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Desert Petroleum
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December 20, 1996

1248

Dear Mr. Rutherford:

The following report documents the Third Quarter 1996 collection and certified laboratory analysis of groundwater samples from five monitoring wells and three water recovery wells associated with former Desert Petroleum Station #793.

SITE LOCATION AND DESCRIPTION

Former Desert Petroleum #793 is a non-active service station, located on the northwest corner of the intersection of Park Blvd. and Hampel Street at 4035 Park Blvd., Oakland, California (Figure 1). The site is located in projected section 32; T1S; R3W; MDB&M at an approximate elevation of 210 feet above mean sea level (Figure 2).

LOCAL GEOLOGY, HYDROGEOLOGY AND GEOMORPHOLOGY.

Geomorphology

The site is located on the western slope of the Berkeley Hills. The Berkeley Hills are a northwest-southeast trending range within the Coastal Range Province of California. Erosion of the Coastal Ranges has filled the valleys within and bordering the Coastal Range with sequences of gravels, silts, sands, and clays.

Stratigraphy and Groundwater Occurrence

The native soil from surface to 13 feet below ground surface (bgs) consists of dark brown silty clay. The dark brown clay is underlain by a light brown stiff clay that includes subrounded to rounded metavolcanic gravel. This clay extends to approximately 23 feet bgs at the northwest corner of the site. The gravel and clay is underlain by a fine to medium sand, clayey sand, and silty sand.

Measurements obtained on September 4, 1996 from the on-site groundwater monitor wells indicate that the top of groundwater ranges between 10 and 17 feet bgs.

ENVIRONMENTAL
PROTECTION
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COLLECTION AND ANALYSIS OF GROUNDWATER SAMPLES, 9/4/96

WEGE and Lawrence Tank Testing personnel conducted a quarterly groundwater monitoring round at the site on September 4, 1996. Water samples were collected from monitor wells MW1, RS-2, RS-5, and RS-6 located on-site and RS-7 located in the center of Brighton Avenue to the northeast of the site (Figure 3). Water samples were also collected from the three on-site water recovery wells (R1-R3). See Appendix A for QA/QC, details, methods, procedures, abbreviations, and acronyms used in sampling and analysis.

Depth to Water Measurements

Depth to water was measured at all monitor wells and the three on-site water recovery wells (R1-R3). The depth to water measurements were made using a product/water interface probe. Measurements were made from the surveyed elevation at of the top of casing at each well. Table 1 shows the elevation of groundwater with respect to mean sea level for all monitor wells on September 4, 1996.

Purging of Monitor Wells

The monitor wells were purged of 3 volumes of water by Lawrence Tank Testing using a truck mounted vacuum lift pump and one inch diameter PVC tubing. The specific volume of water removed from each well is recorded on the well sampling data sheets (Appendix B).

Collection and Certified Analysis of Groundwater Samples

After purging, the wells were allowed to recover to at least 80% of their original well volumes. A groundwater sample was then collected from each well with a disposable polyethylene bailer and decanted with no headspace into two 40 ml VOA vials containing 0.5 ml HCL acid as a preservative.

American Environmental Network analyzed all water samples for concentrations of TPH-G, BTEX, and MTBE using EPA methods 5030/8015M/8020 (Appendix A).

Disposition of Waste Water

The waste water generated from the purging of the monitor wells during sampling was contained on-site in labeled 55 gallon DOT approved drums.

RESULTS OF QUARTERLY GROUNDWATER MONITORING

Groundwater Gradient and Flow Direction

Figure 4 shows the groundwater elevation gradients and flow direction that were derived from the depth to water measurements from on-site monitor wells on September 4, 1996. The groundwater elevation has declined an average of approximately two feet in the monitor on-site wells since the previous quarterly monitoring round on June 11, 1996 (Table 1).

The current flow direction is to northwest. The hydraulic gradient averages 0.10 feet/linear foot downgradient from the overexcavated area at the site. The elevation gradient flattens considerably through the backfilled overexcavation (Figure 4).

The current flow direction and hydraulic gradient is consistent with previous gradient determinations by WEGE.

Results of Certified Analysis of Groundwater Samples

The results of the certified analyses of groundwater samples collected on September 4, 1996 are shown in Table 1. Copies of the laboratory reports are included as Appendix C of this report.

TPH-G concentrations in water samples from the five monitor wells and three recovery wells ranged from a maximum of 20,000 ug/l at monitor well RS-7 to less than laboratory detection limits (50 ug/l) in monitor wells MW1 and RS-2 and recovery well R-3.

Benzene concentrations ranged from a maximum of 7600 ug/l in recovery well R-2 to less than laboratory detection limits (0.5 ug/l) in monitor wells MW1 and RS-2, and recovery well R-3.

MTBE concentrations ranged from a maximum of 400 ug/l in monitor well RS-5 to less than laboratory detection limits in monitor wells MW1 and RS-2, and recovery wells R-1, R-2, and R-3. The laboratory detection limits for MTBE ranged from 5 ug/L to 100 ug/L (see Table 1).

Figure 5 shows the areal distribution of TPH-G, BTEX, and MTBE in groundwater in ug/l as determined from groundwater samples collected from the monitor wells on September 4, 1996. All monitor wells showed a significant decline in TPH-G and BTEX concentrations when compared to the previous quarterly monitoring round conducted on July 11, 1996. This recent decline is consistent with the overall steady decline in TPH-G and BTEX concentrations observed at the monitor wells since the initiation of quarterly monitoring at the site.

LIMITATIONS

This report is based upon the following:

- A. The observations of field personnel.
- B. The results of laboratory analyses performed by a state certified laboratory.
- C. Referenced documents.
- D. Our understanding of the regulations of the State of California, Alameda County and the City of Oakland.

Changes in groundwater conditions can occur due to variations in rainfall, temperature, local and regional water use, and local construction practices. In addition, variations in the soil and groundwater conditions could exist beyond the points explored in this investigation.

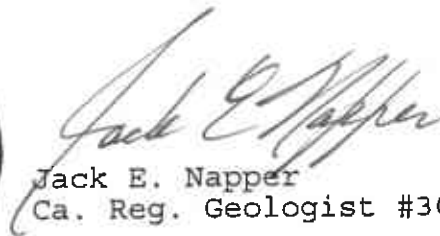
State Certified Laboratory analytical results are included in this report. This laboratory follows EPA and State of California approved procedures; however, WEGE is not responsible for errors in these laboratory results.

The services performed by Western Geo-Engineers, a corporation, under California Registered Geologist #3037 and/or Contractors License #513857, have 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 State of California and the Oakland area. Our work and/or supervision of remediation and/or abatement operations, active or preliminary, at this site is in no way meant to imply that we are owners or operators of this site. Please note that known contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

Sincerely,



David Threlfall
Geologist



Jack E. Napper
Ca. Reg. Geologist #3037

cc: Ms. Jennifer Eberie, HMS, Alameda County Health
(510)271-4530

TABLE 1

GROUND WATER ELEVATIONS AND CERTIFIED ANALYTICAL LABAORATAORY RESULTS FROM WATER SAMPLES
 DESERT PETROLEUM, INC. SITE #793
 4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

(All concentrations in parts per billion [ug/L, ppb])
 (AMSL = Above mean sea level)

WELL ID#	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)	TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTHB (UG/L)
RS-1	12/14/89	240	24.25	215.75	19000	2600	2700	200	1200	
RS-1	12/90				15000	3500	330	170	760	
RS-1	2/91				6900	910	200	39	540	
RS-1	6/91				1600	56	180.000	12	26	
RS-1	9/91				4100	730	7.6	5.1	24	
RS-1	12/91				8300	950	160	71	190	
RS-1	11/09/92	100.18	17.05	83.13	1700	730	9.6	16	14	
RS-1	04/07/94	100.18	13	87.18	860	84	12	16	110	
RS-1	06/19/94	228.15	13.37	214.78	1400	150	12	52	87	
RS-1	09/17/94	228.15	16.33	211.82	310	30	1.8	2.8	3.9	
RS-1	03/12/95	228.15	4.66	223.49	ND	ND	ND	ND	ND	
RS-1	DESTROYED BY OVER-EXCAVATION OF UST-DISPENSER AREAS (8/14/95									
RS-1	REPLACED WITH MW-1 9/5/95.									
MW-1	10/04/95	232.57	12.38	220.19	ND	ND	ND	ND	ND	
MW-1	12/21/95	232.57	13.4	219.17	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
MW-1	03/27/96	232.57	5.53	227.04	< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
MW-1	06/11/96	232.57	9.02	223.55	< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
MW-1	09/04/96	232.57	11.84	220.73	< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
RS-2	06/19/94	227.19	10.89	216.3	140	9.2	34	4.3	24.0	
RS-2	03/12/95	227.19	5.26	221.93	ND	ND	ND	ND	ND	
RS-2	10/04/95	230.43	15.05	215.38	ND	ND	ND	ND	ND	
RS-2	12/21/95	230.43	9.95	220.48	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
RS-2	03/27/96	230.43	6.28	224.15	< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
RS-2	06/11/96	230.43	8.00	222.43	< 50	1.2	2.8	< 0.5	< 2	< 50
RS-2	09/04/96	230.43	9.89	220.54	< 50	< 0.5	< 0.5	< 0.5	< 2	< 50
RS-5	12/14/89	241.26	25.97	215.29	57000	3100	4300	670	3400	
RS-5	2/91					FLOATING PRODUCT				
RS-5	6/91					FLOATING PRODUCT				
RS-5	9/91					FLOATING PRODUCT				
RS-5	12/91					FLOATING PRODUCT				
RS-5	11/09/92	98.99	20.73	78.26	50000	650	4800	1100	15000	
RS-5	04/07/94	98.99	18.16	80.83	27000	5000	8700	550	2800	
RS-5	06/19/94	227.65	18.11	209.54	20000	2100	5300	470	2500	
RS-5	09/17/94	227.65	19.63	208.02	9300	230	340	110	700	
RS-5	03/12/95	227.65	14.54	213.11	93000	6400	2000	19000	10000	
RS-5	10/04/95	230.64	17.53	213.11	16000	420	2100	320	1800	
RS-5	12/21/95	230.64	17.47	213.17	48000	3500	9200	840	4800	56
RS-5	03/27/96	230.64	13.51	217.13	68000	4900	18000	1700	11000	< 3000
RS-5	06/11/96	230.64	14.25	216.39	66000	6300	20000	2100	12000	< 3000
RS-5	09/04/96	230.64	16.50	214.14	31000	2100	11000	1100	6800	400

TABLE 1

GROUND WATER ELEVATIONS AND CERTIFIED ANALYTICAL LABORATORY RESULTS FROM WATER SAMPLES
 DESERT PETROLEUM, INC. SITE #793
 4035 PARK BOULEVARD, OAKLAND, CALIFORNIA

(All concentrations in parts per billion [ug/L, ppb])
 (AMSL = Above mean sea level)

WELL ID#	DATE SAMPLED	WELL CASING ELEVATION (FEET AMSL)	DEPTH TO GROUND WATER (FEET)	GROUND WATER ELEVATION (FEET AMSL)	TPH-G (UG/L)	BENZENE (UG/L)	TOLUENE (UG/L)	ETHYL-BENZENE (UG/L)	XYLENES (UG/L)	MTEB (UG/L)
RS-6	12/14/89	240.23	22.52	217.71	11000	1400	1700	160	860	
RS-6	2/91					FLOATING PRODUCT				
RS-6	6/91				95000	4200	4200	650	3700	
RS-6	9/91					FLOATING PRODUCT				
RS-6	12/91				64000	3700	2300	730	4100	
RS-6	11/09/92	99.27	19.43	79.84	19000	1600	710	500	1600	
RS-6	04/07/94	99.27	14.42	84.85	16000	1200	1300	290	1100	
RS-6	06/19/94	227.22	14.45	212.77	23000	1300	2200	590	2200	
RS-6	09/17/94	227.22	19.52	207.7	24000	630	790	250	1100	
RS-6	03/12/95	227.22	8.9	218.32	3200	450	13	82	230	
RS-6	10/04/95	230.22	17.78	212.44	3700	170	250	38	290	
RS-6	12/21/95	230.22	14.98	215.24	3100	120	30	16	150	58
RS-6	03/27/96	230.22	10.00	220.22	6900	180	440	79	360	< 300
RS-6	06/11/96	230.22	12.00	218.22	7400	220	150	30	100	<1000
RS-6	09/04/96	230.22	15.00	215.22	1400	68	2.6	7.7	9.2	14
RS-7	7/90				560000	24000	210000	50000	740000	
RS-7	2/91					FLOATING PRODUCT				
RS-7	6/91					FLOATING PRODUCT				
RS-7	9/91					FLOATING PRODUCT				
RS-7	12/91				270000	11000	22000	2000	13000	
RS-7	11/09/92	67.88	4.62	63.26	81000	12000	16000	1900	13000	
RS-7	04/07/94	67.88	4.03	63.85	74000	16000	16000	1400	8500	
RS-7	06/19/94	195.92	4.07	191.85	83000	22000	19000	1500	9500	
RS-7	09/17/94	195.92	4.05	191.87	270000	13000	15000	2100	1100	
RS-7	03/12/95	195.92	3.72	192.2	35000	5100	560	6300	3600	
RS-7	10/04/95	199.35	4.03	195.32	96000	14000	14000	1300	7000	
RS-7	12/21/95	199.35	3.95	195.4	70000	9300	12000	860	5600	210
RS-7	03/27/96	199.35	3.80	195.55	64000	8900	14000	1100	8300	< 3000
RS-7	06/11/96	199.35	3.79	195.56	65000	12000	17000	1600	9700	<5000
RS-7	09/04/96	199.35	3.99	195.36	30000	4900	2100	670	4400	100
RECOVERY 1	09/04/96	230.73	15.00	215.73	1800	1100	3	29	< 10	< 30
RECOVERY 2	09/04/96	230.68	13.44	217.24	14000	7600	<10	170	190	<100
RECOVERY 3	09/04/96	230.32	9.90	220.42	<50	<0.5	<0.5	<0.5	<2	<5

ND BELOW LABORATORY DETECTION LIMITS
 TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

-WEGE-

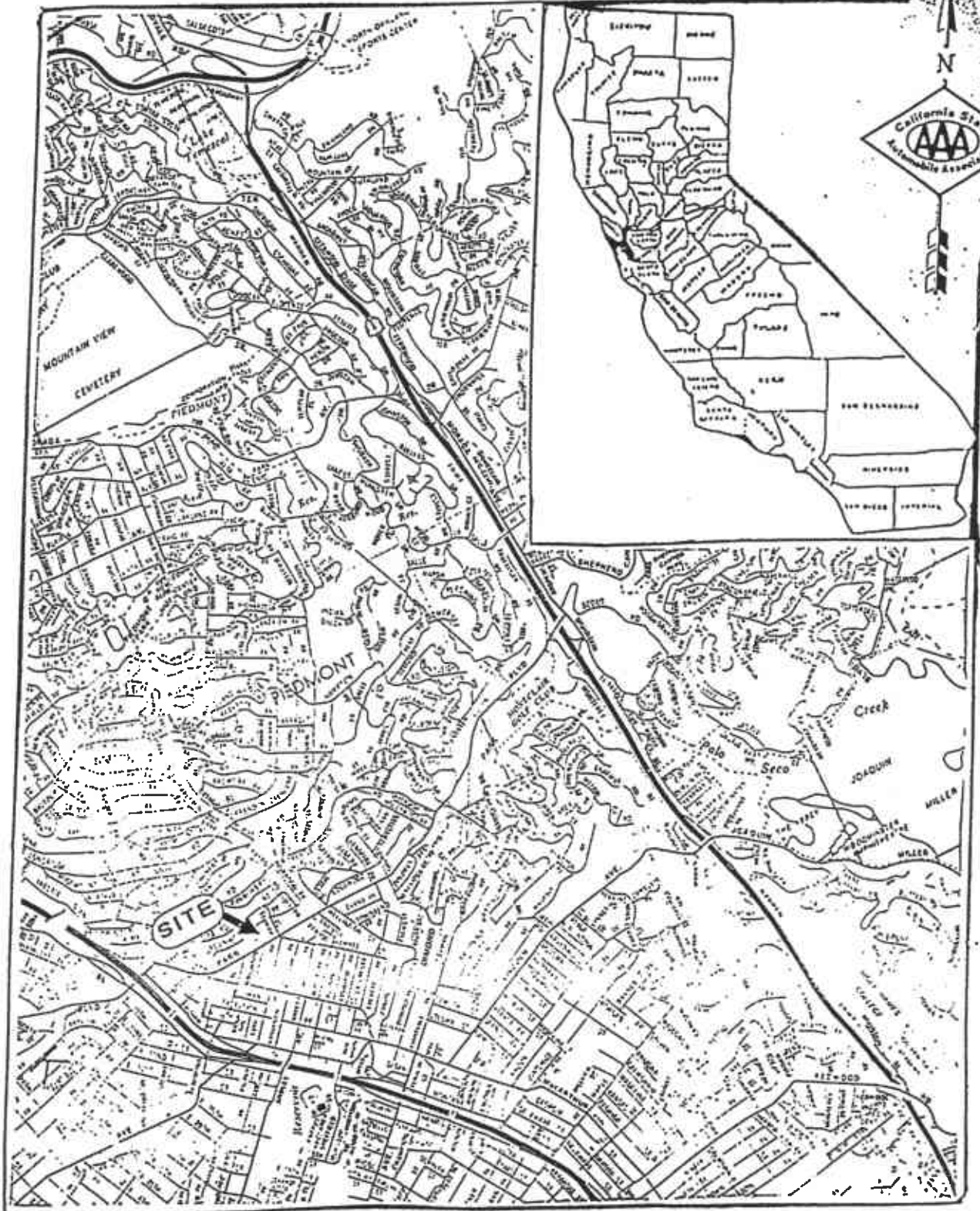


FIGURE 1

Location (AAA Map)



ESTERN
GEO-ENGINEERS

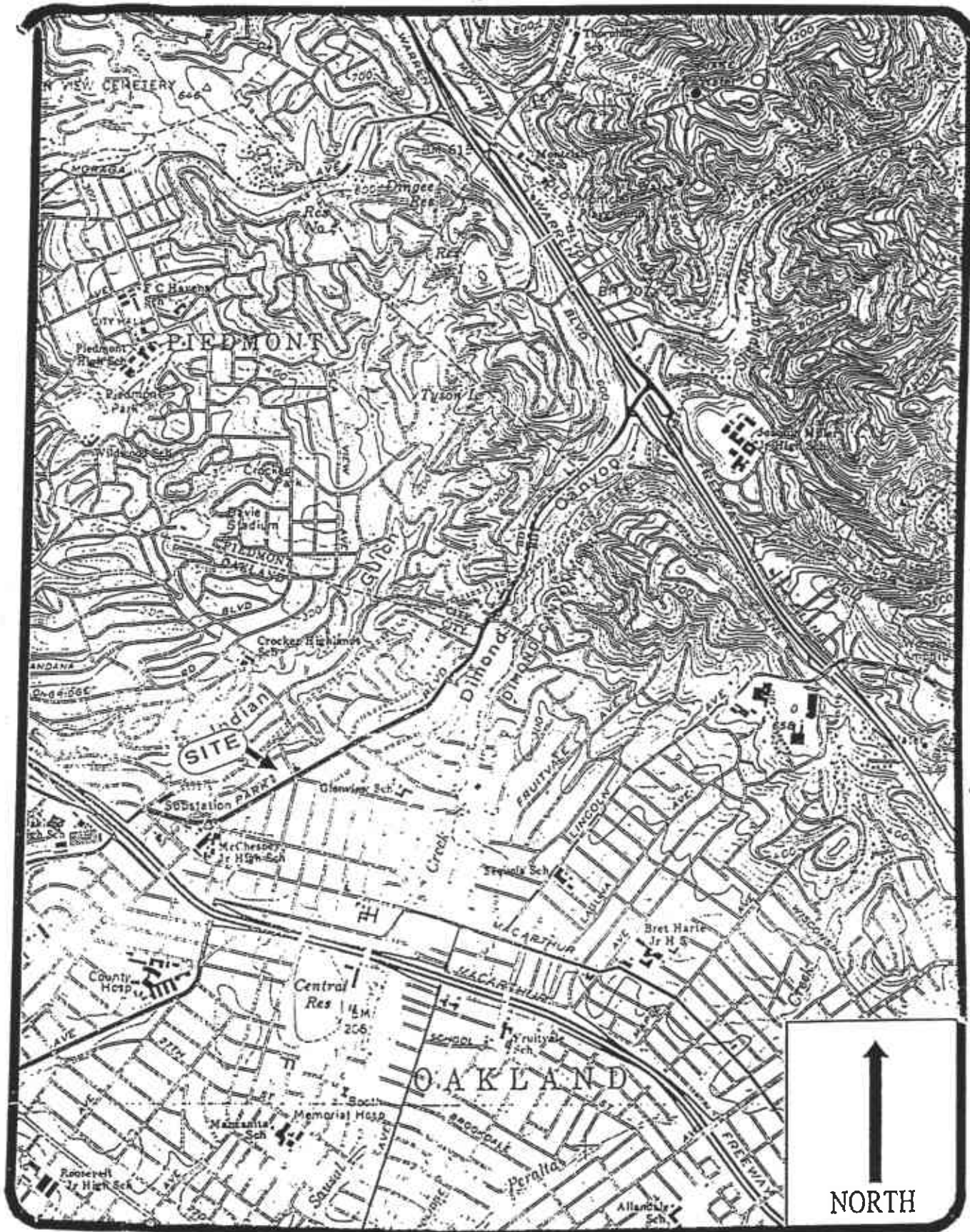


FIGURE 2 USGS TOPOGRAPHIC MAP
8

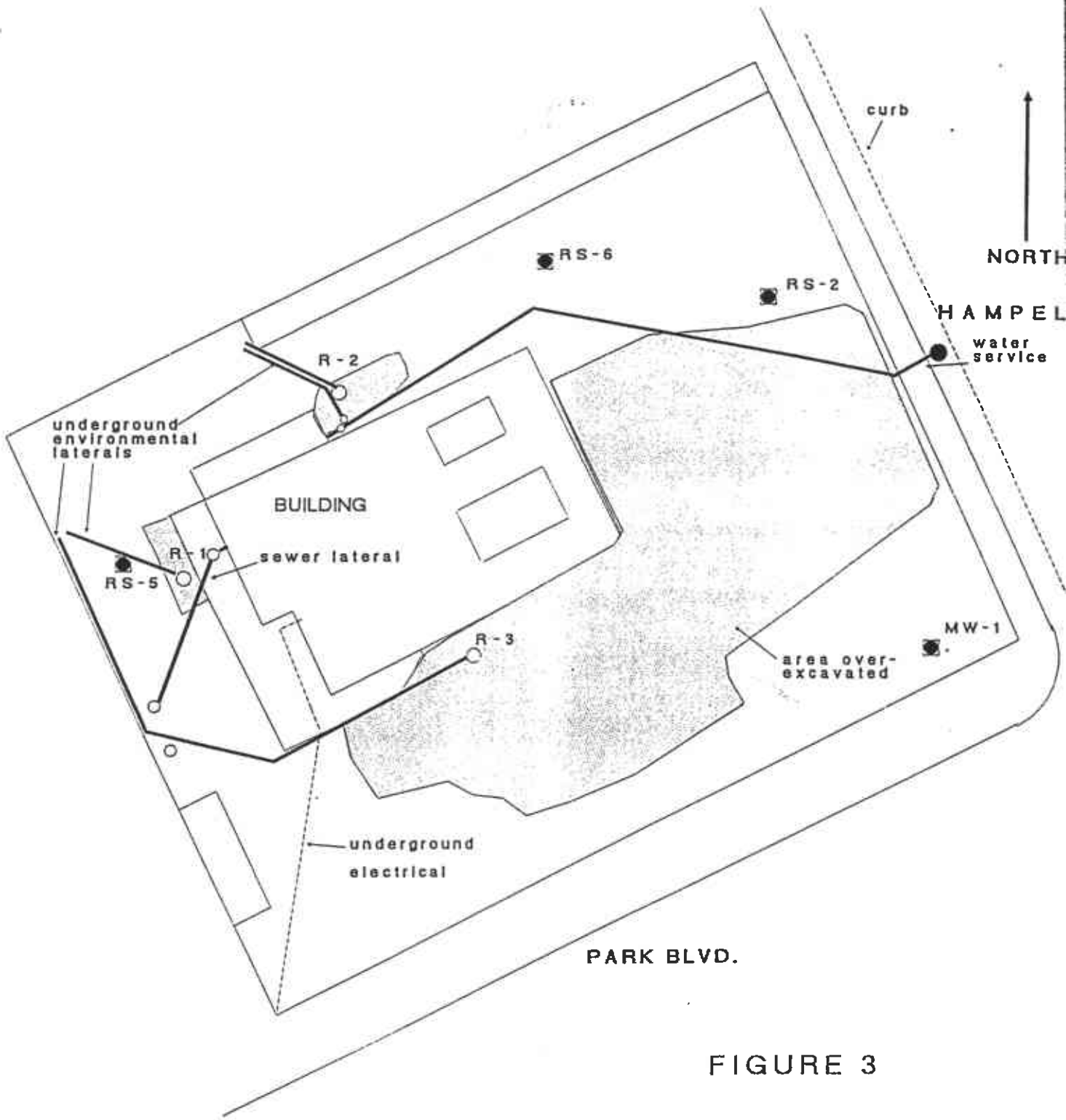
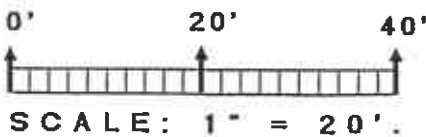
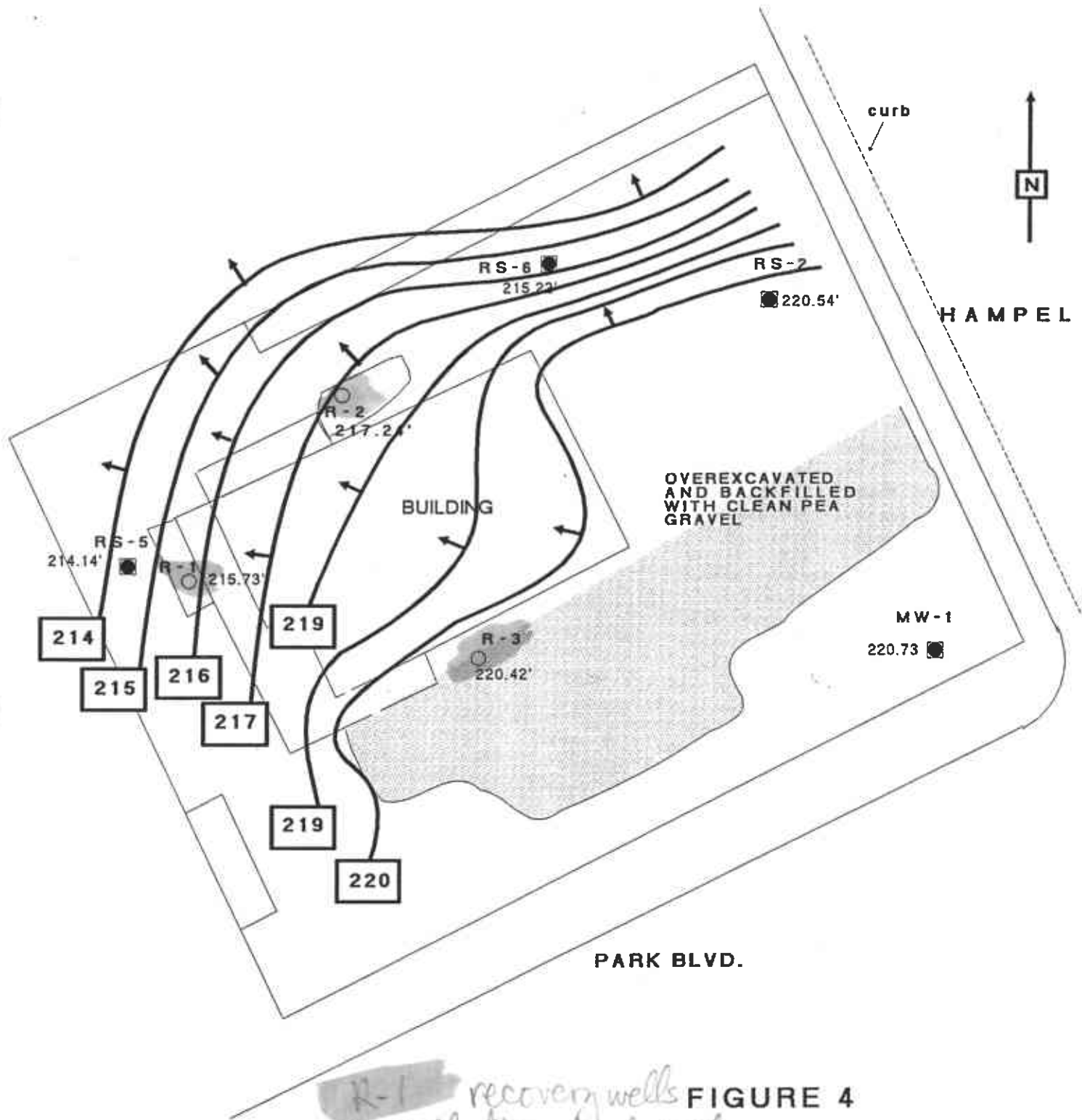


FIGURE 3

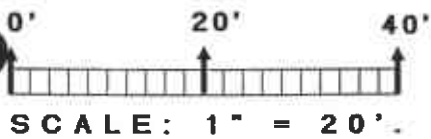
SITE BASE MAP

DESERT PETROLEUM STATION #793
 4035 PARK BLVD..
 OAKLAND, CALIFORNIA 94602





GROUNDWATER ELEVATION
CONTOUR INTERVAL EQUALS
ONE FOOT. ELEVATIONS ARE
MEASURED IN FEET AMSL



**GROUNDWATER ELEVATION GRADIENTS
AND FLOW DIRECTION FOR 9/4/96**

**DESERT PETROLEUM STATION #793
4035 PARK BLVD..
OAKLAND, CALIFORNIA 94602**

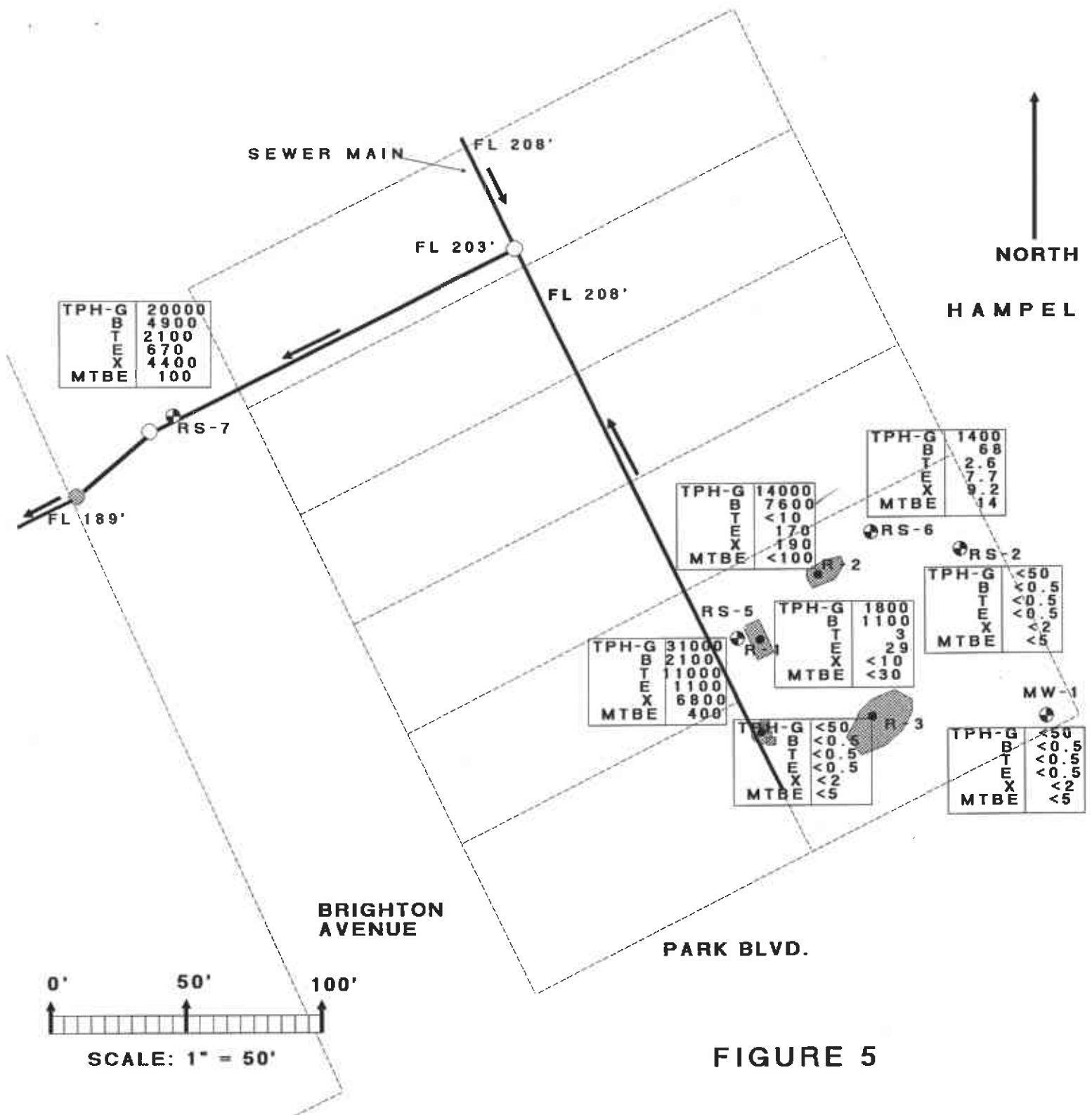


FIGURE 5

EXPLANATION

- MW-1** MONITOR WELL LOCATION WITH ID# AND GROUNDWATER ANALYTICAL RESULTS. ALL CONCENTRATIONS IN UGL.
- TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
 B = BENZENE
 T = TOLUENE
 E = ETHYLBENZENE
 X = XYLENES
 MTBE = METHYL TRIBUTYL ETHER
- R-1** INJECTION/RECOVERY TRENCHES AND RECOVERY WELLS

ANALYTICAL RESULTS FROM GROUND WATER SAMPLES COLLECTED FROM MONITOR WELLS ON 9/4/96

**DESERT PETROLEUM STATION #793
 4035 PARK BLVD.
 OAKLAND, CALIFORNIA**

APPENDIX A

METHODS AND PROCEDURES
QA/QC

APPENDIX A.

METHODS AND PROCEDURES, QA/QC

This Appendix documents the specific methods, procedures, and materials used to collect and analyze groundwater samples and monitoring the vapor recovery system.

Gauging and Measuring Monitor Wells.

Prior to sampling a well, WEGE personnel obtain three measurements: the depth to groundwater (DTW) and the product thickness using a battery powered depth to water-product interface probe and or by using a specially designed bailer. And the vacuum influence at the well head, using a water manometer that is attached to a sample port in the well head. The DTW probe is lowered into the well casing until the instrument signals that the top of water has been reached. The distance from the top of water to the top of casing is read from the tape that is attached to the probe. The tape is calibrated in 0.01 foot intervals for accuracy to 0.01 foot. The measured distance is subtracted from the established elevation at the top of casing to determine the elevation of groundwater with respect to mean sea level. The probe is washed with TSP (Tri Sodium Phosphate) and rinsed in distilled water before each measurement. WEGE has designed and built bailers that will collect a sample of the contents of a well to show the exact thickness of any floating product. Some of the abbreviations used in water sampling and or measuring or monitoring are: DTW, Depth to Water (from surface reference ie usually TOC); TOC, Top of Casing; MSL, Mean Sea Level; AMSL and BMSL, Above and Below MSL; BS, Below Surface; TOW, Top of Water; TSP, Tri Sodium Phosphate.

Purging Standing Water from Monitor Wells

If no product is present, WEGE personnel purge the well. This is accomplished by removing groundwater from the well until the water quality parameters (temperature, pH, and conductivity) stabilize, or until the well is emptied of water. Periodic measurements of groundwater temperature, pH, and conductivity were taken with a Hydac Monitor or other meter and recorded along with the volume of groundwater removed from the well. Purging is done by one or more methods singularly or in combination. Bailers, pneumatic or electric sample pumps, or vacuum pump tanks or trucks may be used. The usual amount of water removed is three well volumes. The water collected during purging is either safely stored onsite for later disposition, transported to an approved onsite or offsite sewer discharge system, or an approved onsite or offsite treatment system.

Collection of Water Sample for Analysis

The well is allowed to recover after purging and a groundwater sample is collected. A fresh bailer is used to collect enough water for the requirements of the laboratory for the analyses needed or required. The water samples are decanted from the bailer into the appropriate number and size containers. These containers are furnished pre-cleaned to exact EPA protocols, with and without preservatives added, by the analytical laboratory or a chemical supply company. The bottles are filled, with no headspace, and then capped with plastic caps with teflon liners.

The vials or bottles containing the groundwater samples are labeled with site name, station, date, time, sampler, and analyses to be performed, and documented on a chain of custody form. They were placed in ziplock bags and stored in a chest cooled to 4°C with ice. The preserved samples are chain of custody delivered to the chosen laboratory.

Analytical Results

TPH is the abbreviations used for Total Petroleum Hydrocarbons used by the laboratories for water and soil analyses. The letter following TPH indicates a particular distinction or grouping for the results. The letters "g", "d", "k", or "o" indicate gasoline, diesel, kerosene, or oil, respectively, ie TPH-d for diesel range TPH.

MBTEX acronym or abbreviation used for Methyl Tertiary Butyl Ether (MTBE), Benzene, Toluene, Ethylbenzene and all of the Xylenes.

The less than symbol, <, used with a "parts per value" indicates the lower detection limit for a given analytical result and the level, if present, of that particular analyte is below or less than that lower detection limit.

Other abbreviations commonly used are ppm, ppb, mg/Kg, ug/Kg, ml/l and ul/l are parts per million, parts per billion, milligrams per kilogram, micrograms per kilogram, milliliters per liter, microliters per liter, respectively.

Chain of Custody Documentation

All water samples that are collected by WEGE and transported to a certified analytical laboratory are accompanied by chain-of-custody (COC) documentation. This documentation is used to record the movement and custody of a sample from collection in the field to final analysis and storage. Samples to be analyzed at the certified laboratory were logged on the COC sheet provided by the laboratory. The same information provided on the sample labels (site name, sample location, date, time, and analysis to be performed) are also noted on the COC form. Each person relinquishing custody of the sample set signs the COC form indicating the date and time of the transfer to the recipient. A copy of the COC follows the samples or their extracts throughout the laboratory to aid the analyst in identifying the samples and to assure analysis within holding times.

Copies of the COC documentation are included with the laboratory results in Appendix B of this report.

APPENDIX B

**MONITOR WELL SAMPLING
DATA SHEETS**

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 9:29
WELL MW1	SAMPLED BY. <i>mp</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 11.84 DTB: 18.30		
FLUID ELEVATION		
BAILER TYPE <i>disposable bailer</i>		
PUMP <i>Paul LTT</i>		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:31	1st bailer	71.4	8.34	.68 X1000
9:34	4	70.8	8.50	.67
9:38		70.0	8.51	.66
9:42		69.8	8.45	.66
		<i>Sampled</i>		

FINAL VOLUME PURGED <i>5</i> gal
TIME SAMPLED <i>9:43</i>
SAMPLE ID. MW1
SAMPLE CONTAINERS <i>2 Vials</i>
ANALYSIS TO BE RUN <i>TPH / BTEX</i>
LABORATORY <i>AEN</i>
NOTES: <i>1st bailer clear No odor</i>

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 9:45
WELL RS-2	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 9.89 DTB: 18.40		
FLUID ELEVATION		
BAILER TYPE disposable bailer		
PUMP Paul LTT		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:47	1st bailer	70.3	8.67	1.91 X1000
9:50	13	68.8	8.97	1.95
9:52		68.9	8.68	1.96
9:58	4	68.9	8.67	1.94
			sampled	

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FINAL VOLUME PURGED 18 gal
TIME SAMPLED 10:00
SAMPLE ID. RS-2
SAMPLE CONTAINERS 2 Vogs
ANALYSIS TO BE RUN TPH ₉ / BTEX
LABORATORY AEN
NOTES: 1st bailer clear No odor New Bailer was needed

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 11:00
WELL RS-5	SAMPLED BY. <i>mp</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 16.50 DTB: 39.20		
FLUID ELEVATION		
BAILER TYPE <i>disposable bailer</i>		
PUMP <i>Paul LTT</i>		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:02	1st bailer	72.0	8.96	.92 X1000
11:12	42	73.5	8.89	.93
11:15		71.0	8.72	.90
11:17		70.8	8.72	.90
11:19		70.2	8.76	.90
			<i>sampled</i>	

FINAL VOLUME PURGED 43 1/4 gal
TIME SAMPLED 11:20
SAMPLE ID. RS-5
SAMPLE CONTAINERS 2 vials
ANALYSIS TO BE RUN TPH, BTX
LABORATORY AEN
NOTES: 1st bailer clear No odor

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 10:10
WELL RS-6	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 15.0 DTB: 34.0		
FLUID ELEVATION		
BAILER TYPE disposable bailer		
PUMP Paul LTT		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
10:11	1st bailer	68.4	8.81	1.12 X1000
10:16	25	69.9	8.67	1.08
10:17		69.2	8.63	1.06
10:22	5	70.2	8.57	1.05
10:24		69.5	8.62	1.07
			<i>sampled</i>	

37

FINAL VOLUME PURGED 3 1/4 gal
TIME SAMPLED 10:25
SAMPLE ID. RS-6
SAMPLE CONTAINERS 2 Vogs
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEN
NOTES: 1st bailer clear No odor

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 11:50
WELL RS-7	SAMPLED BY. <i>mp</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 3.99 DTB: 7.00		
FLUID ELEVATION		
BAILER TYPE <i>disposable bailer</i>		
PUMP <i>Paul LTT</i>		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:51	1st bailer	82.0	8.07	1.70 X1000
11:52	6	78.0	na/	1.48
11:54		76.1		1.43
11:56		74.7		1.41
11:57		74.3		1.40
11:59		74.3		1.39
				<i>sampled</i>

FINAL VOLUME PURGED <i>7 1/2 gal</i>
TIME SAMPLED <i>12:00</i>
SAMPLE ID. <i>RS-7</i>
SAMPLE CONTAINERS <i>2 Vogs</i>
ANALYSIS TO BE RUN <i>TPLH₂ / BTEX</i>
LABORATORY <i>AEN</i>
NOTES: <i>1st bailer clear No odor</i>

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 10:52
WELL R-1	SAMPLED BY. <i>mp</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 15 DTB: 16.90		
FLUID ELEVATION		
BAILER TYPE <i>disposable bailer</i>		
PUMP <i>Paul LTT</i>		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
10:56	1st bailer	65.7	8.93	1.03 X1000
11:04	8	72.3	9.15	.99
11:06		71.2	9.12	1.00
11:08		70.8	9.12	1.00
11:09		71.0	9.12	1.00
			<i>sampled</i>	

FINAL VOLUME PURGED <i>9 1/4 gal</i>
TIME SAMPLED <i>11:10</i>
SAMPLE ID. <i>R-1</i>
SAMPLE CONTAINERS <i>2 Vogs</i>
ANALYSIS TO BE RUN <i>TPhg / BTEX</i>
LABORATORY <i>AEN</i>
NOTES: <i>1st bailer clear No odor</i>



1386 EAST BEAVER
WOODLAND, CALIFORNIA
(916) 668-5300, FAX (916)

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 10:36
WELL R-2	SAMPLED BY. <i>mp</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 13.44 DTB: 16.80		
FLUID ELEVATION		
BAILER TYPE <i>disposable bailer</i>		
PUMP <i>Paul LTT</i>		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
10:38	1st bailer	70.1	8.64	1.43 X1000
10:44	13	65.6	8.83	1.47
10:46		64.9	8.66	1.47
10:48		64.7	8.66	1.47
			<i>sampled</i>	

FINAL VOLUME PURGED	<i>14 gal</i>
TIME SAMPLED	<i>10:49</i>
SAMPLE ID.	<i>R-2</i>
SAMPLE CONTAINERS	<i>2 vogs</i>
ANALYSIS TO BE RUN	<i>TPLtg / BTEX</i>
LABORATORY	<i>AEN</i>
NOTES:	<i>1st bailer clear No odor</i>

WELL SAMPLING DATA SHEET

SITE DP 793	DATE 9-4-96	TIME 11:28
WELL R-3	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 9.90 DTB: 11.75		
FLUID ELEVATION		
BAILER TYPE disposable bailer		
PUMP Paul LTT		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:29	1st bailer	77.6	8.93	2.28 x1000
11:32	10	77.6	8.52	2.23
11:34		76.9	8.61	2.21
11:36		76.0	8.42	2.19
11:38		76.0	8.44	2.18
			sampled	

FINAL VOLUME PURGED 11 1/4 gal
TIME SAMPLED 11:39
SAMPLE ID. R-3
SAMPLE CONTAINERS 2 Vogs
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEN
NOTES: 1st bailer clear No odor
Needed a bailer

APPENDIX C

**CERTIFIED ANALYTICAL
LABORATORY REPORT**

COC DOCUMENTATION

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

WESTERN GEO-ENGINEERING
1386 E. BEAMER STREET
WOODLAND, CA 95776-6003

ATTN: ROY BUTLER
CLIENT PROJ. ID: DP 793

REPORT DATE: 09/20/96

DATE(S) SAMPLED: 09/04/96

DATE RECEIVED: 09/06/96

AEN WORK ORDER: 9609049

PROJECT SUMMARY:

On September 6, 1996, this laboratory received 8 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Director

WESTERN GEO-ENGINEERING

SAMPLE ID: MW1
 AEN LAB NO: 9609049-01
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND ✓	0.5	ug/L ✓	09/11/96
Toluene	108-88-3	ND	0.5	ug/L	09/11/96
Ethylbenzene	100-41-4	ND	0.5	ug/L	09/11/96
Xylenes, Total	1330-20-7	ND	2	ug/L	09/11/96
Purgeable HCs as Gasoline	5030/GCFID	ND ✓	0.05	mg/L ✓	09/11/96
Methyl t-Butyl Ether	EPA 8020	ND	5	ug/L	09/11/96

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: RS-2
AEN LAB NO: 9609049-02
AEN WORK ORDER: 9609049
CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
DATE RECEIVED: 09/06/96
REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND ✓	0.5 ug/L ✓		09/11/96
Toluene	108-88-3	ND	0.5 ug/L		09/11/96
Ethylbenzene	100-41-4	ND	0.5 ug/L		09/11/96
Xylenes, Total	1330-20-7	ND	2 ug/L		09/11/96
Purgeable HCs as Gasoline	5030/GCFID	ND ✓	0.05 mg/L ✓		09/11/96
Methyl t-Butyl Ether	EPA 8020	ND	5 ug/L		09/11/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: RS-5
 AEN LAB NO: 9609049-03
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	2,100 *	30	ug/L	09/17/96
Toluene	108-88-3	11,000 *	30	ug/L	09/17/96
Ethylbenzene	100-41-4	1,100 *	30	ug/L	09/17/96
Xylenes, Total	1330-20-7	6,800 *	100	ug/L	09/17/96
Purgeable HCs as Gasoline	5030/GCFID	31 *	3	mg/L	09/17/96
Methyl t-Butyl Ether	EPA 8020	400 *	300	ug/L	09/17/96

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: RS-6
 AEN LAB NO: 9609049-04
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	68 *	0.5	ug/L	09/12/96
Toluene	108-88-3	2.6 *	0.5	ug/L	09/12/96
Ethylbenzene	100-41-4	7.7 *	0.5	ug/L	09/12/96
Xylenes, Total	1330-20-7	9.2 *	2	ug/L	09/12/96
Purgeable HCs as Gasoline	5030/GCFID	1.4 *	0.05	mg/L	09/12/96
Methyl t-Butyl Ether	EPA 8020	14 *	5	ug/L	09/12/96

MTBE included in gasoline result.

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: RS-7
 AEN LAB NO: 9609049-05
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	4,900 *	10	ug/L	09/12/96
Toluene	108-88-3	2,100 *	10	ug/L	09/12/96
Ethylbenzene	100-41-4	670 *	10	ug/L	09/12/96
Xylenes, Total	1330-20-7	4,400 *	40	ug/L	09/12/96
Purgeable HCs as Gasoline	5030/GCFID	20 *	1	mg/L	09/12/96
Methyl t-Butyl Ether	EPA 8020	100 *	100	ug/L	09/12/96

MTBE included in gasoline result.
 Reporting limits elevated due to high levels of target
 compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: R-1
 AEN LAB NO: 9609049-06
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	1,100 *	3	ug/L	09/12/96
Toluene	108-88-3	3 *	3	ug/L	09/12/96
Ethylbenzene	100-41-4	29 *	3	ug/L	09/12/96
Xylenes, Total	1330-20-7	ND	10	ug/L	09/12/96
Purgeable HCs as Gasoline	5030/GCFID	1.8 *	0.3	mg/L	09/12/96
Methyl t-Butyl Ether	EPA 8020	ND	30	ug/L	09/12/96

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: R-2
 AEN LAB NO: 9609049-07
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	7,600 *	10	ug/L	09/17/96
Toluene	108-88-3	ND	10	ug/L	09/17/96
Ethylbenzene	100-41-4	170 *	10	ug/L	09/17/96
Xylenes, Total	1330-20-7	190 *	40	ug/L	09/17/96
Purgeable HCs as Gasoline	5030/GCFID	14 *	1	mg/L	09/17/96
Methyl t-Butyl Ether	EPA 8020	ND	100	ug/L	09/17/96

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

WESTERN GEO-ENGINEERING

SAMPLE ID: R-3
 AEN LAB NO: 9609049-08
 AEN WORK ORDER: 9609049
 CLIENT PROJ. ID: DP 793

DATE SAMPLED: 09/04/96
 DATE RECEIVED: 09/06/96
 REPORT DATE: 09/20/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	09/12/96
Toluene	108-88-3	ND	0.5	ug/L	09/12/96
Ethylbenzene	100-41-4	ND	0.5	ug/L	09/12/96
Xylenes, Total	1330-20-7	ND	2	ug/L	09/12/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	09/12/96
Methyl t-Butyl Ether	EPA 8020	ND	5	ug/L	09/12/96

ND = Not detected at or above the reporting limit
 * = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9609049

CLIENT PROJECT ID: DP 793

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9609049
 INSTRUMENT: E, F
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
09/11/96	MW-1	01	85
09/11/96	RS-2	02	86
09/17/96	RS-5	03	81
09/12/96	RS-6	04	91
09/12/96	RS-7	05	94
09/12/96	R-1	06	94
09/12/96	R-2	07	112
09/17/96	R-3	08	103
QC Limits:			70-130

DATE ANALYZED: 09/12/96
 SAMPLE SPIKED: 9609053-01
 INSTRUMENT: F

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	18.6	85	<1	85-109	17
Toluene	61.4	98	1	87-111	16
Hydrocarbons as Gasoline	500	107	4	66-117	19

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

Reporting Information:

1. Client: (Same as 2)
 Address: _____
 Contact: _____
 Alt. Contact: _____

American Environmental Network

3440 Vincent Road, Pleasant Hill, CA 94523
 Phone (510) 930-9090
 FAX (510) 930-0256

AEN

R-3, S-3

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: 4609049
 Lab Destination: _____
 Date Samples Shipped: _____
 Lab Contact: _____
 Date Results Required: _____
 Date Report Required: _____
 Client Phone No.: _____
 Client FAX No.: _____

Address Report To:

2. Western Geo Engineers
1386 E. Brainer St.
Woodland C.A. 95776
Attn: _____

Send Invoice To:

3. (Same as 2)

Send Report To: 1 or 2 (Circle one)

Client P.O. No.: _____ Client Project I.D. No.: DP 793

Sample Team Member (s) Matt Penick

Lab Number	Client Sample Identification	Air Volume	Date/Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS											Comments / Hazards		
								TPHs	BTX	MIBE											
D1AB	MW 1	9-1-96	9:43	7	Y	2	V045	✓	✓	✓											
02AB	RS-2		10:00					✓	✓	✓											
03AB	RS-5		11:20					✓	✓	✓											
04AB	RS-6		10:25					✓	✓	✓											
05AB	RS-7		12:00					✓	✓	✓											
06AB	R-1		11:10					✓	✓	✓											
07AB	R-2		10:49					✓	✓	✓											
08AB	R-3		11:39					✓	✓	✓											

Relinquished by: (Signature) <u>[Signature]</u>	DATE <u>9/6/96</u>	TIME <u>12:50</u>	Received by: (Signature) <u>[Signature]</u>	DATE <u>9/6/96</u>	TIME <u>12:50</u>
Relinquished by: (Signature) <u>[Signature]</u>	DATE <u>9/6/96</u>	TIME <u>1400</u>	Received by: (Signature) <u>[Signature]</u>	DATE <u>9-6-96</u>	TIME <u>1400</u>
Relinquished by: (Signature) _____	DATE _____	TIME _____	Received by: (Signature) _____	DATE _____	TIME _____
Method of Shipment			Lab Comments		

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
 4) PVC filter, diam. _____ pore size _____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
 10) Other _____ 11) Other _____