



# EMCON Associates

1433 North Market Boulevard • Sacramento, California 95834-1943 • (916) 928-3300 • Fax (916) 928-3341

January 24, 1994  
Project 0117-115.01

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HAZMAT  
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Mr. Lynn Walker  
Shell Oil Company  
P.O. Box 5278  
Concord, California 94520

Re: Fourth Quarter 1993 Groundwater Monitoring Report for Shell Oil Company  
(Shell) Service Station, 15275 Washington, California  
(WIC No. 204-6852-1008)

Dear Mr. Walker:

This letter presents the results of the fourth quarter 1993 monitoring performed by Blaine Tech Services, Inc. (Blaine) at and near the Shell service station located at 15275 Washington in San Leandro, California (see Figure 1). The monitoring activities were performed consistent with regulatory requirements for quarterly monitoring and reporting.

Groundwater samples were collected from monitoring wells MW-1 through MW-5, and MW-7 through MW-10 on October 27, 1993. Water levels were also measured in each of these wells. Samples were collected and water levels were measured consistent with the procedures described in Blaine's *Quarterly Groundwater Sampling Report 931027-W-1*, presented in Attachment A.

## BACKGROUND

In July 1985 four groundwater monitoring wells (S-1 through S-4) were installed by EMCON Associates to assess soil and groundwater conditions beneath the site (see Figure 2). Total petroleum hydrocarbons as gasoline (TPHG) were detected in soil and groundwater samples, and well S-3 contained approximately 0.5 foot of floating product.

In August 1986 four soil borings (S-1 through S-D) were drilled within the underground fuel tank complex prior to removal of the tanks. Boring S-A was drilled adjacent to the former waste oil tank, and boring S-B was converted to a temporary tank backfill monitoring well. TPHG was detected in soil samples from these borings; however, no waste oil was detected in the analyzed soil samples.

In June 1987 the underground fuel storage tanks were removed. The temporary tank backfill well S-B and monitoring wells S-2 and S-4 were destroyed during construction activities.



Between December 1986 and May 1991 fourteen groundwater monitoring wells (S-5 through S-18) and one recovery well (SR-1) were installed on and off site. The groundwater monitoring well network has been monitored quarterly since September 1988.

In October 1988 a soil-gas survey was conducted by Tracer Research Corporation at 15 off-site locations. Samples were collected south of the site along Lewelling Boulevard and on the adjacent property to the west. The highest soil vapor concentrations were detected south of the site along Lewelling Boulevard.

In March 1990 hydraulic testing was conducted. A variable discharge test was conducted using well SR-1, and slug tests were conducted in several wells. The hydraulic tests indicated low-yield conditions in the shallow aquifer.

### GROUNDWATER FLOW DIRECTION

Table 1 presents a summary of historical groundwater elevation data, including data for the fourth quarter of 1993. Based on water levels measured in wells S-1 through S-10, S-16 through S-18, and SR-1 on October 27, 1993 (see Table 1), and top-of-casing elevations, the direction of groundwater flow at the site is generally toward the west (see Figure 2). Wells S-11 through S-15 were inaccessible during the fourth quarter monitoring event. The historical direction of groundwater flow has generally been southwest.

### SAMPLING FREQUENCY

Groundwater samples are collected quarterly from monitoring wells S-1, S-3, S-5, S-7 through S-10, S-12, S-15, S-16, S-18, and SR-1. ~~Wells S-6, S-11, S-13, S-14, and S-17 are sampled semiannually during the second and fourth quarters.~~ The samples are analyzed for TPHG and benzene, toluene, ethylbenzene, and total xylenes (BTEX). ~~During the fourth quarter monitoring event, wells S-11 through S-15 were paved over and were therefore not sampled. Efforts to uncover the paved over wells are being completed for January 1994.~~ If the well casings were damaged during repaving, they will be repaired, new vault boxes will be installed, and the top-of-casing elevations for the repaired wells will be resurveyed.

*When was this approved?*

### FLOATING PRODUCT

During the October 27, 1993, site visit, floating product was not observed in any of the wells.

*S-12 + -13 are installed in median strip: is this median raised on at same level as street?*

## ANALYTICAL RESULTS

Table 2 presents a summary of historical groundwater analytical results, including analytical results for fourth quarter 1993 monitoring. Certified analytical reports are included in Attachment A. Figure 3 shows the concentrations of TPHG and BTEX at each monitoring location.

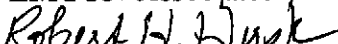
TPHG and BTEX were not detected in samples from wells S-6, S-7, S-10, S-17, or S-18. TPHG was not detected in the sample from well S-16. The highest TPHG concentration was detected in the sample from well S-3, which contained 36 milligrams per liter (mg/l) of TPHG. The highest benzene concentration was detected in the sample from well S-3, which contained 2.2 mg/l of benzene.

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

If you have any questions, please call

Sincerely,

EMCON Associates

  
Robert H. Husk

Project Manager

C.E.G. 1530



Charles S. Metzinger

Project Supervisor

Attachments: Table 1	Summary of Historical Groundwater Elevation Data
Table 2	Summary of Historical Groundwater Analytical Results
Figure 1	Site Location Map
Figure 2	Groundwater Contour Map, October 27, 1993
Figure 3	TPHG and BTEX Concentration Map, October 27, 1993
Attachment A	<i>Quarterly Groundwater Sampling Report 931027-W-1, Blaine Tech Services, Inc.</i>

cc: Juliette Shin, Alameda County Department of Environmental Health  
Rich Hiett, Regional Water Quality Control Board, San Francisco Bay Region

**Table 1**  
**Summary of Historical Groundwater Elevation Data**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-1	11/22/88	21.55	8.01	NA	0.00	13.54
	8/10/89	21.55	7.93	NA	0.00	13.62
	10/10/89	21.55	8.09	NA	0.00	13.46
	1/25/90	21.55	7.73	NA	0.00	13.82
	4/18/90	21.55	7.91	NA	0.00	13.64
	7/23/90	21.55	7.72	NA	0.00	13.83
	10/18/90	21.55	8.55	NA	0.00	13.00
	1/28/91	21.55	8.52	NA	0.00	13.03
	4/25/91	21.55	7.18	NA	0.00	14.37
	7/9/91	21.55	8.22	NA	0.00	13.33
	10/8/91	21.55	8.70	NA	0.00	12.85
	2/5/92	21.55	8.14	NA	0.00	13.41
	4/28/92	21.55	7.52	NA	0.00	14.03
	7/27/92	21.55	8.28	NA	0.00	13.27
	10/26/92	21.55	8.74	NA	0.00	12.81
	1/13/93	21.55	5.91	NA	0.00	15.64
	4/16/93	21.55	6.66	NA	0.00	14.89
	7/23/93	21.55	7.53	NA	0.00	14.02
10/27/93	21.55	8.20	NA	0.00	13.35	
S-3	11/22/88	21.14	7.76	NA	0.00	13.38
	8/10/89	21.14	7.92	NA	0.00	13.22
	10/10/89	21.14	8.00	NA	0.00	13.14
	1/25/90	21.14	7.54	NA	0.00	13.60
	4/18/90	21.14	7.74	NA	0.00	13.40
	7/23/90	21.14	7.55	NA	0.00	13.59
	10/18/90	21.14	8.47	NA	0.00	12.67
	1/28/91	21.14	8.38	NA	0.00	12.76
	4/25/91	21.14	6.91	NA	0.00	14.23
	7/9/91	21.14	8.07	NA	0.00	13.07
	10/8/91	21.14	8.61	NA	0.00	12.53
	2/5/92	21.14	7.80	NA	0.00	13.34
	4/28/92	21.14	7.27	NA	0.00	13.87
	7/27/92	21.14	8.10	NA	0.00	13.04
	10/26/92	21.14	8.62	NA	0.00	12.52
	1/13/93	21.14	5.16	NA	0.00	15.98
	4/16/93	21.14	7.18	NA	0.00	13.96
	7/23/93	21.14	7.34	NA	0.00	13.80
10/27/93	21.14	8.03	NA	0.00	13.11	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-5	8/10/89	21.41	8.28	NA	0.00	13.13
	10/10/89	21.41	8.32	NA	0.00	13.09
	1/25/90	21.41	8.20	NA	0.00	13.21
	4/18/90	21.41	8.32	NA	0.00	13.09
	7/23/90	21.41	8.03	NA	0.00	13.38
	10/18/90	21.41	9.03	NA	0.00	12.38
	1/28/91	21.41	8.80	NA	0.00	12.61
	4/25/91	21.41	7.40	NA	0.00	14.01
	7/9/91	21.41	8.52	NA	0.00	12.89
	10/8/91	21.41	9.00	NA	0.00	12.41
	2/5/92	21.41	8.11	NA	0.00	13.30
	4/28/92	21.41	7.70	NA	0.00	13.71
	7/27/92	21.41	8.52	NA	0.00	12.89
	10/26/92	21.41	9.02	NA	0.00	12.39
	1/13/93	21.41	5.22	NA	0.00	16.19
	4/16/93	21.41	7.04	NA	0.00	14.37
	7/23/93	21.41	7.75	NA	0.00	13.66
10/27/93	21.41	8.49	NA	0.00	12.92	
S-6	11/22/88	22.02	8.58	NA	0.00	13.44
	8/10/89	22.02	8.54	NA	0.00	13.48
	10/10/89	22.02	8.58	NA	0.00	13.44
	1/25/90	22.02	8.31	NA	0.00	13.71
	4/18/90	22.02	8.43	NA	0.00	13.59
	7/23/90	22.02	8.24	NA	0.00	13.78
	10/18/90	22.02	9.20	NA	0.00	12.82
	1/28/91	22.02	9.10	NA	0.00	12.92
	4/25/91	22.02	7.74	NA	0.00	14.28
	7/9/91	22.02	8.81	NA	0.00	13.21
	10/8/91	22.02	9.26	NA	0.00	12.76
	2/5/92	22.02	8.47	NA	0.00	13.55
	4/28/92	22.02	7.91	NA	0.00	14.11
	7/27/92	22.02	8.83	NA	0.00	13.19
	10/26/92	22.02	9.29	NA	0.00	12.73
	1/13/93	22.02	6.43	NA	0.00	15.59
	4/16/93	22.02	7.12	NA	0.00	14.90
7/23/93	22.02	8.14	NA	0.00	13.88	
10/27/93	22.02	8.75	NA	0.00	13.27	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-7	11/22/88	21.47	8.24	NA	0.00	13.23
	8/10/89	21.47	8.18	NA	0.00	13.29
	10/10/89	21.47	8.35	NA	0.00	13.12
	1/25/90	21.47	7.95	NA	0.00	13.52
	4/18/90	21.47	8.06	NA	0.00	13.41
	7/23/90	21.47	7.89	NA	0.00	13.58
	10/18/90	21.47	8.83	NA	0.00	12.64
	1/28/91	21.47	8.77	NA	0.00	12.70
	4/25/91	21.47	7.25	NA	0.00	14.22
	7/9/91	21.47	8.41	NA	0.00	13.06
	10/8/91	21.47	8.95	NA	0.00	12.52
	2/5/92	21.47	8.04	NA	0.00	13.43
	4/28/92	21.47	7.45	NA	0.00	14.02
	7/27/92	21.47	8.48	NA	0.00	12.99
	10/26/92	21.47	9.95	NA	0.00	11.52
	1/13/93	21.47	5.84	NA	0.00	15.63
	4/16/93	21.47	6.38	NA	0.00	15.09
7/23/93	21.47	7.72	NA	0.00	13.75	
10/27/93	21.47	7.79	NA	0.00	13.68	
S-8	11/22/88	20.72	7.76	NA	0.00	12.96
	8/10/89	20.72	7.79	NA	0.00	12.93
	10/10/89	20.72	7.84	NA	0.00	12.88
	1/25/90	20.72	7.47	NA	0.00	13.25
	4/18/90	20.72	7.59	NA	0.00	13.13
	7/23/90	20.72	7.49	NA	0.00	13.23
	10/18/90	20.72	8.44	NA	0.00	12.28
	1/28/91	20.72	8.28	NA	0.00	12.44
	4/25/91	20.72	6.72	NA	0.00	14.00
	7/9/91	20.72	7.98	NA	0.00	12.74
	10/8/91	20.72	8.55	NA	0.00	12.17
	2/5/92	20.72	7.50	NA	0.00	13.22
	4/28/92	20.72	7.14	NA	0.00	13.58
	7/27/92	20.72	8.06	NA	0.00	12.66
	10/26/92	20.72	8.58	NA	0.00	12.14
	1/13/93	20.72	5.32	NA	0.00	15.40
	4/16/93	20.72	5.76	NA	0.00	14.96
7/23/93	20.72	7.29	NA	0.00	13.43	
10/27/93	20.72	7.93	NA	0.00	12.79	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-9	11/22/88	20.96	7.78	NA	0.00	13.18
	8/10/89	20.96	7.82	NA	0.00	13.14
	10/10/89	20.96	7.87	NA	0.00	13.09
	1/25/90	20.96	7.41	NA	0.00	13.55
	4/18/90	20.96	7.65	NA	0.00	13.31
	7/23/90	20.96	7.58	NA	0.00	13.38
	10/18/90	20.96	8.46	NA	0.00	12.50
	1/28/91	20.96	8.29	NA	0.00	12.67
	4/25/91	20.96	6.09	NA	0.00	14.87
	7/9/91	20.96	7.82	NA	0.00	13.14
	10/8/91	20.96	8.55	NA	0.00	12.41
	2/5/92	20.96	6.96	NA	0.00	14.00
	4/28/92	20.96	6.76	NA	0.00	14.20
	7/27/92	20.96	8.10	NA	0.00	12.86
	10/26/92	20.96	8.53	NA	0.00	12.43
	1/13/93	20.96	6.80	NA	0.00	14.16
	4/16/93	20.96	6.28	NA	0.00	14.68
	7/23/93	20.96	7.26	NA	0.00	13.70
10/27/93	20.96	8.00	NA	0.00	12.96	
S-10	11/22/88	20.69	7.91	NA	0.00	12.78
	8/10/89	20.69	7.94	NA	0.00	12.75
	10/10/89	20.69	7.99	NA	0.00	12.70
	1/25/90	20.69	7.56	NA	0.00	13.13
	4/18/90	20.69	7.71	NA	0.00	12.98
	7/23/90	20.69	7.64	NA	0.00	13.05
	10/18/90	20.69	8.58	NA	0.00	12.11
	1/28/91	20.69	8.35	NA	0.00	12.34
	4/25/91	20.69	6.91	NA	0.00	13.78
	7/9/91	20.69	8.14	NA	0.00	12.55
	10/8/91	20.69	8.70	NA	0.00	11.99
	2/5/92	20.69	7.57	NA	0.00	13.12
	4/28/92	20.69	7.20	NA	0.00	13.49
	7/27/92	20.69	8.17	NA	0.00	12.52
	10/26/92	20.69	8.68	NA	0.00	12.01
	1/13/93	20.69	3.78	NA	0.00	16.91
	4/16/93	20.69	6.46	NA	0.00	14.23
	7/23/93	20.69	7.38	NA	0.00	13.31
10/27/93	20.69	8.09	NA	0.00	12.60	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-11	11/22/88	21.26	8.62	NA	0.00	12.64
	8/10/89	21.26	8.65	NA	0.00	12.61
	10/10/89	21.26	8.64	NA	0.00	12.62
	1/25/90	21.26	8.43	NA	0.00	12.83
	4/18/90	21.26	8.42	NA	0.00	12.84
	7/23/90	21.26	8.23	NA	0.00	13.03
	10/18/90	21.26	9.20	NA	0.00	12.06
	1/28/91	21.26	9.13	NA	0.00	12.13
	4/25/91	21.26	7.53	NA	0.00	13.73
	7/9/91	21.26	8.85	NA	0.00	12.41
	10/8/91	21.26	9.34	NA	0.00	11.92
	2/5/92	21.26	8.50	NA	0.00	12.76
	4/28/92	21.26	7.80	NA	0.00	13.46
	7/27/92	21.26	8.80	NA	0.00	12.46
	10/26/92	21.26	9.42	NA	0.00	11.84
	1/13/93	21.26	6.52	NA	0.00	14.74
	4/16/93	21.26	6.86	NA	0.00	14.40
	7/23/93	21.26	8.07	NA	0.00	13.19
10/27/93	21.26	NM	NM	NM	NM	
S-12	8/10/89	21.05	8.32	NA	0.00	12.73
	10/10/89	21.05	8.32	NA	0.00	12.73
	1/25/90	21.05	8.18	NA	0.00	12.87
	4/18/90	21.05	8.05	NA	0.00	13.00
	7/23/90	21.05	7.92	NA	0.00	13.13
	10/18/90	21.05	8.90	NA	0.00	12.15
	1/28/91	21.05	8.54	NA	0.00	12.51
	4/25/91	21.05	7.08	NA	0.00	13.97
	7/9/91	21.05	8.42	NA	0.00	12.63
	10/8/91	21.05	8.80	NA	0.00	12.25
	2/5/92	21.05	8.07	NA	0.00	12.98
	4/28/92	21.05	8.33	NA	0.00	12.72
	7/27/92	21.05	8.55	NA	0.00	12.50
	10/26/92	21.05	9.03	NA	0.00	12.02
	1/13/93	21.05	6.38	NA	0.00	14.67
	4/16/93	21.05	6.56	NA	0.00	14.49
7/23/93	21.05	7.76	NA	0.00	13.29	
10/27/93	21.05	NM	NM	NM	NM	



**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-13	8/10/89	20.57	8.00	NA	0.00	12.57
	10/10/89	20.57	7.95	NA	0.00	12.62
	1/25/90	20.57	7.79	NA	0.00	12.78
	4/18/90	20.57	7.73	NA	0.00	12.84
	7/23/90	20.57	7.63	NA	0.00	12.94
	10/18/90	20.57	8.58	NA	0.00	11.99
	1/28/91	20.57	8.39	NA	0.00	12.18
	4/25/91	20.57	7.00	NA	0.00	13.57
	7/9/91	20.57	8.12	NA	0.00	12.45
	10/8/91	20.57	8.69	NA	0.00	11.88
	2/5/92	20.57	7.62	NA	0.00	12.95
	4/28/92	20.57	7.15	NA	0.00	13.42
	7/27/92	20.57	8.20	NA	0.00	12.37
	10/26/92	20.57	8.73	NA	0.00	11.84
	1/13/93	20.57	5.06	NA	0.00	15.51
	4/16/93	20.57	6.38	NA	0.00	14.19
7/23/93	20.57	7.45	NA	0.00	13.12	
10/27/93	20.57	NM	NM	NM	NM	
S-14	8/10/89	20.44	7.58	NA	0.00	12.86
	10/10/89	20.44	7.62	NA	0.00	12.82
	1/25/90	20.44	7.82	NA	0.00	12.62
	4/18/90	20.44	7.37	NA	0.00	13.07
	7/23/90	20.44	7.28	NA	0.00	13.16
	10/18/90	20.44	8.10	NA	0.00	12.34
	1/28/91	20.44	8.04	NA	0.00	12.40
	4/25/91	20.44	6.40	NA	0.00	14.04
	7/9/91	20.44	7.69	NA	0.00	12.75
	10/8/91	20.44	8.24	NA	0.00	12.20
	2/5/92	20.44	7.20	NA	0.00	13.24
	4/28/92	20.44	9.75	NA	0.00	10.69
	7/27/92	20.44	7.64	NA	0.00	12.80
	10/26/92	20.44	8.32	NA	0.00	12.12
	1/13/93	20.44	5.07	NA	0.00	15.37
	4/16/93	20.44	5.86	NA	0.00	14.58
7/23/93	20.44	7.06	NA	0.00	13.38	
10/27/93	20.44	NM	NM	NM	NM	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-15	8/10/89	22.22	8.48	NA	0.00	13.74
	10/10/89	22.22	8.46	NA	0.00	13.76
	1/25/90	22.22	8.34	NA	0.00	13.88
	4/18/90	22.22	8.45	NA	0.00	13.77
	7/23/90	22.22	8.22	NA	0.00	14.00
	10/18/90	22.22	9.11	NA	0.00	13.11
	1/28/91	22.22	9.13	NA	0.00	13.09
	4/25/91	22.22	7.83	NA	0.00	14.39
	7/9/91	22.22	8.93	NA	0.00	13.29
	10/8/91	22.22	9.26	NA	0.00	12.96
	2/5/92	22.22	8.60	NA	0.00	13.62
	4/28/92	22.22	8.09	NA	0.00	14.13
	7/27/92	22.22	8.83	NA	0.00	13.39
	10/26/92	22.22	9.31	NA	0.00	12.91
	1/13/93	22.22	6.64	NA	0.00	15.58
	4/16/93	22.22	7.14	NA	0.00	15.08
	7/23/93	22.22	8.23	NA	0.00	13.99
10/27/93	22.22	NM	NM	NM	NM	
S-16	8/10/89	21.82	8.36	NA	0.00	13.46
	10/10/89	21.82	8.23	NA	0.00	13.59
	1/25/90	21.82	7.88	NA	0.00	13.94
	4/18/90	21.82	8.19	NA	0.00	13.63
	7/23/90	21.82	8.09	NA	0.00	13.73
	10/18/90	21.82	8.90	NA	0.00	12.92
	1/28/91	21.82	8.55	NA	0.00	13.27
	4/25/91	21.82	7.48	NA	0.00	14.34
	7/9/91	21.82	8.48	NA	0.00	13.34
	10/8/91	21.82	8.95	NA	0.00	12.87
	2/5/92	21.82	8.20	NA	0.00	13.62
	4/28/92	21.82	7.80	NA	0.00	14.02
	7/27/92	21.82	8.29	NA	0.00	13.53
	10/26/92	21.82	9.02	NA	0.00	12.80
	1/13/93	21.82	5.78	NA	0.00	16.04
	4/16/93	21.82	6.80	NA	0.00	15.02
	7/23/93	21.82	7.67	NA	0.00	14.15
10/27/93	21.82	8.52	NA	0.00	13.30	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
S-17	8/10/89	20.95	8.13	NA	0.00	12.82
	10/10/89	20.95	8.18	NA	0.00	12.77
	1/25/90	20.95	7.60	NA	0.00	13.35
	4/18/90	20.95	7.95	NA	0.00	13.00
	7/23/90	20.95	7.87	NA	0.00	13.08
	10/18/90	20.95	8.71	NA	0.00	12.24
	1/28/91	20.95	8.54	NA	0.00	12.41
	4/25/91	20.95	7.15	NA	0.00	13.80
	7/9/91	20.95	8.24	NA	0.00	12.71
	10/8/91	20.95	8.86	NA	0.00	12.09
	2/5/92	20.95	7.74	NA	0.00	13.21
	4/28/92	20.95	7.41	NA	0.00	13.54
	7/27/92	20.95	8.34	NA	0.00	12.61
	10/26/92	20.95	8.87	NA	0.00	12.08
	1/13/93	20.95	3.43	NA	0.00	17.52
	4/16/93	20.95	6.70	NA	0.00	14.25
	7/23/93	20.95	7.53	NA	0.00	13.42
10/27/93	20.95	8.29	NA	0.00	12.66	
S-18	4/25/91	21.03	NM	NM	NM	NM
	7/9/91	21.03	8.23	NA	0.00	12.80
	10/8/91	21.03	8.84	NA	0.00	12.19
	2/5/92	21.03	7.67	NA	0.00	13.36
	4/28/92	21.03	7.40	NA	0.00	13.63
	7/27/92	21.03	8.34	NA	0.00	12.69
	10/26/92	21.03	8.83	NA	0.00	12.20
	1/13/93	21.03	5.86	NA	0.00	15.17
	4/16/93	21.03	4.88	NA	0.00	16.15
	7/23/93	21.03	7.56	NA	0.00	13.47
10/27/93	21.03	8.30	NA	0.00	12.73	

**Table 1**  
**Summary of Historical Groundwater Elevation Data**  
**(continued)**

Well	Date	Reference Elevation (Ft.-MSL)	Depth to Groundwater (feet)	Depth to Floating Product (feet)	Floating Product Thickness (feet)	Groundwater Elevation (Ft.-MSL)
SR-1	1/25/90	21.45	7.53	NA	0.00	13.92
	4/18/90	21.45	8.17	NA	0.00	13.28
	7/23/90	21.45	7.58	NA	0.00	13.87
	10/18/90	21.45	8.81	NA	0.00	12.64
	1/28/91	21.45	8.37	NA	0.00	13.08
	4/25/91	21.45	6.91	NA	0.00	14.54
	7/9/91	21.45	8.11	NA	0.00	13.34
	10/8/91	21.45	8.63	NA	0.00	12.82
	2/5/92	21.45	7.68	NA	0.00	13.77
	4/28/92	21.45	7.27	NA	0.00	14.18
	7/27/92	21.45	8.11	8.10	0.01	13.34
	10/26/92	21.45	8.63	NA	0.00	12.82
	1/13/93	21.45	5.46	NA	0.00	15.99
	4/16/93	21.45	6.28	NA	0.00	15.17
	7/23/93	21.45	7.34	NA	0.00	14.11
	10/27/93	21.45	8.04	NA	0.00	13.41

Ft.-MSL = feet above mean sea level  
 NM = not measured

**Table 2**

**Summary of Historical Groundwater Analytical Results**  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-1	07/08/85	0.52	NA	NA	NA	NA
	09/06/88	<0.050	<0.0005	<0.001	<0.001	<0.003
	11/16/88	<0.050	<0.0005	<0.001	<0.001	<0.003
	02/27/89	<0.050	0.0005	<0.001	<0.001	<0.003
	05/04/89	<0.050	0.001	<0.001	<0.001	<0.003
	08/10/89	<0.050	0.0007	<0.001	<0.001	<0.003
	10/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/18/90	0.080	0.005	<0.0005	<0.0005	0.003
	01/28/91	<0.050	0.0045	<0.0005	<0.0005	0.002
	04/25/91	0.080*	0.0037	<0.0005	0.0007	0.002
	07/09/91	0.20	0.016	<0.0005	0.0013	0.0058
	10/08/91	<0.050	0.0023	<0.0005	<0.0005	<0.0005
	02/05/92	0.16	0.0089	<0.0005	0.0021	0.006
	04/28/92	<0.050	0.0024	<0.0005	<0.0005	0.0009
	07/27/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	0.057	0.003	0.0016	0.0014	0.0017
	01/14/93	0.49	0.053	0.0012	0.020	0.033
04/16/93	0.24	0.020	<0.0005	0.015	0.24	
07/23/93	<0.050	0.0005	<0.0005	<0.0005	<0.0005	
10/27/93	0.060	0.0059	<0.0005	0.0025	0.0017	
S-3	09/06/88	96	3.4	9.5	2.7	17
	11/16/88	70	4.6	8.4	2.5	13
	02/27/89	32	2.4	3.1	1.5	6.4
	05/04/89	47	4.4	0.30	2.4	15
	08/10/89	110	5.7	5.7	3.2	19
	10/10/89	52	4.6	3.3	2.6	15
	01/25/90	420	5.2	4.1	6.7	34
	04/18/90	58	3.8	1.4	2.4	12
	07/23/90	49	3.4	1.8	2.3	12
	10/18/90	44	3.5	0.65	2.4	11
	01/28/91	64	40.9	0.57	1.94	8.09
	04/25/91	120	3.9	3.6	2.4	8.9
07/09/91	50	3.6	2.3	1.8	10	
10/08/91	130	3.6	1.0	2.8	8.4	

Table 2 (Continued)

Summary of Historical Groundwater Analytical Results  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-3	02/05/92	150	2.5	0.67	2.7	10
	04/28/92	120	2.2	1.2	2.0	5.8
	07/27/92	190	1.4	<1.25	<1.25	3.4
	10/26/92	950	2.0	8.4	16	36
	01/14/93	41	2.7	2.5	1.8	6.9
	04/16/93	40	0.93	2.8	1.9	14
	07/23/93	87	1.6	<0.0050	1.3	4.0
	10/27/93	36	2.2	<0.5	1.5	3.2
S-5	01/08/87	7.8	0.38	0.51	NR	1.0
	09/06/88	7.0	2.6	0.060	0.40	0.70
	11/16/88	3.0	0.66	0.060	0.12	0.22
	02/27/89	5.7	2.0	0.22	0.26	0.32
	05/04/89	9.0	3.0	0.60	0.63	1.7
	08/10/89	5.1	1.1	<0.050	0.27	0.40
	10/10/89	15	3.3	0.16	0.83	2.2
	01/25/90	12	2.4	0.36	0.57	1.4
	04/18/90	5.2	1.1	0.040	0.30	0.46
	07/23/90	5.5	1.3	0.14	0.32	0.73
	10/18/90	12	3.2	0.040	0.72	0.9
	01/28/91	2.55	0.41	0.015	0.11	0.060
	04/25/91	67	5.1	3.1	2.8	11
	07/09/91	4.9	0.48	0.036	0.36	1.0
	10/08/91	6.6	0.37	0.007	0.19	0.38
	02/05/92	44	4.8	0.85	2.7	8.4
	04/28/92	33	1.4	0.32	1.6	5.2
	07/27/92	20	2.4	<0.125	1.8	5.3
	10/26/92	21	1.6	0.14	1.5	2.8
	01/14/93	54	1.9	1.0	2.7	16
04/16/93	42	2.0	1.3	4.3	18	
07/23/93	46	2.5	2.2	3.4	11	
10/27/93	6.5	0.99	0.031	1.1	1.0	
S-6	11/16/88	0.050	0.0007	<0.001	<0.001	<0.003
	02/27/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	05/04/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003

Table 2 (Continued)

**Summary of Historical Groundwater Analytical Results**  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-6	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	0.0006	<0.0005	0.001
	07/23/90	<0.050	<0.0005	0.0009	<0.0005	0.0018
	10/18/90	<0.050	<0.0005	0.0007	<0.0005	0.0008
	01/28/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/25/91	<0.050	<0.0005	<0.0005	<0.0005	0.0007
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	<0.050	0.0007	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/13/93	NA	NA	NA	NA	NA
	04/16/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/23/93	NA	NA	NA	NA	NA
	10/27/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
S-7	11/16/88	0.10	0.0051	0.015	0.002	0.013
	02/27/89	0.050	0.0005	0.003	0.001	0.011
	05/04/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/18/90	<0.050	<0.0005	0.0005	0.0005	0.0041
	01/28/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/25/91	0.060*	<0.0005	<0.0005	<0.0005	<0.0005
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	02/05/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/27/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	0.057^	<0.0005	<0.0005	<0.0005	<0.0005
	01/14/93	0.056^	<0.0005	<0.0005	<0.0005	<0.0005
	04/16/93	0.11	0.028	<0.0005	<0.0005	0.0018
	07/23/93	0.080	0.0048	<0.0005	<0.0005	0.0008
10/27/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	

Table 2 (Continued)

**Summary of Historical Groundwater Analytical Results**  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-8	11/16/88	0.21	0.005	<0.001	0.001	0.005
	02/27/89	<0.050	0.0024	<0.001	<0.001	<0.003
	05/03/89	<0.050	0.0075	<0.001	0.002	<0.003
	08/10/89	<0.050	0.0006	<0.001	<0.001	<0.003
	10/09/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/28/91	<0.050	0.055	0.0005	<0.0005	0.0014
	04/25/91	0.13*	0.019	<0.0005	0.0013	0.0011
	07/09/91	0.20	0.033	<0.0005	0.0018	0.0028
	10/08/91	0.58	0.095	0.0022	0.0049	0.0065
	02/05/92	0.090*	0.018	<0.0005	0.0062	0.0018
	04/28/92	<0.050	0.0059	<0.0005	0.0025	<0.0005
	07/27/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/14/93	0.27	0.074	0.0009	0.025	0.0055
	04/16/93	1.1	0.42	<0.0005	0.20	0.020
	07/23/93	0.16	0.023	<0.0005	0.0012	0.0015
10/27/93	0.42	0.065	0.0007	0.011	0.0017	
S-9	11/16/88	1.4	0.069	0.003	0.052	0.18
	02/27/89	1.6	0.24	0.004	0.13	0.18
	05/03/89	2.6	0.47	0.010	0.24	0.48
	08/10/89	0.52	0.073	<0.01	0.040	<0.030
	10/09/89	0.38	0.082	<0.001	0.046	0.013
	01/25/90	0.75	0.14	0.0012	0.069	0.075
	04/18/90	0.68	0.15	0.0017	0.050	0.037
	07/23/90	0.49	0.094	0.0012	0.032	0.024
	10/18/90	0.39	0.14	0.0007	0.0033	0.024
	01/28/91	1.04	0.45	0.0046	0.085	0.097
	04/25/91	5.8	0.88	0.009	0.36	0.50
	07/09/91	1.4	0.22	0.0028	0.082	0.10
	10/08/91	0.89	0.96	<0.0025	0.016	0.029
	02/05/92	0.95	0.24	<0.0025	0.028	0.055
	04/28/92	1.4*	0.29	0.003	0.10	0.081
07/27/92	0.89	0.19	<0.0025	0.066	0.068	



Table 2 (Continued)

Summary of Historical Groundwater Analytical Results  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-9	10/26/92	0.65	0.16	<0.0025	0.063	0.089
	01/13/93	19	2.4	0.038	1.7	2.2
	04/16/93	10	1.5	<0.0005	1.1	0.99
	07/23/93	1.1	0.40	<0.0050	0.26	0.16
	10/27/93	2.5	0.40	<0.005	0.19	0.11
S-10	11/16/88	0.33	0.0005	<0.001	0.001	0.011
	02/27/89	0.14	<0.0005	<0.003	0.002	0.006
	05/03/89	0.22	<0.0005	0.001	0.002	0.007
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/09/89	0.17	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	0.0011	0.004
	04/18/90	<0.050	<0.0005	0.0009	<0.0005	0.002
	07/23/90	0.59	<0.0005	<0.0005	0.0019	0.019
	10/18/90	0.14	<0.0005	0.0007	<0.0005	0.007
	01/28/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/25/91	<0.050	<0.0005	<0.0005	0.0011	0.0008
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	0.14	<0.0005	<0.0005	<0.0005	<0.0005
	02/05/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/27/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/13/93	0.088	<0.0005	0.0006	<0.0005	<0.0005
	04/16/93	0.080	<0.0005	<0.0005	<0.0005	<0.0005
	07/23/93	<0.050	0.0015	<0.0005	0.0007	0.0027
10/27/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	
S-11	11/16/88	<0.050	<0.0005	<0.001	<0.001	<0.003
	02/27/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	05/03/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/09/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	0.0006	<0.0005	0.0011
	10/18/90	<0.050	<0.0005	<0.0005	<0.0005	0.0005
	01/28/91	0.063	<0.0005	0.0033	0.0009	0.007

**Table 2 (Continued)**

**Summary of Historical Groundwater Analytical Results**  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-11	04/25/91	<0.050	<0.0005	<0.0005	0.0008	<0.0005
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/13/93	NA	NA	NA	NA	NA
	04/16/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/23/93	NA	NA	NA	NA	NA
	10/27/93	NA	NA	NA	NA	NA
S-12	11/16/88	0.050	0.0035	<0.001	<0.001	<0.003
	02/27/89	<0.050	0.0008	<0.001	<0.001	<0.003
	05/03/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/09/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/28/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/25/91	0.090	0.0054	<0.0005	0.0011	0.0007
	07/09/91	<0.050	0.0029	<0.0005	<0.0005	<0.0005
	10/08/91	0.050	<0.0005	<0.0005	<0.0005	<0.0005
	02/05/92	0.050*	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/27/92	0.094^	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	0.086^	<0.0005	<0.0005	<0.0005	<0.0005
	01/14/93	0.12	0.002	<0.0005	<0.0005	<0.0005
	04/16/93	0.060	<0.0005	<0.0005	<0.0005	<0.0005
	07/23/93	0.090	<0.0005	<0.0005	<0.0005	0.0009
10/27/93	NA	NA	NA	NA	NA	
S-13	05/03/89	0.15	0.0049	0.004	0.002	0.014
	08/10/89	0.11	0.0029	<0.001	<0.001	<0.003
	10/09/89	0.077	0.0014	<0.001	<0.001	<0.003
	01/25/90	0.051	0.0005	<0.0005	<0.0005	<0.001
	04/18/90	0.085	0.0087	<0.0005	<0.0005	<0.001
	07/23/90	0.080	0.0008	<0.0005	<0.0005	<0.0005

Table 2 (Continued)

Summary of Historical Groundwater Analytical Results  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-13	10/18/90	0.13	<0.0005	<0.0005	<0.0005	<0.0005
	01/28/91	<0.050	<0.0005	0.0009	<0.0005	0.001
	04/25/91	0.44*	0.0038	<0.0005	0.0012	0.0006
	07/09/91	0.32*	0.0006	<0.0005	<0.0005	<0.0005
	10/08/91	0.31	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	0.18^	<0.0005	<0.0005	<0.0005	<0.0005
	01/13/93	NA	NA	NA	NA	NA
	04/16/93	0.24	0.0048	<0.0005	0.0013	<0.0005
	07/23/93	NA	NA	NA	NA	NA
	10/27/93	NA	NA	NA	NA	NA
S-14	05/03/89	5.3	0.75	0.40	0.20	0.80
	08/10/89	1.8	0.54	0.14	0.042	0.050
	10/09/89	1.0	0.36	0.060	0.020	0.030
	01/25/90	0.64	0.16	0.077	0.017	0.039
	04/18/90	1.2	0.20	0.11	0.030	0.096
	07/23/90	5.0	0.43	0.34	0.14	0.66
	10/18/90	1.8	0.77	0.013	0.017	0.12
	01/28/91	0.72	0.20	0.036	0.021	0.078
	04/25/91	14	0.93	0.43	0.25	0.97
	07/09/91	0.16	0.030	0.0053	0.005	0.016
	10/08/91	5.4	0.081	0.057	0.095	0.38
	04/28/92	2.0	0.27	0.14	0.048	0.17
	10/26/92	0.92	0.033	0.012	0.025	0.088
	01/13/93	NA	NA	NA	NA	NA
	04/16/93	4.5	1.1	0.029	0.091	0.17
07/23/93	NA	NA	NA	NA	NA	
10/27/93	NA	NA	NA	NA	NA	
S-15	05/03/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/09/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.001	<0.001	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/28/91	<0.050	<0.0005	0.0006	<0.0005	0.0008

Table 2 (Continued)

**Summary of Historical Groundwater Analytical Results**  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-15	04/25/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	02/05/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	0.050	0.0008	0.0009	<0.0005	0.0014
	07/27/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/14/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/16/93	<0.050	0.0006	0.001	<0.0005	0.0007
	07/23/93	<0.050	0.0012	<0.0005	<0.0005	0.0016
	10/27/93	NA	NA	NA	NA	NA
S-16	05/04/89	0.38	0.044	0.003	0.002	<0.003
	08/10/89	<0.050	0.0006	<0.001	<0.001	<0.003
	10/10/89	<0.005	<0.0005	<0.001	<0.001	<0.003
	01/25/90	0.24	0.16	0.0033	0.0008	0.011
	04/18/90	<0.050	0.001	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	0.0011	<0.0005	<0.0005	<0.0005
	10/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/28/91	<0.050	<0.0005	0.0006	<0.0005	0.0009
	04/25/91	0.060 <sup>A</sup>	0.021	0.0005	0.0032	0.0048
	07/09/91	<0.050	0.001	<0.0005	<0.0005	<0.0005
	10/08/91	0.050	0.017	0.0014	0.0012	0.0055
	02/05/92	0.15	0.065	0.0007	<0.0005	0.0084
	04/28/92	<0.050	0.013	<0.0005	<0.0005	<0.0005
	07/27/92	0.51	0.13	<0.0025	<0.0005	0.021
	10/26/92	<0.050	<0.0005	<0.0005	<0.0025	<0.0005
	01/13/93	0.10	0.025	0.0019	<0.0005	0.0084
	04/16/93	0.15	0.056	0.0018	0.0046	0.012
	07/23/93	<0.050	0.0009	<0.0005	<0.0005	<0.0005
10/27/93	<0.050	0.0015	<0.0005	<0.0005	<0.0005	
S-17	05/03/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	08/10/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	10/09/89	<0.050	<0.0005	<0.001	<0.001	<0.003
	01/25/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	04/18/90	<0.050	<0.0005	<0.0005	<0.0005	<0.001
	07/23/90	<0.050	<0.0005	<0.0005	<0.0005	<0.0005

Table 2 (Continued)

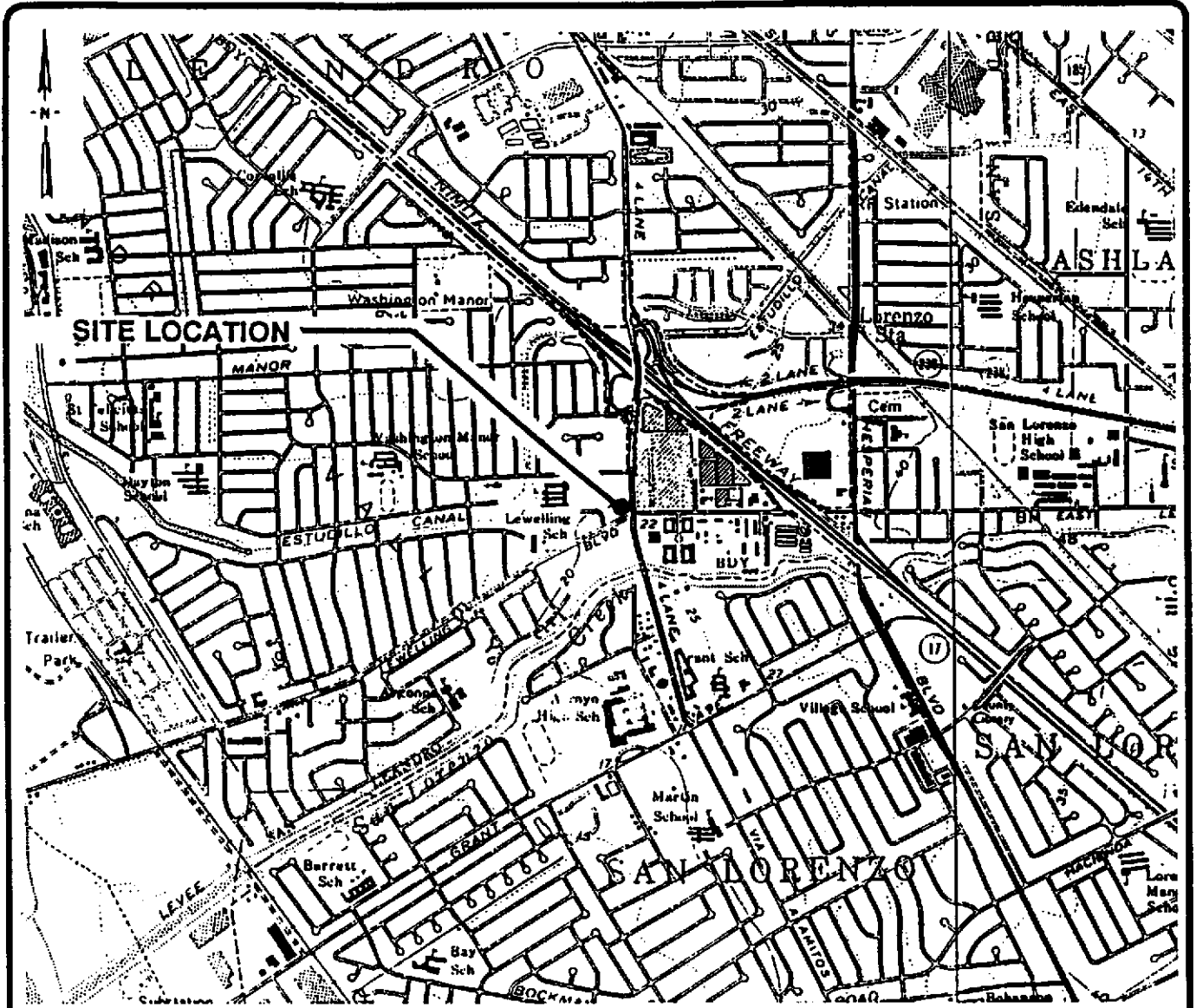
**Summary of Historical Groundwater Analytical Results**  
(milligrams per liter)

Well Number	Sampling Date	TPHG	Benzene	Toluene	Ethylbenzene	Total Xylenes
S-17	10/18/90	0.39	0.010	0.062	0.022	0.11
	01/28/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/25/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/13/93	NA	NA	NA	NA	NA
	04/16/93	0.13	<0.0005	<0.0005	<0.0005	<0.0005
	07/23/93	NA	NA	NA	NA	NA
	10/27/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
S-18	05/31/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/09/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/08/91	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	02/05/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/28/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/27/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/26/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	01/13/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	04/16/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	07/23/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	10/27/93	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
SR-1	03/22/89	5.4	1.1	0.23	0.35	1.3
	01/25/90	2.2	0.47	0.12	0.11	0.51
	04/18/90	1.0	0.13	0.047	0.047	0.22
	07/23/90	3.2	0.47	0.32	0.17	0.87
	10/18/90	1.3	0.28	0.0066	0.11	0.13
	01/28/91	0.11	0.12	0.012	0.051	0.11
	07/09/91	1.4	0.20	0.027	0.13	0.34
	10/08/91	0.98	0.079	0.0015	0.044	0.052
	02/05/92	3.8	0.58	0.036	0.32	0.40
	04/28/92	38	1.8	0.46	1.9	0.75
	07/27/92	FP	FP	FP	FP	FP
	10/26/92	1.8	0.37	0.010	0.13	0.13
	01/13/93	47	1.0	1.1	1.7	13

**Table 2 (Continued)**

**Summary of Historical Groundwater Analytical Results  
(milligrams per liter)**

<b>Well Number</b>	<b>Sampling Date</b>	<b>TPHG</b>	<b>Benzene</b>	<b>Toluene</b>	<b>Ethylbenzene</b>	<b>Total Xylenes</b>
SR-1	04/16/93	25	1.7	0.43	2.4	8.3
	07/23/93	33	2.4	2.0	3.8	14
	10/27/93	2.3	0.34	<0.0125	0.27	0.44
TPHG = Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified). BTEX = Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020. NA = Not analyzed. * = Compounds detected within the chromatographic range of gasoline but not characteristic of the standard gasoline pattern. ^ = Compounds detected are volatile aromatics (BTEX) present in sample.						



**SITE LOCATION**

SCALE: 0 2000 FEET

Base map from GeoStrategies, Inc.

12/93

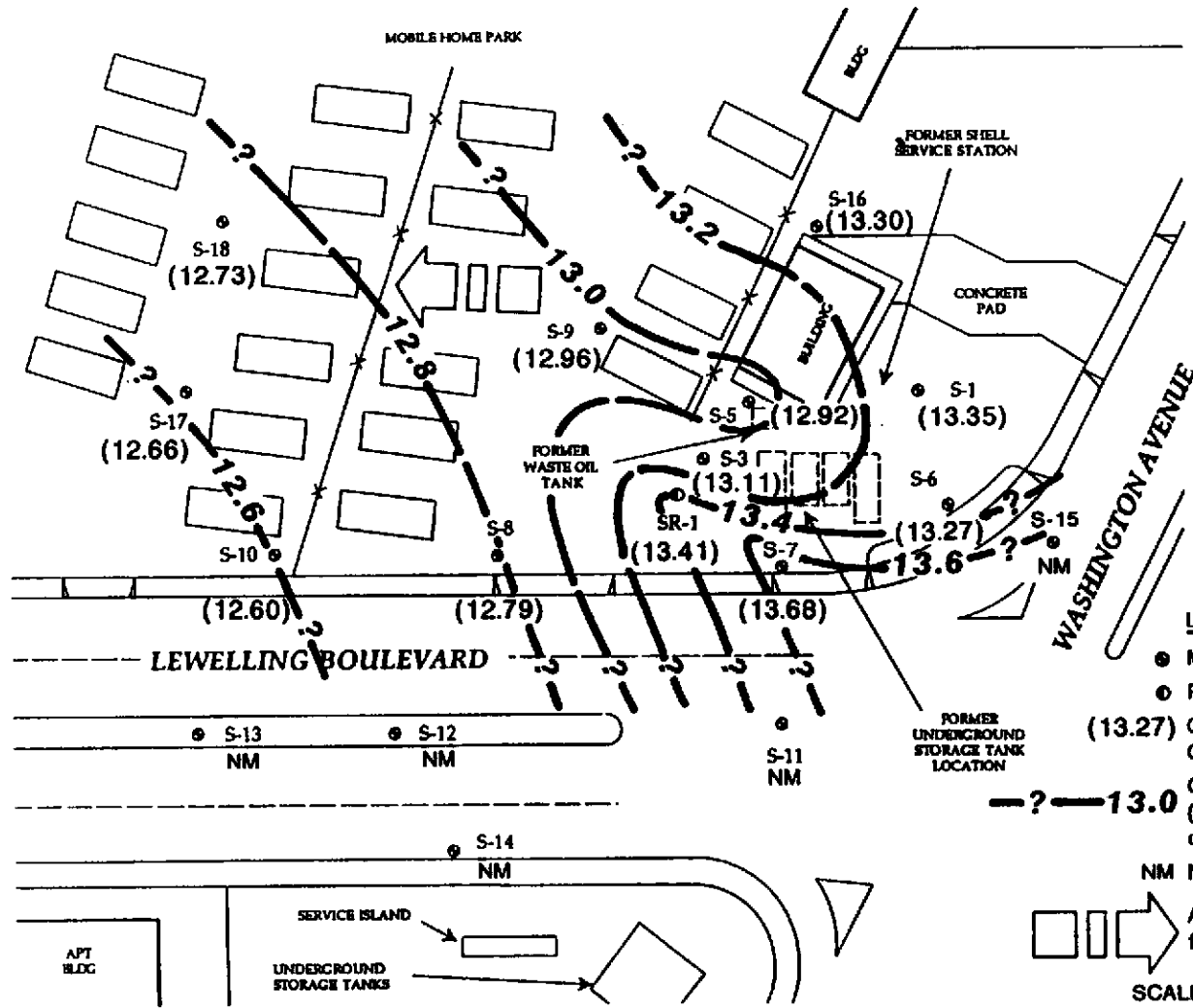


SHELL OIL COMPANY  
 FORMER SHELL SERVICE STATION  
 15275 WASHINGTON AVENUE  
 SAN LEANDRO, CALIFORNIA

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SITE LOCATION MAP

FIGURE  
**1**  
 PROJECT NO.  
 0117-115.01



Base map from Hydro-Environmental Technologies, Inc.

1/94



**EMCON**  
Associates  
Sacramento, California

SHELL OIL COMPANY  
FORMER SHELL SERVICE STATION  
15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

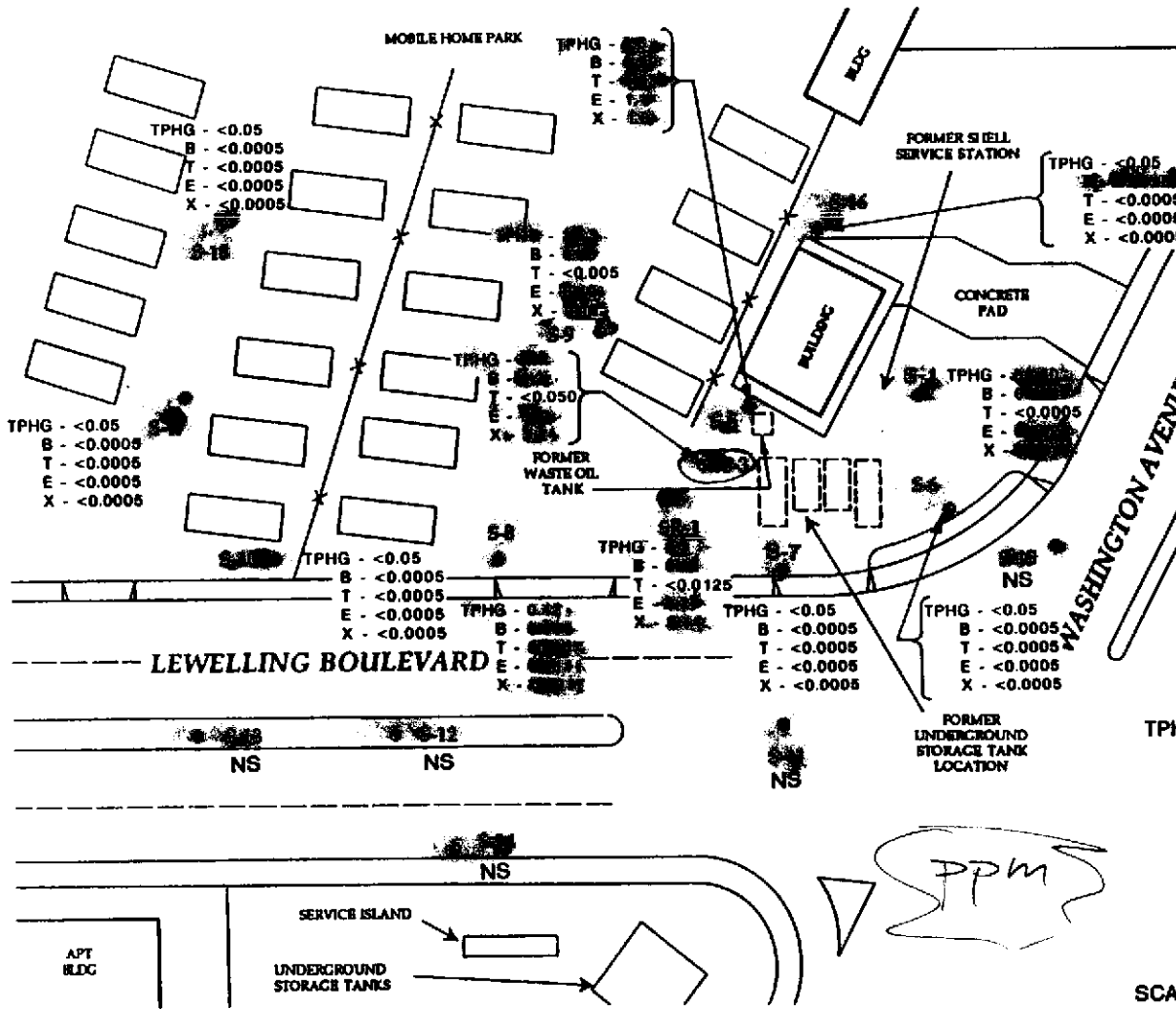
GROUNDWATER CONTOUR MAP, OCTOBER 27, 1993

FIGURE

**2**

PROJECT NO.  
0117-115.01





- LEGEND**
- ⊙ Monitoring well
  - ⊠ Recovery well
  - TPHG - Total petroleum hydrocarbons as gasoline
  - B - Benzene, mg/l
  - T - Toluene, mg/l
  - E - Ethylbenzene, mg/l
  - X - Total xylenes, mg/l
  - NS - Not sampled

SCALE: 0 \_\_\_\_\_ 60 FEET

Base map from Hydro-Environmental Technologies, Inc.



SHELL OIL COMPANY  
FORMER SHELL SERVICE STATION  
15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

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TPHG AND BTEX CONCENTRATION MAP,  
OCTOBER 27, 1993

FIGURE  
**3**  
PROJECT NO.  
0117-115.01

**ATTACHMENT A**

**QUARTERLY GROUNDWATER SAMPLING REPORT  
931027-W-1, BLAINE TECH SERVICES, INC.**



# BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE  
SAN JOSE, CA 95133  
(408) 995-5535  
FAX (408) 293-8773

RECEIVED

DEC 13 1993

December 3, 1993

EMCON

Shell Oil Company  
P.O. Box 5278  
Concord, CA 94520-9998

Attn: Lynn Walker

SITE:  
Shell WIC #204-6852-1008  
15275 Washington  
San Leandro, California

QUARTER:  
4th quarter of 1993

## QUARTERLY GROUNDWATER SAMPLING REPORT 931027-W-1

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This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a **TABLE OF WELL GAUGING DATA**. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.

## **STANDARD PROCEDURES**

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### **Evacuation**

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water are removed in cases where more evacuation is needed to achieve stabilization of water parameters and when requested by the local implementing agency. Less water may be removed in cases where the well dewateres and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

### **Decontamination**

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Effluent water from purging and on-site equipment cleaning is collected and transported to Shell's Martinez Manufacturing Complex in Martinez, California.

### **Free Product Skimmer**

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This

recovered free product is measured and logged in the **VOLUME OF IMMISCIBLES REMOVED** column. Gauging at such site is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

### **Sample Containers**

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

### **Sampling**

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

### **Sample Designations**

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label. Either the requested analyses or the specific analytes are written on the sample label (e.g. TPH-G, BTEX).

### **Chain of Custody**

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

### **Hazardous Materials Testing Laboratory**

The samples obtained at this site were delivered to Anametrix, Inc. in San Jose, California. Anametrix, Inc. is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1234.

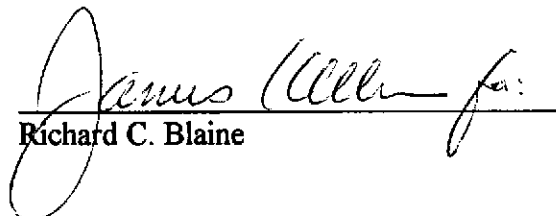
## Objective Information Collection

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

## Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

  
Richard C. Blaine

RCB/lp

attachments: table of well gauging data  
chain of custody  
certified analytical report

cc: EMCON Associates  
1433 N. Market Blvd.  
Sacramento, CA 95834-1943  
ATTN: Bob Husk


## TABLE OF WELL GAUGING DATA

WELL I.D.	DATA COLLECTION DATE	MEASUREMENT REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLES LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
S-1	10/27/93	TOB	--	NONE	--	--	8.20	20.01
S-3	10/27/93	TOB	SHEEN/ODOR	--	--	--	8.03	15.48
S-5	10/27/93	TOB	ODOR	NONE	--	--	8.49	18.44
S-6	10/27/93	TOB	--	NONE	--	--	8.75	24.70
S-7	10/27/93	TOB	--	NONE	--	--	7.79	24.27
S-8	10/27/93	TOB	--	NONE	--	--	7.93	24.26
S-9 *	10/27/93	TOB	ODOR	NONE	--	--	8.00	17.94
S-10	10/27/93	TOB	--	NONE	--	--	8.09	18.25
S-11	10/27/93	INACCESSIBLE						
S-12	10/27/93	INACCESSIBLE						
S-13	10/27/93	INACCESSIBLE						
S-14	10/27/93	INACCESSIBLE						
S-15	10/27/93	INACCESSIBLE						
S-16	10/27/93	TOB	--	NONE	--	--	8.52	24.22
S-17	10/27/93	TOB	--	NONE	--	--	8.29	24.37
S-18	10/27/93	TOB	--	NONE	--	--	8.30	18.08
SR-1	10/27/93	TOB	ODOR	NONE	--	--	8.04	21.21

\* Sample DUP was a duplicate sample taken from well S-9.

54  
0012

9310409 (18)


 <b>SHELL OIL COMPANY</b> RETAIL ENVIRONMENTAL ENGINEERING - WEST										<b>CHAIN OF CUSTODY RECORD</b> Serial No: <u>931027-W</u>										Date: <u>10/27/93</u> Page: <u>1 of 2</u>																																																																																					
Site Address: <u>15275 Washington San Leandro</u>										<b>Analysis Required</b>										LAB: <u>Anametrix</u>																																																																																					
WIC#: <u>204-6852-100P</u>										<table border="1"> <tr> <th>CHECK ONE (1) BOX ONLY</th> <th>CL/DI</th> <th>TURN AROUND TIME</th> </tr> <tr> <td>Groundwater Monitoring <input checked="" type="checkbox"/></td> <td>6441</td> <td>24 hours <input type="checkbox"/></td> </tr> <tr> <td>Site Investigation <input type="checkbox"/></td> <td>6441</td> <td>48 hours <input type="checkbox"/></td> </tr> <tr> <td>Soil Classfy/Disposal <input type="checkbox"/></td> <td>6442</td> <td>15 days <input checked="" type="checkbox"/> (Normal)</td> </tr> <tr> <td>Water Classfy/Disposal <input type="checkbox"/></td> <td>6443</td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Sol/Ab Rem. or Sys. O &amp; M <input type="checkbox"/></td> <td>6442</td> <td></td> </tr> <tr> <td>Water Rem. or Sys. O &amp; M <input type="checkbox"/></td> <td>6443</td> <td></td> </tr> <tr> <td>Other <input type="checkbox"/></td> <td></td> <td></td> </tr> </table>										CHECK ONE (1) BOX ONLY	CL/DI	TURN AROUND TIME	Groundwater Monitoring <input checked="" type="checkbox"/>	6441	24 hours <input type="checkbox"/>	Site Investigation <input type="checkbox"/>	6441	48 hours <input type="checkbox"/>	Soil Classfy/Disposal <input type="checkbox"/>	6442	15 days <input checked="" type="checkbox"/> (Normal)	Water Classfy/Disposal <input type="checkbox"/>	6443	Other <input type="checkbox"/>	Sol/Ab Rem. or Sys. O & M <input type="checkbox"/>	6442		Water Rem. or Sys. O & M <input type="checkbox"/>	6443		Other <input type="checkbox"/>			NOTE: Notify Lab as soon as Possible of 24/48 hrs. LAT.																																																													
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9310409

(18)

 <b>SHELL OIL COMPANY</b> RETAIL ENVIRONMENTAL ENGINEERING - WEST		<b>CHAIN OF CUSTODY RECORD</b> Serial No: <u>9310409-W1</u>				Date: <u>10/27/93</u> Page <u>2 of 2</u>																	
Site Address: <u>15275 Washington San Leandro</u>		<b>Analysis Required</b>				LAB: <u>Anamatrix</u>																	
WIC#: <u>204-6952-1008</u>		TPH (EPA 8015 Mod. Gas) TPH (EPA 8015 Mod. Diesel) BTEX (EPA 8020/602) Volatile Organics (EPA 8240) Test for Disposal Combination TPH 8015 & BTEX 8020 Asbestos Container Size Preparation Used Composite Y/N		CHECK ONE (1) BOX ONLY Quarterly Monitoring <input checked="" type="checkbox"/> 6441 Site Investigation <input type="checkbox"/> 6441 Soil Classfy/Disposal <input type="checkbox"/> 6442 Water Classfy/Disposal <input type="checkbox"/> 6443 Soil/Air Rem. or Sys. O & M <input type="checkbox"/> 6452 Water Rem. or Sys. O & M <input type="checkbox"/> 6453 Other <input type="checkbox"/>		TURN AROUND TIME 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 15 days <input checked="" type="checkbox"/> (Normal) Other <input type="checkbox"/>																	
Shell Engineer: <u>Lynn Walker</u> Phone No.: (510) 675-6170 Fax #: 675-6170				MATERIAL DESCRIPTION		SAMPLE CONDITION/COMMENTS																	
Consultant Name & Address: <u>Blaine Tech Services, Inc.</u> <u>985 Timothy Drive, San Jose, CA 95133</u>				TPH (EPA 8015 Mod. Diesel) BTEX (EPA 8020/602) Volatile Organics (EPA 8240) Test for Disposal Combination TPH 8015 & BTEX 8020 Asbestos Container Size Preparation Used Composite Y/N		NOTE: Helly Lab as soon as Possible of 24/48 hrs. 1AT.																	
Consultant Contact: <u>Jim Keller</u> Phone No.: (408) 995-5535 Fax #: 293-8773				Comments:		Sampled by: <u>[Signature]</u> Printed Name: <u>ODN WEST</u>																	
Sample ID		Date		Sludge		Soil		Water		Air		No. of conls.		TPH (EPA 8015 Mod. Gas) TPH (EPA 8015 Mod. Diesel) BTEX (EPA 8020/602) Volatile Organics (EPA 8240) Test for Disposal Combination TPH 8015 & BTEX 8020 Asbestos Container Size Preparation Used Composite Y/N		MATERIAL DESCRIPTION		SAMPLE CONDITION/COMMENTS					
9 S-9		10/27						X				3				Groundwater							
10 SR-1								X				3											
11 S-5								X				3											
12 S-3								X				3											
13 DUP								X				3											
14 EB								X				3				Equip blank							
15 TB								X				2				Trip blank							
Relinquished By (signature): <u>[Signature]</u>		Printed Name: <u>ODN WEST</u>		Date: <u>10/28/93</u>		Time: <u>15:10</u>		Received (signature): <u>[Signature]</u>		Printed Name: <u>Dean Harris</u>		Date: <u>10/28/93</u>		Time: <u>17:45</u>		Relinquished By (signature): <u>[Signature]</u>		Printed Name: <u>Mania Barajas</u>		Date: <u>10/28/93</u>		Time: <u>17:45</u>	
Relinquished By (signature): <u>[Signature]</u>		Printed Name: <u>Dean Harris</u>		Date: <u>10/28/93</u>		Time: <u>14:45</u>		Received (signature): <u>[Signature]</u>		Printed Name: <u>Mania Barajas</u>		Date: <u>10/28/93</u>		Time: <u>17:45</u>		Relinquished By (signature): <u>[Signature]</u>		Printed Name: <u>Mania Barajas</u>		Date: <u>10/28/93</u>		Time: <u>17:45</u>	

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Shell Oil Co. or Conoco



# Inchcape Testing Services

## Anamatrix Laboratories

1961 Concourse Drive  
 Suite E  
 San Jose, CA 95131  
 Tel: 408-432-8192  
 Fax: 408-432-8198

MR. JIM KELLER  
 BLAINE TECH  
 985 TIMOTHY DRIVE  
 SAN JOSE, CA 95133

Workorder # : 9310409  
 Date Received : 10/28/93  
 Project ID : 204-6852-1008  
 Purchase Order: MOH-B813

The following samples were received at Anamatrix, Inc. for analysis :

ANAMATRIX ID	CLIENT SAMPLE ID
9310409- 1	S-6
9310409- 2	S-10
9310409- 3	S-16
9310409- 4	S-1
9310409- 5	S-7
9310409- 6	S-17
9310409- 7	S-18
9310409- 8	S-8
9310409- 9	S-9
9310409-10	SR-1
9310409-11	S-5
9310409-12	S-3
9310409-13	DUP
9310409-14	EB
9310409-15	TB

This report consists of 9 pages not including the cover letter, and is organized in sections according to the specific Anamatrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anamatrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anamatrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

  
 Sarah Schoen, Ph.D.  
 Laboratory Director

11-08-93  
 Date

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. JIM KELLER  
BLAINE TECH  
985 TIMOTHY DRIVE  
SAN JOSE, CA 95133

Workorder # : 9310409  
Date Received : 10/28/93  
Project ID : 204-6852-1008  
Purchase Order: MOH-B813  
Department : GC  
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9310409- 1	S-6	WATER	10/27/93	TPHgBTEX
9310409- 2	S-10	WATER	10/27/93	TPHgBTEX
9310409- 3	S-16	WATER	10/27/93	TPHgBTEX
9310409- 4	S-1	WATER	10/27/93	TPHgBTEX
9310409- 5	S-7	WATER	10/27/93	TPHgBTEX
9310409- 6	S-17	WATER	10/27/93	TPHgBTEX
9310409- 7	S-18	WATER	10/27/93	TPHgBTEX
9310409- 8	S-8	WATER	10/27/93	TPHgBTEX
9310409- 9	S-9	WATER	10/27/93	TPHgBTEX
9310409-10	SR-1	WATER	10/27/93	TPHgBTEX
9310409-11	S-5	WATER	10/27/93	TPHgBTEX
9310409-12	S-3	WATER	10/27/93	TPHgBTEX
9310409-13	DUP	WATER	10/27/93	TPHgBTEX
9310409-14	EB	WATER	10/27/93	TPHgBTEX
9310409-15	TB	WATER	10/27/93	TPHgBTEX

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. JIM KELLER  
BLAINE TECH  
985 TIMOTHY DRIVE  
SAN JOSE, CA 95133

Workorder # : 9310409  
Date Received : 10/28/93  
Project ID : 204-6852-1008  
Purchase Order: MOH-B813  
Department : GC  
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Charles Balmer  
Department Supervisor

11/8/93  
Date

Charles Burch 11.8.93  
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9310409  
Matrix : WATER  
Date Sampled : 10/27/93

Project Number : 204-6852-1008  
Date Released : 11/08/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# S-17	Sample I.D.# S-18	Sample I.D.# S-8	Sample I.D.# S-9	Sample I.D.# SR-1
Benzene	0.5	ND	ND	65	400	340
Toluene	0.5	ND	ND	0.7	ND	ND
Ethylbenzene	0.5	ND	ND	11	190	270
Total Xylenes	0.5	ND	ND	1.7	110	440
TPH as Gasoline	50	ND	ND	420	2500	2300
% Surrogate Recovery		100%	98%	100%	109%	99%
Instrument I.D.		HP12	HP12	HP12	HP12	HP4
Date Analyzed		11/02/93	11/02/93	11/02/93	11/02/93	11/03/93
RLMF		1	1	1	10	25

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor (Dilution).

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Charles R. Burch 11.8.93  
Analyst Date

Cheryl Bulmer 11/8/93  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9310409  
Matrix : WATER  
Date Sampled : 10/27/93

Project Number : 204-6852-1008  
Date Released : 11/08/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# S-6	Sample I.D.# S-10	Sample I.D.# S-16	Sample I.D.# S-1	Sample I.D.# S-7
Benzene	0.5	ND	ND	1.5	5.9	ND
Toluene	0.5	ND	ND	ND	2.5	ND
Ethylbenzene	0.5	ND	ND	ND	1.7	ND
Total Xylenes	0.5	ND	ND	ND	60	ND
TPH as Gasoline	50	ND	ND	ND		
% Surrogate Recovery		106%	98%	99%	105%	120%
Instrument I.D.		HP12	HP12	HP12	HP12	HP12
Date Analyzed		11/01/93	11/01/93	11/01/93	11/01/93	11/01/93
RLMF		1	1	1	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
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Charles Burch 11-8-93  
Analyst Date

Cheryl Balmer 11/5/93  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9310409  
Matrix : WATER  
Date Sampled : 10/27/93

Project Number : 204-6852-1008  
Date Released : 11/08/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# S-5	Sample I.D.# S-3	Sample I.D.# DUP	Sample I.D.# EB	Sample I.D.# TB
Benzene	0.5	990	2200	440	ND	ND
Toluene	0.5	31	ND	37	ND	ND
Ethylbenzene	0.5	1100	1500	210	ND	ND
Total Xylenes	0.5	1000	3200	220	ND	ND
TPH as Gasoline	50	6500	36000	2400	ND	ND
% Surrogate Recovery		109%	112%	115%	99%	105%
Instrument I.D.		HP12	HP12	HP12	HP12	HP12
Date Analyzed		11/02/93	11/02/93	11/02/93	11/02/93	11/02/93
RLMF		50	100	10	1	1

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- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
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Charles M Burch 11.8.93  
Analyst Date

Charles Paulsen 11/8/93  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9310409  
Matrix : WATER  
Date Sampled : 10/27/93

Project Number : 204-6852-1008  
Date Released : 11/08/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# BN0101E2 BLANK	Sample I.D.# BN0201E2 BLANK	Sample I.D.# BN0302E2 BLANK
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND
% Surrogate Recovery		96%	94%	95%
Instrument I.D.		HP12	HP12	HP4
Date Analyzed		11/01/93	11/02/93	11/03/93
RLMF		1	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor (Dilution).

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Charles M. Burch 11.8.93  
Analyst Date

Charles Beckman 11/11/93  
Supervisor Date



TOTAL VOLATILE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT  
 EPA METHOD 5030 WITH GC/PID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE  
 Matrix : WATER  
 Date Sampled : N/A  
 Date Analyzed : 11/01/93

Anamatrix I.D. : MN0101E1  
 Analyst : *CMB*  
 Supervisor : *CS*  
 Date Released : 11/05/93  
 Instrument I.D.: HP12

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS *
Benzene	20.0	21.5	108%	52-133
Toluene	20.0	21.2	106%	57-136
Ethylbenzene	20.0	22.8	114%	56-139
Total Xylenes	20.0	20.2	101%	56-141
P-BFB			109%	61-139

\* Quality control limits established by Anamatrix, Inc.

TOTAL VOLATILE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT  
 EPA METHOD 5030 WITH GC/PID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE  
 Matrix : WATER  
 Date Sampled : N/A  
 Date Analyzed : 11/02/93

Anamatrix I.D. : MN0201E1  
 Analyst : *CMB*  
 Supervisor : *U*  
 Date Released : 11/08/93  
 Instrument I.D.: HP12

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS *
Benzene	20.0	22.5	113%	52-133
Toluene	20.0	24.2	121%	57-136
Ethylbenzene	20.0	24.9	124%	56-139
Total Xylenes	20.0	25.6	128%	56-141
P-BFB			108%	61-139

\* Quality control limits established by Anamatrix, Inc.

TOTAL VOLATILE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT  
 EPA METHOD 5030 WITH GC/FID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE  
 Matrix : WATER  
 Date Sampled : N/A  
 Date Analyzed : 11/04/93

Anamatrix I.D. : MN0302E1  
 Analyst : *Chub*  
 Supervisor : *g*  
 Date Released : 11/05/93  
 Instrument I.D.: HP4

COMPOUND	SPIKE AMT. (ug/L)	REC LCS (ug/L)	%REC LCS	% REC LIMITS *
GASOLINE	500	390	78%	67-127
p-BFB			94%	61-139

\* Quality control limits established by Anamatrix, Inc.

# WELL GAUGING DATA

*steel well 204-6852-1008*

Project # 931027-W1 Date 10/27/93 Client S.O.C.

Site 15275 Washington Av. San Leandro

Well I.D.	Well Size (in.)	Sheen/Odor	Depth to Immiscible Liquid (feet)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to Water (feet)	Depth to Well Bottom (feet)	Survey Point: TOB or TOC
S-1	3					20.01	8.20	7.0.3
S-3	3					8.03	15.48	}
S-5	4					8.49	18.44	
S-6	3					8.75	24.70	
S-7	3					7.79	24.27	
S-8	3					7.93	24.26	
						<del>8.00</del>	<del>17.94</del>	
* S-9	3					8.00	17.94	
S-10	3					8.09	18.25	
S-11	}							
S-12								
S-13								
S-14								
S-15								
S-16	3					8.52	24.22	
S-17	3					8.29	24.37	

} inaccessible - paved over w/ new pavement - boxes not raised yet.

\* strong odor of gasoline around cap but not in well water.



# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852 1008
Sampler: DW/JB	Date Sampled: 10/27/93
Well I.D.: 5-1	Well Diameter: (circle one) 2 <u>3</u> 4 6
Total Well Depth: Before 20.01 After	Depth to Water: Before 8.20 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC      Grade      Other --

Volume Conversion Factor (VCF):  
 $(12 \times (d^2/4) \times \pi) / 231$   
 where  
 $12 = \text{in./ft.}$   
 $d = \text{diameter (in.)}$   
 $\pi = 3.1416$   
 $231 = \text{in}^3/\text{gal}$

Well dia.	VCF
2"	0.34
3"	0.77
4"	1.05
6"	1.47
8"	2.04
12"	1.97

<u>4.4</u>	x	<u>3</u>	=	<u>13.2</u>	gallons
1 Case Volume		Specified Volumes			

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_

Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1220	73.4	7.7	1100	>200	5	
1222	72.6	7.5	1300	140.4	10	
1224	<del>72.0</del> 72.0	7.4	1300	113.1	15	

Did Well Dewater?  If yes, gals.      Gallons Actually Evacuated: 15

Sampling Time: 1230

Sample I.D.: S-1      Laboratory: (A)

Analyzed for: TPH GAS BTEX

Duplicate I.D.:      Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations:

# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852 1008
Sampler: JB/DW	Date Sampled: 10/27/93
Well I.D.: 5-3	Well Diameter: (circle one) 2 <u>3</u> 4 6
Total Well Depth: Before 15.48 After	Depth to Water: Before 8.03 After
Depth to Free Product: <i>None</i>	Thickness of Free Product (feet): <u>      </u>
Measurements referenced to:	PVC <input type="checkbox"/> <u>Grade</u> <input checked="" type="checkbox"/> Other -- <input type="checkbox"/>

Volume Conversion Factor (VCF):  
 $VCF = (c^2/n) \times \pi / 2.31$   
 where  
 c = in/foot  
 n = 2.31 ft  
 2.31 = 2.31 ft

Well dia.	VCF
2"	0.26
3"	0.37
4"	0.48
6"	1.07
8"	1.64
10"	2.31
12"	3.07

<u>2.8</u>	x	<u>3</u>	=	<u>8.4</u>	gallons
1 Case Volume		Specified Volumes			

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_

Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1554	75.0	7.7	1000	7200	3	odor & sheen
1558	74.8	7.7	1000	7200	6	" "
1603	75.2	7.4	1000	7200	9	" "

Did Well Dewater? NO If yes, gals. Gallons Actually Evacuated: 9

Sampling Time: 1608

Sample I.D.: 5-3 Laboratory: (A)

Analyzed for: TPH GAS BTEX

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: slow recharge

# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852 1008
Sampler: JB/DW	Date Sampled: 10/27/93
Well I.D.: S-5	Well Diameter: (circle one) 2 3 <u>4</u> 6
Total Well Depth: Before 18.44 After	Depth to Water: Before 8.49 After
Depth to Free Product: <u>None</u>	Thickness of Free Product (feet): <u>    </u>
Measurements referenced to:	PVC <u>Grade</u> Other --

Volume Conversion Factor (VCF):  
 $(\pi \times (d^2/4) \times h) / 2.31$   
 where  
 $d = \text{in./ft.}$   
 $d = \text{diameter (in.)}$   
 $h = \text{height}$   
 $2.31 = \text{ft./gal.}$

Well dia.	VCF
2"	0.24
3"	0.37
4"	0.49
6"	1.07
8"	1.49
10"	1.90
12"	2.31

6.5	x	3	=	19.5
1 Case Volume		Specified Volumes		gallons

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_

Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1531	72.4	7.8	1050	69	7	odor
1534	71.8	7.8	1050	195	14	odor
1537	70.8	7.8	1050	134	20	odor

Did Well Dewater? No If yes, gals. Gallons Actually Evacuated: 20

Sampling Time: 1540

Sample I.D.: S-5 Laboratory: (D)

Analyzed for: TPH GAS, BTEX

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_



# SHELL WELL MONITORING DATA SHEET

Project #: <u>A31027-W1</u>	Wic # <u>204 6852 1008</u>
Sampler: <u>DW/JS</u>	Date Sampled: <u>10/27/93</u>
Well I.D.: <u>S-6</u>	Well Diameter: (circle one) 2 <input checked="" type="radio"/> 4 <input type="radio"/> 6 <input type="radio"/>
Total Well Depth: Before <u>24.41</u> After <u>18.41</u>	Depth to Water: Before <u>8.75</u> After _____
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Measurements referenced to: PVC <input type="checkbox"/> <u>Grade</u> <input checked="" type="checkbox"/> Other -- <input type="checkbox"/>	

Volume Conversion Factor (VCF):  

$$VCF = (c^2/n) \times \pi / 2.31$$
 where  
 $c = \text{in./foot}$   
 $n = \text{diameter (in.)}$   
 $\pi = 3.1416$   
 $2.31 = \text{ft./in.}$

Well dia.	VCF
2"	0.16
3"	0.37
4"	0.68
6"	1.47
8"	2.68
10"	4.08
12"	5.87

<u>5.9</u>	x	<u>3</u>	=	<u>17.7</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Type of Installed Pump \_\_\_\_\_

Sampling: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1039	73.8	7.7	1200	>200	6	
1042	72.0	7.6	1100	>200	12	
1046	72.0	7.6	1100	>200	18	

Did Well Dewater?  If yes, gals. \_\_\_\_\_ Gallons Actually Evacuated: 18.0

Sampling Time: 1051

Sample I.D.: S-6 Laboratory: (A)

Analyzed for: TPH-GAS RIEX

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: (next)

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852
Sampler: S-7 DW/FR	Date Sampled: 10/27/93
Well I.D.: S-7	Well Diameter: (circle one) 2 <u>3</u> 4 6
Total Well Depth: Before 24.27 After	Depth to Water: Before 7.79 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <u>Grade</u> Other --

Volume Conversion Factor (VCF):  
 $VCF = (C^2/n) \times 2.31$   
 where  
 C = in./foot  
 n = 2.31 ft  
 2.31 = 2.31 gal

Well dia.	VCF
2"	0.34
3"	0.79
4"	1.10
6"	1.47
8"	2.04
10"	2.98

$$\underline{6.1} \times \underline{3} = \underline{18.3}$$

1 Case Volume                      Specified Volumes                      =                      gallons

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_

Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1243	75.2	7.6	1400	7200	7	
1245	72.6	7.6	1400	7200	6	
1248	73.4	7.4	1500	7200	6	

Did Well Dewater?  If yes, gals.                      Gallons Actually Evacuated: 19

Sampling Time: 1255

Sample I.D.: S-7                      Laboratory: (A)

Analyzed for: TPH GAS, BTEX

Duplicate I.D.:                      Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations:

# SHELL WELL MONITORING DATA SHEET

Project #: 931027- <del>DU</del>	Wic # 204 6552 1008
Sampler: JB/DW	Date Sampled: 10/27/93
Well I.D.: S-8	Well Diameter: (circle one) 2 <u>3</u> 4 6
Total Well Depth: Before 24.26 After	Depth to Water: Before 7.93 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <u>Grade</u> Other --

Volume Conversion Factor (VCF):  
 $(12 \cdot (d^2/4) \cdot \pi) / 231$   
 where  
 12 = in./foot  
 d = diameter (in.)  
 $\pi = 3.1416$   
 231 = gal/cu ft

Well dia.	VCF
2"	0.26
3"	0.57
4"	0.98
6"	1.47
8"	2.08
10"	2.71
12"	3.37

<u>6.0</u>	x	<u>3</u>	=	<u>18</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Type of Installed Pump \_\_\_\_\_

Sampling: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1355	74.6	7.4	1600	>200	6.0	
1359	73.6	7.4	1600	>200	12.0	
1403	72.8	7.4	1600	>200	18.0	

Did Well Dewater?  If yes, gals. Gallons Actually Evacuated: 18

Sampling Time: 1410

Sample I.D.: S-8

Laboratory: (N)

Analyzed for: TPH GAS BTEX

Duplicate I.D.:

Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations:

# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852 1008
Sampler: JB/DW	Date Sampled: 10/27/93
Well I.D.: 5-9	Well Diameter: (circle one) 2 <b>3</b> 4 6
Total Well Depth: Before 17.94 After	Depth to Water: Before 8.00 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <b>Grade</b> Other --

Volume Conversion Factor (VCF):  
 $(2.31 \times (\frac{d^2}{4}) \times \pi) / 2.31$   
 where  
 2.31 = in./foot  
 d = diameter (in.)  
 π = 3.1416  
 2.31 = lbs./gal

Well dia.	VCF
2"	0.16
3"	0.37
4"	0.65
6"	1.47
8"	2.64
10"	4.04
12"	6.17

<u>3.7</u>	x	<u>3</u>	=	<u>11.1</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Type of Installed Pump \_\_\_\_\_

Sampling: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1428	75.2	7.6	1400	185.2	4.0	Slight odor
1430	75.6	7.4	1500	>200	8.0	" "
1439	77.	7.4	1500	141.3	12.0	" "

Did Well Dewater?  If yes, gals.      Gallons Actually Evacuated: 12

Sampling Time: 1445

Sample I.D.: 5-9

Laboratory: **(A)**

Analyzed for: TPH GAS RTEX

Duplicate I.D.: DUP

Cleaning Blank I.D.:

Analyzed for: TPH GAS BTEX

Shipping Notations:

Additional Notations:

# SHELL WELL MONITORING DATA SHEET

Project #: <b>931027-W1</b>	Wic # <b>204 6852 1008</b>
Sampler: <b>DW/JB</b>	Date Sampled: <b>10/27/93</b>
Well I.D.: <b>S-10</b>	Well Diameter: (circle one) 2 <b>3</b> 4 6
Total Well Depth: Before <b>18.25</b> After	Depth to Water: Before <b>8.09</b> After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <input type="checkbox"/> <u>Grade</u> <input checked="" type="checkbox"/> Other -- <input type="checkbox"/>

Volume Conversion Factor (VCF):  
 $(12 \times (d^2/4) \times \pi) / 231$   
 where  
 12 = in/foot  
 d = diameter (in.)  
 $\pi = 3.1416$   
 231 = in<sup>3</sup>/gal

Well dia.	VCF
2"	0.36
3"	0.77
4"	1.45
6"	3.27
8"	6.98
10"	12.27
12"	18.84

<u>3.8</u>	x	<u>3</u>	=	<u>11.4</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_

Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1111	71.0	8.2	900	7200	4.0	
1115	70.2	8.0	840	7200	8.0	
1120	70.8	7.9	800	7200	12.0	

Did Well Dewater?  If yes, gals. \_\_\_\_\_ Gallons Actually Evacuated: **12.0**

Sampling Time: **1125**

Sample I.D.: **S-10** Laboratory: **D**

Analyzed for: **TPH GAS, BTEX**

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: **EB @ 10:59**

Analyzed for: **TPH GAS, BTEX**

Shipping Notations:

Additional Notations:

# SHELL WELL MONITORING DATA SHEET

Project #: <u>931027-W1</u>	Wic # <u>204-6852-1008</u>
Sampler: <u>DW/JB</u>	Date Sampled: <u>not sampled 10/27/93</u>
Well I.D.: <u>5-11</u>	Well Diameter: (circle one) 2 3 4 6 <u>    </u>
Total Well Depth: Before                      After	Depth to Water: Before                      After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC              Grade              Other --

Volume Conversion Factor (VCF):  

$$VCF = (d^2/4) \times \pi \times n / 231$$
 Where:  
 d = diameter (in.)  
 n = 1.3144  
 231 = gal/cu ft

Well dia.	VCF
2"	0.24
3"	0.57
4"	0.98
6"	2.47
8"	4.08
12"	8.17

Inaccessible - paved over

\_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ gallons

1 Case Volume                      Specified Volumes

Purging: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Type of Installed Pump _____	Sampling: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Installed Pump <input type="checkbox"/>
---	---

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:

Did Well Dewater?              If yes, gals.              Gallons Actually Evacuated:

Sampling Time: \_\_\_\_\_

Sample I.D.: \_\_\_\_\_              Laboratory: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Duplicate I.D.: \_\_\_\_\_              Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: <u>931027-W1</u>		Wic # <u>204-6852-1008</u>	
Sampler: <u>NW/JB</u>		Date Sampled: <u>not sampled 10/27/83</u>	
Well I.D.: <u>5-12</u>		Well Diameter: (circle one) 2 3 4 6 <u>    </u>	
Total Well Depth:		Depth to Water:	
Before	After	Before	After
Depth to Free Product:		Thickness of Free Product (feet):	
Measurements referenced to:		PVC	Grade
		Other --	

Volume Conversion Factor (VCF):  
 $VCF = (c^2/16) \times \pi / 231$   
 where:  
 c = in./foot  
 d = diameter (in.)  
 π = 3.1416  
 231 = in<sup>3</sup>/gal

Well dia.	VCF
2"	0.21
3"	0.27
4"	0.46
6"	1.07
10"	4.60
24"	1.17

*Unaccessible - paved over*

\_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_  
 1 Case Volume                      Specified Volumes                      gallons

Purging: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Type of Installed Pump \_\_\_\_\_

Sampling: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:

Did Well Dewater?                      If yes, gals.                      Gallons Actually Evacuated:

Sampling Time: \_\_\_\_\_

Sample I.D.: \_\_\_\_\_                      Laboratory: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Duplicate I.D.: \_\_\_\_\_                      Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: <u>93027-W1</u>		Wic # <u>204-6852</u>	
Sampler: <u>DW/IB</u>		Date Sampled: <u>NOT sampled 10/27/93</u>	
Well I.D.: <u>5-13</u>		Well Diameter: (circle one) 2 3 4 6 <u>    </u>	
Total Well Depth:		Depth to Water:	
Before	After	Before	After
Depth to Free Product:		Thickness of Free Product (feet):	
Measurements referenced to:		PVC	Grade Other --

Volume Conversion Factor (VCF):  

$$VCF = (d^2/4) \times \pi / 2.31$$
 Where  
 d = diameter (in.)  
 π = 3.1416  
 2.31 = in<sup>2</sup>/gal

Well dia.	VCF
2"	0.34
3"	0.77
4"	1.25
5"	1.97
6"	2.98

*Inaccessible - paved over*

\_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ gallons

1 Case Volume                      Specified Volumes

Purging: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Type of Installed Pump _____	Sampling: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Installed Pump <input type="checkbox"/>
---	---

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:

Did Well Dewater?                      If yes, gals.                      Gallons Actually Evacuated:

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Sampling Time: \_\_\_\_\_

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Sample I.D.: \_\_\_\_\_                      Laboratory: \_\_\_\_\_

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Analyzed for: \_\_\_\_\_

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Duplicate I.D.: \_\_\_\_\_                      Cleaning Blank I.D.: \_\_\_\_\_

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Analyzed for: \_\_\_\_\_

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Shipping Notations: \_\_\_\_\_

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Additional Notations: \_\_\_\_\_



# SHELL WELL MONITORING DATA SHEET

Project #: <u>931027-W1</u>	Wic # <u>204-6952-1008</u>
Sampler: <u>DW/IB</u>	Date Sampled: <u>not sampled 10/27/93</u>
Well I.D.: <u>5-14</u>	Well Diameter: (circle one) 2 3 4 6 <u>    </u>
Total Well Depth: Before                      After	Depth to Water: Before                      After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC                      Grade                      Other --

Volume Conversion Factor (VCF):  
 $(12 \times (12^2/4) \times \pi) / 231$   
 where  
 12 = in/foot  
 4 = diameter (in.)  
 231 = in<sup>3</sup>/gal

Well Dia.	VCF
2"	0.24
3"	0.37
4"	0.48
6"	1.07
10"	4.04
12"	5.97

*Inaccessible - paved over*

$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$   
 1 Case Volume                      Specified Volumes                      =                      gallons

Purging: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Type of Installed Pump _____	Sampling: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Installed Pump <input type="checkbox"/>
---	---

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:

Did Well Dewater?                      If yes, gals.                      Gallons Actually Evacuated:

Sampling Time: \_\_\_\_\_

Sample I.D.:                      Laboratory: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Duplicate I.D.:                      Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: <u>931027-51</u>	Wic # <u>204-6852-1008</u>
Sampler: <u>NW/173</u>	Date Sampled: <u>not sampled 10/27/93</u>
Well I.D.: <u>5-15</u>	Well Diameter: (circle one) 2 3 4 6 <u>    </u>
Total Well Depth: Before                      After	Depth to Water: Before                      After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC              Grade              Other --

Volume Conversion Factor (VCF):  
 $(12 \times (d^2/n) \times \pi) / 2.31$   
 Where:  
 12 = in./foot  
 d = diameter (in.)  
 π = 3.1416  
 2.31 = in./gal

Well dia.	VCF
2"	0.34
3"	0.57
4"	0.85
6"	1.47
10"	4.06
12"	5.87

Inaccessible - paved over

X
 
 =  gallons

1 Case Volume                      Specified Volumes

Purging: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Type of Installed Pump _____	Sampling: Bailer <input type="checkbox"/> Middleburg <input type="checkbox"/> Electric Submersible <input type="checkbox"/> Suction Pump <input type="checkbox"/> Installed Pump <input type="checkbox"/>
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TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:

Did Well Dewater?              If yes, gals.              Gallons Actually Evacuated:

Sampling Time: \_\_\_\_\_

Sample I.D.: \_\_\_\_\_              Laboratory: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Duplicate I.D.: \_\_\_\_\_              Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: <b>931027</b>	Wic # <b>204 6852 1008</b>
Sampler: <b>DW/IB</b>	Date Sampled: <b>10/27/93</b>
Well I.D.: <b>S-16</b>	Well Diameter: (circle one) <b>2</b> 3 4 6
Total Well Depth: Before <b>24.22</b> After	Depth to Water: Before <b>8.52</b> After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <input type="checkbox"/> <b>Grade</b> <input checked="" type="checkbox"/> Other -- <input type="checkbox"/>

Volume Conversion Factor (VCF):  
 $(12 \times (4^2/4) \times \pi) / 231$   
 2.31  
 12 = In/feet  
 4 = diameter (in.)  
 π = 3.1416  
 231 = gal/ft<sup>3</sup>

Well dia.	VCF
2"	0.34
3"	0.57
4"	0.81
6"	1.47
10"	4.04
12"	5.97

<u>5.8</u>	x	<u>3</u>	=	<u>17.4</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_  
 Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1157	70.0	7.6	1500	>200	6	
1159	68.2	7.6	1400	>200	12	
1201	68.8	7.5	1500	>200	18	

Did Well Dewater?  If yes, gals. \_\_\_\_\_ Gallons Actually Evacuated: **18**

Sampling Time: **1205**

Sample I.D.: **S-16** Laboratory: **(11)**

Analyzed for: **TPH GAS BTEX**

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852 1008
Sampler: JB/DW	Date Sampled: 10/27/93
Well I.D.: S-17	Well Diameter: (circle one) 2 <b>3</b> 4 6
Total Well Depth: Before 23.47 After	Depth to Water: Before 8.29 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <b>Grade</b> Other --

Volume Conversion Factor (VCF):  
 $VCF = (C^2/A) \times \pi / 2.31$   
 where:  
 C = in./foot  
 A = diameter (in.)  
 π = 3.1416  
 2.31 = ft/psi

Well dia.	VCF
2"	0.56
3"	0.87
4"	1.16
6"	1.47
8"	1.86
10"	2.37

$$\frac{5.6}{1 \text{ Case Volume}} \times \frac{3}{\text{Specified Volumes}} = \frac{16.8}{\text{gallons}}$$

Purging: Bailer  Middleburg  Electric Submersible  Suction Pump  Type of Installed Pump \_\_\_\_\_

Sampling: Bailer  Middleburg  Electric Submersible  Suction Pump  Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1316	72.2	7.7	1300	7200	6	
1319	69.6	7.7	1300	7200	12	
1322	69.8	7.7	1300	7200	17	

Did Well Dewater? 10 If yes, gals. Gallons Actually Evacuated: 17

Sampling Time: 1327

Sample I.D.: S-17 Laboratory: D

Analyzed for: TPH GAS BTEX

Duplicate I.D.: \_\_\_\_\_ Cleaning Blank I.D.: \_\_\_\_\_

Analyzed for: \_\_\_\_\_

Shipping Notations: \_\_\_\_\_

Additional Notations: \_\_\_\_\_

# SHELL WELL MONITORING DATA SHEET

Project #: 931027-W1	Wic # 204 6852 1008
Sampler: DW/JB	Date Sampled: 10/27/93
Well I.D.: S-18	Well Diameter: (circle one) 2 <u>3</u> 4 6
Total Well Depth: Before 18.08 After	Depth to Water: Before 8.30 After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to:	PVC <u>Grade</u> Other --

Volume Conversion Factor (VCF):  
 $(12 \div ((1/4) \times \pi) / 2.31)$   
 where  
 12 = In/foot  
 4 = diameter (in.)  
 π = 3.1416  
 2.31 = 2.31 ft/lb

Well dia.	VCF
2"	0.26
3"	0.37
4"	0.48
6"	0.71
8"	0.94
10"	1.17
12"	1.40

<u>3.6</u>	x	<u>3</u>	=	<u>10.8</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Type of Installed Pump \_\_\_\_\_

Sampling: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1138	73.6	7.4	1250	7200	4	
1144	75.0	7.6	1200	60.4	6	
1145	WELL Dewatered			<del>17.09</del>		
1337	Return to Sample			DTW @ 8	39	
1340	77.0	7.6	1200	17.09		

Did Well Dewater?  If yes, gals.      Gallons Actually Evacuated: 6

Sampling Time: 1340

Sample I.D.: S18      Laboratory: (1)

Analyzed for: TPH GWS BTEX

Duplicate I.D.:      Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations:

# SHELL WELL MONITORING DATA SHEET

Project #: <u>931027-W1</u>	Wic # <u>204 6852 1008</u>
Sampler: <u>JB/DW</u>	Date Sampled: <u>10/27/93</u>
Well I.D.: <u>SR-1</u>	Well Diameter: (circle one) 2 3 4 <u>6</u>
Total Well Depth: Before <u>21.21</u> After	Depth to Water: Before <u>8.04</u> After
Depth to Free Product:	Thickness of Free Product (feet):
Measurements referenced to: PVC <u>Grade</u> Other --	

Volume Conversion Factor (VCF):  
 $(12 \times (12^2/4) \times \pi) / 231$   
 where:  
 12 = 12 feet  
 4 = diameter (in.)  
 $\pi = 3.1416$   
 231 = 1/231 gal

Well dia.	VCF
2"	0.34
3"	0.77
4"	1.10
6"	1.47
8"	2.35
12"	5.10

<u>19.4</u>	x	<u>3</u>	=	<u>58.2</u>
1 Case Volume		Specified Volumes		gallons

Purging: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Type of Installed Pump \_\_\_\_\_

Sampling: Bailer   
 Middleburg   
 Electric Submersible   
 Suction Pump   
 Installed Pump

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>1510</u>	<u>72.8</u>	<u>7.6</u>	<u>1200</u>	<u>12.32</u>	<u>20</u>	<u>ODOR</u>
<u>1512</u>	<u>70.4</u>	<u>7.4</u>	<u>1200</u>	<u>44.7</u>	<u>40</u>	<u>"</u>
<u>1514</u>	<u>70.0</u>	<u>7.2</u>	<u>1300</u>	<u>29.0</u>	<u>59</u>	

Did Well Dewater?  If yes, gals.      Gallons Actually Evacuated: 59

Sampling Time: 1520

Sample I.D.: SR-1      Laboratory: (D)

Analyzed for: TPH GAS, BTEX

Duplicate I.D.:      Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations: