Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-450-6000**

June 13, 1994

Juliet Shin
Alameda County Department of Environmental Health
80 Swan Way, Room 210
Oakland, CA 94621

Re: Shell Service Station
2160 Otis Drive
Alameda, California
WIC #204-0072-0502
STID 590
WA Job #81-429-104

Dear Ms. Shin:

On behalf of Shell Oil Company (Shell), Weiss Associates has prepared this letter to respond to your May 17, 1994 letter to Dan Kirk of Shell. Your letter requested an offsite soil and ground water investigation to determine the source of the volatile organic compounds (VOCs) in ground water detected in monitoring well MW-2 at the site referenced above (Figures 1 and 2). WA intends to submit an offsite investigation workplan. However, we would like to wait until after sampling monitoring well MW-1 for VOCs during 3rd quarter 1994. The analytic results will help determine if any upgradient soil borings are necessary, and may determine whether there is an offsite, upgradient source. Therefore, we respectfully request a 60-day extension of the workplan submittal date to August 30, 1994. This extension will give Blaine Tech, the sampling consultant, time to sample well MW-1 and generate their sampling report.

Weiss Associates appreciates your consideration in this matter. Please call David Elias at 450-6108 if you have any questions or comments.

Sincerely,
Weiss Associates

Thomas Fojut FOR
Patricia-Anne Dresser
Staff Geologist

David Elias
Senior Staff Geologist

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cc: Dan Kirk, Shell Oil Company
Kevin Graves, Regional Water Quality Control Board - San Francisco Bay Region

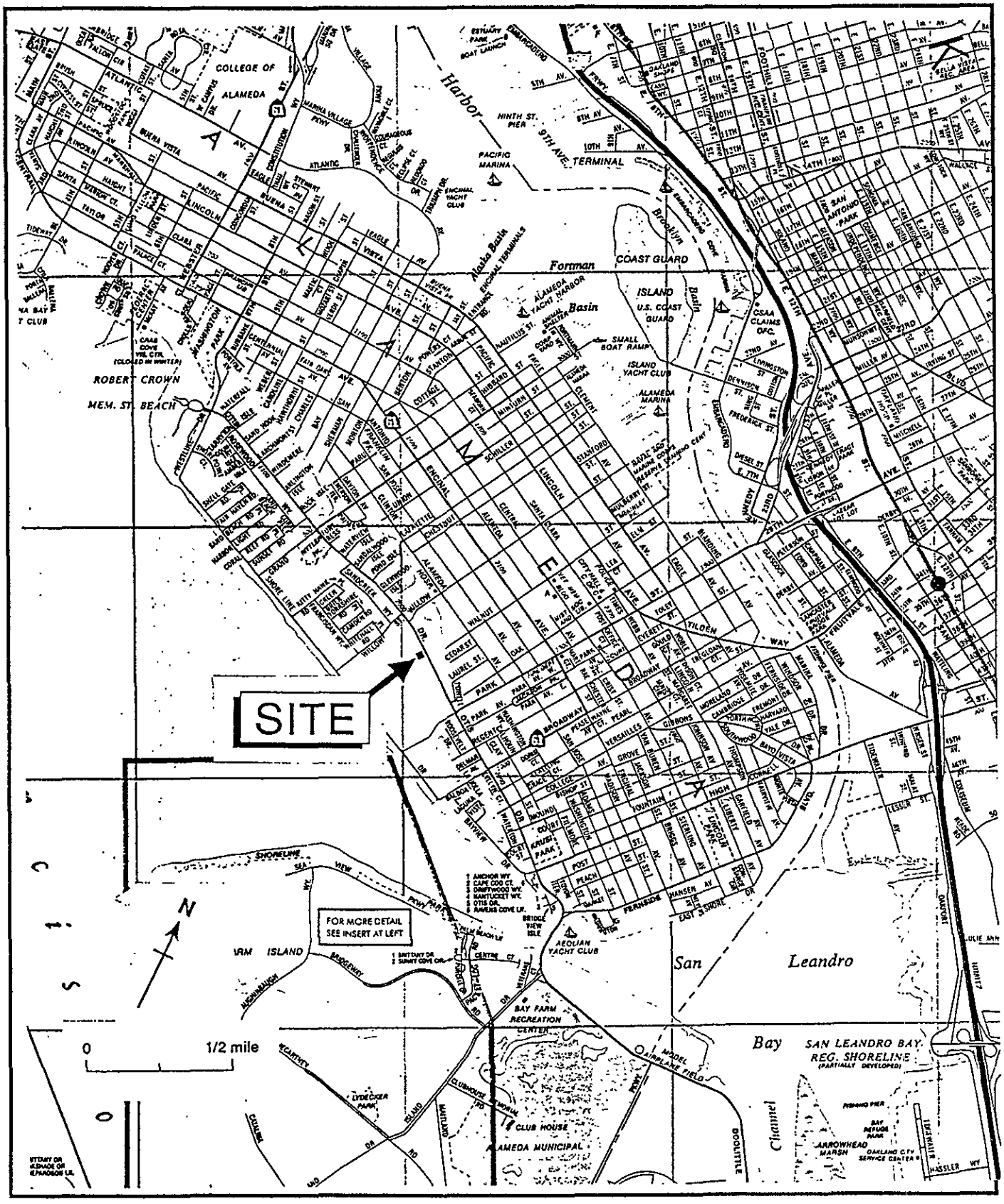

Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0502, 2160 Otis Drive, Alameda, CA

8/21/90

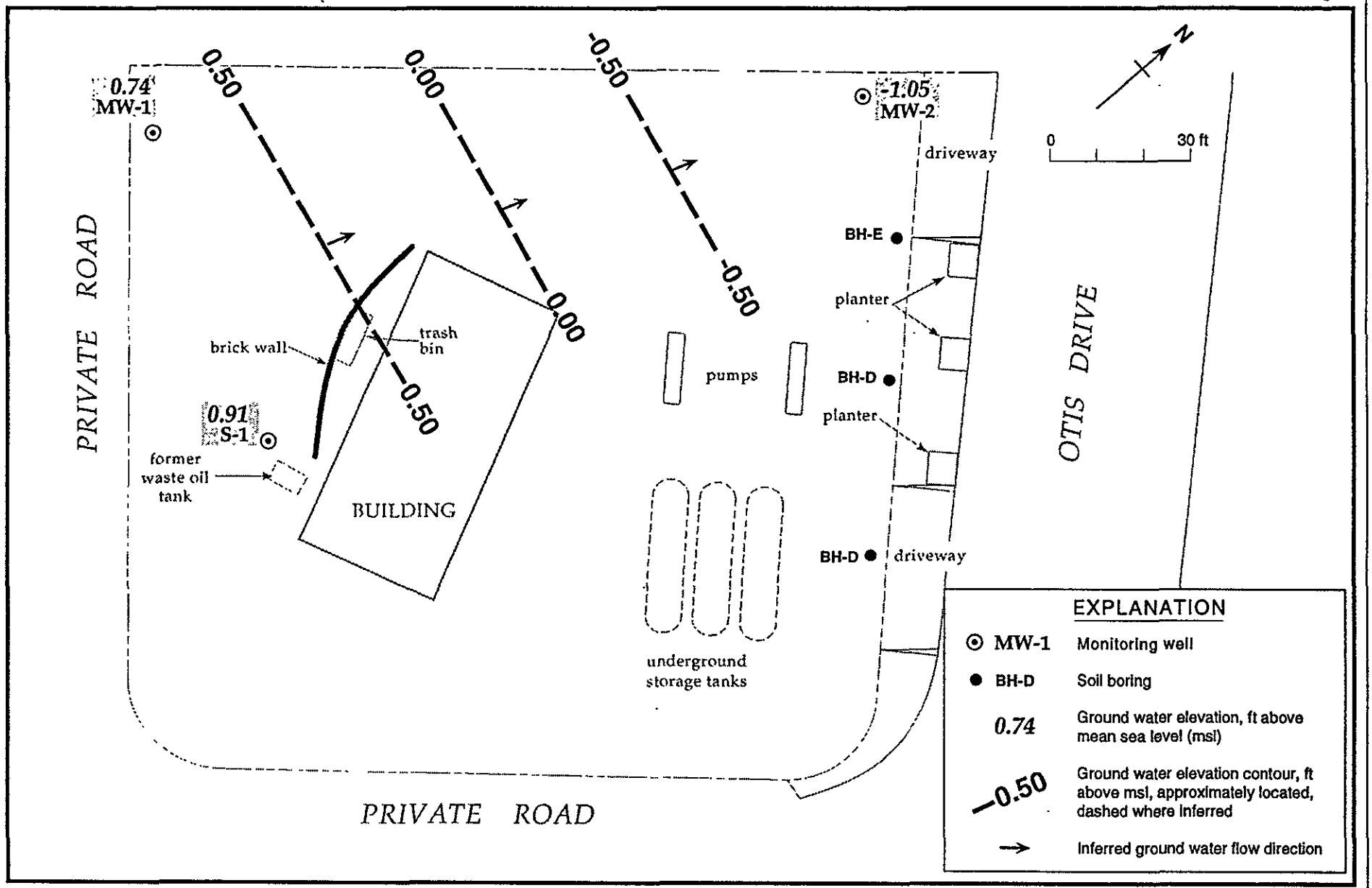

Figure 2. Monitoring Well Locations, Soil Boring Locations and Ground Water Elevation Contours - January 7, 1994 - Shell Service Station WIC #204-0072-2160, 2160 Otis Drive, Alameda, California

Table 1. Ground Water Elevations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	04/11/90	6.00	5.23	0.77
	07/10/90		5.40	0.60
	10/09/90		5.61	0.39
	01/17/91		5.66	0.34
	04/09/91		4.96	1.04
	07/10/91		5.52	0.48
	10/09/91		5.70	0.30
	01/24/92		5.51	0.49
	04/23/92		5.14	0.86
	07/01/92		4.48	1.52
	10/02/92		5.80	0.20
	01/05/93		5.34	0.66
	04/08/93		4.62	1.38
	07/20/93		5.20	0.80
	10/15/93		4.37	1.63
	01/07/94		5.26	0.74
	04/13/94		**5.01**	**0.99**
MW-2	04/11/90	3.29	4.51	-1.22
	07/10/90		4.61	-1.32
	10/09/90		4.74	-1.45
	01/17/91		4.73	-1.44
	04/09/91		4.09	-0.80
	07/10/91		4.66	-1.37
	10/09/91		4.81	-1.52
	01/24/92		4.66	-1.37
	04/23/92		4.51	-1.22
	07/01/92		4.57	-1.28
	10/02/92		4.80	-1.51
	01/05/93		4.39	-1.1
	04/08/93		4.15	-0.86
	07/20/93		4.40	-1.11
	10/15/93		5.41	-2.12
	01/07/94		4.34	-1.05
	04/13/94		**4.29**	**-1.00**
S-1	09/11/90	5.10	4.29	0.81
	04/11/90		4.00	1.10
	07/10/90		4.25	0.85
	10/09/90		4.46	0.64
	01/17/91		4.53	0.57
	04/09/91		4.20	0.90
	07/10/91		4.42	0.68

Table 1. Ground Water Elevations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
S-1	10/09/91		4.87	0.23
	01/24/92		4.90	0.20
	04/23/92		4.66	0.44
	07/01/92		4.85	0.25
	10/02/92		4.80	0.30
	01/05/93		5.38	-0.28
	04/08/93		3.69	1.41
	07/20/93		4.20	0.90
	10/15/93		4.38	0.72
	01/07/94		4.19	0.91
	04/17/94		**4.03**	**1.07**

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID (Sampling Frequency)	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	POG
			<----------parts per billion (µg/L)---------->						
S-1	09/04/87		---	---	<5	<5	<5	<5	---
(Annually	09/11/89[a]	4.29	<50	<100	<0.5	<1	<1	<3	<1,000
1st Qtr)	04/11/90	4.00	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000
	07/10/90	4.25	<90	---	<0.5	<0.5	<0.5	<0.5	<10,000
	10/09/90	4.46	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000
	01/17/91	4.53	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91	4.20	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91	4.42	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91	4.87	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92	4.90	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92	4.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92	4.85	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	5.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93	5.38	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	4.19	<50	---	<0.5	<0.5	<0.5	<0.5	---
MW-1	04/11/90	5.23	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000
(Annually	07/10/90	5.40	100	---	<0.5	<0.5	<0.5	<0.5	<10,000
1st Qtr)	10/09/90	5.61	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000
	01/17/91	5.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91	4.96	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91	5.52	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91	5.70	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92	5.51	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92	5.14	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92	4.48	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93	5.34	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93[dup]	5.34	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	5.26	<50	---	<0.5	<0.5	<0.5	<0.5	---
MW-2	04/11/90	4.51	200[b]	220	2.7	<0.5	0.5	2.4	<10,000
(Quarterly)	07/10/90	4.61	570[b]	450	150	<0.5	0.9	3.1	<10,000
	10/09/90	4.74	190[b]	51	55	<0.5	<0.5	<0.5	<5,000
	01/17/91	4.73	350[b]	<50	51	<0.5	<0.5	<0.5	---
	04/09/91	4.09	---	<50	21	<5	<5	<5	---
	07/10/91	4.66	50[b]	<50	8.4	<0.5	<0.5	<0.5	---
	10/09/91	4.81	150	---	22	<0.5	<0.5	<0.5	---
	01/24/92	4.66	<50	---	4.8	<0.5	<0.5	<0.5	---
	04/23/92	4.51	<50	---	2.3	1.5	<0.5	<0.5	---
	07/01/92	4.57	130[c]	---	19	<0.5	<0.5	<0.5	---
	10/02/92	4.80	120[c]	---	7.8	<0.5	<0.5	<0.8	---
	01/05/93	4.39	200[c]	---	9.0	<0.5	0.6	1.8	---
	04/08/93	4.15	170[c]	---	9.6	<0.5	<0.5	1.6	---
	07/20/93	4.40	80[a]	---	16	1.3	1.4	6.1	---

-- Table 2A continues on next page --

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Well ID (Sampling Frequency)	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	POG
			<----------parts per billion (µg/L)---------->						
	10/15/93	4.38	400[c]	---	37	0.6	1.1	4.7	---
	01/07/94	4.34	86[d]	---	12	<0.5	<0.5	1.1	<500
	04/13/94	4.29	<50	---	14	<0.5	<0.5		
BH-C	12/17/92	5.0	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
BH-D	12/17/92	5.0	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
BH-E	12/17/92	5.5	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
Trip Blank	07/10/90		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/90		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/17/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/08/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/20/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/15/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/13/94		<50	---	<0.5	<0.5	<0.5	<0.5	

-- Table 2A continues on next page --

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 8020, or 8240
E = Ethylbenzene by EPA Method 8020, or 8240
T = Toluene by EPA Method 8020, or 8240
X = Xylenes by EPA Method 8020, or 8240
POG = Petroleum oil and grease by American Public Health Association Standard Methods 503, or EPA method 5520 BF
DTSC MCLs = Department of Toxic Substances Control maximum contaminant levels
<n = Not detected above detection limit of n ppb
NE = DTSC MCL not established
BH-C = Grab Ground Water Sample

Notes:

a = 0.090 ppm chromium, 0.090 ppm lead and 0.10 ppm Zn detected; no cadmium detected above detection limit of 0.010 ppm by EPA Method 6010. No semi-volatile organic compounds or PCBs detected by EPA Method 625. DHS MCLs for Cr = 0.05 ppm; Pb = 0.05 ppm; secondary MCL for Zn = 5 ppm.
b = Chromatographic pattern not typical for gasoline; the concentration is due mostly to lighter hydrocarbon compounds.
c = The concentration reported as gasoline is *partially* due to the presence of discrete peaks not indicative of gasoline.
d = The concentration reported as gasoline is *primarily* due to the presence of discrete peaks not indicative of gasoline.
e = DTSC recommended action level for drinking water; MCL not established

Table 2B. Analytic Results for Ground Water - Volatile Organic Compounds - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date Sampled	Depth to Water (ft)	TCE	TCA	PCE	Cloroform	cis-1,2-DCE	trans-1,2-DCE	1,2-DCA	Carbon Disulfate	Vinyl Chloride
			<----------parts per billion (µg/l)---------->								
S-1	09/04/87[a]	---	---	---	---	---	---	---	---	---	---
	09/11/89	4.29	ND	ND	ND	ND	ND	ND	ND	ND	ND
	04/11/90	4.00	<0.4	<0.4	<0.4	1.7	<0.4	<0.4	<0.4	---	<0.4
	07/10/90	9.25	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	---	<2
	10/09/90	4.96	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<2
	01/07/94	4.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5
	01/07/94[dup]	4.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5
MW-1	04/11/90	5.23	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	---	<0.4
	07/10/90	5.40	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	---	<2
	10/09/90	5.61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<2
MW-2	04/11/90	4.51	1.2	<0.4	<0.4	4.5	<0.4	16	<0.4	---	<2
	07/10/90	4.61	0.93	<0.4	<0.4	1.7	<0.4	11	0.44	---	<2
	10/09/90	4.74	1.3	<0.5	1.6	15	46	6.7	<0.5	---	2.5
	01/17/91[b]	4.73	1.2	<0.5	0.6	2.6	74	12	0.5	---	3.0
	04/09/91	4.09	<5	<5	<5	<5	64	<5	<5	<0.5	<10
	07/10/91	4.66	<0.5	<0.5	6.9	43	<0.5	<0.5	<0.5	14	<10
	10/09/91	4.81	1.9	<1	28	7.4	54	16	<1	---	1.7
	01/24/92	4.66	2.5	<0.5	7.0	19	16	4.3	0.6	---	<0.5
	04/23/92	4.51	<3	<3	3.0	<3	84	18	<3	---	<3
	07/01/92	4.57	2.0	<1	2.0	<1	54	14	<1	---	1.0
	10/92/92	4.80	1.0	<1	<1	<1	61	12	<1	---	<1
	01/05/93	4.39	1.7	<0.5	2.2	<0.5	33	8.7	<0.5	---	.67
	04/08/93	4.15	1.3	<1	<1	<1	38	7.8	<1	---	<1
	07/20/93	4.40	2.4	<1	4.7	2.3	43	10	<0.5	---	<0.5
	10/15/93	4.38	<2.5	<2.5	<2.5	<2.5	110	25	<2.5	---	<2.5
	01/07/94	4.34	3.8	<0.5	14.0	8.9	29	5.4	<0.5	---	<0.5
BH-C	12/17/93	5.0	<2	<2	<2	<2	<2	<2	<2	---	<2
BH-D	12/17/93	5.0	<2	<2	<2	<2	<2	<2	<2	---	<2
BH-E	12/17/93	5.5	<2	<2	<2	<2	<2	<2	<2	---	<2
DTSC MCLs			5	200	5	NE	6	10	0.5	NE	0.5

-- Table 2B continues on next page --

Table 2B. Analytic Results for Ground Water - Volatile Organic Compounds - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Abbreviations:

TCE = Trichloroethene by EPA Method 601/8010 or 8240
TCA = 1,1,1-Trichloroethane by EPA Method 601/8010 or 8240PCE = Tetrachloroethene by EPA Method 601/8010 or 8240
cis-1,2-DCE = cis-1,2-Dichloroethene by EPA Method 601/8010 or 8240
trans-1,2-DCE = trans-1,2-Dichloroethene by EPA Method 601/8010 or 8240
--- = Not analyzed
<n = Not detected above detection limit of n ppb
1,2-DCA = 1,2 dichloroethane by EPA Method 601/8010 or 8240
DTCS MCLs = Department of Toxic Substance control maximum contaminant levels
NE = DTSC MCL not established
ND = Analyte not detected, detection limit not known

Notes:

a = 7.0 ppb unknown alcohol and 270 ppb acetone detected
b = 5.0 ppb chlorobenzene detected