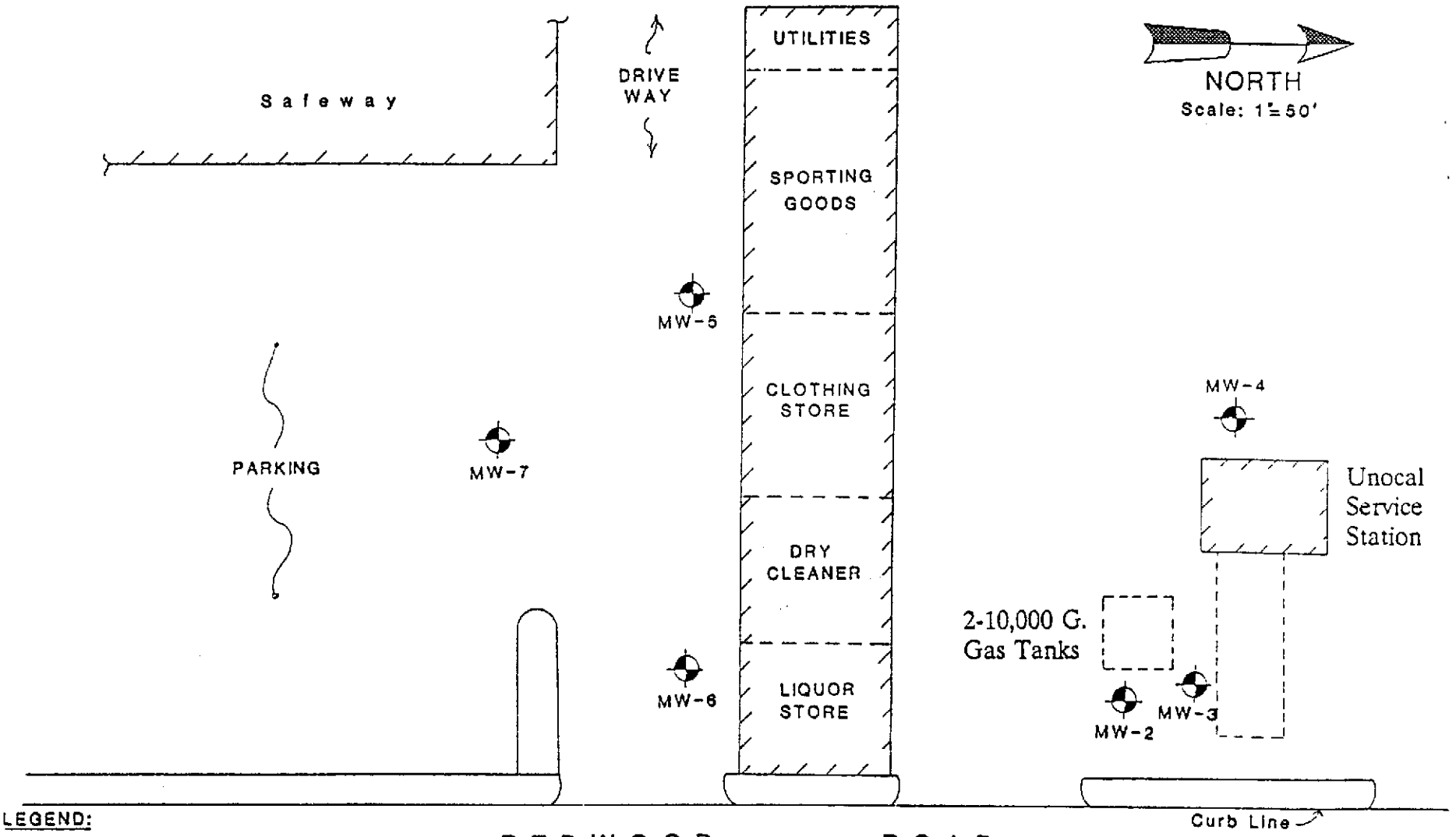
BSK & Associates

Alex Y. Eskandari, P.E.
Project Manager
C.E. #038101, R.E.A. #01528

Tim W. Berger, R.G. #05225
Project Geologist

AYE/TWB:ndp/slc
(rpts\env\Nahas.PCE)

Distribution:
R.T. Nahas Co. (original and 3 copies)



SITE PLAN

Job No. P92057.3
December 1992
FIGURE: 1

BSK & ASSOCIATES

WELL FIELD LOG

Well Development: **Date:**
Sample Collection: x **Date:** 11/30/92

Project Name: MW-7 Special Sampling
Location: Nahas/Union 76
Personnel: FRG
Weather: Clear

WELL INFORMATION:

Well Number	MW-7	**Date Purged**	11/30/92
Depth to Water - feet(TOC)	12.00	**Purge Method**	Teflon-Bladder Pump
Well Depth (feet)	28.0		
Water Volume (gallons)	2.7	**Purge Begin**	10:37
Reference Elevation - feet(TOC)	182.78	**Purge End**	10:58
Groundwater Elevation (feet)	+170.78	**Purge Rate**	0.6 gal/min.
Measurement Technique	Solinst Electric Well Sounder		

IMMISCIBLE LAYERS:

Top: Clear, no odor, 0 ppm(PID)
Bottom: Thin layer sediment, O ppm(PID)
Detection Method: Visual, olfactory, Photo-Ionization Detector
Collection Method: Clear PVC Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
10:42	3.0	1010	7.2	68.0	
10:47	6.0	1061	7.0	73.0	
10:52	9.0	1097	6.9	74.0	
10:58	12.0	1105	6.9	74.0	

SAMPLE COLLECTION DATA

Sampling Equipment: Teflon Point-Source Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
11:05	TPH-Gasoline	2-40ml glass VOA with HCl	
"	TPH-Diesel	1-liter amber glass, R&B	
"	EPA Method 602	2-40ml glass VOA w/HCl	

Field Observations: Busy grocery store parking lot

BSK Job No.: P92057.3
Date: December 1992
Figure No.: 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
R. Nahas

Date Sampled : 11/30/92
Time Sampled : 1105
Date Received : 12/01/92
Date of Analysis : 12/02/92
Report Issue Date: 12/08/92

Case Number : Ch923111
Lab ID Number : 3111
Project Number : P92057.3
Sample Description: MW-7, No.1

Sample Type: LIQUID

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

Results Reported in Micrograms per Liter (µg/L)

Analyte	Results	DLR
TPH(G)	2700	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

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

BSK-Pleasanton
R. Nahas

Date Sampled : 11/30/92
Time Sampled : 1105
Date Received : 12/01/92
Date of Analysis : 12/08/92
Report Issue Date: 12/08/92

Case Number : Ch923111
Lab ID Number : 3111
Project Number : P92057.3
Sample Description: MW-7, No.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

ANALYTICAL BSK LABORATORIES
Environmental Services

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Fresno, California 93706
Telephone (209) 485-8310
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BSK-Pleasanton
R. Nahas

Date Sampled : 11/30/92
Time Sampled : 1105
Date Received : 12/01/92
Date of Analysis : 12/02/92
Report Issue Date: 12/08/92

Case Number : Ch923111
Lab ID Number : 3111
Project Number : P92057.3
Sample Description: MW-7, No.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....	[illegible]	0.5
Carbon tetrachloride	ND	0.5	trans-1,2-Dichloroethene...	[illegible]	0.5
Chlorobenzene	2	0.5	1,2-Dichloropropane	ND	0.5
Chloroethane	ND	0.5	cis-1,3-Dichloropropene ...	ND	0.5
Chloroform	[illegible]	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	[illegible]	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	[illegible]	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

BSK Log Number 3111

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-4659

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

Sampled by: Robert Greguras

Date sampled	Time sampled	Type (See key below)	Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	EPA 601	TPH Gas ★	Hazardous sample Special handling required	12-11-92 Remarks
11/30/92	11:05	AQ	MW-7, No. 1	5	1	P	X	X	(X) 4x40ml	✓ for PCE & fluorocarbon 113
								★		★ for Stoddard
										If not speciated by 601, or is not Stoddard, run 624 fingerprint

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	F. Robert Greguras	F. Robert Greguras	BSK - P	11/30/92	4:15 PM
Received by	Tim Berger	Tim Berger	BSK - P	"	4:15 PM
Relinquished by	Tim Berger	Tim Berger	BSK - P	12/1/92	08:30
Received by	D. Aiello	D. Aiello	BSK	12-1-92	1605
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.