RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1993
at
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California

87091.7A

9/15/93

RESNA
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September 15, 1993
87091.7A

Ms. Tina Berry
Unocal Corporation
2000 Crow Canyon Place
Suite 400
San Ramon, California 94583

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

Ms. Berry:

At the request of Unocal Corporation, RESNA Industries Inc. (RESNA) has conducted the groundwater monitoring for the second 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 June 25, 1993. Monitoring wells MW-4 through MW-7 are sampled on a semi-annual basis and were not sampled this quarter. The field procedures used during the monitoring are attached. As requested by Unocal, equipment rinseate and purge water were removed by RESNA and transported under non-hazardous waste manifest to Gibson Environmental 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 monitoring event was predominantly west to southwest. This is generally consistent with the flow direction observed in March 1993. Copies of the Chain of Custody Record(s) and analytical reports are attached.

The next monitoring event has been scheduled for September 1993. RESNA recommends that a signed copy of this letter report be forwarded to:

Mr. Eddy So
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612; and

Mr. Scott O'Seery
Alameda County Health Care Service Agency
80 Swan Way, Room 350
Oakland, California 94621

Mr. Mike Bakaldin
San Leandro Fire Department
835 East 14th Street
San Leandro, California 94577

Please call if you have questions regarding this project.

Sincerely,
RESNA Industries Inc.

Keith A. Romstad
Project Manager

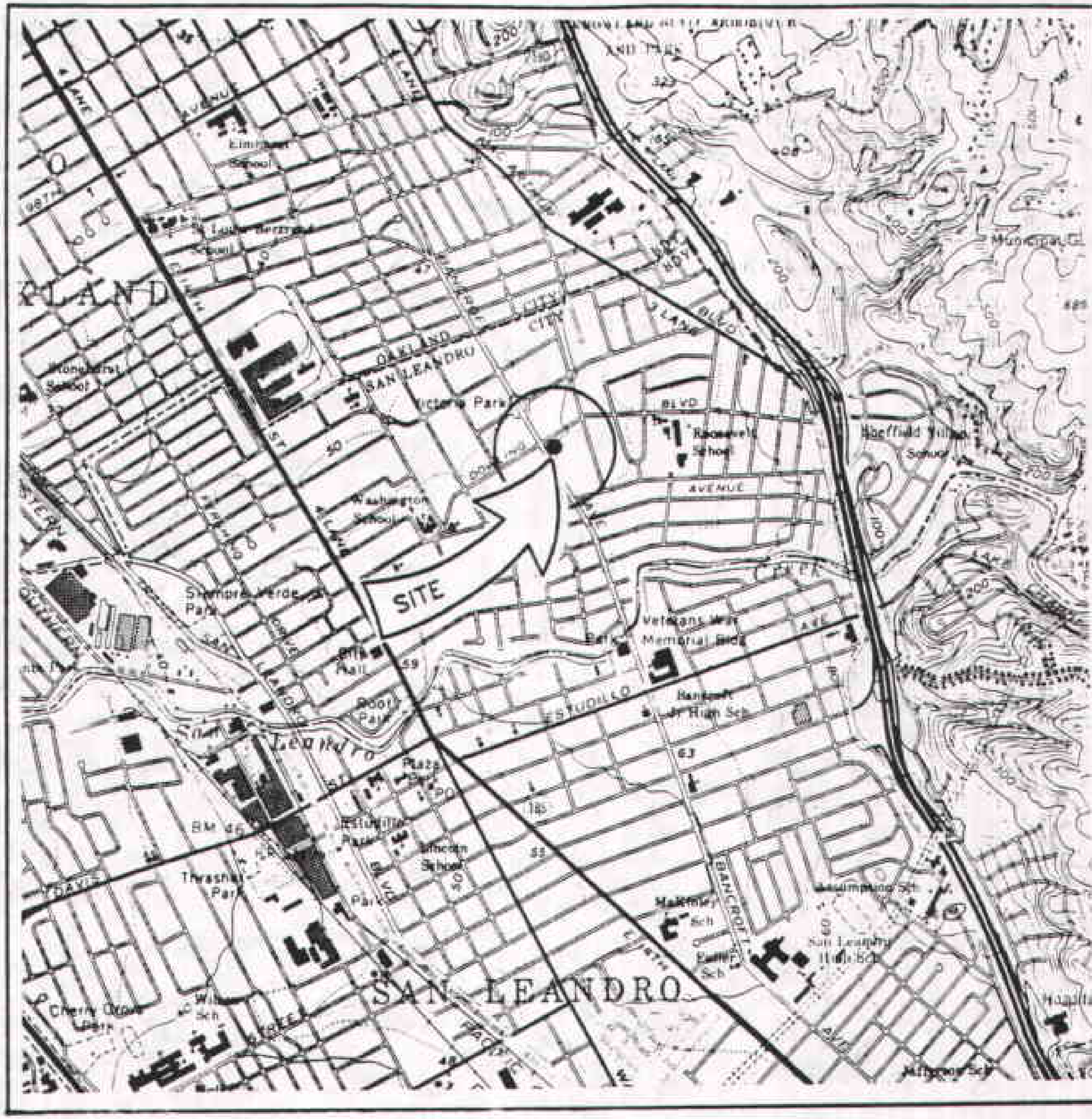
John B. Bobbitt, R.G. 4313
Program Manager

KAR/JBB/lr
Attachments:

Plate 1, Site Location Map
Plate 2, Site Plan and Potentiometric Surface Map (06/25/93)

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

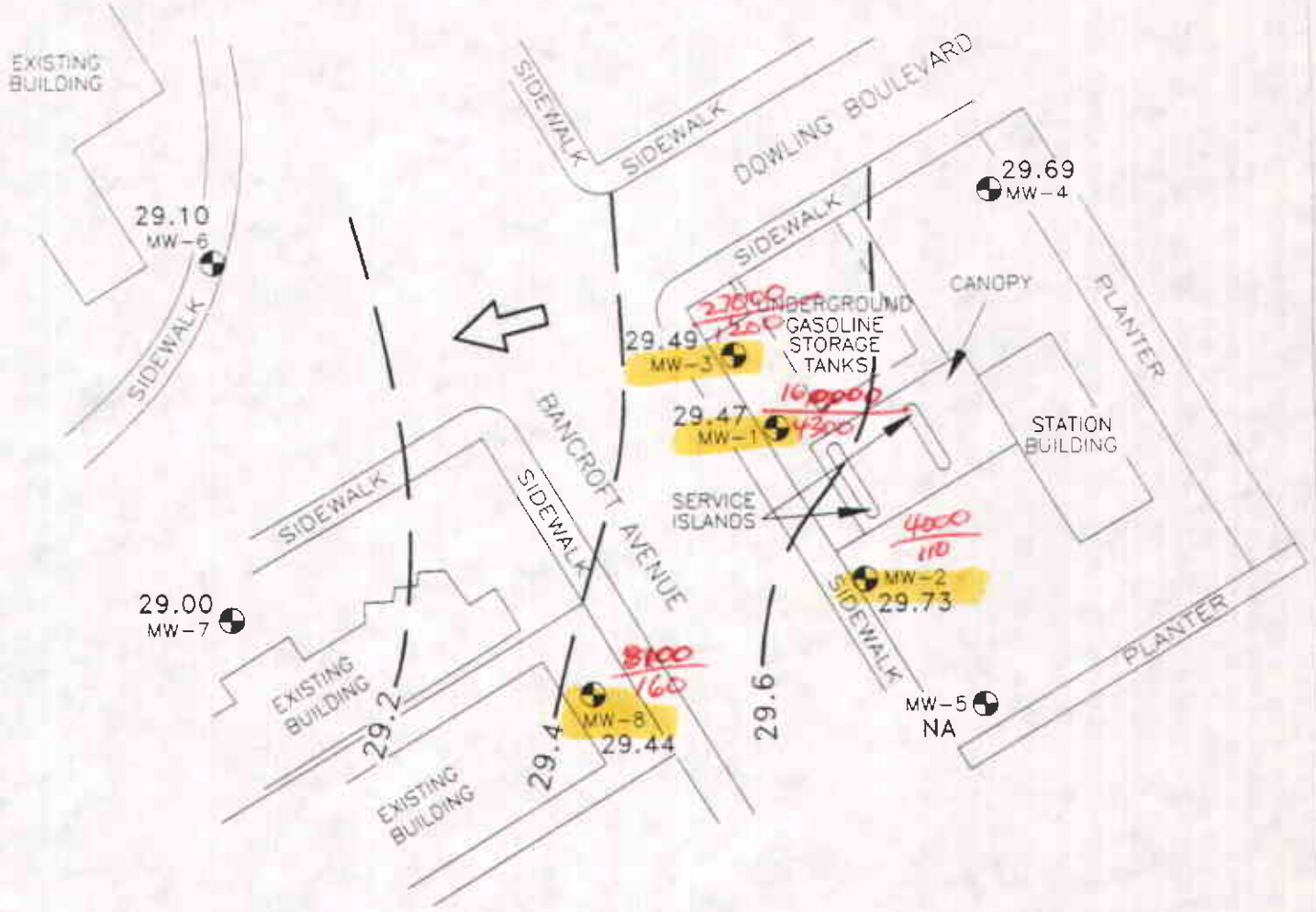
N

APPROXIMATE SCALE

0 1000 2000 4000

FEET

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



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

29.73 = Groundwater elevation in feet above mean sea level

= Approximate direction of groundwater flow

NA = Not accessible

MW-8 = Monitoring well

N

Approximate Scale

50 25 0 50 100

feet

NOTE: Contours are based on interpretation of available data, and are not intended to imply certainty.

RESNA
Working to Restore Nature

PROJECT NO. 87091.7A

GENERALIZED SITE PLAN AND POTENTIOMETRIC SURFACE MAP (6/25/93)

UNOCAL STATION NO. 5367

500 BANCROFT AVENUE

SAN LEANDRO, CALIFORNIA

PLATE 2

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	Groundwater 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	23.69							FP = 0.31, S = —
	11/13/87		34.15	23.68							FP = 0.38, S = —
	11/19/87		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				
	02/16/90						WELL DRY				
	07/19/90						WELL DRY				
	08/24/90						WELL DRY				
	11/30/90						WELL DRY				
	02/06/91										FP = No, S = No
	05/06/91		33.00	24.83							
	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		32.76	25.07	680,000	NA	9,000	40,000	7,600	44,000	FP = No, S = No
	10/16/92						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 = —
	06/25/93		28.36	29.47	160,000	NA	4,300	36,000	5,800	34,000	FP = No, S = No

See Notes on Page 8 of 8.

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	Groundwater Elevation (datum is MSL)	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Observations
MW-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		36.86	21.27	110	NA	2.6	<0.5	5.6	5.1	FP = No, S = No
	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
	06/25/93		28.40	29.73	4,000	NA	110	<0.5	320	280	FP = No, S = No

See Notes on Page 8 of 8

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 3 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-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	20.85	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	160	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	1,900	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
	06/25/93		28.43	29.49	27,000	NA	1,200	980	1,700	6,900	FP = No, S = No

See Notes on Page 8 of 8.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 4 of 8)

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		35.60	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
	02/06/91		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		37.76	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		35.92	22.37	<50	NA	<0.5	<0.5	<0.5	<0.5	FP = No, S = No
	11/18/92		36.33	21.96			NOT SAMPLED				
	03/03/93		26.43	31.86	68	NA	0.9	0.6	<0.5	1.9	FP = No, S = No
	06/25/93		28.60	29.69			NOT SAMPLED				FP = No, S = No

See Notes on Page 8 of 8.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 5 of 8)

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-5	02/16/90	58.50	35.89	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
	02/06/91		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
	06/25/93		NM	NM			NOT SAMPLED				Well Inaccessible

See Notes on Page 8 of 8.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 6 of 8)

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-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
	06/25/93		27.86	29.10			NOT SAMPLED				FP = No, S = No

See Notes on Page 8 of 8.

TABLE 1
GROUNDWATER MONITORING DATA
Unocal Service Station No. 5367
500 Bancroft Avenue
San Leandro, California
(page 7 of 8)

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-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 = MN
	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
	06/25/93		28.25	29.00			NOT SAMPLED				FP = No, S = No

See Notes on Page 8 of 8.

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

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-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	26	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	160	290	FP = NM, S = NM
	06/25/93		28.27	29.44	8,100	NA	160	<0.5	580	740	FP = No, S = No

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.

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
June 25, 1993
(page 1 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 1					
Start	12:25				
	12:28	1.0	79.4	7.48	660
	12:31	2.0	76.3	7.46	620
	12:34	3.0	76.6	7.46	640

Notes:

Well Diameter (inches):	2
Depth to Bottom (feet):	34.2
Depth to Water - initial (feet):	28.36
Percent Recovery:	100
Time Sampled:	1:35
Gallons per Well Casing Volume:	1.0
Gallons Purged:	3.0
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	<1
Sheen Present?	No

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
June 25, 1993
(page 2 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 2					
Start	1:45				
	1:51	12.0	79.9	7.63	530
	1:57	24.0	79.0	7.60	530
	2:03	36.0	78.4	7.57	530

Notes:

Well Diameter (inches):	4
Depth to Bottom (feet):	46.3
Depth to Water - initial (feet):	28.40
Percent Recovery:	100
Time Sampled:	3:10
Gallons per Well Casing Volume:	11.78
Gallons Purged:	36
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	2
Sheen Present?	No

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
June 25, 1993
(page 3 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 3					
Start	2:40				
	2:45	10	76.3	7.45	590
	2:50	20	74.8	7.42	580
	2:55	30	74.9	7.41	590

Notes:

Well Diameter (inches):	4
Depth to Bottom (feet):	43.5
Depth to Water - initial (feet):	28.43
Percent Recovery:	100
Time Sampled:	3:50
Gallons per Well Casing Volume:	9.96
Gallons Purged:	30
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	2
Sheen Present?	No

TABLE 2
WELL PURGE DATA SHEET
Unocal Service Station No. 5367
June 25, 1993
(page 4 of 4)

Well Number	Time (hr)	Volume (cum.gal.)	Temp (F°)	pH	Conduct. (micromho)
Well 8					
Start	1:00				
	1:06	2.8	76.9	7.54	610
	1:12	5.6	74.3	7.52	600
	1:23	8.4	74.5	7.50	600

Notes:

Well Diameter (inches):	2
Depth to Bottom (feet):	43.9
Depth to Water - initial (feet):	28.27
Percent Recovery:	100
Time Sampled:	2:20
Gallons per Well Casing Volume:	2.67
Gallons Purged:	9
Well Casing Volume Purged:	3
Approximate Pumping Rate (gpm):	<1
Sheen Present?	No

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 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.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	87091-7a, Unocal San Leandro	Sampled:	Jun 25, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Water	Received:	Jun 28, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Jul 2, 1993
Attention: Brian Worden	First Sample #:	3FD4401		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3FD4401 Rinsate Blank-MW1	Sample I.D. 3FD4402 W-28.5-MW1	Sample I.D. 3FD4403 W-28.5-MW8	Sample I.D. 3FD4404 W-28.5-MW2	Sample I.D. 3FD4405 W-28.5-MW3
Purgeable Hydrocarbons	50	N.D.	160,000	8,100	4,000	27,000
Benzene	0.50	N.D.	4,300	160	110	1,200
Toluene	0.50	N.D.	36,000	N.D.	N.D.	980
Ethyl Benzene	0.50	N.D.	5,800	580	320	1,700
Total Xylenes	0.50	N.D.	34,000	740	280	6,900
Chromatogram Pattern:		--	Gas	Gas	Gas	Gas

Quality Control Data

Report Limit Multiplication Factor:	1.0	1,000	10	10	100
Date Analyzed:	6/30/93	7/1/93	6/30/93	6/30/93	7/1/93
Instrument Identification:	GCHP-3	GCHP-2	GCHP-3	GCHP-3	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	97	95	88	125	102

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

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680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Brian Worden

Client Project ID: 87091-7a, Unocal San Leandro
Matrix: Water
QC Sample Group: 3FD4401,3,4

Reported: Jul 2, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK063093	BLK063093	BLK063093	BLK063093
Date Prepared:	N/A	N/A	N/A	N/A
Date Analyzed:	6/30/93	6/30/93	6/30/93	6/30/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
LCS % Recovery:	97	100	97	100
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3FA8001	3FA8001	3FA8001	3FA8001
Date Prepared:	N/A	N/A	N/A	N/A
Date Analyzed:	6/30/93	6/30/93	6/30/93	6/30/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	77	78	76	73
Matrix Spike Duplicate % Recovery:	96	96	93	97
Relative % Difference:	22	21	20	28

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Brian Worden

Client Project ID: 87091-7a, Unocal San Leandro
Matrix: Water
QC Sample Group: 3FD4402,5

Reported: Jul 2, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK070193	BLK070193	BLK070193	BLK070193
Date Prepared:	N/A	N/A	N/A	N/A
Date Analyzed:	7/1/93	7/1/93	7/1/93	7/1/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	86	86	85	87
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3FD4902	3FD4902	3FD4902	3FD4902
Date Prepared:	N/A	N/A	N/A	N/A
Date Analyzed:	7/1/93	7/1/93	7/1/93	7/1/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	95	95	95	97
Matrix Spike Duplicate % Recovery:	97	98	98	100
Relative % Difference:	2.1	3.1	3.1	3.0

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

Please Note:
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RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO. 87091-7A

PROJECT NAME/SITE Unocal 500 Barnard St, San Leandro, CA

PO # A8513

SAMPLERS (SIGN) Robin A. Adair (PRINT) Robin A. Adair

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
Rinsate Blank-MW1	6-25-93	1:30			HCL		2		X	X			9306044			1
W-28.5-MW1		1:35					2		X	X						2
W-28.5-MW8		2:20					2	H2O	X	X						3
W-28.5-MW2		3:10					2		X	X						4
W-28.5-MW3		3:50					2		X	X						5

RELINQUISHED BY: Robin A. Adair	DATE 6-25-93	TIME 0920	RECEIVED BY: R. Tehbib	0920 6/28/93
RELINQUISHED BY R Tehbib	DATE 6/28/93	TIME 0945	RECEIVED BY	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	
RELINQUISHED BY	DATE	TIME	RECEIVED BY LABORATORY	6-28-93 0945

LABORATORY: Sequoia Labs Analytical

REQUESTED TURNAROUND TIME: NORMAL

RECEIPT CONDITION

PLEASE SEND RESULTS TO: Brian Worden Resna, San Jose

PROJECT MANAGER