



92 MAR 31 PM 1:18

March 30, 1992

Scott Seery
Alameda Department of Environmental Health
80 Swan Way #210
Oakland, CA 94621

Dear Mr. Seery,

Enclosed is the quarterly report for groundwater monitoring at the San Francisco Water Department facility at 505 Poloma Way in Sunol. We are proceeding with monthly water level measurements and quarterly sampling on the schedule indicated in my letter of February 7, 1992.

Please call me at (415) 554-2796 if you have any comments or questions.

Sincerely,

Dave Wells

Dave Wells

cc: Lester Feldman, RW@CB



CROSBY & OVERTON, INC.

8430 AMELIA STREET • OAKLAND, CA 94621

(800) 821-0424 • (415) 633-0336
FAX (415) 633-0759

Maintenance Fund

March 18, 1992

9423-S

Dave Wells
City & County of San Francisco
Department of Public Health
101 Grove Street Room 207
San Francisco, California 94102

RE: Groundwater Monitoring Well Sampling At Sunol Water Department Facility, At 505 Paloma Way, Sunol CA.

Dear Mr. Wells,

Crosby & Overton, Inc. (C&O) is pleased to submit this letter report concerning the results of groundwater monitoring well sampling and analyses for three groundwater monitoring wells (MW-1, MW-2, MW-3) at 505 Paloma Way, Sunol, California (see figure 1).

Background

On May 15 and 16, 1990 three underground storage tanks (UST) used for the maintenance facility vehicles were removed from the Sunol yard by the joint venture of Stacy and Witbeck, and Rogers and Jenner. Soil samples were taken from two feet below the UST at a depth of approximately 10 feet below ground surface. Sampling results indicated that total petroleum hydrocarbons as gasoline (TPH-G) were found at 7.6 parts per million (ppm) and total petroleum hydrocarbons as diesel (TPH-D) were found at 40 ppm. Benzene, toluene, ethyl benzene, and total xylenes (BTEX) were detected in three of the four samples at concentrations up to 1.7 ppm.

In November 1989, American Environmental Management Corporation supervised excavation of oil-contaminated soil for the City and County of San Francisco Department of Public Health (SFDPH). Soil was excavated approximately 100 feet southwest of the former UST locations at the east end of the repair shop area, where San Francisco Water Department personnel disposed of used motor oil and solvents onto the ground. Approximately 225 square feet of soil was excavated. The excavation was extended to 5 to 7.5 feet below ground surface. During excavation, soil samples were collected by the SFDPH at depths where the soil appeared to be the most contaminated. Analysis of these soil samples indicated the presence of total oil and grease (TOG) at 31,000 ppm, and various volatile organic compounds (VOC) at 0.3 to 3.2 ppm. The excavated soil was sent to Laidlaw Environmental in Button Willow, California for disposal.

On August 22, 23, and 26, 1991 Harding Lawson Associates drilled three boreholes, converting them to three groundwater monitoring wells. Well MW-1 was installed within 10 feet of the former oil spill area. Well MW-2 was installed within 10 feet of the former UST locations. Well MW-3 was installed in an assumed downgradient location from the two former source areas. At a latter date it was discovered that well MW-1 was in fact in a downgradient location from the former USTs(see figure 2).

On February 6, 1992 C&O was contracted by the SFDPH to begin quarterly sampling and monthly gauging of the three groundwater monitoring wells.

Geology

The site is located at the head of the Niles Canyon near the confluence of Alameda Creek and Arroyo de la Laguna (see figure 2). This area is within the Sunol groundwater subbasin. The site is underlain by highly permeable Quaternary Alluvium characteristic of streambed deposits which were derived from the ancestral Alameda Creek. These deposits consist of unconsolidated beds of sand, gravel and boulders with discontinuous layers of clay. According to the State of California Department of Water Resources bulletin No. 118-2, June 1974, these deposits have a permeability of up to 10 ft/day (75 gal/day).

Recharge of the groundwater is largely through infiltration and percolation of precipitation, stream flow along the Alameda Creek, and water applied for irrigation and other uses on the valley alluvium.

The largest extraction of groundwater in the Sunol subbasin is within one quarter mile of the site at the Sunol filter galleries which lie approximately 15 feet below the ground surface. Another significant discharge is by effluent flow into Alameda Creek. Infiltration and percolation of this effluent flow helps to recharge the groundwater reservoirs underlying the Niles cone at its apex in the vicinity of the Niles district of Fremont.

The top 30 feet of the alluvium, the depth to which the monitoring wells were drilled, are characterized by dark brown to olive brown silty sands and fine to coarse gravels. The water table was encountered at a depth of 20.5 to 21.5 feet (see table 1).

Procedures

Standard operating procedures for groundwater monitoring well sampling is included as an attachment.

After stabilization, the wells were sampled. Samples submitted for chemical analyses were delivered by Dave Wells of the SFDPH to Curtis & Tompkins, Ltd.. Curtis & Tompkins is certified by the state of California for the analyses requested. Samples were analyzed for extractable petroleum hydrocarbons in aqueous solutions (California DOHS

method), total volatile hydrocarbons with BTEX distinction (EPA 5030/8020), total volatile hydrocarbons as gasoline (California DOHS method), total oil and grease (gravimetric, standard methods 5520 B/F), and volatile organics in water (EPA method 8240). The laboratory report and chain of custody are included at the end of this report.

**TABLE 1
GROUNDWATER TABLE ELEVATION GAUGING**

DATE	MW-1	MW-2	MW-3
8-27-91	218.87	218.30	218.28
10-3-91	218.92	219.10	219.06
2-7-92	218.21	218.30	218.28
2-21-92	219.28	219.42	219.39
TOC	238.79	239.32	238.70

TOC=TOP OF CASING ELEVATION CORRECTED TO USGS BENCHMARK DATUM 143
ALL MEASUREMENTS GIVEN IN FEET AND CORRECTED TO TOC ELEVATION

**TABLE 2
ANALYTIC RESULTS OF GROUNDWATER WELL SAMPLING**

DATE	SAMPLE	TPH-G	TPH-D	TOG	B	T	E	X	VOC
2-21-92	MW-1	ND	ND	ND	NA	NA	NA	NA	ND
2-21-92	MW-2	ND	ND	ND	ND	ND	ND	ND	NA
2-21-92	MW-3	ND	ND	ND	NA	NA	NA	NA	ND

ND = NOT DETECTED AT OR ABOVE REPORTING LIMIT

NA = NOT ANALYZED

TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL

B = BENZENE

T = TOLUENE

E = ETHYL BENZENE

X = TOTAL XYLENES

VOC = VOLATILE ORGANIC COMPOUNDS

Analysis

All groundwater monitoring wells had below detectable quantities of contamination for the analyte measured (see table 2).

Conclusions

Groundwater table elevations should continue to be monitored on a monthly basis. Quarterly, groundwater samples should be taken according to the attached standard operating procedures and analyzed by EPA methods 8240, (modified)8015, and SM 5520.

Reportage

A copy of this report should be submitted, along with a cover letter from the SFDPH, to each of the addressees listed below:

Scott Seery
Alameda County Health
Care Services Agency
80 Swan Way #200
Oakland, CA 94621

Lester Feldman
Water Quality Control Board
2101 Webster Street Suite 500
Oakland, CA 94621

If we may be of further service, or if you should have any questions please do not hesitate to contact us at your convenience (510) 633-0336.

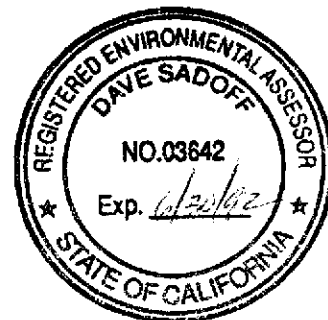
Sincerely,

Darrell Taylor

Darrell Taylor
Staff Geologist

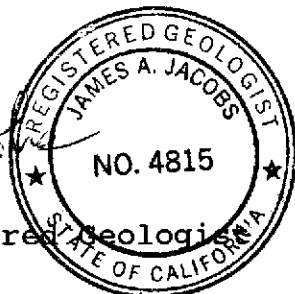
Dave Sadoff

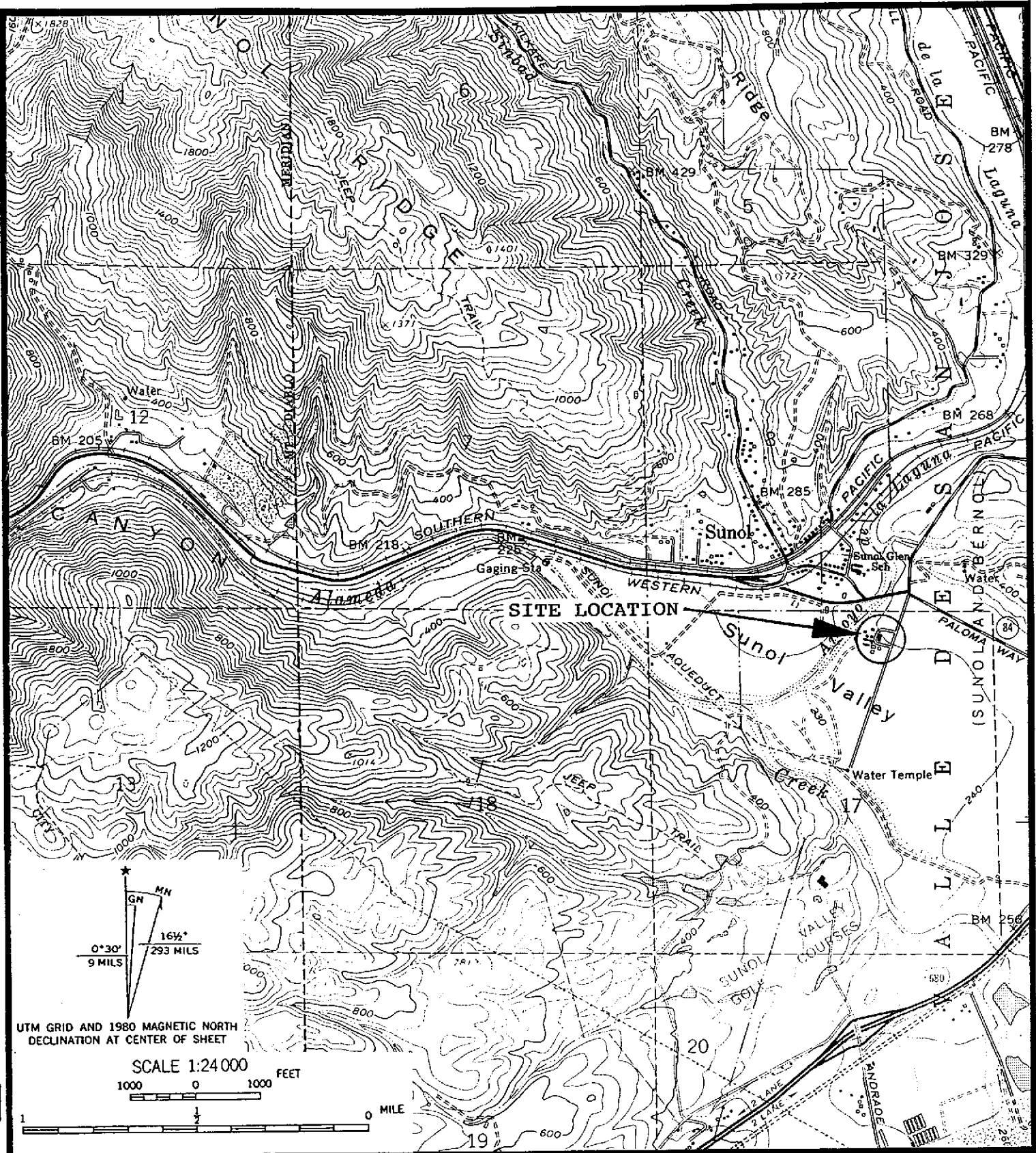
Dave Sadoff
Project Environmental Geologist
R.E.A. No. 03642



James A. Jacobs

James A. Jacobs
California Registered Geologist
No. 4815





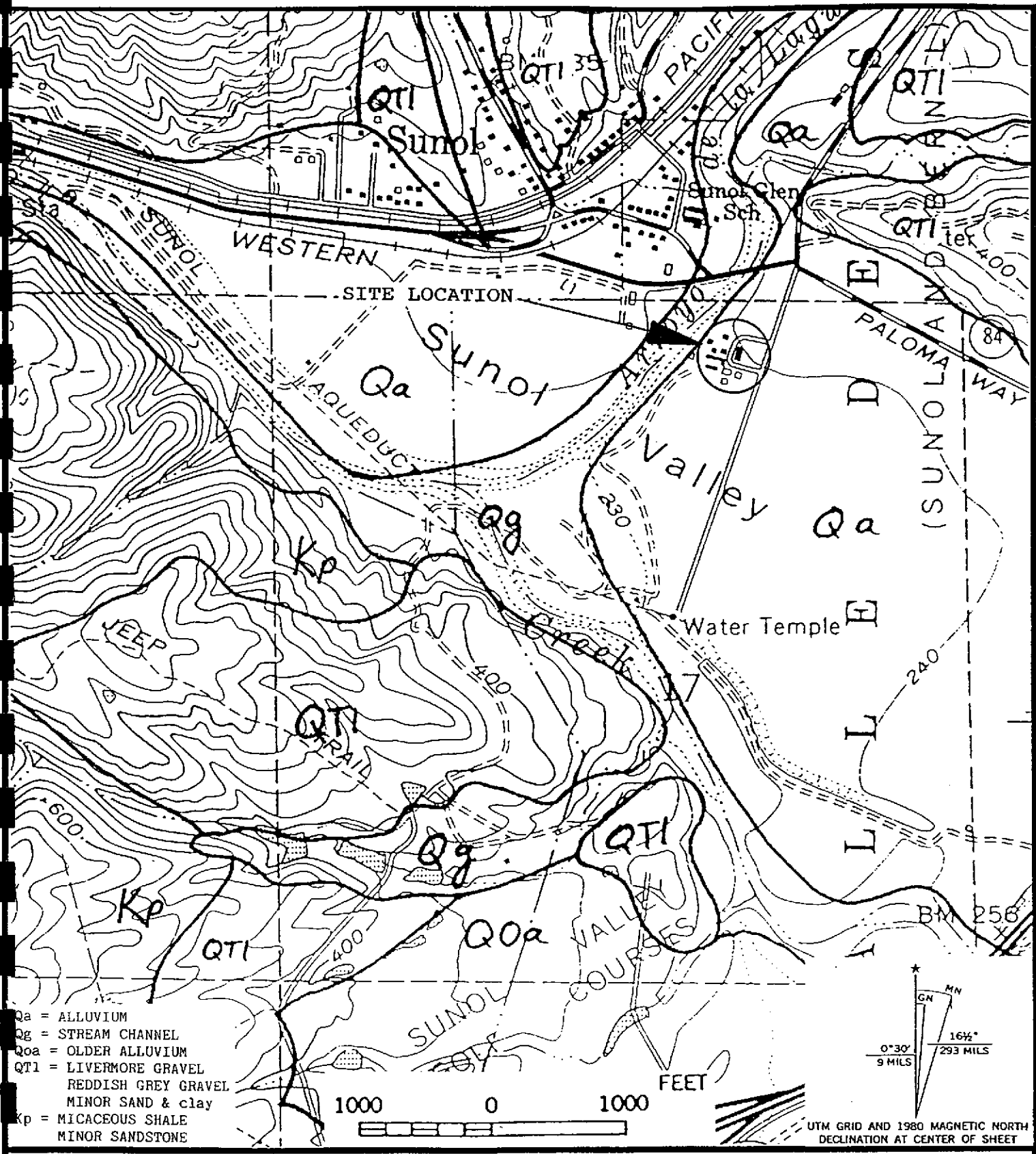
CROSBY & OVERTON, INC.

FIGURE 1
SITE LOCATION MAP
AFTER USGS

DATE: 3-16-92

JOB NUMBER: 9423-S

DRAWN BY: D. Taylor



- Qa = ALLUVIUM
- Qg = STREAM CHANNEL
- Qo = OLDER ALLUVIUM
- QTI = LIVERMORE GRAVEL
REDDISH GREY GRAVEL
MINOR SAND & clay
- Kp = MICACEOUS SHALE
MINOR SANDSTONE

1000 0 1000 FEET

UTM GRID AND 1980 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

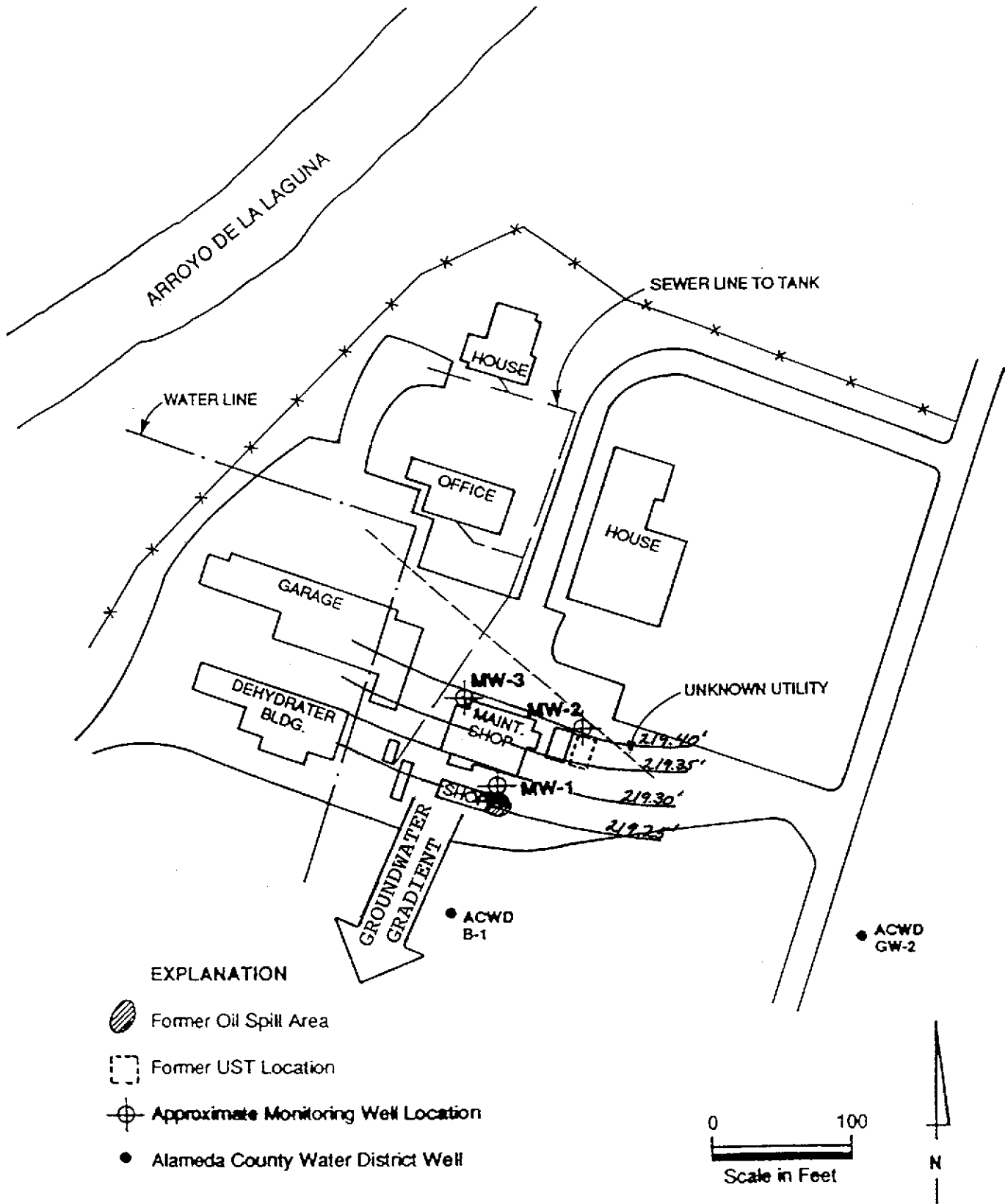
CROSBY & OVERTON, INC.

FIGURE 2
SITE GEOLOGY
AFTER USGS

DATE: 3-16-92

JOB NUMBER: 9423-S

DRAWN BY: D. Taylor



CROSBY & OVERTON, INC.

FIGURE 3
GROUNDWATER GRADIENT
AND POTENTIOMETRIC SURFACE

DATE: 3-16-92

JOB NUMBER: 9423-S

DRAWN BY: after HLA 10/90

STANDARD OPERATING PROCEDURES**Monitoring Well Sampling**

A minimum of three well volumes are pumped from each well, each well is permitted to recharge to $\geq 80\%$ of original capacity and stabilize. Stabilization is determined by measuring the parameters of pH; temperature; and electrical conductivity. When two subsequent measurements of these three parameters are within 10% of each other, the well is considered stabilized and is sampled.

The samples are collected using a new polyethylene bailer with a bottom siphon and nylon cord. The bailers are disposable, and therefore, never reused. Duplicate water samples for volatile organic compounds are collected from the well and siphoned into three (3) clear 40 ml VOA vials with all headspace removed, and preserved with hydrochloric acid. For all other analyses, samples are collected in 950 ml amber glass bottles. All samples are labeled, chilled to 4°C (utilizing either crushed ice or Blue-Ice®) in an ice chest, and sent to a California State Certified hazardous materials testing laboratory under chain-of-custody documentation.

Groundwater sampling is performed in accordance with the California Regional Water Quality Control Board (RWQCB) procedures described in the *Leaking Underground Fuel Tank (LUFT) Field Manual*, the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites*, and local regulatory guidelines.

Standard Environmental Protection Agency (EPA), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), and Department of Health Services (DHS) methodologies are routinely utilized.

Chain of Custody documentation accompanies all samples to the laboratory. A copy of the Chain of Custody documentation is attached to the Certificate of Analysis.



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 02/21/92

DATE REPORTED: 03/10/92

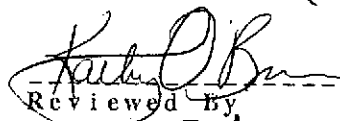
LABORATORY NUMBER: 106616

CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH

PROJECT ID: 9423-S

LOCATION: SUNOL

RESULTS: SEE ATTACHED


Reviewed By


Reviewed By

Berkeley

Wilmington

Los Angeles

LABORATORY NUMBER: 106616
 CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH
 PROJECT ID: 9423-S
 LOCATION: SUNOL

DATE RECEIVED: 02/21/92
 DATE EXTRACTED: 02/28/92
 DATE ANALYZED: 02/28-29/92
 DATE REPORTED: 03/09/92

Extractable Petroleum Hydrocarbons in Aqueous Solutions
 California DOHS Method
 LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
106616-1	MW1	ND	ND	50
106616-2	MW2	ND	ND	50
106616-3	MW3	ND	ND	50

ND = Not detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	10
RECOVERY, %	105

LABORATORY NUMBER: 106616
 CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH
 PROJECT ID: 9423-S
 LOCATION: SUNOL

DATE RECEIVED: 02/21
 DATE ANALYZED: 02/26
 DATE REPORTED: 03/09

Total Volatile Hydrocarbons as Gasoline in Aqueous Solutions
 California DOHS Method
 LUFT Manual October 1989

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	REPORTING LIMIT (ug/L)
106616-1	MW1	ND	50
106616-3	MW3	ND	50

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	92



Client: San Francisco Department of Health

Laboratory Login Number: 106616

Project Name: Sunol
Project Number: 9423-S

Report Date: 09 March 92

ANALYSIS: Total Oil & Grease (Gravimetric)

METHOD: SMWW 17:5520B

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
106616-001	MW1	Water	21-FEB-92	21-FEB-92	25-FEB-92	ND	mg/L	5	TR	4345
106616-002	MW2	Water	21-FEB-92	21-FEB-92	25-FEB-92	ND	mg/L	5	TR	4345
106616-003	MW3	Water	21-FEB-92	21-FEB-92	25-FEB-92	ND	mg/L	5	TR	4345

ND = Not Detected at or above Reporting Limit (RL).

Q C B a t c h R e p o r t

Client: San Francisco Department of Health Laboratory Login Number: 106616
 Project Name: Sunol Report Date: 09 March 92
 Project Number: 9423-S

ANALYSIS: Total Oil & Grease (Gravimetric)

QC Batch Number: 4345

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520B	25-FEB-92

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	95%	SMWW 17:5520B	25-FEB-92
BSD	92%	SMWW 17:5520B	25-FEB-92

		Control Limits
Average Spike Recovery	94%	80% - 120%
Relative Percent Difference	2.5%	< 20%



LABORATORY NUMBER: 106616-1

DATE RECEIVED: 02/21/92

CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH DATE ANALYZED: 03/01/92

PROJECT ID: 9423-S

DATE REPORTED: 03/10/92

SAMPLE ID: MW-1

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	10
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethylene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethylene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	105 %
Toluene-d8	94 %
Bromofluorobenzene	100 %



LABORATORY NUMBER: 106616-3

DATE RECEIVED: 02/21/92

CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH DATE ANALYZED: 03/06/92

PROJECT ID: 9423-S

DATE REPORTED: 03/10/92

SAMPLE ID: MW-3

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	10
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethylene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
2-Chloroethylvinyl ether	*	*
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethylene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

* 2-Chloroethylvinyl ether fails calibration criteria

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	98 %
Toluene-d8	101 %
Bromofluorobenzene	110 %



LABORATORY NUMBER: 106616

DATE ANALYZED: 02/29/92

CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH DATE REPORTED: 03/10/92

PROJECT ID: 9423-S

LOCATION: SUNOL

SAMPLE ID: METHOD BLANK

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	10
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethylene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethylene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	114 %
Toluene-d8	98 %
Bromofluorobenzene	99 %



LABORATORY NUMBER: 106616

DATE ANALYZED: 03/06/92

CLIENT: SAN FRANCISCO DEPARTMENT OF HEALTH DATE REPORTED: 03/10/92

PROJECT ID: 9423-S

LOCATION: SUNOL

SAMPLE ID: METHOD BLANK

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Vinyl acetate	ND	10
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethylene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
2-Chloroethylvinyl ether	*	*
Bromoform	ND	5.0
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethylene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethyl benzene	ND	5.0
Styrene	ND	5.0
Total xylenes	ND	5.0

ND = Not detected at or above reporting limit

* 2-Chloroethylvinyl ether fails calibration criteria

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101 %
Toluene-d8	95 %
Bromofluorobenzene	108 %

Curtis & Tompkins, Ltd
 2323 Fifth Street
 Berkeley, California 94710
 (415) 486-0900

Chain of Custody Form

Samplers S. Taylor
D. Sadoff

Job Description Suppl

Job Number 9423-s

Client Contact Dave Wells (415) 554-2796 Recorder _____

ANALYSIS REQUESTED											
TPH-G	TPH-G-BTEX	TPH-D	8420 VOC	TOG-B							
X		X									
		X	X								
		X									
		X	X								
X			X								
		X	X								

Matrix				# Containers	Method Preserved					Sample Number				Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil		H ₂ SO ₄	HNO ₃	Ice	None	Other	Yr	Mo	Dy	Time					
X				4		X		X		MW	1	9	20	22	10	4	30	4 VOA's
X				2		X				MW	1	9	20	22	11	4	30	2 1lt. amber
X				3		X		X		MW	2	9	20	22	11	2	00	3 VOA's
X				2		X				MW	2	9	20	22	11	2	00	2 1lt. amber
X				4		X		X		MW	3	9	20	22	11	1	00	4 VOA's
X				2		X				MW	3	9	20	22	11	1	00	2 1lt. amber

Laboratory Notes :

Other preservative = HCl

Chain of Custody Record

Relinquished by: (signature) Date/Hr <u>Dave Wells</u> 2/21/92 15:30	Received by (signature) _____
Relinquished by: (signature) Date/Hr _____	Received by (signature) _____
Relinquished by: (signature) Date/Hr _____	Received by (signature) _____
Relinquished by: (signature) Date/Hr _____	Received by (signature) _____
Dispatched by: (signature) Date/Hr _____	Received for Lab by (signature) <u>[Signature]</u> 2-21-92