LETTER REPORT
GROUNDWATER MONITORING
THIRD QUARTER 1991
at Unocal Station No. 5367
500 Bancroft Avenue
San Leandro, California

RESNA Job No. 87091-5

11/22/91

November 22, 1991
AGS 87091-5

Mr. Bob Boust
Unocal Corporation
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Subject: Letter Report on Groundwater Monitoring for Third Quarter 1991 at Unocal Station No. 5367, 500 Bancroft Avenue, San Leandro, California.

Dear Mr. Boust:

This letter report summarizes the results of the third quarter groundwater monitoring performed by RESNA Industries (RESNA), formerly Applied GeoSystems (AGS), at the above-referenced site, as authorized by Unocal Corporation (Unocal). The site is located at the intersection of Bancroft Avenue and Dowling Boulevard in San Leandro, California, as shown on the Site Vicinity Map, Plate 1. Locations of the wells and site facilities are shown on Plate 2.

Background

At the request of Unocal, monitoring well MW-1 was installed by AGS in September 1987 (AGS Report No. 87091-1, dated December 16, 1987). Monitoring wells MW-2 through MW-4 were installed by AGS in September 1988 (AGS Report No. 87091-3, dated November 18, 1988). Wells MW-5 and MW-6, and MW-7 and MW-8 were installed in May 1989 and February 1990, respectively (AGS Report No. 87091-4, dated August 10, 1990). Quarterly groundwater monitoring was recommended by AGS after elevated levels of hydrocarbons were detected in groundwater at the site.

Sampling Procedures

The quarterly monitoring program conducted by RESNA includes measuring depths to water and subjectively evaluating groundwater samples and purging and sampling groundwater from each monitoring well. Because well MW-1 was dry no water sample was collected from it. This quarterly monitoring was performed on September 27, 1991, in accordance

with the Field Procedures in Attachment I. Disposal of purge water is also described in Attachment I.

Results of Subjective Evaluations

No evidence of floating product or sheen was observed in any of the wells. Cumulative results of subjective evaluations are presented in Table 1.

Groundwater Flow, Gradient, and Depth

Groundwater depths from Table 1 and surveyed wellhead elevations were used to calculate differences in the water-level elevations in wells. Groundwater elevation data for September 27, 1991, are presented in Table 2. The groundwater flows toward the southwest with a gradient of approximately 0.001 as shown on Plate 2. The water level fell an average of 3.52 feet between May and September 1991 for MW-2 through MW-6 and MW-8, and 5.49 feet for MW-7. A hydrograph (Plate 3) shows relative changes in depth to water for selected wells since October 1988.

Analytical Methods and Results

Groundwater samples collected on September 27, 1991, were analyzed for total petroleum hydrocarbons as gasoline (TPHg) using Environmental Protection Agency (EPA) modified Method 8015 and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 602. These analyses were conducted at Applied Analytical Environmental Laboratory in Fremont, California (Hazardous Waste Testing Laboratory Certification No. 1211). Copies of the Chain of Custody Record and the certified analysis report are in Attachment II.

The results of laboratory analyses show the highest concentrations of TPHg and BTEX were detected in the water sample from well MW-3, which is located west of the gasoline USTs. Concentrations of TPHg in wells MW-3, MW-8, and MW-2 were 4,000, 720, and 110 parts per billion (ppb), respectively. Benzene concentrations in wells MW-3, MW-8, and MW-2 were 160, 13, and 2.6 ppb, respectively. Concentrations of TPHg and BTEX in groundwater samples from MW-2, MW-3, and MW-8 are lower than those detected in May 1991. No TPHg or BTEX was detected in groundwater samples from MW-4, MW-5, MW-6, or MW-7.

Conclusions and Recommendations

Elevated levels of TPHg and BTEX are present west and southwest of the gasoline USTs and service islands. Because elevated concentrations of TPHg and BTEX exist in groundwater samples from monitoring wells MW-2, MW-3, and MW-8, we recommend biannual sampling for all wells and quarterly sampling for MW-1 through MW-3 and MW-8.

We also recommend that copies of this report be sent to:

- Mr. Lester Feldman of the California Regional Water Quality Control Board, San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, California 94612; and

- Mr. Joe Ferreira at the San Leandro Fire Department, 835 East 14th Street, San Leandro, California 94577.

Scheduling

The fourth quarter 1991 monitoring is scheduled for December 1991.

Please call if you have any questions.

Sincerely,
RESNA Industries

Clark A. Robertson
Project Geologist

Dan Wynne, C.E.G.1569
Project Manager

Enclosures: Results of Subjective Evaluations, Table 1
Groundwater Elevation Data, Table 2
Cumulative Results of Laboratory Analyses, Table 3
Site Vicinity Map, Plate 1
Generalized Site Plan and Groundwater Elevation Map, Plate 2
Hydrograph, Plate 3

Attachment I: Field Procedures
Attachment II: Chain of Custody Record and Certified Analysis Report

TABLE 1
RESULTS OF SUBJECTIVE EVALUATIONS
(Page 1 of 3)

Well	Date	Depth to Water	Floating Product	Sheen
MW-1	09/23/87	33.40	0.02	NA
	09/24/87	33.24	0.01	NA
	10/06/87	33.39	0.01	NA
	11/05/87	34.14	0.31	NA
	11/13/87	34.15	0.38	NA
	11/19/87	33.89	0.06	NA
	04/27/88	32.40	0.01	NA
	09/07/88	---	Well dry	--
	10/03/88	---	Well dry	--
	01/27/89	---	Well dry	--
	02/16/90	---	Well dry	--
	07/19/90	---	Well dry	--
	08/24/90	---	Well dry	--
	11/30/90	---	Well dry	--
	02/06/91	---	Well dry	--
	05/06 91	33.00	NONE	NONE
	09/27/91	---	Well dry	--
MW-2	10/03/88	36.04	NONE	NONE
	01/27/89	34.77	NONE	NONE
	02/16/90	34.50	NONE	NONE
	07/19/90	35.72	NONE	NONE
	08/24/90	36.30	NONE	NONE
	11/30/90	37.40	NONE	NONE
	02/07/91	37.27	NONE	NONE
	05/06/91	33.31	NONE	NONE
	09/27/91	36.86	NONE	NONE
MW-3	10/03/88	35.86	NONE	NONE
	01/27/89	34.60	NONE	NONE
	02/16/90	35.23	NONE	NONE
	07/19/90	35.50	NONE	NONE
	08/24/90	36.08	NONE	NONE
	11/30/90	37.17	NONE	NONE
	02/06/91	37.07	NONE	NONE
	05/06/91	33.11	NONE	NONE
	09/27/91	36.64	NONE	NONE

See notes on page 3 of 3

TABLE 1
RESULTS OF SUBJECTIVE EVALUATIONS
(Page 2 of 3)

Well	Date	Depth to Water	Floating Product	Sheen
MW-4	10/03/88	36.12	NONE	NONE
	01/27/89	34.87	NONE	NONE
	02/16/90	35.60	NONE	NONE
	07/19/90	35.78	NONE	NONE
	08/24/90	36.35	NONE	NONE
	11/30/90	37.46	NONE	NONE
	02/06/91	37.40	NONE	NONE
	05/06/91	33.39	NONE	NONE
	09/27/91	36.90	NONE	NONE
MW-5	02/16/90	35.89	NONE	NONE
	07/19/90	36.10	NONE	NONE
	08/24/90	36.67	NONE	NONE
	11/30/90	37.74	NONE	NONE
	02/06/91	37.62	NONE	NONE
	05/06/91	33.67	NONE	NONE
	09/27/91	37.23	NONE	NONE
MW-6	02/16/90	34.50	NONE	NONE
	07/19/90	34.74	NONE	NONE
	08/24/90	35.32	NONE	NONE
	11/30/90	36.38	NONE	NONE
	02/06/91	36.27	NONE	NONE
	05/06/91	32.41	NONE	NONE
	09/27/91	35.87	NONE	NONE
MW-7	02/16/90	35.75	NONE	NONE
	07/19/90	35.03	NONE	NONE
	08/24/90	35.64	NONE	NONE
	11/30/90	36.68	NONE	NONE
	02/06/91	36.55	NONE	NONE
	05/06/91	32.69	NONE	NONE
	09/27/91	38.18	NONE	NONE

See notes on page 3 of 3

TABLE 1
RESULTS OF SUBJECTIVE EVALUATIONS
(Page 3 of 3)

Well	Date	Depth to Water	Floating Product	Sheen
MW-8	02/16/90	35.10	NONE	NONE
	07/19/90	35.41	NONE	NONE
	08/24/90	36.00	NONE	NONE
	11/30/90	37.08	NONE	NONE
	02/06/91	36.92	NONE	NONE
	05/06/91	33.03	NONE	NONE
	09/27/91	36.55	NONE	NONE

Depth to water measured in feet below top of casing.
Product thickness measured in feet.
NA = Not applicable

TABLE 2
GROUNDWATER ELEVATION DATA
(September 27, 1991)

Monitoring Well	Top of Casing Above MSL (C)	Static Water Level (W)	Water Level Above MSL (C-W)
MW-1	57.83	DRY	N/A
MW-2	58.13	36.86	21.27
MW-3	57.92	36.64	21.28
MW-4	58.29	36.90	21.39
MW-5	58.50	37.23	21.27
MW-6	56.96	35.87	21.09
MW-7	57.25	38.18	19.07
MW-8	57.71	36.55	21.16

Measurements are in feet.
Static water level was measured in feet below top of casing.
Datum is mean sea level based on City of San Leandro datum at the southeastern corner of the intersection of Dowling Boulevard and Bancroft Avenue, next to the storm inlet.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES
(Page 1 of 3)

Date	Sample Number	TPHg	B	T	E	X
WELL MW-1						
10/88	Well dry therefore water sample not collected					
01/89	Well dry therefore water sample not collected					
02/90	Well dry therefore water sample not collected					
05/90	Well dry therefore water sample not collected					
08/90	Well dry therefore water sample not collected					
11/90	Well dry therefore water sample not collected					
02/91	Well dry therefore water sample not collected					
05/91	Insufficient water to purge and sample well					
09/91	Well dry therefore water sample not collected					
WELL MW-2						
10/88	W-37-MW2	1,760	47.8	7.4	20.9	81.6
01/89	W-35-MW2	510	58.0	8.7	22.6	20.3
02/90	W-36-MW2	840	50.0	0.5	28.0	44.0
05/90	W-36-MW2	1,000	39.0	<0.5	32.0	52.0
08/90	W-36-MW2	330	17	<0.5	19	20
11/90	W-37-MW2	400	41	<0.5	39	37
02/91	W-37-MW2	510	40	<0.5	29	44
05/91	W-33-MW2	2,300	150	10	52	110
09/91	W-36-MW2	**110**	**2.6**	**<0.5**	**5.6**	**5.1**
WELL MW-3						
10/88	W-37-MW3	61,000	1,060	3,380	1,520	8,720
01/89	W-35-MW3	39,000	1,570	2,830	1,250	7,070
02/90	W-36-MW3	22,000	710	4,100	6,900	33,000
05/90	W-36-MW3	19,000	330	170	310	1,500
08/90	W-36-MW3	19,000	480	160	510	1,500
11/90	W-37-MW3	13,000	390	81	410	1,000
02/91	W-37-MW3	13,000	310	150	380	1,200
05/91	W-33-MW3	39,000	1,000	570	930	3,900
09/91	W-36-MW3	**4,000**	**160**	**84**	**180**	**560**
WELL MW-4						
10/88	W-37-MW4	<20	<0.5	<0.5	<0.5	<0.5
01/89	W-35-MW4	<20	<0.5	<0.5	<0.5	<0.5
02/90	W-36-MW4	<20	<0.5	<0.5	<0.5	<0.5

See notes on page 3 of 3

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES
(Page 2 of 3)

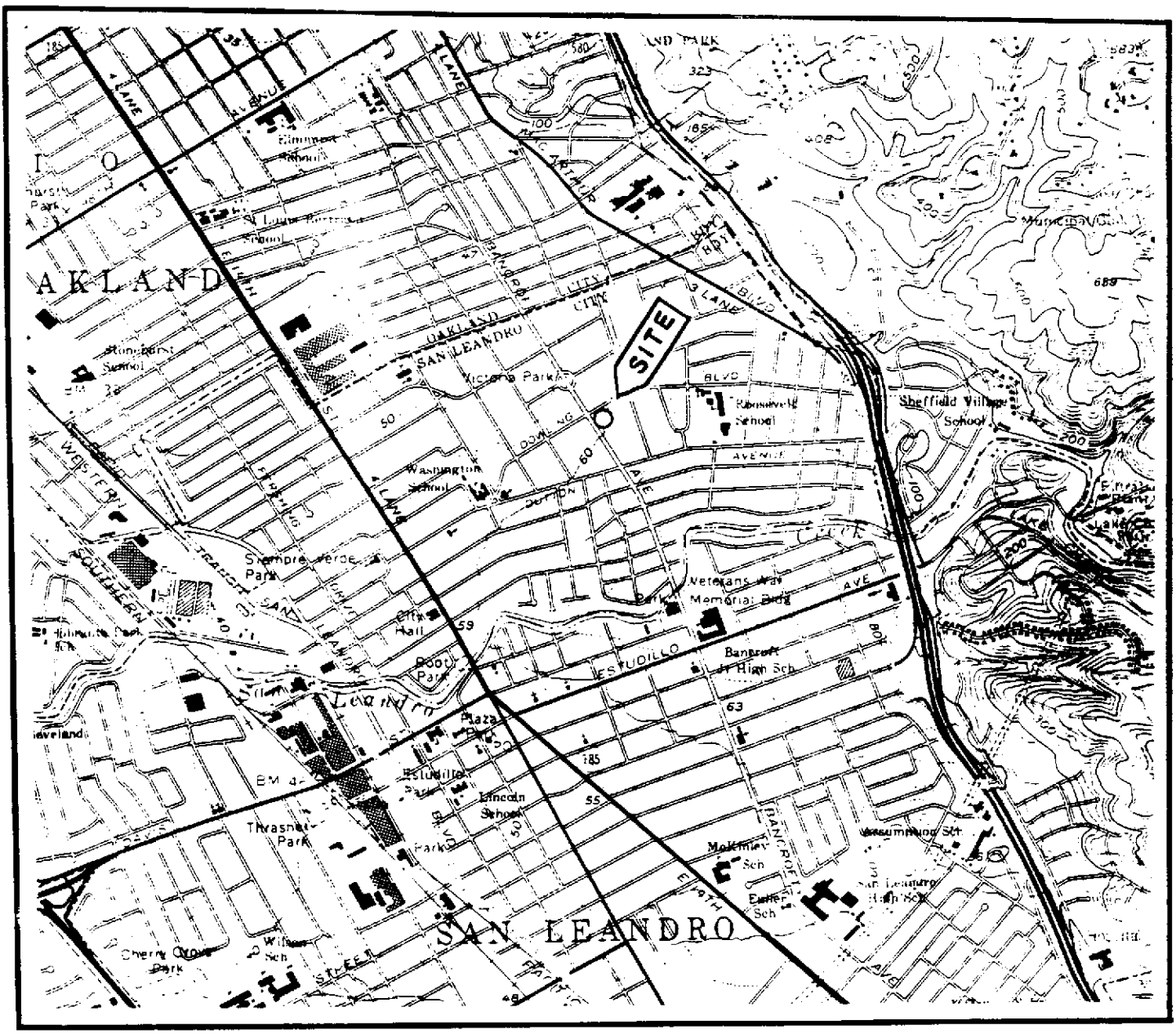
Date	Sample Number	TPHg	B	T	E	X
WELL MW-4						
05/90	W-36-MW4	<20	<0.5	<0.5	0.68	1.4
08/90	W-36-MW4	<20	<0.5	<0.5	<0.5	<0.5
11/90	W-37-MW4	<50	<0.5	<0.5	<0.5	1.2
02/91	W-37-MW4	<50	<0.5	<0.5	<0.5	<0.5
05/91		Not Sampled				
09/91	W-36-MW4	<50	<0.5	<0.5	<0.5	<0.5
WELL MW-5						
02/90	W-36-MW5	67	0.51	1.6	2.9	7.5
05/90	W-36-MW5	<20	<0.5	<0.5	<0.5	<0.5
08/90	W-35-MW5	<20	<0.5	<0.5	<0.5	<0.5
11/90	W-38-MW5	<50	<0.5	0.7	<0.5	<0.5
02/91	W-38-MW5	<50	<0.5	<0.5	<0.5	<0.5
05/91		Not Sampled				
09/91	W-37-MW5	<50	<0.5	<0.5	<0.5	<0.5
WELL MW-6						
02/90	W-35-MW6	<20	<0.5	<0.5	<0.5	<0.5
05/90	W-37-MW6	<20	<0.5	<0.5	<0.5	<0.5
08/90	W-35-MW6	<20	<0.5	<0.5	<0.5	<0.5
11/90	W-36-MW6	<50	<0.5	<0.5	<0.5	<0.5
02/91	W-36-MW6	<50	<0.5	<0.5	<0.5	<0.5
05/91		Not Sampled				
09/91	W-35-MW6	<50	<0.5	<0.5	<0.5	<0.5
WELL MW-7						
02/90	W-36-MW7	<20	<0.5	<0.5	<0.5	<0.5
05/90	W-35-MW7	24	<0.5	<0.5	0.74	1.7
08/90	W-35-MW7	<20	<0.5	<0.5	<0.5	<0.5
11/90	W-37-MW7	<50	<0.5	<0.5	0.6	1.5
02/91	W-37-MW7	<50	<0.5	<0.5	<0.5	<0.5
05/91		Not Sampled				
09/91	W-38- MW7	<50	<0.5	<0.5	<0.5	<0.5

See notes on page 3 of 3

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES
(Page 3 of 3)

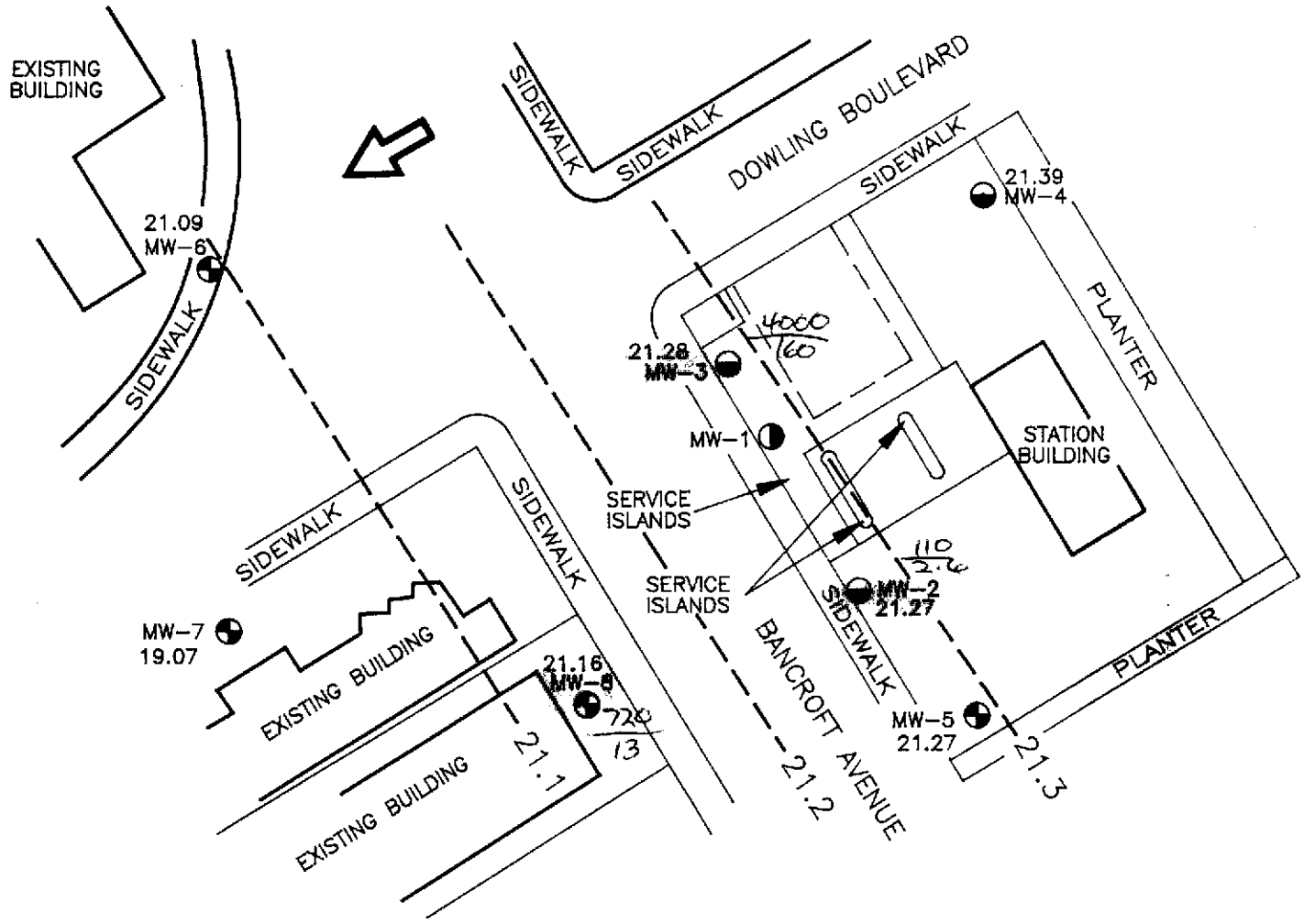
Date	Sample Number	TPHg	B	T	E	X
WELL MW-8						
02/90	W-35-MW8	1,900	11	<0.5	52	55
05/90	W-36-MW8	770	6.5	<0.5	20	32
08/90	W-36-MW8	990	13	<0.5	48	66
11/90	W-37-MW8	570	13	<0.5	45	36
02/91	W-37-MW8	630	9.6	<0.5	35	36
05/91	W-33-MW8	14,000	80	<0.5	250	550
09/91	W-36-MW8	720	13	4.3	26	26

Results in micrograms/liter (μg/l) = parts per billion (ppb)
TPHg = Total petroleum hydrocarbons as gasoline
BTEX = Benzene, ethylbenzene, toluene, total xylene isomers
< = Less than the detection limit for the method of analysis.
Sample designation: W-37-MW8
- W — Water sample
- 37 — Sample depth in feet
- MW8 — Monitoring well number



Source: U.S. Geological Survey
7.5-Minute Quadrangle
San Leandro, California
Photorevised 1980

RESNA	SITE VICINITY MAP Unocal Station No. 5367 500 Bancroft Avenue San Leandro, California	PLATE 1
PROJECT NO. 87091-5		



= Inferred direction of groundwater flow (September 27, 1991)

21.3 = Inferred line of equal groundwater elevation in feet above mean sea level

MW-8 = Monitoring well (Applied GeoSystems, May 1989 and February 1990)

MW-4 = Monitoring well (Applied GeoSystems, September 1988)

MW-1 = Monitoring well (Applied GeoSystems, September 1987)

TPH / benzene (ppb)

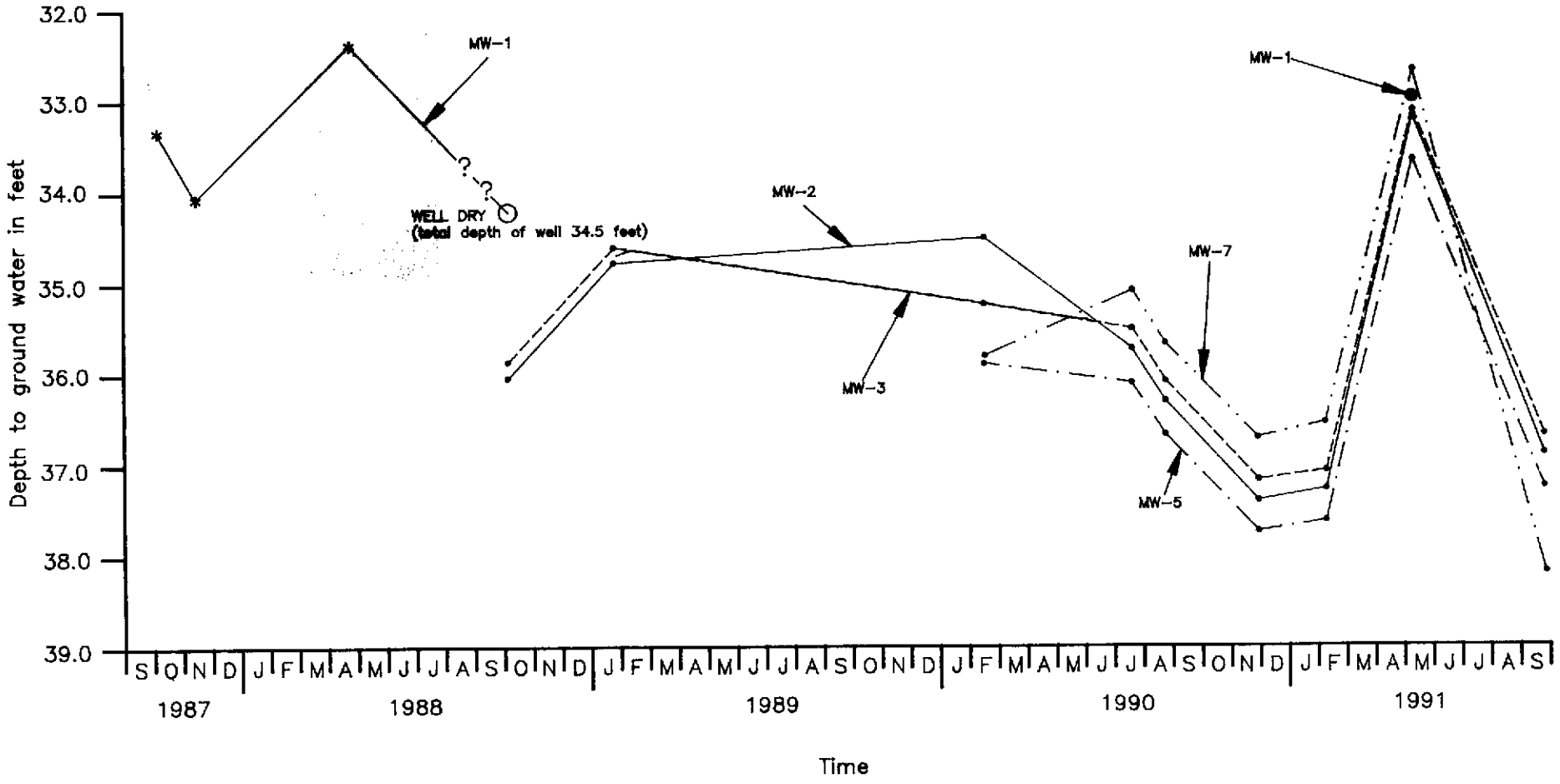
N

Approximate Scale

50 25 0 50 100

feet

RESNA	GENERALIZED SITE PLAN AND GROUNDWATER ELEVATION MAP Unocal Station No. 5367 500 Bancroft Avenue San Leandro, California	PLATE 2
PROJECT NO. 87091-5		



* Floating product present

PLATE	HYDROGRAPH	RESNA
3	Unocal Station No. 5367 500 Bancroft Avenue San Leandro, California	PROJECT NO. 87091-5

ATTACHMENT I
FIELD PROCEDURES

FIELD PROCEDURES

Ground-Water Monitoring

Static water level was measured to the nearest 0.01 foot with a Solinst water-level indicator. After the static ground-water level was recorded, an initial sample was collected from each well and checked for floating product and sheen. The samples were collected by gently lowering approximately half the length of a Teflon bailer past the air-water interface to collect a sample from near the surface of the water in each well. The bailer was cleaned with Alconox and deionized water after each use.

Ground-Water Sampling

The wells were purged of at least 3 well volumes of water and allowed to recover to their approximate static water levels. Samples for laboratory analysis then were collected from the static water surface with a Teflon bailer that was thoroughly cleaned with Alconox (a commercial, biodegradable detergent) and water. The samples were transferred to laboratory-cleaned, 40-milliliter glass vials. Hydrochloric acid was added to the vials as a preservative. The samples were sealed with Teflon-lined caps, labeled, and stored on ice. The sampler initiated a Chain of Custody Record and it accompanied the samples to the State-certified analytical laboratory.

Water Storage and Disposal

The water purged from the wells was temporarily stored onsite in labelled, sealed 17E 55-gallon liquid-waste drums approved for this use by the Department of Transportation. The purge water is scheduled for removal from the site for disposal in December 1991, by H & H Environmental of San Francisco, California.

Groundwater Reporting

Concentrations of hydrocarbon constituents in groundwater samples are reported by the laboratory in units of parts per billion (ppb). The Maximum Contaminant Levels listed in Title 22 of the Code of California Regulations for benzene, ethylbenzene, and total xylene isomers are 1.0, 680, and 1,750 ppb, respectively. The action level established for toluene by the California Department of Health Services is 100 ppb. To conform to the laboratory reports we report groundwater chemical data in units of ppb.

ATTACHMENT II
CHAIN OF CUSTODY RECORD
AND
LABORATORY ANALYSIS REPORT

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (415) 623-0775
Fax: (415) 651-8647

ANALYSIS REPORT

1020lab.frm

Attention: Mr. Clark Robertson
Applied GeoSystems
42501 Albrae Street
Fremont, CA 94538
Project: AGS 87091-5

Date Sampled: 09-27-91
Date Received: 09-27-91
BTEX Analyzed: 10-08-91
TPHg Analyzed: 10-08-91
TPHd Analyzed: NR
Matrix: Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
W-37-MW5 W1109731	ND	ND	ND	ND	ND	NR
W-35-MW6 W1109732	ND	ND	ND	ND	ND	NR
W-38-MW7 W1109733	ND	ND	ND	ND	ND	NR
W-36-MW4 W1109734	ND	ND	ND	ND	ND	NR
W-36-MW2 W1109735	2.6	ND	5.6	5.1	110	NR

ppb = parts per billion = µg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 10, 1991
Date Reported

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (415) 623-0775
Fax: (415) 651-8647

ANALYSIS REPORT

1020lab.frm

Attention: Mr. Clark Robertson
Applied GeoSystems
42501 Albrae Street
Fremont, CA 94538
Project: AGS 87091-5

Date Sampled: 09-27-91
Date Received: 09-27-91
BTEX Analyzed: 10-08-91
TPHg Analyzed: 10-08-91
TPHd Analyzed: NR
Matrix: Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
W-36-MW8 W1109736	13	4.3	26	26	720	NR
W-36-MW3 W1109737	160	84	180	560	4000	NR

ppb = parts per billion = µg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

October 10, 1991
Date Reported

APPLIED ANALYTICAL LABORATORY IS CERTIFIED BY THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY (Certification No. 1211)

Applied GeoSystems

CHAIN-OF-CUSTODY RECORD

94077

PROJ. NO.	PROJECT NAME
870915	UNOCAL BANCROFT
P.O. NO.	SAMPLERS (Signature)
	LOUIS RUIZ

DATE MM/DD/YY	TIME		No. of Containers	TPHgasoline (8015)	BTEX (602/8020)	TPHdiesel (8015)					Preserved?	REMARKS	LABORATORY I.D. NUMBER
9/27/91	2:15	W-37-MW5	3	✓	✓						HCl		
	2:20	W-35-MW6	3	✓	✓								
	2:25	W-36-MW7	3	✓	✓								
	2:30	W-36-MW4	3	✓	✓								
	2:35	W-36-MW2	3	✓	✓								
	2:40	W-36-MW8	3	✓	✓								
✓	2:45	W-36-MW3	3	✓	✓						✓		

RELINQUISHED BY (Signature):	DATE / TIME	RECEIVED BY (Signature):
LOUIS RUIZ	9/27/91 4:30	
RELINQUISHED BY (Signature):	DATE / TIME	RECEIVED BY (Signature):
RELINQUISHED BY (Signature):	DATE / TIME	RECEIVED FOR LABORATORY BY (Signature):
	9/27/91 4:30	Moriarty

Laboratory: APPLIED ANALYTICAL

Turn Around: 2 WK

SEND RESULTS TO:

Applied GeoSystems
42501 Albrae Street
Fremont, CA 94538
(415) 651-1906

Proj. Mgr.: CLARK ROBERTSON

ATTACHMENT I
FIELD PROCEDURES

FIELD PROCEDURES

Ground-Water Monitoring

Static water level was measured to the nearest 0.01 foot with a Solinst water-level indicator. After the static ground-water level was recorded, an initial sample was collected from each well and checked for floating product and sheen. The samples were collected by gently lowering approximately half the length of a Teflon bailer past the air-water interface to collect a sample from near the surface of the water in each well. The bailer was cleaned with Alconox and deionized water after each use.

Ground-Water Sampling

The wells were purged of at least 3 well volumes of water and allowed to recover to their approximate static water levels. Samples for laboratory analysis then were collected from the static water surface with a Teflon bailer that was thoroughly cleaned with Alconox (a commercial, biodegradable detergent) and water. The samples were transferred to laboratory-cleaned, 40-milliliter glass vials. Hydrochloric acid was added to the vials as a preservative. The samples were sealed with Teflon-lined caps, labeled, and stored on ice. The sampler initiated a Chain of Custody Record and it accompanied the samples to the State-certified analytical laboratory.

Water Storage and Disposal

The water purged from the wells was temporarily stored onsite in labelled, sealed 17E 55-gallon liquid-waste drums approved for this use by the Department of Transportation. The purge water is scheduled for removal from the site for disposal in February 1992, by H & H Environmental of San Francisco, California.

Groundwater Reporting

Concentrations of hydrocarbon constituents in groundwater samples are reported by the laboratory in units of parts per billion (ppb). The Maximum Contaminant Levels listed in Title 22 of the Code of California Regulations for benzene, ethylbenzene, and total xylene isomers are 1.0, 680, and 1,750 ppb, respectively. The action level established for toluene by the California Department of Health Services is 100 ppb. To conform to the laboratory reports we report groundwater chemical data in units of ppb.

ATTACHMENT II
CHAIN OF CUSTODY RECORD
AND
LABORATORY ANALYSIS REPORT

Applied GeoSystems

CHAIN-OF-CUSTODY RECORD

PROJ. NO.	PROJECT NAME
87091-5	UNOCAL BANCROFT
P.O. NO.	SAMPLERS (Signature)
	LOUIS KUTA

DATE MM/DD/YY	TIME		No. of Containers	TPHgasoline (8015)	BTEX (602/8020)	TPHdiesel (8015)	Preserved?	REMARKS	LABORATORY I.D. NUMBER
12/27/91	1:00	W-37-MW2	3	✓	✓		HCl/ice		
	1:15	W-37-MW8	3	✓	✓				
↓	1:30	W-37-MW3	3	✓	✓		↓		

RELINQUISHED BY (Signature):	DATE / TIME	RECEIVED BY (Signature):
LOUIS KUTA	12/30/91 10:10	
RELINQUISHED BY (Signature):	DATE / TIME	RECEIVED BY (Signature):
RELINQUISHED BY (Signature):	DATE / TIME	RECEIVED FOR LABORATORY BY (Signature):
	12/30/91	Z Kuta

Laboratory: APPLIED ANALYTICAL

Turn Around: 2 wk

SEND RESULTS TO:
Applied GeoSystems
42501 Albrae Street
Fremont, CA 94538
(415) 651-1906
Proj. Mgr.: TAN WINNE

Environmental Laboratories

RESNA
Working to Restore Nature

42501 Albrae Street
Fremont, CA 94538
Phone: (510) 623-0775
(800) 247-5223
FAX: (510) 651-8754

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. Dan Wynne	Date Sampled:	12-27-91
	RESNA/Applied GeoSystems	Date Received:	12-30-91
	42501 Albrae Street	BTEX Analyzed:	01-06-92
	Fremont, CA 94538	TPHg Analyzed:	01-06-92
Project:	AGS 87091-5	TPHd Analyzed:	NR
		Matrix:	Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
W-37-MW2 W1112921	3.9	ND	7.3	6.0	170	NR
W-37-MW8 W1112922	15	2.9	40	49	1600	NR
W-37-MW3 W1112923	240	280	400	1600	31000	NR

ppb = parts per billion = µg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

January 9, 1992
Date Reported

RESNA ENVIRONMENTAL LABORATORY IS CERTIFIED BY THE STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
(Certification No. 1211)

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906
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vwell

VADOSE WELL DAILY REPORT

Sheet 1 of 1 Employee No. 276

Project Name: UNOCAL SARATOGA Job No.: 10019-02

Service Station No.: 6859 Date: 2/27/92

Monitoring Well No.	Ambient Reading	Readings from well (2 readings)	Purge Time	Depth
MW-1	0.0	244.4 241.8 247.2	60 30	15'
MW-2	0.0	237.5 239.9 242.5	60 30	15'
MW-3	0.0	199.3 191.9 196.2	60 30	15'
MW-4	0.0	203.4 209.5 205.2	60 30	15'
MW-5	0.0	0.0 0.0 0.0	30 15	60 30
MW-6				
MW-7				
MW-8				