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LETTER REPORT
GROUNDWATER MONITORING
FIRST QUARTER 1993
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California

Job No. 87091-7A

4/22/93

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

April 22, 1993

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

Subject: Groundwater Monitoring, First Quarter 1993, at Unocal Service Station No. 5367, 500 Bancroft Avenue, San Leandro, California.

Mr. Boust:

At Unocal's request, RESNA Industries Inc. (RESNA) has conducted the groundwater monitoring for the first quarter 1993 at the subject site (Plate 1).

Potentiometric data for all wells and groundwater samples for monitoring wells MW-1 through MW-3, and MW-8 were collected on March 3, 1993. Monitoring wells MW-4 through MW-7 are sampled on a semi-annual basis and were sampled this quarter. The field procedures used during the monitoring are attached. At Unocal's request, equipment rinseate and purge water were removed by RESNA Industries and transported under non-hazardous waste manifest to Gibson Oil and Refinery in Redwood City, California.

Cumulative potentiometric and analytical data are summarized in Table 1. Well purge data are summarized in Table 2. A Potentiometric Surface Map was constructed from the groundwater elevation data (Plate 2). Groundwater flow for the first quarter is predominantly southwest. This is generally consistent with the flow direction observed in December 1992. Copies of the Chain of Custody Record(s) and analytical reports are attached.

April 22, 1993
Unocal Station 5367, San Leandro, California

The next monitoring event has been scheduled for the week of June 1993. We recommend a signed copy of this report be forwarded to:


- Mr. Eddy So
CRQCB, San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612; and
- Mr. Joe Ferreira
San Leandro Fire Department
835 East 14th Street
San Leandro, California.

Please call if you have questions regarding this project.

Sincerely,
RESNA Industries Inc.



Brian Worden
Project Geologist



Gary Pischke, CEG 1501
Project Manager

BW/GP/lr
Attachments:

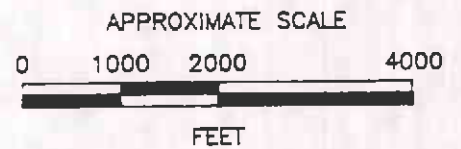
Plate 1, Site Location Map
Plate 2, Site Plan and Potentiometric Surface Map (03/03/93)

Table 1, Groundwater Monitoring Data
Table 2, Well Purge Data Sheets

Field Methods
Chain of Custody Record
Laboratory Analysis Reports



SOURCE: U.S. GEOLOGICAL SURVEY
 7.5-MINUTE QUADRANGLE
 SAN LEANDRO, CA.
 PHOTOREVISED 1980

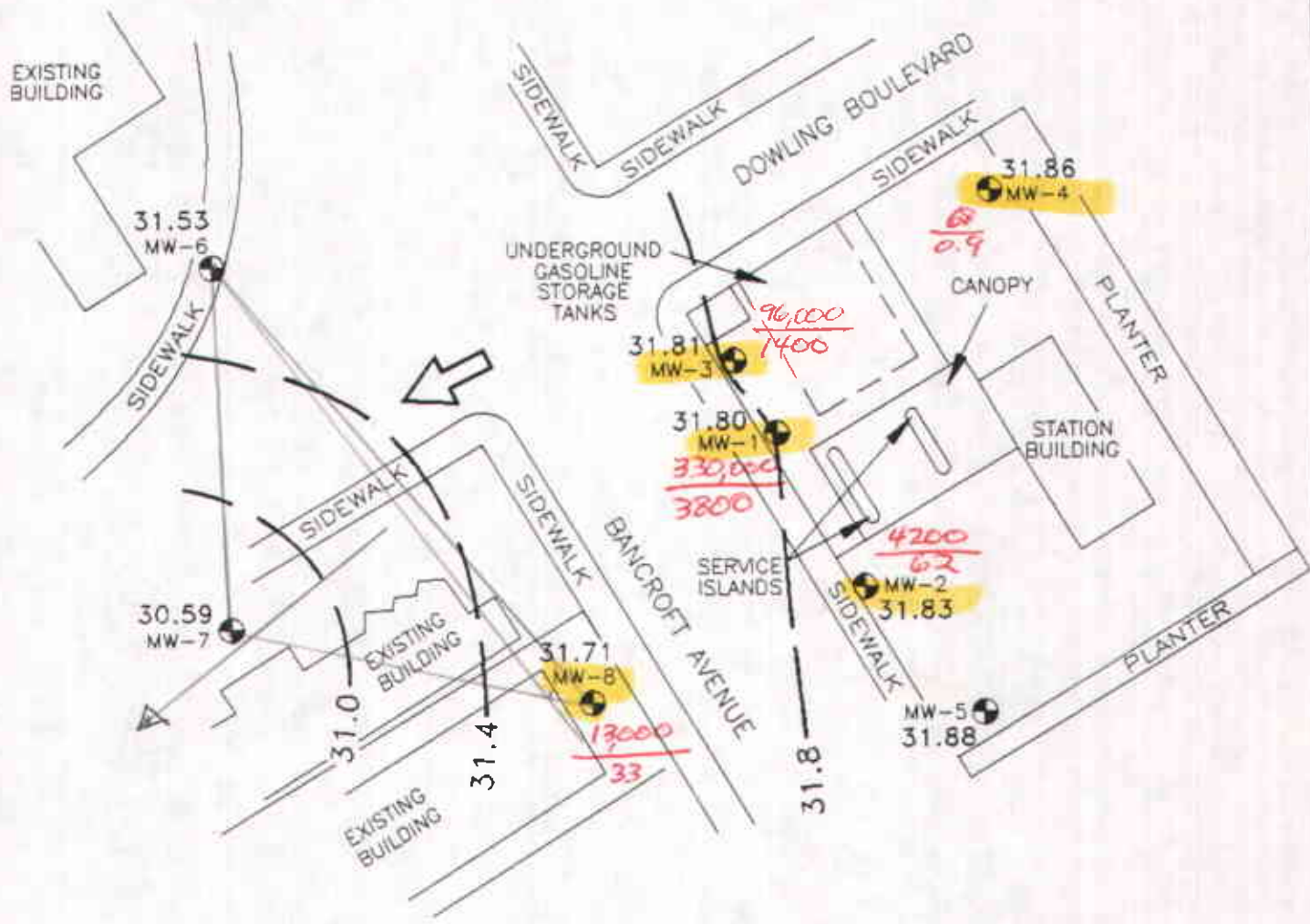


RESNA	SITE LOCATION MAP	PLATE 1
	UNOCAL STATION NO. 5367	
	500 BANCROFT AVENUE	
SAN LEANDRO, CALIFORNIA		
PROJECT NO. 87091.7A		



$$\frac{(31.71 - 31.53)}{(31.71 - 30.59)} = \frac{x}{D}$$

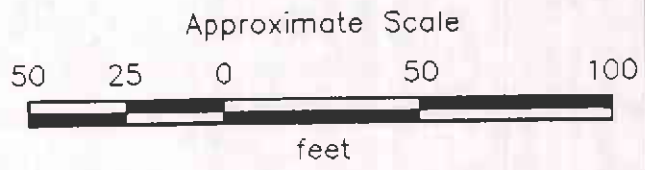
$$\left(\frac{0.18}{1.12}\right) 107 = x$$


$$17.2' = x$$



TPH (ppb)
benzene

- - - 31.8 = Inferred line of equal groundwater elevation in feet above mean sea level
- 31.88 = Groundwater elevation in feet above mean sea level
-  = Inferred direction of groundwater flow
- MW-8  = Monitoring well



	SITE PLAN AND POTENTIOMETRIC SURFACE MAP (3/3/93)	PLATE 2
	UNOCAL STATION NO. 5367	
	500 BANCROFT AVENUE	
	SAN LEANDRO, CALIFORNIA	
PROJECT NO. 87091.7A		

April 22, 1993
 Unocal Station No. 5367, San Leandro, California

TABLE 1
 GROUNDWATER MONITORING DATA
 Unocal Service Station No. 5367
 500 Bancroft Avenue
 San Leandro, California
 (page 1 of 8)

Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations	
MW-1	09/23/87	57.83	33.40	24.43							FP = 0.02, S = ---	
	09/24/87		33.24	24.59							FP = 0.01, S = ---	
	10/06/87		33.39	24.44							FP = 0.01, S = ---	
	11/05/87		34.14	23.89							FP = 0.31, S = ---	
	11/13/87		34.15	23.68							FP = 0.38, S = ---	
	11/18/87		33.89	23.94							FP = 0.06, S = ---	
	04/27/88		32.40	25.43							FP = 0.01, S = ---	
	09/07/88										WELL DRY	
	10/03/88										WELL DRY	
	01/27/89										WELL DRY	
	02/18/90										WELL DRY	
	07/19/90										WELL DRY	
	08/24/90										WELL DRY	
	11/30/90										WELL DRY	
	02/08/91										WELL DRY	
	05/06/91		33.00	24.83								FP = No, S = No
	09/27/91											WELL DRY
	03/31/92			31.00	26.83	330,000	NA	8,200	33,000	6,800	36,000	FP = No, S = No
	06/18/92			32.78	25.07	660,000	NA	9,000	40,000	7,600	44,000	FP = No, S = No
	10/18/92											WELL DRY
11/18/92											WELL DRY	
03/03/93			26.03	31.80	330,000	NA	3,800	21,000	4,200	24,000	FP = ---, S = ---	

See Notes on Page 6 of 8.

April 22, 1993
 Unocal Station No. 5367, San Leandro, California

TABLE 1
 GROUNDWATER MONITORING DATA
 Unocal Service Station No. 5367
 500 Bancroft Avenue
 San Leandro, California
 (page 2 of 8)

Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations
MS-2	10/03/88	58.13	36.04	22.09	1,760	NA	47.8	7.4	20.9	81.6	FP = No, S = No
	01/27/89		34.77	23.36	510	NA	58.0	8.7	22.6	20.3	FP = No, S = No
	02/16/90		34.50	23.63	840	NA	50.0	0.5	28.0	44.0	FP = No, S = No
	05/90		NM	NM	1,000	NA	39.0	<0.5	32.0	52.0	FP = NM, S = NM
	07/19/90		35.72	22.41							FP = No, S = No
	08/24/90		36.30	21.83	330	NA	17	<0.5	19	20	FP = No, S = No
	11/30/90		37.40	20.73	400	NA	41	<0.5	39	37	FP = No, S = No
	02/07/91		37.27	20.86	510	NA	40	<0.5	29	44	FP = No, S = No
	05/06/91		33.31	24.82	2,300	NA	150	10	52	110	FP = No, S = No
	09/27/91		58.13	36.86	21.27	110	NA	2.6	<0.5	5.6	5.1
	12/27/91	37.66		20.47	170	NA	3.9	<0.5	7.3	60	FP = No, S = No
	03/31/92	31.27		26.86	4,200	NA	110	3	190	250	FP = No, S = No
	06/18/92	33.09		25.04	1,200	NA	35	1.6	56	26	FP = No, S = No
	09/30/92	NM		NM	820	NA	21	<0.5	42	25	FP = No, S = No
	10/16/92	35.87		22.26			NOT ANALYZED				FP = No, S = No
	11/18/92	36.24		21.89	65	NA	1.2	<0.5	2.8	1.4	FP = No, S = No
	03/03/93	26.30		31.83	4,200	NA	62	2.9	97	120	FP = NM, S = NM

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TABLE 1
 GROUNDWATER MONITORING DATA
 Unocal Service Station No. 5367
 500 Bancroft Avenue
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations
MM-3	10/03/88	57.92	35.86	22.06	61,000	NA	1,060	3,380	1,520	8,720	FP = No, S = No
	01/27/89		34.60	23.32	39,000	NA	1,570	2,830	1,250	7,070	FP = No, S = No
	02/16/90		35.23	22.69	22,000	NA	710	4,100	6,900	33,000	FP = No, S = No
	05/90		NM	NM	19,000	NA	330	170	310	1,500	FP = NM, S = NM
	07/19/90		35.50	22.42			NOT ANALYZED				FP = No, S = No
	08/24/90		36.08	21.84	19,000	NA	480	160	510	1,500	FP = No, S = No
	11/30/90		37.17	20.75	13,000	NA	390	81	410	1,000	FP = No, S = No
	02/06/91		37.07	20.65	13,000	NA	310	150	380	1,200	FP = No, S = No
	05/06/91		33.11	24.81	39,000	NA	1,000	570	930	3,900	FP = No, S = No
	09/27/91		36.64	21.28	4,000	NA	180	84	180	560	FP = No, S = No
	12/27/91		37.46	20.46	31,000	NA	240	280	400	1,600	FP = No, S = No
	03/31/92		31.10	26.82	100,000	NA	1,800	1,900	2,300	9,400	FP = No, S = No
	06/18/92		32.83	25.09	180,000	NA	2,200	1,700	2,300	1,100	FP = No, S = No
	09/30/92		NM	NM	36,000	NA	730	200	1,000	4,400	FP = NM, S = NM
	10/16/92		35.66	22.26			NOT ANALYZED				FP = No, S = No
	11/18/92		36.04	21.88	24,000**	NA	430	160	640	2,800	FP = No, S = No
03/03/93	26.11	31.81	96,000**	NA	1,400	1,900	1,400	8,400	FP = NM, S = NM		

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 Unocal Station No. 5367, San Leandro, California

TABLE 1
 GROUNDWATER MONITORING DATA
 Unocal Service Station No. 5367
 500 Bancroft Avenue
 San Leandro, California
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Groundwater Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations
MW-4	10/03/88	58.29	36.12	22.17	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	01/27/89		34.87	23.42	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	02/16/90		35.80	22.69	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/90		NM	NM	<20	NA	<0.5	<0.5	0.68	1.4	FP = NM, S = NM
	07/19/90		35.78	22.51			NOT ANALYZED				FP = No, S = No
	08/24/90		36.35	21.94	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		37.46	20.83	<50	NA	<0.5	<0.5	<0.5	1.2	FP = No, S = No
	02/08/91		37.40	20.89	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		33.39	24.90			NOT ANALYZED				FP = No, S = No
	09/27/91		36.90	21.39	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		37.78	20.53	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		31.41	26.88	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	06/18/92		33.09	25.20	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	10/16/92		35.02	22.37	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/16/92		36.33	21.96			NOT SAMPLED				
03/03/93	28.43	31.86		68	NA	0.9	0.6	<0.5	1.9	FP = No, S = No	

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Unocal Station No. 5367, San Leandro, California

TABLE 1
GROUNDWATER MONITORING DATA
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500 Bancroft Avenue
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations
MW-5	02/16/90	58.50	35.88	22.61	67	NA	0.51	1.6	2.9	7.5	FP = No, S = No
	05/90		NM	NM	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = NM, S = NM
	07/19/90		36.10	22.40			NOT ANALYZED				FP = No, S = No
	08/24/90		36.67	21.83	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		37.74	20.76	<50	NA	<0.5	0.7	<0.5	<0.5	FP = No, S = No
	02/08/91		37.62	20.88	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		33.67	24.83			NOT ANALYZED				FP = No, S = No
	09/27/91		37.23	21.27	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		38.02	20.48	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		31.62	26.88	<50	NA	<0.5	<0.5	<0.5	1.1	FP = No, S = No
	06/18/92		33.46	25.04			NOT ANALYZED				FP = No, S = No
	10/16/92		36.23	22.27	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		36.62	21.88			NOT SAMPLED				
	03/03/93		26.62	31.88	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No

See Notes on Page 8 of 8.

April 22, 1993

Unocal Station No. 5367, San Leandro, California

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations
MW-6	02/16/90	56.96	34.50	22.46	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/90		NM	NM	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = NM, S = NM
	07/19/90		34.74	22.22	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	08/24/90		35.32	21.64	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		36.38	20.58	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	02/06/91		36.27	20.69	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		32.41				NOT ANALYZED				FP = No, S = No
	09/27/91		35.87	21.09	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		36.67	20.29	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		30.32	26.64	<50	NA	<0.5	1.3	<0.5	2.0	FP = No, S = No
	06/18/92		32.18	33.78	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	10/16/92		34.92	22.04	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		35.28	21.68			NOT SAMPLED				
	03/03/93		25.43	31.53	<50**	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No

See Notes on Page 8 of 8.

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TABLE 1
 GROUNDWATER MONITORING DATA
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 500 Bancroft Avenue
 San Leandro, California
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations
MW-7	02/16/90	57.25	35.75	21.50	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/90		NM	NM	24	NA	<0.5	<0.5	0.74	1.7	FP = NM, S = NM
	07/19/90		35.03	22.22			NOT ANALYZED				FP = No, S = No
	08/24/90		35.64	21.61	<20	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/30/90		36.68	20.57	<50	NA	<0.5	<0.5	0.6	1.5	FP = No, S = No
	02/06/91		36.55	20.70	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	05/06/91		32.69	24.56	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	09/27/91		36.18	21.07	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	12/27/91		36.96	20.29	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	03/31/92		30.56	26.69	<50	NA	<0.5	<0.5	<0.5	0.9	FP = No, S = No
	06/18/92		32.52	24.73			NOT ANALYZED				FP = No, S = No
	10/16/92		35.24	22.01	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		35.59	21.66			NOT SAMPLED				
	03/03/93		25.66	31.59	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No

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Unocal Station No. 5367, San Leandro, California

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
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Well/ Sample Number	Date	Elevation of Top of Casing (datum is MSL)	Static Water Level	Ground-water Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Observations	
MM-8	02/16/90	57.71	35.10	22.61	1,900	NA	11	<0.5	52	55	FP = No, S = No	
	05/90		NM	NM	770	NA	6.5	<0.5	20	32	FP = NM, S = NM	
	07/19/90		35.41	22.30			NOT ANALYZED				FP = No, S = No	
	08/24/90		36.00	21.71	990	NA	13	<0.5	48	66	FP = No, S = No	
	11/30/90		37.08	20.63	570	NA	13	<0.5	45	36	FP = No, S = No	
	02/06/91		36.92	20.79	630	NA	9.6	<0.5	35	36	FP = No, S = No	
	05/06/91		33.03	24.68	14,000	NA	80	<0.5	250	550	FP = No, S = No	
	09/27/91		36.55	21.16	720	NA	13	4.3	26	28	FP = No, S = No	
	12/27/91		37.34	20.37	1,600	NA	15	2.9	40	49	FP = No, S = No	
	03/31/92		31.93*	25.78	15,000	NA	120	1.0	430	530	FP = No, S = No	
	06/18/92						WELL INACCESSIBLE					
	10/16/92			35.58	22.13	300	NA	0.96	<0.5	4.0	3.5	FP = No, S = No
	11/18/92			35.94	21.77	1,100	NA	6.1	<0.5	13	5.6	FP = No, S = No
	03/03/93			26.00	31.71	13,000	NA	33	<0.5	168	290	FP = NM, S = NM

Notes:

Analytical results in parts per billion (ppb)

Static water level measured in feet below top of casing

NA = Not Analyzed

< = Not detected. Number following < indicates applicable detection limit.

TPHg = Total petroleum hydrocarbons as gasoline

TPHd = Total petroleum Hydrocarbons as diesel

NM = Not measured

FP = Free product

S = Sheen

* = Data suspect; not used in water-elevation determination.

** = Chromatogram contains early eluting peak.

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TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
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Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 1					
Start	4:30				
	4:40	1.50	65.5	6.65	.92
	4:50	3.00	66.0	6.50	.90
	5:00	4.50			

Notes:
Well Diameter (inches): 2
Depth to Bottom (feet): 34.60
Depth to Water - initial (feet): 26.03
Percent Recovery: 100
Time Sampled: 5:15
Gallons per Well Casing Volume: 1.45
Gallons Purged: 4.50
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): <1

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
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Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 2					
Start	1:50				
	2:00	13.40	74.8	6.93	.77
	2:10	26.80	70.4	6.46	.73
	2:20	40.20	69.8	6.42	.72

Notes:

Well Diameter (inches):	4
Depth to Bottom (feet):	46.60
Depth to Water - initial (feet):	26.30
Percent Recovery:	100
Time Sampled:	2:30
Gallons per Well Casing Volume:	13.40
Gallons Purged:	40
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	1.3

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
(page 3 of 8)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 3					
Start	3:40				
	3:50	15	66.9	6.80	.78
	4:00	30	65.7	6.49	.72
	4:10	45	65.8	6.45	.75

Notes:
Well Diameter (inches): 4
Depth to Bottom (feet): 48.30
Depth to Water - initial (feet): 26.11
Percent Recovery: 100
Time Sampled: 4:20
Gallons per Well Casing Volume: 14.64
Gallons Purged: 45
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): 1.5

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
(page 4 of 8)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 4					
Start	10:10				
	10:20	14	68.5	7.38	.60
	10:30	28	64.9	6.94	.54
	10:40	43	64.8	6.87	.51

Notes:
Well Diameter (inches): 4
Depth to Bottom (feet): 47.80
Depth to Water - initial (feet): 26.43
Percent Recovery: 100
Time Sampled: 10:50
Gallons per Well Casing Volume: 14.10
Gallons Purged: 43
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): 1.4

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
(page 5 of 8)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 5					
Start	11:00				
	11:10	3	64.5	6.70	.67
	11:20	6	64.7	6.67	.64
	11:30	9	65.6	6.57	.66

Notes:
Well Diameter (inches): 2
Depth to Bottom (feet): 44.15
Depth to Water - initial (feet): 26.62
Percent Recovery: 100
Time Sampled: 11:40
Gallons per Well Casing Volume: 2.98
Gallons Purged: 9
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): <1

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
(page 6 of 8)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 6					
Start	12:00				
	12:10	3	66.4	6.67	.60
	12:20	6	66.2	6.59	.61
	12:30	10	65.4	6.63	.58

Notes:
Well Diameter (inches): 2
Depth to Bottom (feet): 44.40
Depth to Water - initial (feet): 25.43
Percent Recovery: 100
Time Sampled: 12:40
Gallons per Well Casing Volume: 3.22
Gallons Purged: 10
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): <1

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
(page 7 of 8)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 7					
Start	1:00				
	1:10	3.1	66.7	6.71	.53
	1:20	6.2	66.8	6.70	.56
	1:30	9.3	66.9	6.69	.57

Notes:
Well Diameter (inches): 2
Depth to Bottom (feet): 43.90
Depth to Water - initial (feet): 25.66
Percent Recovery: 100
Time Sampled: 1:40
Gallons per Well Casing Volume: 3.10
Gallons Purged: 9.30
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): <1

April 22, 1993
Unocal Station 5367, San Leandro, California

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
March 3, 1993
(page 8 of 8)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 8					
Start	2:50				
	3:00	3	65.5	6.89	.79
	3:10	6	64.0	6.71	.75
	3:20	9	62.8	6.59	.73

Notes:
Well Diameter (inches): 2
Depth to Bottom (feet): 43.60
Depth to Water - initial (feet): 26.00
Percent Recovery: 100
Time Sampled: 3:30
Gallons per Well Casing Volume: 2.99
Gallons Purged: 9
Well Casing Volume Purged: 3
Approximate Pumping Rate (gpm): <1

FIELD METHODS

Groundwater Sampling

The static water level in each well was measured to the nearest 0.01 foot with an electronic water-level sounder cleaned with a laboratory-grade, non-phosphatic detergent and deionized water before use in each well. A clean bailer was used to obtain a sample from the surface of the water in the well for subjective analysis of hydrocarbons. The sample was retrieved and visually examined for floating product, sheen, color, and clarity.

Approximately 3 casing volumes of groundwater were purged from the wells using an electrical submersible pump. The pump, cables, and hoses were cleaned with a laboratory-grade, non-phosphatic detergent and water before use in each well. The wells were purged until withdrawal was of sufficient duration to result in stabilized pH, temperature, and electrical conductivity of the water, as measured by portable meters calibrated to a standard pH buffer and conductivity standards. The wells recovered to more than 90 percent of the static water level before samples were collected. At Unocal's request, the purged water was removed from the site, transported to Gibson Oil & Refining Company, Inc. in Redwood City, California, and recycled.

Before collecting each groundwater sample, field personnel cleaned the Teflon bailer with a laboratory-grade, non-phosphatic detergent and rinsed it with tap water and distilled water. When required, appropriate preservatives were added to the sample containers. A sample of the formation water then was collected from the surface of the water in each of the wells with the Teflon bailer and slowly transferred to sample containers.

Reporting Results of Analyses

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 California Code of Regulations for benzene, ethylbenzene, and total xylene isomers in drinking water are 1.0, 680, and 1,750 ppb, respectively. The action level established by the California Department of Health Services for toluene is 100 ppb. We report ground-water chemical data in units of ppb to conform with the laboratory reports.

Sample Labeling and Handling

Water samples for hydrocarbon analysis were preserved in new 40-milliliter glass vials that contained concentrated hydrochloric acid as a preservative. The water samples were sealed with Teflon-lined lids to eliminate air bubbles. The sample containers were labeled in the

April 22, 1993
Unocal Station 5367, San Leandro, California

field with the site identification, monitoring well number and depth, and date and promptly placed in iced storage for transport to the laboratory. Field personnel initiated Chain of Custody Records in the field that accompanied the samples to a laboratory certified by the State of California for the analyses requested. Samples were transported promptly to the RESNA laboratory.

ANALYSIS REPORT

Attention:	Jennifer Chase	Date Sampled:	03-03-93
	RESNA	Date Received:	03-04-93
	42501 Albrae Street	BTEX Analyzed:	03-05-93
	Fremont, California 94538	TPHg Analyzed:	03-05-93
Project:	13110.0L, Project 87091-6D	TPHd Analyzed:	NR
	Unocal Bancroft	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	50

SAMPLE

Laboratory Identification

W-26-MW8 W1303033	33	ND	160	290	13000	NR
W-26-MW3 W1303034	1400	1900	1400	8400	96000*	NR
W-26-MW1 W1303035	3800	21000	4200	24000	330000	NR

*Chromatogram contains a discrete peak that elutes before benzene.

ppb = parts per billion = ug/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

March 12, 1993
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)

ANALYSIS REPORT

Attention:	Jennifer Chase RESNA 42501 Albrae Street Fremont, California 94538	Date Sampled:	03-03-93
Project:	13110.0L, Project 87091-6D Unocal Bancroft	Date Received:	03-04-93
		BTEX Analyzed:	03-05-93
		TPHg Analyzed:	03-05-93
		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	50

SAMPLE

Laboratory Identification

W-26-MW4 W1303028	0.9	0.6	ND	1.9	68	NR
W-26-MW5 W1303029	ND	ND	ND	ND	ND	NR
W-25-MW6 W1303030	ND	ND	ND	ND	ND*	NR
W-25-MW7 W1303031	ND	ND	ND	ND	ND	NR
W-26-MW2 W1303032	62	2.9	97	120	4200	NR

*Chromatogram contains a discrete peak that elutes before benzene.

ppb = parts per billion = ug/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.

M. T. Aguirre
Laboratory Representative

March 12, 1993
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)

QUALITY ASSURANCE/QUALITY CONTROL REPORT

Attention:	Jennifer Chase RESNA 42501 Albrae Street Fremont, California 94538	Date Analyzed:	03-05-93
		G.C. #:	1
		Matrix:	Water
Project:	13110.0L, Project 87091-6D		

	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	50
Blank	ND	ND	ND	ND	ND	NR
Standard	103	99	106	100	101	NR
MS	103	99	105	94	125	NR
MSD	99	93	95	90	126	NR
RPD	3.96	6.25	10.0	4.35	0.80	NR

ppb = parts per billion = ug/L = micrograms per liter
 ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
 NR = Analysis not requested.
 MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference

	<u>Acceptable Range</u>	
Standard		85-115%
Blank		ND
MS/MSD		70-130%
RPD		<25%

MTague
 Laboratory Representative

March 12, 1993
 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)

PROJECT NO.		PROJECT NAME/SITE						NO. CONTAINERS	SAMPLE TYPE	ANALYSIS REQUESTED										P.O. #:					
87091-6D		UNOVAR BARCOFFA								<div style="display: flex; justify-content: space-between;"> BTEX (602/8020) TPHg (8015) TPHd (8015) TOG 418.1/5520 601/8010 624/8240 625/8270 </div>															
SAMPLERS (SIGN)		SAMPLERS (PRINT)						DATE	TIME	COMP	GRAB	PRES. USED	ICED											REMARKS	
LAUSWIES		LAUSWIES																							
W-26-MW4		3/3/93 10:50							✓	HL	✓	3W	✓	✓											W1303028
W-26-MW5		3/3/93 11:40							✓	HL	✓	3W	✓	✓											029
W-25-MW6		3/3/93 12:40							✓	HL	✓	3W	✓	✓											030
W-25-MW7		3/3/93 1:40							✓	HL	✓	3W	✓	✓											031
W-26-MW2		3/3/93 2:30							✓	HL	✓	3W	✓	✓											032
W-26-MW8		3/3/93 3:30							✓	HL	✓	3W	✓	✓											033
W-26-MW3		3/3/93 4:20							✓	HL	✓	3W	✓	✓											034
W-26-MW1		3/3/93 5:00							✓	HL	✓	3W	✓	✓											035

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	LABORATORY:	PLEASE SEND RESULTS TO:
LAUSWIES	3/4/93	8:15		RESNA	J. CHASE
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	REQUESTED TURNAROUND TIME:	
				2 WK	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:	RECEIPT CONDITION:	PROJECT MANAGER:
			Vintage	good, cold	J. CHASE