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CALIF CONTRACTOR # 513857 A CORPORATION  
REGISTERED GEOLOGISTS

Mr. John Rutherford  
Desert Petroleum  
P.O. Box 1601  
Oxnard, California 93032  
(805) 644-5892  
FAX (805) 654-0720

August 27, 1996

Dear Mr. Rutherford:

The following report documents the First Quarter 1996 collection and certified laboratory analysis of ground water samples from five monitoring 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 Ground Water 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 March 27, 1996 from the on-site ground water monitor wells indicate that the top of ground water ranges between 5.5 and 13.5 feet bgs.

96 SEP 18 PM 4:23  
DP 793  
ENVIRONMENTAL  
COLLECTION  
8/27/96

## COLLECTION AND ANALYSIS OF GROUND WATER SAMPLES, 3/27/96

WEGE and Lawrence Tank Testing personnel conducted a quarterly ground water monitoring round at the site on March 27, 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 (Figures 3 and 5). 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 recovery wells R-1, R-2, and R-3. The depth to water measurements were made using a product/water interface probe. Measurements were made from the surveyed elevation at the top of casing at each well. Table 1 shows the elevation of ground water with respect to mean sea level for all monitor wells on March 27, 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 Ground Water Samples

After purging, the wells were allowed to recover to at least 80% of their original well volumes. A ground water 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.

DP 793, 8/27/96  
ENFORCEMENT  
PROJECT  
96 SEP

## RESULTS OF QUARTERLY GROUND WATER MONITORING

### Ground Water Gradient and Flow Direction

Figure 4 shows the ground water elevation gradients and flow direction that were derived from the depth to water measurements from on-site monitor wells on March 27, 1996. The ground water elevation has risen an average of approximately five feet in the on-site wells since the previous quarterly monitoring round on December 21, 1995 (Table 1).

The current flow direction is to northwest. This flow direction is consistent with previous gradient determinations by WEGE. The hydraulic gradient averages 0.07 feet/linear foot over the site.

### Results of Certified Analysis of Ground Water Samples

The results of the certified analyses of ground water samples collected on March 27, 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 ranged from a maximum of 68,000 ug/l at the on-site monitor well RS-5 to less than laboratory detection limits (50 ug/l) in monitor wells MW1 and RS-2. Neither MW1 or RS-2 showed BTEX concentrations above the laboratory detection limits. MTBE was not found in concentrations above laboratory detection limits in any of the five wells. The laboratory detection limits for MTBE ranged from 50 ug/L to 3000 ug/L (see Table 1).

Figure 5 shows the areal distribution of TPH-G, BTEX, and MTBE in ground water in ug/l as determined from ground water samples collected from the monitor wells on March 27, 1996. No significant changes in TPH-G, BTEX, or MTBE concentrations were noted at any of the monitor wells since the previous quarterly ground water monitoring round on December 21, 1995.

### LIMITATIONS

This report is based upon the following:

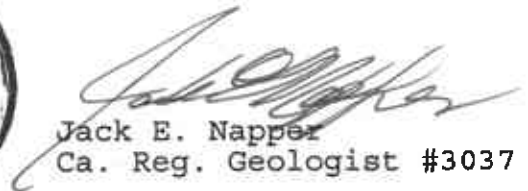
- A. The observations of field personnel.
- B. The results of laboratory analyses performed by a state certified laboratory.
- C. Referenced documents.
- D. Our understanding of the regulations of the State of California, Alameda County and the City of Oakland.

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 ground water must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

Sincerely yours,



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 LABORATORY RESULTS FROM WATER SAMPLES  
 DESERT PETROLEUM, INC. SITE #793  
 4015 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)	MTBE (UG/L)	
RS-1	12/14/89	240	24.25	215.75	19000	2600	2700	200	1200		
	12/90				15000	3500	330	170	760		
	2/91				6900	910	200	39	540		
	6/91				1600	56	180.000	12	26		
	9/91				4100	730	7.6	5.1	24		
	12/91				8300	950	160	71	190		
	11/09/92	100.18	17.05	83.13	1700	730	9.6	16	14		
	04/07/94	100.18	13	87.18	860	84	12	16	110		
	06/19/94	228.15	13.37	214.78	1400	150	12	52	87		
	09/17/94	228.15	16.33	211.82	310	30	1.8	2.8	3.9		
	03/12/95	228.15	4.66	223.49	ND	ND	ND	ND	ND		
	DESTROYED BY OVER-EXCAVATION OF UST-DISPENSER AREAS ( 8/14/95 REPLACED WITH MW-1 9/5/95.										
	MW-1	10/04/95	232.57	12.38	220.19	ND	ND	ND	ND	ND	
12/21/95		232.57	13.4	219.17	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
03/27/96		232.57	5.53	227.04	< 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		
	03/12/95	227.19	5.26	221.93	ND	ND	ND	ND	ND		
	10/04/95	230.43	15.05	215.38	ND	ND	ND	ND	ND		
	12/21/95	230.43	9.95	220.48	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
	03/27/96	230.43	6.28	224.15	< 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		
	2/91					FLOATING PRODUCT					
	6/91					FLOATING PRODUCT					
	9/91					FLOATING PRODUCT					
	12/91					FLOATING PRODUCT					
	11/09/92	98.99	20.73	78.26	50000	650	4800	1100	15000		
	04/07/94	98.99	18.16	80.83	27000	5000	8700	550	2800		
	06/19/94	227.65	18.11	209.54	20000	2100	5300	470	2500		
	09/17/94	227.65	19.63	208.02	9300	230	340	110	700		
	03/12/95	227.65	14.54	213.11	93000	6400	2000	19000	10000		
	10/04/95	230.64	17.53	213.11	16000	420	2100	320	1800		
	12/21/95	230.64	17.47	213.17	48000	3500	9200	840	4800	56	
03/27/96	230.64	13.82	217.13	68000	4900	18000	1100	24000	240		
RS-6	12/14/89	240.23	22.52	217.71	11000	1400	1700	160	860		
	2/91					FLOATING PRODUCT					
	6/91				95000	4200	4200	650	3700		
	9/91					FLOATING PRODUCT					
	12/91				64000	3700	2300	730	4100		

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)	MTBE (UG/L)
	11/09/92	99.27	19.43	79.84	19000	1600	710	500	1600	
	04/07/94	99.27	14.42	84.85	16000	1200	1300	290	1100	
	06/19/94	227.22	14.45	212.77	23000	1300	2200	590	2200	
	09/17/94	227.22	19.52	207.7	24000	630	790	250	1100	
	03/12/95	227.22	8.9	218.32	3200	450	13	82	230	
	10/04/95	230.22	17.78	212.44	3700	170	250	38	290	
	12/21/95	230.22	14.98	215.24	3100	120	30	16	150	58
	7/90				5600000	24000	210000	50000	740000	
	2/91					FLOATING PRODUCT				
	6/91					FLOATING PRODUCT				
	9/91					FLOATING PRODUCT				
	12/91				270000	11000	22000	2000	13000	
	11/09/92	67.88	4.62	63.26	81000	12000	16000	1900	13000	
	04/07/94	67.88	4.03	63.85	74000	16000	16000	1400	8500	
	06/19/94	195.92	4.07	191.85	83000	22000	19000	1500	9500	
	09/17/94	195.92	4.05	191.87	270000	13000	15000	2100	1100	
	03/12/95	195.92	3.72	192.2	35000	5100	560	6300	3600	
	10/04/95	199.35	4.03	195.32	96000	14000	14000	1300	7000	
	12/21/95	199.35	3.95	195.4	70000	9300	12000	860	5600	210
					54000	8500	14000	1100	8100	1000

*-WEGE-*

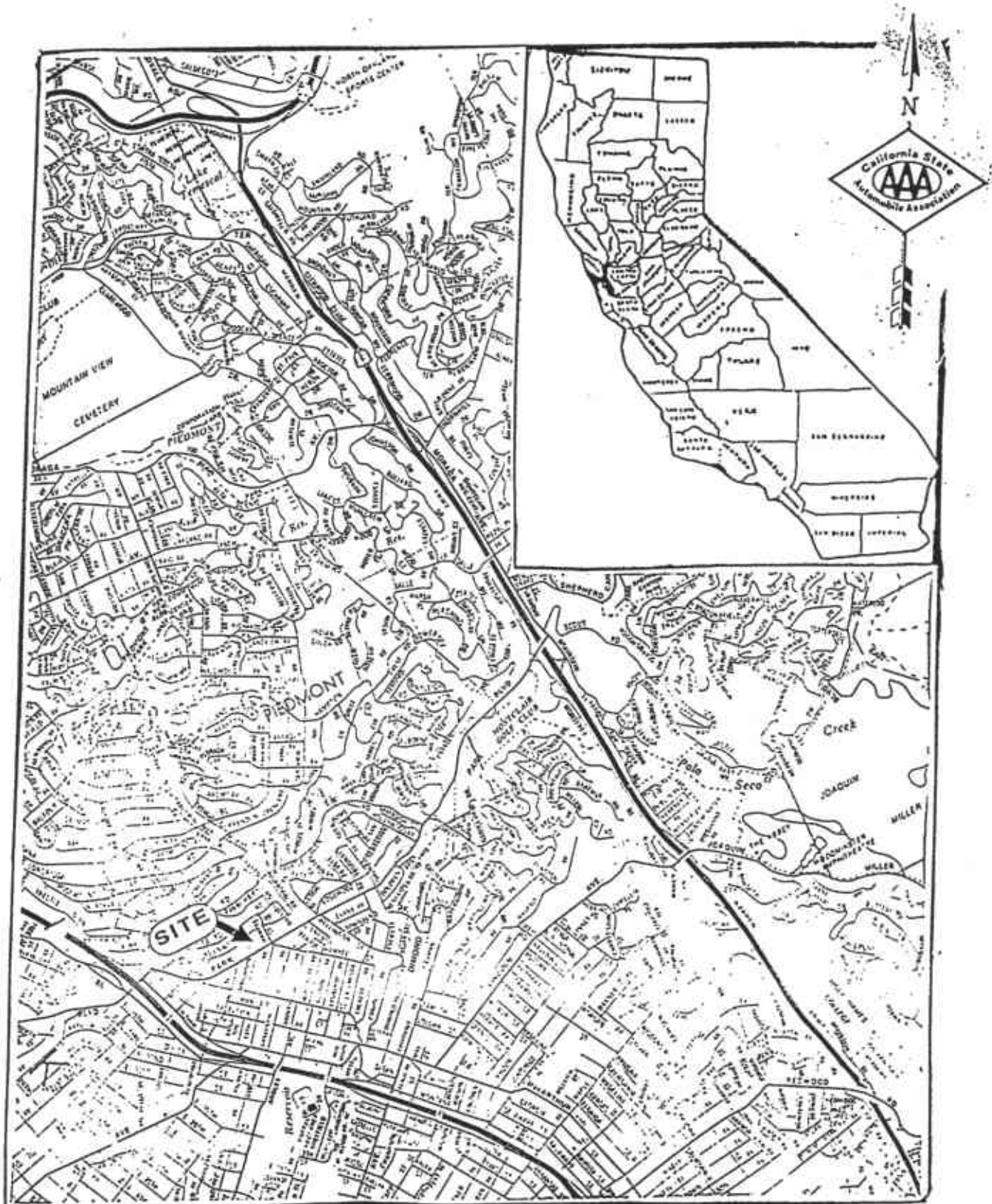


FIGURE 1

Location (AAA Map)



WESTERN  
GEO-ENGINEERS

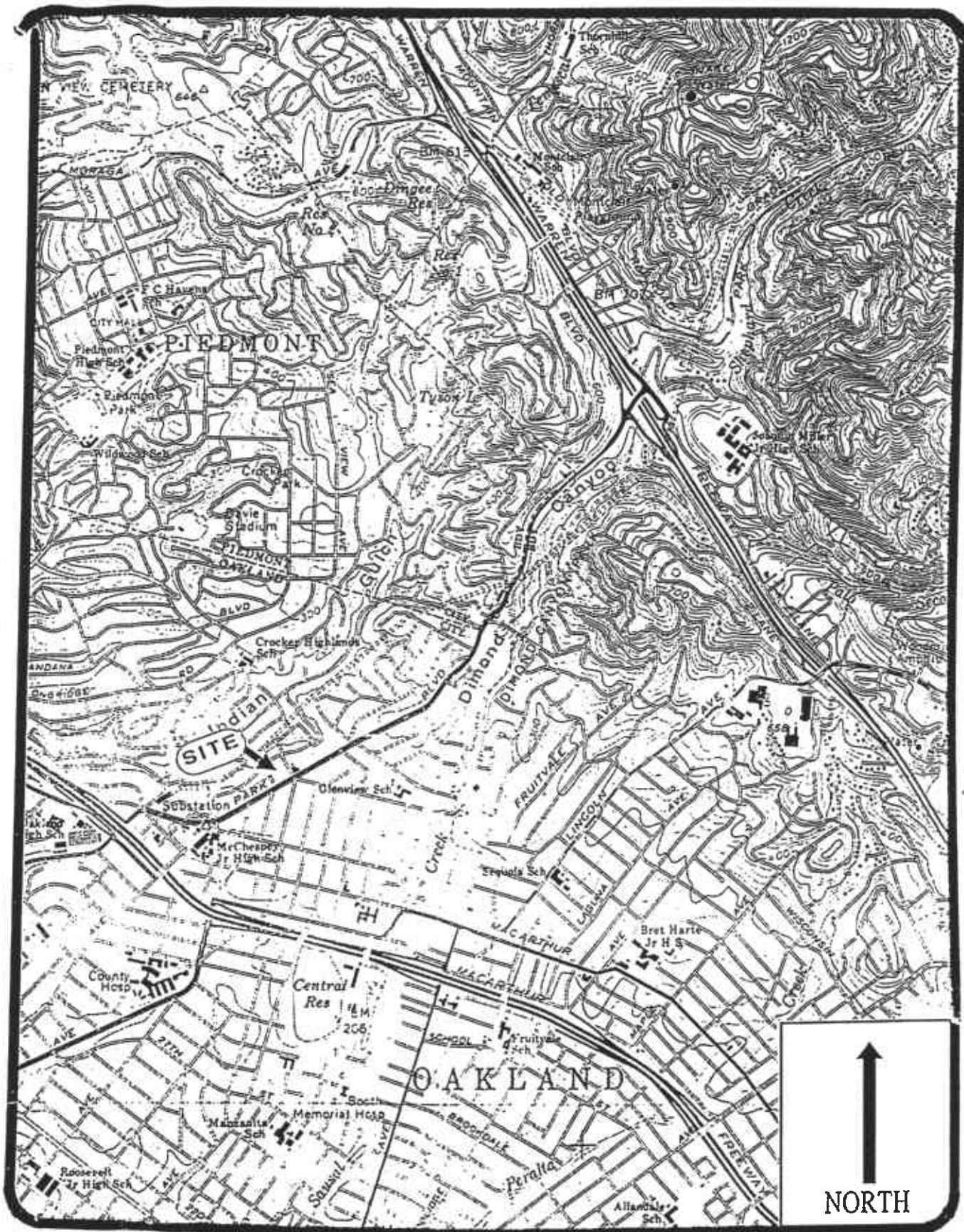


FIGURE 2, USGS TOPOGRAPHIC MAP  
8<sup>th</sup>



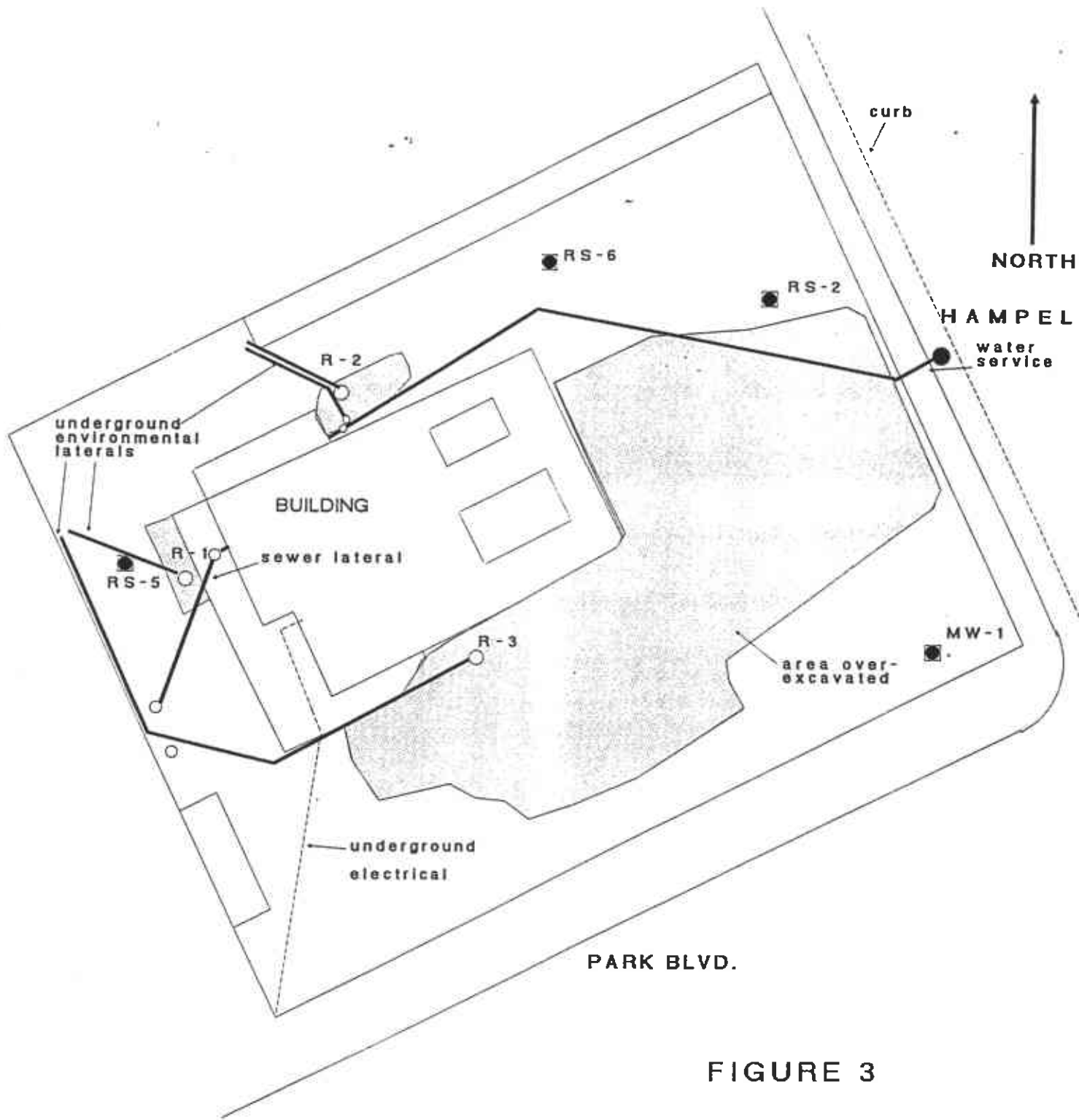
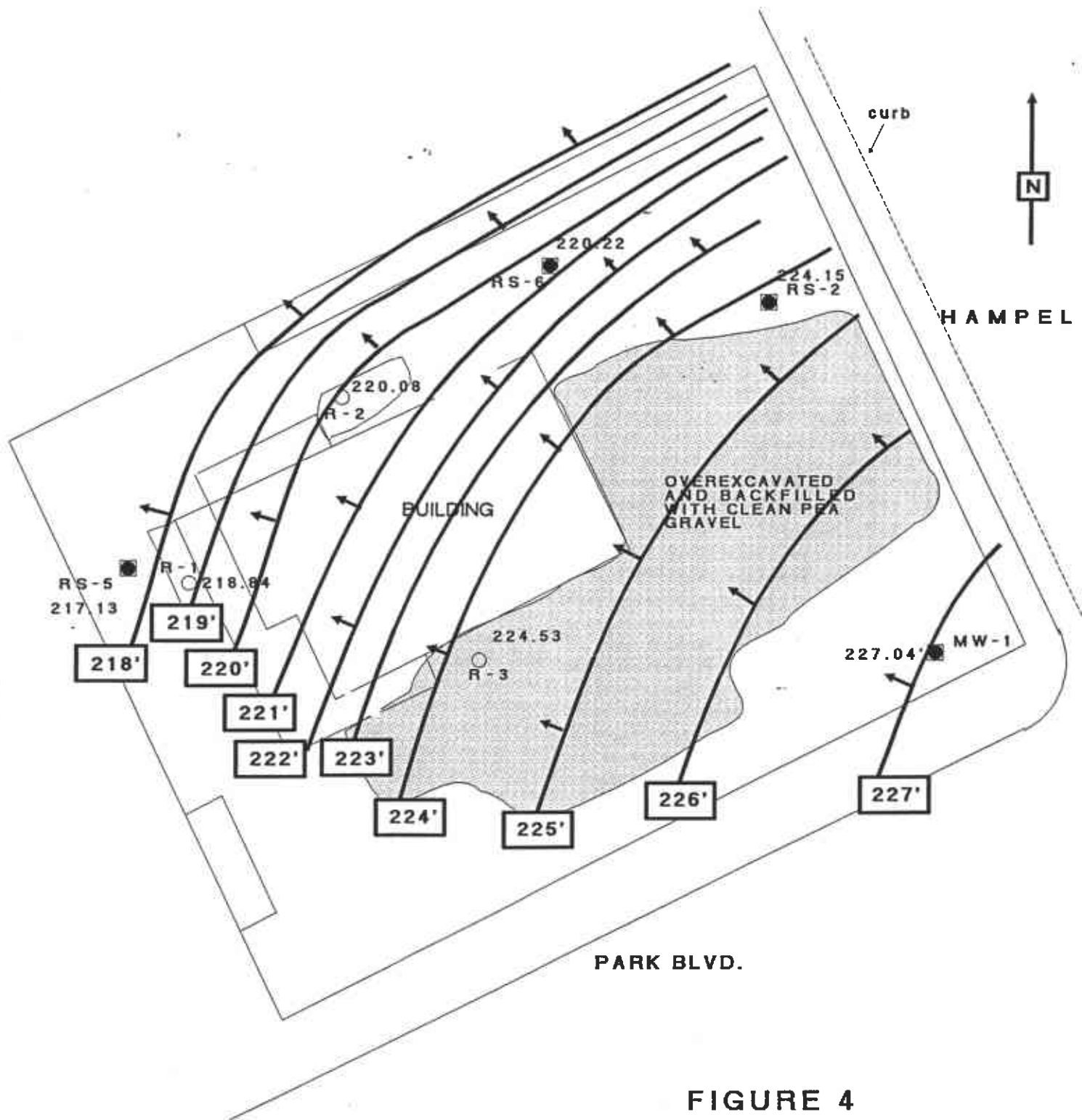


FIGURE 3

SITE BASE MAP

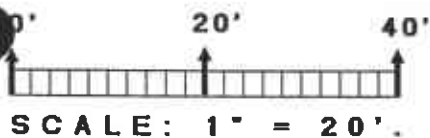
DESERT PETROLEUM STATION #793  
 4035 PARK BLVD..  
 OAKLAND, CALIFORNIA 94602



**FIGURE 4**

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

**GROUND WATER ELEVATION GRADIENTS  
AND FLOW DIRECTION FOR 3/27/96**



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

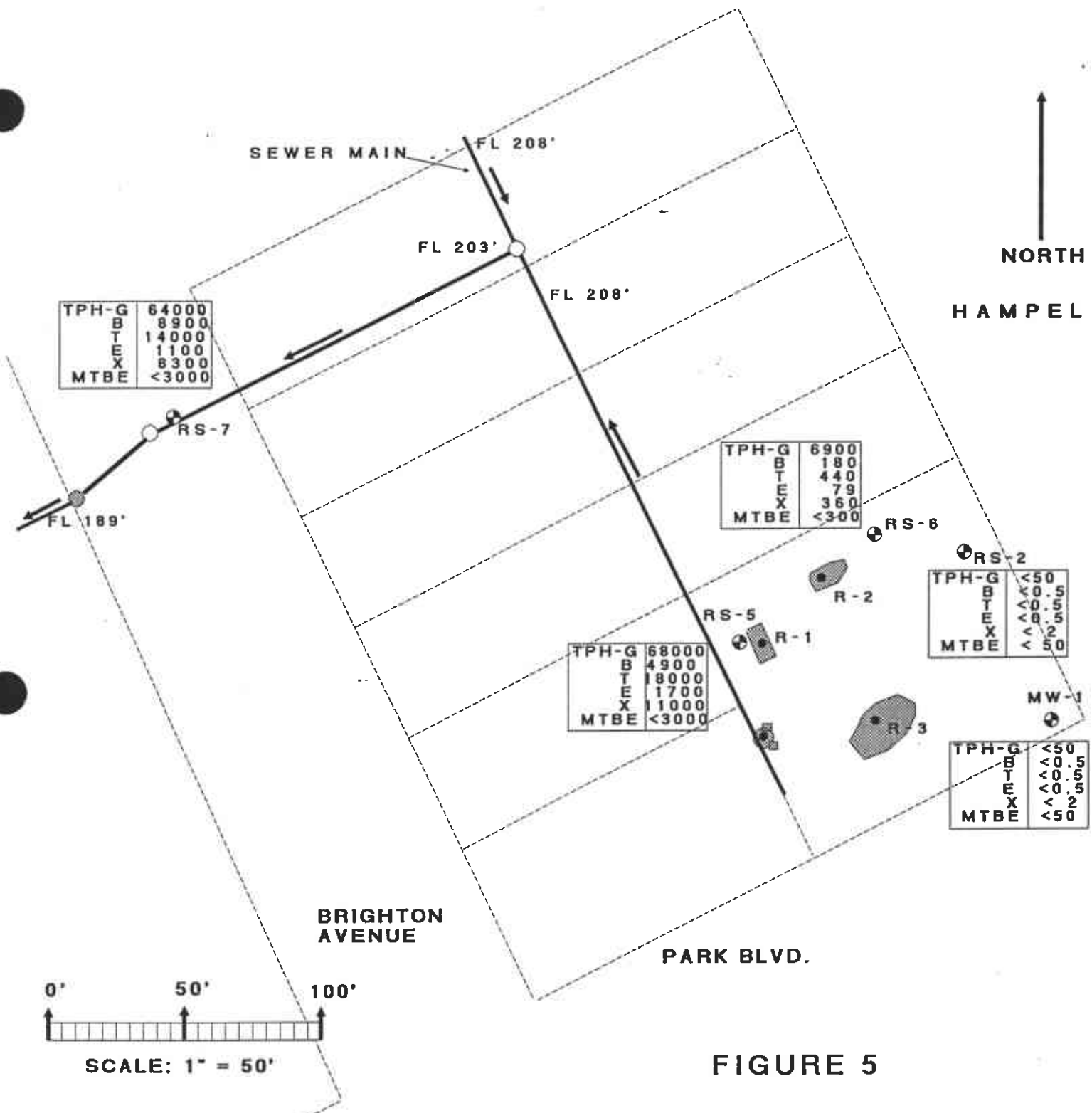


FIGURE 5

**EXPLANATION**

- MW-1 MONITOR WELL LOCATION WITH ID\* AND GROUND WATER ANALYTICAL RESULTS. ALL CONCENTRATIONS IN UG/L.
- 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 3/27/96**

**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 ground water samples.*

#### Gauging and Measuring Monitor Wells.

Prior to sampling a well, WEGE personnel obtain two measurements: the depth to ground water and the product thickness using a battery powered depth to water-product interface probe and or by using a specially designed bailer. The 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 ground water with respect to mean sea level. The probe is washed with TSP 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.

#### Purging Standing Water from Monitor Wells

If no product is present, WEGE personnel purge the well. This is accomplished by removing ground water from the well until the water quality parameters (temperature, pH, and conductivity) stabilize, or until the well is emptied of water. Periodic measurements of ground water temperature, pH, and conductivity were taken with a Hydac Monitor or other meter and recorded along with the volume of ground water 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 ground water 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 ground water 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.

BTEX or MTBE are acronyms or abbreviations used for Benzene, Toluene, Ethylbenzene and all of the Xylenes (BTEX) and Methyl Tertiary Butyl Ether (MTBE), respectively.

MBTEX is the designation for the combination of the above five compounds.

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 Des: 793	DATE 3-27-96	TIME 8:10
WELL mw 1	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 5.53 DTB: 19.50		
FLUID ELEVATION		
BAILER TYPE disposable		
PUMP Paul		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:15	8 gal	72.6	7.26	.64 x10
9:17		71.6	7.13	.53
9:19		70.9	7.06	.48
9:21		71.0	7.01	.48
	sampled			

FINAL VOLUME PURGED 9 gal
TIME SAMPLED 9:22
SAMPLE ID. mw 1
SAMPLE CONTAINERS 2 vials
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEN
NOTES: 1st bailer light brown No odor

# WELL SAMPLING DATA SHEET

SITE Des: 793	DATE 3-27-96	TIME 8:15
WELL RS 2	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 6.28 DTB: 18.65		
FLUID ELEVATION		
BAILER TYPE disposable		
PUMP Paul		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:30	24 gal	68.7	6.87	.76 x16
9:31		69.1	6.81	.76
9:33		69.3	6.79	.76
9:35		69.3	6.81	.76
		<del>sampled</del>		

FINAL VOLUME PURGED 25 gal
TIME SAMPLED 9:36
SAMPLE ID. RS 2
SAMPLE CONTAINERS 2 vials
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEN
NOTES: Use bailer light Brown No odor

# WELL SAMPLING DATA SHEET

SITE Des: 793	DATE 3-27-96	TIME 8:20
WELL RS 6	SAMPLED BY. <i>mp</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 10.00 DTB: 34.30		
FLUID ELEVATION		
BAILER TYPE <i>disposable</i>		
PUMP <i>Paul</i>		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:40	48 gal	69.6	6.79	.65 x10
9:42		70.2	6.84	.65
9:44		70.3	6.82	.65
9:46		70.3	6.83	.65
<i>sampled</i>				

FINAL VOLUME PURGED	<i>49 gal</i>
TIME SAMPLED	<i>9:48</i>
SAMPLE ID.	<i>RS 6</i>
SAMPLE CONTAINERS	<i>2 vials</i>
ANALYSIS TO BE RUN	<i>TPH<sub>9</sub>/BTEX</i>
LABORATORY	<i>AEN</i>
NOTES:	<i>1st bailer clear (light odor)</i>

# WELL SAMPLING DATA SHEET

SITE Des: 793	DATE 3-27-96	TIME 8:24
WELL RS 5	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 13.5 / DTB: 39.50		
FLUID ELEVATION		
BAILER TYPE disposable		
PUMP Paul		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
9:56	50 gal	71.6	6.87	.51 x10
9:58		71.5	6.92	.50
10:00		71.1	6.89	.50
10:05		71.2	6.89	.50
		sampled		

FINAL VOLUME PURGED 51 gal
TIME SAMPLED 10:07
SAMPLE ID. RS 5
SAMPLE CONTAINERS 2 vials
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEN
NOTES: 1st bailer clear light odor



# WELL SAMPLING DATA SHEET

SITE Des: 793	DATE 3-27-96	TIME 8:40
WELL 8	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 5.80 DTB: 11.80		
FLUID ELEVATION		
BAILER TYPE disposable		
PUMP Paul		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
	gal			xl

FINAL VOLUME PURGED
TIME SAMPLED
SAMPLE ID. 8
SAMPLE CONTAINERS 2 vials
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEM
NOTES: 1st bailer



# WELL SAMPLING DATA SHEET

SITE Des. 793	DATE 3-27-96	TIME <del>8:30</del>
WELL RS 7	SAMPLED BY. mp	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: <del>7.80</del> DTB: <del>20.20</del> 7.00		
FLUID ELEVATION		
BAILER TYPE disposable		
PUMP Paul		

WELL PURGING RECORD					
TIME	VOLUME REMOVED	TEMP.	pH	COND.	
10:25	12 gal	71.8	6.95	.63	x100
10:26		70.0	6.94	.63	
10:28		69.4	6.92	.62	
10:30		69.4	6.92	.63	
<del>Sample</del>					

FINAL VOLUME PURGED 11 gal
TIME SAMPLED 10:33
SAMPLE ID. RS 7
SAMPLE CONTAINERS 2 vials
ANALYSIS TO BE RUN TPHg/BTEX
LABORATORY AEN
NOTES: Use bailer clear light odor



## **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: DES 793

REPORT DATE: 04/12/96

DATE(S) SAMPLED: 03/27/96

DATE RECEIVED: 04/01/96

AEN WORK ORDER: 9604005

### PROJECT SUMMARY:

On April 1, 1996, this laboratory received 5 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.

*William Schroeder, for*  
Larry Klein  
Laboratory Director

Revision of report dated 04/10/96 to include MTBE.

## WESTERN GEO-ENGINEERING

SAMPLE ID: MW 1  
AEN LAB NO: 9604005-01  
AEN WORK ORDER: 9604005  
CLIENT PROJ. ID: DES 793

DATE SAMPLED: 03/27/96  
DATE RECEIVED: 04/01/96  
REPORT DATE: 04/12/96

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ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	04/05/96
Toluene	108-88-3	ND	0.5	ug/L	04/05/96
Ethylbenzene	100-41-4	ND	0.5	ug/L	04/05/96
Xylenes, Total	1330-20-7	ND	2	ug/L	04/05/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	04/05/96
Methyl t-Butyl Ether	EPA 8020	ND	50	ug/L	04/05/96

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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: 9604005-02  
AEN WORK ORDER: 9604005  
CLIENT PROJ. ID: DES 793

DATE SAMPLED: 03/27/96  
DATE RECEIVED: 04/01/96  
REPORT DATE: 04/12/96

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ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5 ug/L		04/05/96
Toluene	108-88-3	ND	0.5 ug/L		04/05/96
Ethylbenzene	100-41-4	ND	0.5 ug/L		04/05/96
Xylenes, Total	1330-20-7	ND	2 ug/L		04/05/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05 mg/L		04/05/96
Methyl t-Butyl Ether	EPA 8020	ND	50 ug/L		04/05/96

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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: 9604005-03  
 AEN WORK ORDER: 9604005  
 CLIENT PROJ. ID: DES 793

DATE SAMPLED: 03/27/96  
 DATE RECEIVED: 04/01/96  
 REPORT DATE: 04/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	4,900 *	30	ug/L	04/08/96
Toluene	108-88-3	18,000 *	30	ug/L	04/08/96
Ethylbenzene	100-41-4	1,700 *	30	ug/L	04/08/96
Xylenes, Total	1330-20-7	11,000 *	100	ug/L	04/08/96
Purgeable HCs as Gasoline	5030/GCFID	68 *	3	mg/L	04/08/96
Methyl t-Butyl Ether	EPA 8020	ND	3000	ug/L	04/08/96

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: 9604005-04  
 AEN WORK ORDER: 9604005  
 CLIENT PROJ. ID: DES 793

DATE SAMPLED: 03/27/96  
 DATE RECEIVED: 04/01/96  
 REPORT DATE: 04/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	180 *	3 ug/L		04/08/96
Toluene	108-88-3	440 *	3 ug/L		04/08/96
Ethylbenzene	100-41-4	79 *	3 ug/L		04/08/96
Xylenes, Total	1330-20-7	360 *	10 ug/L		04/08/96
Purgeable HCs as Gasoline	5030/GCFID	6.9 *	0.3 mg/L		04/08/96
Methyl t-Butyl Ether	EPA 8020	ND	300 ug/L		04/08/96

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 7  
 AEN LAB NO: 9604005-05  
 AEN WORK ORDER: 9604005  
 CLIENT PROJ. ID: DES 793

DATE SAMPLED: 03/27/96  
 DATE RECEIVED: 04/01/96  
 REPORT DATE: 04/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	8,900 *	30	ug/L	04/08/96
Toluene	108-88-3	14,000 *	30	ug/L	04/08/96
Ethylbenzene	100-41-4	1,100 *	30	ug/L	04/08/96
Xylenes, Total	1330-20-7	8,300 *	100	ug/L	04/08/96
Purgeable HCs as Gasoline	5030/GCFID	64 *	3	mg/L	04/08/96
Methyl t-Butyl Ether	EPA 8020	ND	3000	ug/L	04/08/96

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

AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9604005

CLIENT PROJECT ID: DES 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 GC/FID

AEN JOB NO: 9604005  
 INSTRUMENT: F, H  
 MATRIX: WATER

## Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery	
			Fluorobenzene	
04/05/96	MW 1	01	102	
04/05/96	RS 2	02	102	
04/08/96	RS 5	03	99	
04/08/96	RS 6	04	97	
04/08/96	RS 7	05	97	
QC Limits:			70-130	

DATE ANALYZED: 04/05/96  
 SAMPLE SPIKED: 9604001-10  
 INSTRUMENT: H

## Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	22.2	100	1	85-109	17
Toluene	73.9	89	3	87-111	16
Hydrocarbons as Gasoline	500	84	<1	66-117	19

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

\*\*\* END OF REPORT \*\*\*

Phone (510) 930-9090  
FAX (510) 930-0256

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: 9604160  
Lab Destination: 4/11/96  
Date Samples Shipped: \_\_\_\_\_  
Lab Contact: \_\_\_\_\_  
Date Results Required: \_\_\_\_\_  
Date Report Required: \_\_\_\_\_  
Client Phone No.: \_\_\_\_\_  
Client FAX No.: \_\_\_\_\_

Contact: \_\_\_\_\_  
Alt. Contact: \_\_\_\_\_

Address Report To:  
2 Western Geo. Engineers  
1386 E. Boomer St.  
Woodland C.A. 95776  
Att:

Send Invoice To:  
3 (as to 2)

Send Report To: 1 or 2 (Circle one)  
Client P.O. No.: \_\_\_\_\_ Client Project ID. No.: Des 793  
Sample Team Member (s): MP

P.23

APR 11 '96 10:49 WEST GEO-ENG (CONF) (916) 668-5300

Lab Number	Client Sample Identification	Air Volume	Date/Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS	Comments / Hazards
	MW 1		3-27-96	7	Y	2	2.0045	✓	
	RS 2		9:22					X	
	RS 5		9:36					X	
	RS 6		10:07					X	
	RS 7		9:48					X	
			10:33					X	
<p>Relinquished by: <u>Matt Penick</u> DATE <u>4-1-96</u> TIME <u>10:58</u> Received by: <u>[Signature]</u> DATE <u>4-1-96</u> TIME <u>10:50</u></p> <p>Relinquished by: <u>Roy Balle</u> DATE <u>4-3-96</u> TIME <u>12:00</u> Received by: <u>[Signature]</u> DATE <u>4-3-96</u> TIME <u>12:50</u></p> <p>Relinquished by: _____ DATE _____ TIME _____ Received by: _____ DATE _____ TIME _____</p> <p>Method of Shipment: _____ Lab Comments: _____</p>									<p>Comments / Hazards</p> <p><u>Please analyze for MIBX</u></p> <p><u>D. Threlkoff</u></p> <p><u>4-10-96</u></p>

ANALYSIS

TAGS/BTEX  
MIBX

4/11/96  
OLD  
9604005

\*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 \_\_\_\_\_

COPIES: WHITE - JOB FILE YELLOW - PROJECT FILE PINK - CLIENT