

EXCELTECH

**JUNE QUARTERLY
GROUNDWATER SAMPLING
AND ANALYSIS**

FOR

**FORMER SHELL STATION
7194 AMADOR VALLEY BOULEVARD
DUBLIN, CALIFORNIA**

**Project No. 1826G
June 1990**



July 2, 1990

Shell Oil Company
1390 Willow Pass Road
Suite 900
Concord, CA 94520

Attention: Ms. Diane Lundquist

Subject: June Quarterly
Groundwater Sampling and Analysis
Former Shell Station,
7194 Amador Valley Boulevard, Dublin, California
Project No. 1826G

Dear Ms. Lundquist:

This letter report presents the results of the June Quarterly groundwater sampling and analyses for the subject site in the City of Dublin, Alameda County, California (Figure 1). It includes all current and past analytical data acquired during this ongoing investigation.

Groundwater Sampling

Groundwater samples were collected from 12 monitoring wells and one recovery well on and adjacent to the site in accordance with Exceltech's groundwater sampling protocol (Appendix A). The groundwater purged from the wells and equipment rinse water was placed in Department of Transportation-approved drums and left on-site pending removal by a licensed hauler to the Shell refinery for recycling.

Laboratory Analyses

The groundwater samples were transported to National Environmental Testing, Inc. (NET) located in Santa Rosa, California, a state-certified laboratory for analysis. They analyzed the samples for the presence of total petroleum hydrocarbons as gasoline (TPHG); and benzene, toluene, ethyl benzene, and total xylenes (BTEX).

Summary of Laboratory Results

The results of the groundwater sampling and analyses are summarized in Table 1. The analytical reports from NET and chain-of-custody documents are attached in Appendix B. Hydrocarbon-related contamination was detected in five of the 12 monitoring wells and in the recovery well (MW-1, MW-2, MW-3, MW-4, MW-6, and RW-1).

Discussion

A general decrease in hydrocarbon-related contamination levels has been observed in the groundwater samples collected from the monitoring wells at and adjacent to this site through the course of the investigation. Groundwater elevations obtained from depth to groundwater

measurements obtained prior to sampling were used to generate groundwater elevation contour maps shown in Figure 2.

Reporting Requirements

A copy of this report will be forwarded to the following agencies:

Zone 7-Alameda County Flood Control and
Water Conservation District
5997 Parkside Drive
Pleasanton, California 94566
Attention: Mr. Craig Mayfield
Water Resources Engineer

California Regional Water Quality Control
Control Board
San Francisco Bay Region
1800 Harrison Street, Suite 700
Oakland, California 94612-3429
Attention: Mr. Donald Dalke

Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Suite 200
Oakland, California 94621
Attention: Mr. Gil Wistar
Hazardous Materials Specialist

Disclaimer

This report has been prepared solely for the use of Shell and any reliance on this report by third parties shall be as such party's sole risk.

Limitations

The discussion and recommendations presented in this report are based on the following:

1. The observations by field personnel.
2. The results of laboratory analyses performed by a state-certified laboratory.
3. Our understanding of the regulations of the State of California, Alameda County, and the City of Dublin.

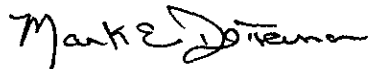
It is possible that variations in the soil or groundwater conditions could exist beyond the points explored in this investigation. Also, changes in the groundwater conditions could occur at some time in the future due to variations in rainfall, temperature, regional water usage, or other factors.

The service performed by Exceltech has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the Dublin area. Please note that contamination of soil and groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

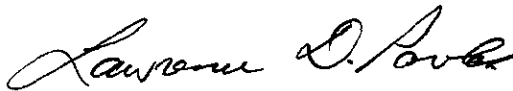
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Exceltech includes in this report chemical analytical data from a state-certified laboratory. The analytical tests are performed according to procedures suggested by the U.S. EPA and State of California. Exceltech is not responsible for laboratory errors in procedure or result reporting.

Sincerely,
Exceltech, Inc.

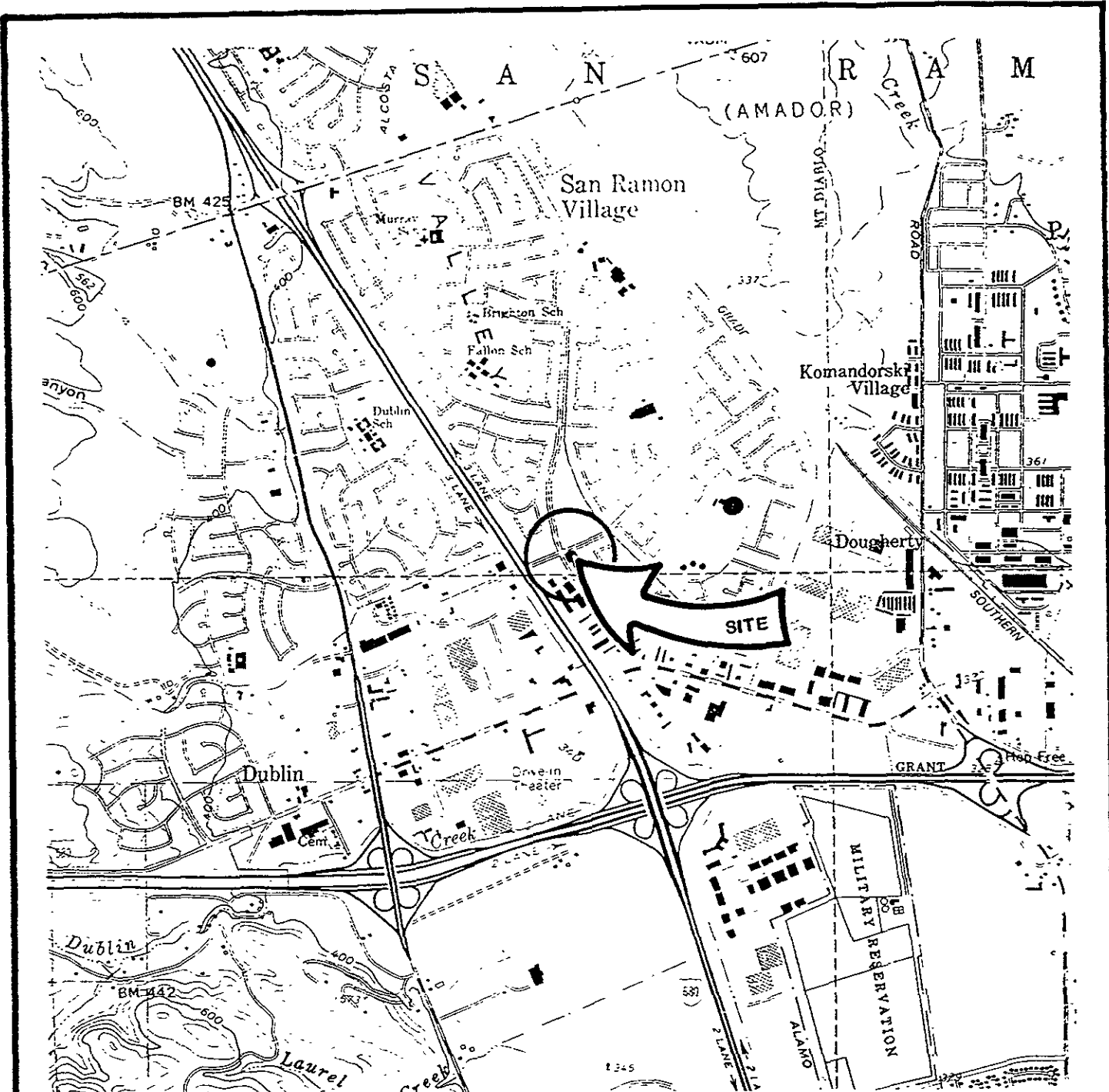


Mark Dettnerman, R.G.4799
Project Geologist



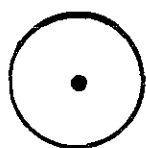
Lawrence D. Pavlak, C.E.G. 1187
Corporate C.E.G.

MD/LDP/sw
Enclosures

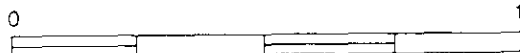


SOURCE: USGS 7.5' MAP, DUBLIN QUADRANGLE

LEGEND



SITE LOCATION

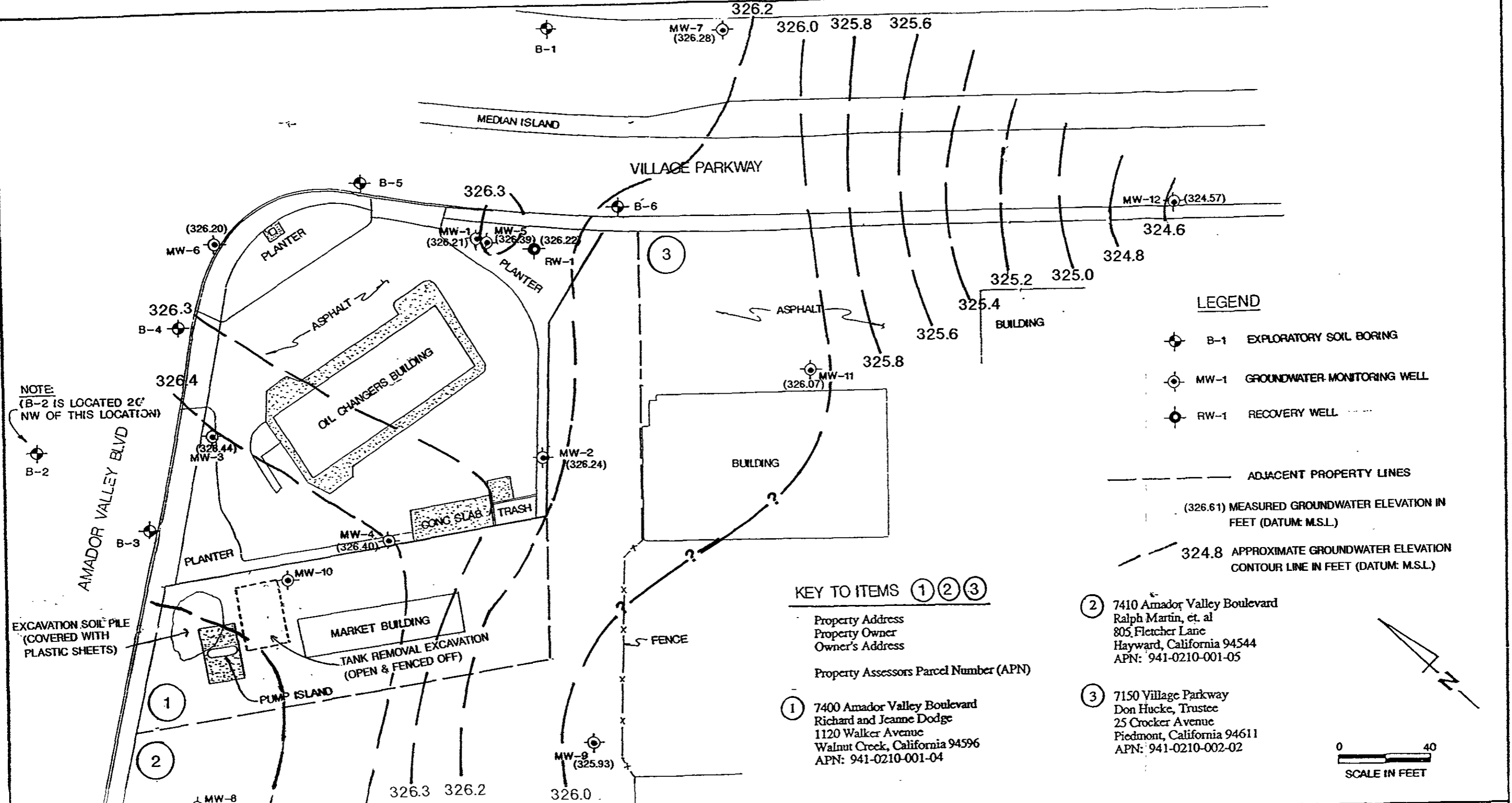


SCALE IN MILES



SITE LOCATION MAP
 FORMER SHELL STATION
 7194 AMADOR VALLEY BLVD
 DUBLIN, CALIFORNIA

REVIEWED BY <i>PA</i>	APPROVED BY <i>J.C.</i>
DRAWING # 1826G	DRAWN BY J.C.
DATE 6/26/90	DRAWING # FIG. 1



NOTE:
(B-2 IS LOCATED 20'
NW OF THIS LOCATION)

LEGEND

- B-1 EXPLORATORY SOIL BORING
- MW-1 GROUNDWATER MONITORING WELL
- RW-1 RECOVERY WELL

- ADJACENT PROPERTY LINES
- (326.61) MEASURED GROUNDWATER ELEVATION IN FEET (DATUM: M.S.L.)
- 324.8 APPROXIMATE GROUNDWATER ELEVATION CONTOUR LINE IN FEET (DATUM: M.S.L.)

KEY TO ITEMS ① ② ③

- ① Property Address
7400 Amador Valley Boulevard
Richard and Jeanne Dodge
1120 Walker Avenue
Walnut Creek, California 94596
APN: 941-0210-001-04
- ② Property Address
7410 Amador Valley Boulevard
Ralph Martin, et. al
805 Fletcher Lane
Hayward, California 94544
APN: 941-0210-001-05
- ③ Property Address
7150 Village Parkway
Don Hucke, Trustee
25 Crocker Avenue
Piedmont, California 94611
APN: 941-0210-002-02



<p>EXCELTECH</p>	GROUNDWATER ELEVATION CONTOUR MAP (6/4/90)		REVIEWED BY: 	APPROVED BY:
	FORMER SHELL STATION		JOB #: 1826G	DRAWN BY: M.D.
	7194 AMADOR VALLEY BLVD		DATE: 6/26/90	DRAWING #: FIG. 2
	DUBLIN, CALIFORNIA			

Exceltech, Inc
 Project No 1826G
 July 2, 1990

Shell Oil Company
 7194 Amador Valley Blvd. Dublin
 Dublin, CA

**TABLE 1
 GROUNDWATER ANALYSES DATA**

Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW 1	05/09/88	0.44	0.12	0.05	N R	0.12	8.72	334.83
	08/26/88	200	4.4	0.26	0.30	0.45	9.15	
	10/05/88	17	6.7	0.36	0.21	0.73	8.54	
	11/22/88	8	3.9	0.83	0.25	0.34	9.31	
	12/09/88	11	0.79	0.036	0.0073	0.068	9.33	
	01/13/89	8.8	3.8	0.11	0.33	0.09	N A	
	02/10/89	18	4.7	0.4	0.66	0.19	8.51	
	03/02/89	14	6.1	0.77	0.32	0.44	8.71	
	04/04/89	11	4.8	0.77	0.27	0.78	7.93	
	05/01/89	11	2.8	0.88	0.41	0.78	8.43	
	06/01/89	N D	N D	N D	N D	N D	8.56	
	06/29/89	4.7	0.31	0.16	0.075	0.26	8.60	
	08/09/89	12	1.3	0.62	0.83	0.68	8.43	
	09/11/89	N D	N D	N D	N D	0.0022	8.65	
	10/10/89	8.7	1.1	0.31	0.18	0.59	8.52	
	10/25/89	7.5	0.66	0.25	0.46	0.48	8.56	
	12/20/89	6.2	0.27	0.11	0.26	0.22	8.80	
	01/17/90	7.4	0.20	0.17	0.16	0.26	8.47	
02/23/90	1.5	0.130	0.013	0.030	0.024	8.25		
06/04/90	0.83	0.088	0.010	0.0026	0.028	8.62		
MW-2	05/09/88	N D	N D	N D	N R	N D	10.85	336.96
	08/26/88	1.7	0.23	0.016	0.087	0.12	11.29	
	10/05/88	0.2	0.02	0.0023	0.0083	0.012	10.83	
	11/22/88	0.8	0.093	0.0016	0.0043	0.06	11.42	
	12/09/88	0.27	0.045	0.0036	0.0072	0.014	11.45	
	01/13/89	0.18	0.026	0.0023	0.017	0.007	N A	
	02/10/89	0.32	0.043	0.0017	0.034	0.015	10.74	
	03/02/89	0.23	0.024	0.0009	0.0092	0.018	10.91	
04/04/89	0.23	0.053	0.0023	0.0071	0.02	10.06		

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**TABLE 1
 GROUNDWATER ANALYSES DATA**

Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-2 (CONT)	05/01/89	ND	0.0027	ND	ND	ND	10.58	
	05/31/89	0.12	0.014	ND	0.0039	0.0076	10.73	
	06/28/89	ND	0.0041	ND	ND	ND	10.90	
	08/08/89	0.088	0.0039	ND	ND	ND	10.78	
	09/08/89	ND	0.0032	ND	ND	ND	10.97	
	10/09/89	0.11	0.0067	ND	ND	ND	10.88	
	10/24/89	ND	0.0025	ND	ND	0.0019	11.00	
	12/21/89	<0.05	0.0071	<0.0005	0.005	0.0098	11.06	
	01/17/90	<0.05	0.0044	<0.0005	0.0016	0.0014	10.78	
	02/23/90	0.07	0.0063	<0.0005	0.0027	0.0025	10.35	
	06/04/90	0.06	0.0024	<0.0005	0.0008	<0.0005	10.72	
MW-3	05/09/88	0.076	0.01	0.0044	NR	0.015	10.59	336.96
	08/26/88	5.2	0.17	0.006	0.032	0.054	11.10	
	10/05/88	0.26	0.1	0.0027	0.0058	0.007	10.43	
	11/22/88	0.18	0.075	0.0014	0.0081	0.004	11.16	
	12/09/88	0.16	0.005	0.0059	ND	ND	11.24	
	01/13/89	0.16	0.036	0.0012	0.003	0.002	NA	
	02/10/89	0.3	0.083	ND	0.0086	0.008	10.43	
	03/02/89	0.57	0.16	0.001	0.017	0.009	10.59	
	04/04/89	0.15	0.064	0.0008	0.0027	0.006	9.45	
	05/01/89	0.13	0.048	0.0012	0.0034	0.002	10.20	
	06/01/89	ND	ND	ND	ND	ND	10.40	
	06/28/89	0.09	0.068	0.0007	ND	0.0051	10.60	
	08/09/89	0.15	0.023	0.0053	0.0026	ND	10.64	
09/11/89	ND	ND	ND	ND	ND	10.83		
10/10/89	0.08	0.0064	0.00072	ND	ND	10.95		

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Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-3 (CONT)	10/26/89	0.15	0.011	N D	0.0016	N D	10.86	
	12/21/89	<0.05	0.0068	<0.0005	<0.0005	<0.0005	11.09	
	01/23/90	<0.05	0.004	<0.0005	0.00068	<0.0005	10.90	
	02/23/90	0.05	0.010	<0.0005	0.0012	0.0009	10.52	
	06/04/90	0.08	0.010	<0.0005	0.0014	<0.005	10.52	
MW-4	05/09/88	0.29	0.076	0.033	N R	0.15	10.88	337.14
	08/26/88	0.21	0.64	0.041	0.11	0.16	11.34	
	10/05/88	0.45	0.11	0.0063	0.016	0.02	10.87	
	11/22/88	0.5	0.11	0.004	0.02	0.027	11.41	
	12/09/88	0.26	0.92	0.0075	0.0059	0.011	11.46	
	01/13/89	0.99	0.2	0.0065	0.046	0.014	N A	
	02/10/89	0.29	0.09	0.0036	0.0088	0.009	10.78	
	03/02/89	0.63	0.21	0.0062	0.034	0.007	10.92	
	04/04/89	0.64	0.34	0.013	0.025	0.04	10.04	
	05/01/89	0.1	0.065	0.002	0.003	0.004	10.52	
	05/31/89	0.06	N D	N D	N D	N D	10.62	
	06/28/89	0.11	0.062	0.0013	N D	0.0048	11.00	
	08/09/89	0.16	0.11	0.002	0.0064	N D	10.92	
	09/08/89	0.094	0.045	0.0005	0.0038	N D	11.05	
	10/10/89	0.09	0.03	0.001	0.0019	N D	10.97	
	10/26/89	N D	0.0034	N D	N D	N D	11.35	
	12/21/89	<0.05	0.035	0.0011	0.0036	0.0016	11.07	
01/17/90	<0.05	0.004	<0.0005	0.00068	<0.0005	11.08		
02/23/90	<0.05	0.008	<0.0005	0.0011	0.0007	10.90		
06/04/90	0.16	0.085	0.0011	0.0019	<0.005	10.74		
MW-5	08/26/88	0.21	0.006	0.044	0.009	0.019	9.10	334.96
	10/05/88	7.5	2.7	N D	0.11	0.59	9.95	
	11/22/88	0.15	0.021	0.026	0.003	0.002	8.93	

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 GROUNDWATER ANALYSES DATA**

Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-5 (CONT.)	12/09/88	0.24	0.037	0.0022	0.0067	0.0077	10.48	
	01/13/89	0.08	0.0016	ND	0.0077	0.002	NA	
	02/10/89	0.06	ND	ND	ND	ND	10.35	
	03/02/89	ND	ND	ND	ND	ND	8.50	
	04/05/89	ND	ND	ND	ND	ND	7.72	
	05/01/89	ND	0.0013	ND	ND	ND	8.21	
	06/01/89	ND	ND	ND	ND	ND	8.40	
	06/29/89	ND	ND	ND	ND	ND	8.65	
	08/09/89	0.089	0.0085	0.0018	0.0015	0.0022	8.76	
	09/11/89	1.1	0.0078	0.0014	ND	0.0063	8.80	
	10/10/89	ND	ND	ND	ND	ND	11.92	
	10/25/89	ND	0.0014	ND	ND	0.0016	9.03	
	12/20/89	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	11.26	
	01/18/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	9.95	
	02/23/90	<0.05	<0.0005	<0.0005	0.0006	<0.0005	8.30	
	06/04/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.57	
	MW-6	08/26/88	15	0.39	0.39	0.67	1.7	9.69
10/05/88		2.7	0.13	0.038	0.96	0.22	9.27	
11/22/88		NA	NA	NA	NA	NA	9.77	
12/09/88		0.54	0.062	0.003	0.026	0.005	9.85	
01/13/89		0.98	0.16	0.022	0.12	0.029	NA	
02/10/89		1.9	0.29	0.024	0.093	0.048	9.10	
03/02/89		1.4	0.16	0.02	0.13	0.033	9.29	
04/04/89		1.2	0.22	0.027	0.074	0.069	8.48	
05/01/89		0.79	0.12	0.011	0.025	0.017	8.90	
06/01/89		1.2	0.049	0.049	0.069	0.03	9.16	
06/29/89	0.94	0.13	0.015	0.069	0.035	9.30		
08/09/89	1.4	0.28	0.039	0.17	0.064	9.30		
09/11/89	ND	ND	ND	ND	ND	9.31		

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 July 2, 1990

Shell Oil Company
 7194 Amador Valley Blvd. Dublin
 Dublin, CA

**TABLE 1
 GROUNDWATER ANALYSES DATA**

Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-6 (CONT)	10/10/89	1.0	0.085	0.011	0.012	0.016	9.32	
	10/24/89	1.5	0.067	0.02	0.05	0.039	9.30	
	12/20/89	<0.05	0.0049	0.00051	<0.0005	<0.0005	9.58	
	01/18/90	<0.05	0.067	0.012	0.048	0.018	9.46	
	02/23/90	0.0010	0.150	0.016	0.047	0.030	8.94	
	06/04/90	0.19	<0.0005	<0.0005	<0.0005	0.0006	9.22	
MW-7	08/26/88	ND	0.0008	ND	ND	ND	7.94	333.23
	10/05/88	ND	ND	ND	ND	ND	7.54	
	11/22/88	0.7	0.041	0.009	0.001	0.02	NA	
	12/09/88	ND	ND	ND	ND	0.0006	7.53	
	01/13/89	ND	ND	ND	ND	ND	NA	
	02/10/89	ND	ND	ND	ND	ND	6.62	
	03/02/89	ND	ND	ND	ND	ND	7.03	
	04/05/89	ND	ND	ND	ND	ND	6.80	
	05/01/89	ND	ND	ND	ND	ND	6.53	
	05/31/89	ND	ND	ND	ND	ND	6.93	
	06/28/89	ND	ND	ND	ND	ND	6.85	
	08/09/89	ND	ND	ND	ND	ND	6.67	
	09/07/89	ND	ND	ND	ND	ND	6.90	
	10/10/89	ND	ND	ND	ND	ND	6.90	
	10/24/89	ND	ND	ND	ND	ND	7.29	
12/20/89	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	7.47		
01/18/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	7.49		
02/23/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0007	6.92		
06/04/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	6.95		
MW-8	03/01/89	ND	ND	ND	ND	ND	8.28	335.80
	04/04/89	ND	ND	ND	ND	ND	7.31	
	05/01/89	ND	ND	ND	ND	ND	8.97	

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**TABLE 1
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Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-8 (CONT)	05/31/89	ND	ND	ND	ND	ND	9.17	
	06/28/89	ND	ND	ND	ND	ND	9.40	
	08/08/89	ND	ND	ND	ND	ND	9.42	
	09/07/89	ND	ND	ND	ND	ND	8.50	
	10/10/89	ND	ND	ND	ND	ND	9.46	
	10/26/89	ND	ND	ND	ND	ND	9.56	
	12/21/89	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	9.57	
	01/18/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	9.29	
	02/26/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.50	
	06/04/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	9.04	
MW-9	03/01/89	ND	ND	ND	ND	ND	8.48	334.57
	04/04/89	ND	ND	ND	ND	ND	7.69	
	05/01/89	ND	ND	ND	ND	ND	8.20	
	05/31/89	ND	ND	ND	ND	ND	8.72	
	06/28/89	ND	ND	ND	ND	ND	9.00	
	08/08/89	ND	ND	ND	ND	ND	8.53	
	09/07/89	ND	ND	ND	ND	ND	8.99	
	10/09/89	ND	ND	ND	ND	ND	8.89	
	10/23/89	ND	ND	ND	ND	ND	9.02	
	12/21/89	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	9.48	
	01/18/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.73	
	02/26/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	9.06	
	06/04/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.64	
MW-10	03/02/89	1	0.14	0.036	ND	0.077	8.95	335.37
	04/04/89	3.3	0.76	0.24	0.046	0.63	7.89	
	05/01/89	0.68	0.099	0.024	0.0081	0.032	9.07	
	06/01/89	1.4	0.12	0.039	ND	0.045	8.86	
	06/29/89	1.3	0.051	0.0014	0.0061	0.091	9.05	

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 July 2, 1990

Shell Oil Company
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**TABLE 1
 GROUNDWATER ANALYSES DATA**

Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-10 (CONT)	08/09/89	0.86	0.31	0.026	0.045	0.082	9.70	
	09/07/89	0.39	0.055	0.0029	0.0040	0.018	8.14	
	10/10/89	0.46	0.085	0.0076	0.010	0.045	9.21	
	10/26/89	0.27	0.02	0.0014	0.0035	0.0093	9.60	
	12/20/89	<0.05	0.0057	<0.0005	<0.0005	<0.0005	9.42	
	01/18/90	NA	NA	NA	NA	NA	NA	
	06/04/90	NA	NA	NA	NA	NA	NA	
MW-11	03/02/89	ND	ND	ND	ND	ND	8.30	334.20
	04/04/89	ND	ND	ND	ND	ND	7.52	
	05/01/89	ND	ND	ND	ND	ND	7.97	
	05/31/89	ND	ND	ND	ND	ND	8.13	
	06/28/89	ND	ND	ND	ND	ND	8.30	
	08/08/89	ND	ND	ND	ND	ND	8.22	
	09/07/89	ND	ND	ND	ND	ND	8.32	
	10/09/89	ND	ND	ND	ND	ND	8.28	
	10/24/89	ND	ND	ND	ND	ND	8.38	
	12/20/89	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.48	
	01/18/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.20	
02/26/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	7.86		
06/04/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.13		
MW-12	03/02/89	ND	ND	ND	ND	ND	6.94	332.53
	04/04/89	ND	ND	ND	ND	ND	6.33	
	05/01/89	ND	ND	ND	ND	ND	6.62	
	06/01/89	ND	ND	ND	ND	ND	6.82	
	06/29/89	ND	ND	ND	ND	ND	7.00	
	08/09/89	ND	ND	ND	ND	ND	6.76	
	09/07/89	ND	ND	ND	ND	ND	6.81	
	10/09/89	ND	ND	ND	ND	ND	7.11	

Exceltech, Inc
 Project No 1826G
 July 2, 1990

Shell Oil Company
 7194 Amador Valley Blvd. Dublin
 Dublin, CA

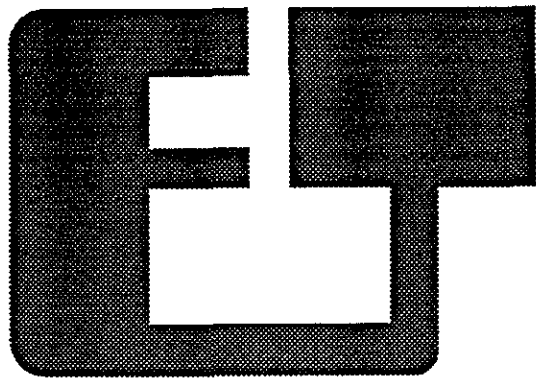
**TABLE 1
 GROUNDWATER ANALYSES DATA**

Well	Date	TPHG (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	Depth To Water (ft.)	Well Elevation (ft.)
MW-12 (CONT)	10/24/89	N D	N D	N D	N D	N D	7.60	
	12/20/89	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.25	
	01/18/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	8.23	
	02/26/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	7.54	
	06/04/90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	7.96	
RW-1	12/09/89	6.8	0.74	0.005	0.011	0.037	10.73	336.19
	01/13/89	10	3.2	0.027	0.06	N D	N A	
	02/10/89	6	2.8	N D	N D	N D	10.91	
	03/02/89	3.9	2.4	N D	N D	N D	10.15	
	04/05/89	1.7	1	N D	0.009	N D	9.34	
	05/01/89	0.9	0.39	0.005	0.01	N D	9.85	
	06/01/89	1.1	0.0014	0.0033	N D	0.013	9.96	
	06/30/89	1.4	N D	N D	N D	N D	9.90	
	08/09/89	7.5	1.7	0.21	0.28	0.30	9.80	
	09/11/89	0.097	0.0017	0.0021	0.0023	0.014	10.02	
	10/10/89	1.4	0.048	0.0045	N D	0.003	9.88	
	10/25/89	0.82	0.051	0.0012	0.025	0.003	9.80	
	12/21/89	0.49	0.016	0.001	0.0085	0.019	10.25	
	01/17/90	N D	0.027	0.0017	0.014	0.0016	9.80	
02/23/90	0.42	0.042	0.0018	0.013	0.0027	9.60		
06/04/90	0.18	0.023	0.0007	0.0053	0.0012	9.97		

ppm parts per million (mg/kg)
 TPHG Total petroleum hydrocarbons as gasoline
 N A Data not available
 N R Analysis not requested
 N D Not detected at or above laboratory listed detection limit
 <0.05 Not detected at or above the indicated detection limit
 Note For unlisted detection limits, refer to laboratory reports

APPENDIX A

GROUNDWATER SAMPLING PROTOCOL



EXCELTECH

**Groundwater Sampling
Protocol**

GROUNDWATER SAMPLING PROTOCOL

Sampling of groundwater is performed by Exceltech, Inc. sampling technicians. Summarized field sampling procedures are as follows:

1. Measurements of liquid surface in the well and depth of monitoring well.
2. Field check for presence of floating product.
3. Purge well prior to collecting samples.
4. Monitor groundwater for temperature, pH, and specific conductance during purging.
5. Collect samples using Environmental Protection Agency (EPA) approved sample collection devices, i.e., teflon or stainless steel bailers or pumps.
6. Transfer samples into laboratory-supplied EPA-approved containers.
7. Label samples and log onto chain-of-custody form.
8. Store samples in a chilled ice chest for shipment to a state-certified analytical laboratory.

GROUNDWATER SAMPLING PROCEDURES

Equipment Cleaning

All water samples are placed in precleaned laboratory-supplied bottles. Sample bottles and caps remain sealed until actual usage at the site. All equipment which comes in contact with the well or groundwater is thoroughly cleaned with a trisodium phosphate (TSP) solution and rinsed with deionized or distilled water before use at the site. This cleaning procedure is followed between each well sampled. Wells are sampled in approximate order of increasing contamination. If a teflon cord is used, the cord is cleaned. If a nylon or cotton cord is used, a new cord is used in each well. All equipment blanks are collected prior to sampling. The blanks are analyzed periodically to ensure proper cleaning.

Water Level Measurements

Depth to groundwater is measured in each well using a sealed sampling tape or scaled electric sounder prior to purging or sampling. If the well is known or suspected of containing free-phase petroleum hydrocarbons, an optical interface probe is used to measure the hydrocarbon thickness and groundwater level. Measurements are collected and recorded to the nearest 0.01 foot.

Bailer Sheen Check

If no measurable free-phase petroleum hydrocarbons are detected, a clear acrylic bailer is used to determine the presence of a sheen. Any observed film as well as odor and color of the water is recorded.

Groundwater Sampling

Prior to groundwater sampling, each well is purged of "standing" groundwater. Either a bailer, hand pump, or submersible pump is used to purge the well. The amount of purging is dependent on the well yield. In a high yield formation, samples will be collected when normal field measurement, including temperature, pH, and specific conductance stabilize, provided a minimum of three well-casing volumes of water have been removed. Field measurements will be taken after purging each well volume. In low yield formations, the well is purged such that the "standing" water is removed and the well is allowed to recharge. (Normal field measurements will be periodically recorded during the purging process.) In

situations where recovery to 80% of static water level is estimated, or observed to exceed a two hour duration, a sample will be collected when sufficient volume is available for a sample for each parameter. At no time will the well be purged dry so that the recharge rate causes the formation water to cascade into the well.

In wells where free-phase hydrocarbons are detected, the free-phase portion will be bailed from the well and the volume removed recorded. A groundwater sample will be collected if bailing reduces the amount of free-phase hydrocarbons to the point where they are not present in the well. Well sampling will be conducted using one of the aforementioned methods depending on the formation yield. However, if free-phase hydrocarbons persist throughout bailing, then a groundwater samples will not be collected.

Groundwater sample containers are labeled with a unique sample number, location, product name and number, and date of collection. All samples are logged into a chain-of-custody form and placed in a chilled ice chest for shipment to a laboratory certified by the State of California Department of Health Services.

APPENDIX B

**CERTIFIED LABORATORY REPORTS
AND
CHAIN-OF-CUSTODY DOCUMENTS**



NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Rich Garlow
Exceltech
41674 Christy St.
Fremont, CA 94538

Date: 06-20-90
NET Client Acct No: 18.06
NET Pacific Log No: 2386
Received: 06-08-90 2300

Client Reference Information

SHELL- Dublin, Project; 1826G

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:


Jules Skamarack
Laboratory Manager

JS:rcf
Enclosure(s)

Client No: 18.06
Client Name: Exceltech
NET Log No: 2386

Date: 06-20-90

Page: 2

Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	BB1	MW7	Units
			06-05-90 0947	06-05-90 1036	
			55115	55116	
PETROLEUM HYDROCARBONS			---	---	
VOLATILE (WATER)			---	---	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			---	---	
as Gasoline		0.05	ND	ND	ppm
METHOD 602			---	---	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	ND	ND	ppm
Ethylbenzene		0.0005	ND	ND	ppm
Toluene		0.0005	ND	ND	ppm
Xylenes, total		0.0005	ND	ND	ppm

Client No: 18.06
Client Name: Exceltech
NET Log No: 2386

Date: 06-20-90

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Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	MW11	MW12	Units
			06-05-90 1142	06-05-90 1256	
			55117	55118	
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	ND	ppm
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	ND	ND	ppm
Ethylbenzene		0.0005	ND	ND	ppm
Toluene		0.0005	ND	ND	ppm
Xylenes, total		0.0005	ND	ND	ppm

Client No: 18.06
Client Name: Exceltech
NET Log No: 2386

Date: 06-20-90

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Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	MW8	MW9	Units
			06-05-90 1313	06-05-90 1425	
			55119	55120	
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	ND	ppm
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	ND	ND	ppm
Ethylbenzene		0.0005	ND	ND	ppm
Toluene		0.0005	ND	ND	ppm
Xylenes, total		0.0005	ND	ND	ppm

Client No: 18.06
Client Name: Exceltech
NET Log No: 2386

Date: 06-20-90

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Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	RW1	MW5	Units
			06-06-90 1424	06-06-90 1636	
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	0.18	ND	ppm
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	0.023	ND	ppm
Ethylbenzene		0.0005	0.0053	ND	ppm
Toluene		0.0005	0.0007	ND	ppm
Xylenes, total		0.0005	0.0012	ND	ppm

Client No: 18.06
 Client Name: Exceltech
 NET Log No: 2386

Date: 06-20-90

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Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	MW3	BB2	Units
			06-06-90 1527	06-07-90 1138	
		55123	55123	55124	
PETROLEUM HYDROCARBONS			---	---	
VOLATILE (WATER)			---	---	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			---	---	
as Gasoline		0.05	0.08	ND	ppm
METHOD 602			---	---	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	0.010	ND	ppm
Ethylbenzene		0.0005	0.0014	ND	ppm
Toluene		0.0005	ND	ND	ppm
Xylenes, total		0.0005	ND	ND	ppm

Client No: 18.06
Client Name: Exceltech
NET Log No: 2386

Date: 06-20-90

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Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	MW2	MW4	Units
			06-07-90 1206	06-07-90 1304	
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	0.06	0.16	ppm
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	0.0024	0.085	ppm
Ethylbenzene		0.0005	0.0008	0.0019	ppm
Toluene		0.0005	ND	0.0011	ppm
Xylenes, total		0.0005	ND	ND	ppm

Client No: 18.06
Client Name: Exceltech
NET Log No: 2386

Date: 06-20-90

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Ref: SHELL- Dublin, Project; 1826G

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	MW6	MW1	Units
			06-07-90 1411	06-07-90 1520	
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	0.19	0.83	ppm
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			06-14-90	06-14-90	
Benzene		0.0005	ND	0.088	ppm
Ethylbenzene		0.0005	ND	0.0026	ppm
Toluene		0.0005	ND	0.010	ppm
Xylenes, total		0.0005	0.0006	0.028	ppm

KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference, $100 \text{ [Value 1 - Value 2] / mean value}$.
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

Method References


Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 16th Edition, APHA, 1985.

CHAIN OF CUSTODY RECORD

PROJECT NO. 18266		PROJECT NAME Shell Dublin			TEST REQUESTED				WIC # 204-2277-0105	
SAMPLERS (Signature) <i>James Gonzales</i>		James Gonzales			TPTG - STEX					LAB NET PACIFIC
NO.	DATE	TIME	SAMPLE DESCRIPTION	TURN AROUND TIME		5 day				
B81	6-5-90	9:47	2 preserved VOA (HCL)		REMARKS					
mw7	"	10:36								
mw11	"	11:42								
mw12	"	12:56								
mw8	"	1:13								
mw9	"	2:25								
RELINQUISHED BY: <i>James Gonzales</i>		DATE: TIME: 6-5-90 4:47pm	RECEIVED BY: <i>Jeff Winkler</i>	14:20 6/8/90	RELINQUISHED BY: <i>Jeff Winkler</i>	DATE: TIME: 6/8/90	RECEIVED BY:	custody seal intact 6/8/90 custody seal 6/8/90 @ 19:00		
RELINQUISHED BY:		DATE: TIME:	RECEIVED BY:		RELINQUISHED BY: (via recs)	DATE: TIME: 6/8/90 2:30p	RECEIVED BY: <i>K. Temple</i>			
REMARKS: AFE # 986639					 EXCELTECH		41674 Christy Street Fremont, C.A. 94538-3114 (415) 659-0404 Fax (415) 651-4677 Contr. Lic. No. 550205			
REPORT TO: Rich Garlow										

90 JUL -6 PM 12: 25