WESTERN GEO-ENGINEERS
CALIF CONTRACTOR # 513857 A CORPORATION
REGISTERED GEOLOGISTS

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October 21, 1998

Mr. John Rutherford
Desert Petroleum Inc.
P.O. Box 1601
Oxnard, California 93032
(805) 644-6784: FAX (805) 654-0720
x4

RE: September 1998 Quarterly Groundwater Sampling Report for Former Desert Petroleum Station #796, 2844 Mountain Boulevard, Oakland, California.

Dear Mr. Rutherford:

As you requested Western Geo-Engineers (WEGE) has performed the quarterly monitoring/sampling of this site. The following report represents WEGE's September 1998 Quarterly Groundwater.

INTRODUCTION

A WEGE sample technician monitored and sampled the four existing groundwater monitoring wells on September 16, 1998.

LOCATION

The site is an operating "Compare Price Gas Station" that retails regular unleaded, super-unleaded gasoline and diesel. The site is located East of Highway 13 at 2844 Mountain Blvd., Oakland, California, west of Joaquin Miller Park.

GROUNDWATER SAMPLING

Table 1 is a summary of groundwater monitoring of this site since May 1990. The most recent sampling/monitoring, September 16, 1998 found RS-1 free of product or sheen, RS-2 [illegible] to contain high levels of Methyl tertiary Butyl Ether (MTBE), 280 mg/L, which was confirmed using EPA Method 8260. All wells were analyzed for dissolved gasoline range hydrocarbons, see Appendix B for Laboratory report and Table 1 with Charts showing historic TPHg and MTBE levels for the wells. During this sample event the water samples were also analyzed for the Fuel Oxygenants as requested by the Region Water Board. The following fuel oxygenants were found and the laboratory lower detection limits are listed below.

FUEL OXYGENANTS

ANALYTE	LOWER DETECTION LIMIT
ETHANOL	500 UG/L
METHYL-T- BUTYL ETHER (MTBE)	1 UG/L
DI-ISOPROPYL ETHER (DIPE)	5 UG/L
TERTIARY BUTYL ALCOHOL (TBA)	5 UG/L
ETHYL T BUTYL ETHER (ETBE)	5 UG/L
T-AMYL METHYL ETHER (TAME)	1 UG/L

All wells contained MTBE, see Table 1 and Appendix B for Laboratory Report. All other Fuel Oxygenants were below lower laboratory detection limits except for TAME which was found in monitor wells RS-1 and RS-2 at 980 ug/L and 2600 ug/L respectively.

GROUNDWATER GRADIENT "FLOW DIRECTION"

Figure 4 depicts groundwater elevations as measured on September 16, 1998. This figure shows a gradient flow predominantly to the southwest.

To evaluate the lateral extent of free product beneath the site, a workplan was developed and approved (December 10, 1996) to perform a soil probe survey (SPS). The SPS was conducted on January 17, 1997 with findings submitted February 27, 1997 as part of the Interim Remedial Workplan, see Appendix A.

MTBE

The charts presented with Table 1 show that MTBE was present in the groundwater since June 1995. The ratio as compared to gasoline concentrations in groundwater indicates that a leak was occurring at that time with substantial increases in September 1996, May and November 1997 and May 1998. Concern of the increasing MTBE prompted a site visit on August 6, 1997. A WEGE geologist interviewed the site owner, Mr. Sharahn Shenazi, concerning what may be the cause of elevated MTBE found during quarterly sampling. Mr. Shenazi felt that the MTBE was introduced to the groundwater during washing down of the station. The wash water would drain to the water meter box which is depressed in the station asphalt down slope of the pump islands, see Figure 3. Mr. Shenazi stated that he has had no inventory losses and that the product lines are double contained and the leak detectors indicate everything is fine. The three existing tanks are two 6,000 gallon prevously lined single walled steel tanks and a 10,000 gallon single wall fiberglass tank. During testing of the tanks prior to lining one tank (diesel tank) showed a pressure increase but then tested fine, see September 1997 Quarterly Report.

The water meter box was inspected. The bottom of the box was not sealed and open to the subsurface, no odors were present and field screening with a MiniRae PID showed only 0.5 ppmv existed in the soils beneath the water meter. A soil sample was obtained at approximately one foot beneath the station surface and approximately six inches below the water meter and chain of custody delivered to North State Environmental Analytical Laboratory (NSE). NSE analyzed the

soil sample for Total Petroleum Hydrocarbons as gasoline (TPHg), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) and MTBE. The laboratory results showed 1.9 mg/Kg of TPHg, trace amounts of BTEX and MTBE below laboratory lower detection limits.

Mr. Scott Seary of Alameda County Health requested Mr. John Rutherford of Desert Petroleum, Mr. Shenazi, current owner of the property and Mr. George Converse of Western Geo- Engineers to meet with him at his office on October 20, 1998. Discussions involved the June 7, 1998 removal of the 6000 gallon single wall steel tank closest to the pump islands, see Figure 3, and the evidence supporting the on going release of gasoline range hydrocarbons at the site since February 1995. As of this meeting Mr. Shenazi is delinquent in providing the required UST removal report and will be named as a responsible party for the release at the site.

DISCUSSION

Free phase floating product exists at or near RS-1 and on August 6, 1997 at Soil Probe Hole M7. There was a dramatic increase in MTBE concentration at RS-2 in September 1996, which coincides with the first measurable presence of free phase floating product in RS-1. Even though the stations washing practice drains the wash water to the water meter box, the soil sample obtained beneath the water meter box was below laboratory lower detection limits for MTBE. This strongly suggests that the MTBE influence was not caused by the "wash down" procedures. A meeting at the Alameda County Health Office on October 20, 1998 revealed that one of the 6,000 gallon UST's had been removed and the inspection revealed holes in the tank (the required UST decommission/sampling report has not been submitted to Alameda County Health as of 10/20/98).

Based on the laboratory analysis and stated observations by Alameda County Health during tank removal Western Geo-Engineers feels that a new release has occurred or is occurring at this site and is the source for gasoline with MTBE being introduced into the shallow groundwater.

Figures 5A and 5B represent historic and present lateral extent of the dissolved gasoline plume.

Figures 6A and 6B represent historic and present lateral extent of the MTBE plume. Note Figure 6A represents MTBE analysis with EPA Method 8020 and Figure 6B represents MTBE analysis with EPA Method 8260.

RECOMMENDATIONS

1. All tank and line tightness tests should be review from early 1995 to the present.
2. Review of tanks lining test procedures and comments.
3. Conduct a line tightness test.
4. Check continuity and integrity of vapor return lines and system.
5. Check integrity of overspill system.
6. Review inventory records from January 1995 to the present.
7. **Relieve Desert Petroleum Inc. of involvement as a responsible party based on the following:**

- Desert Petroleum Inc. does not own or operate the site and has no control on how the site is operated and managed
- Desert Petroleum Inc. has actively investigated and remediated this site since May 1990, with reasonable contaminant decline until mid 1994, see Tables 1 with associated graphs. This decline, projected, would have allowed site closure by mid 1996.
- Desert Petroleum Inc. has performed source removal on four different occasions:
    a. July 1989 excavated and removed gasoline-tainted soils from west and southwest of the UST's.
    b. April 1994 removed the waste oil UST and limited over-excavation and removal of oil and gasoline tainted soils.
    c. Performed vapor extraction and groundwater treatment using the RSI S.A.V.E.
    d. October – December 1996 interim free product removal at RS-1 removing 30.4 gallons of gasoline and 1077 gallons of gasoline tainted groundwater.

TIME FRAME

November 1998	Monitoring and sampling groundwater from wells RS-1, RS-2, RS-3 and RS-4.

HEALTH AND SAFETY

This site is being treated as a class D site, normal common sense is to be used.

SAMPLE METHODS

A WEGE technician working directly under California Registered Geologist #3037 using approved methods gauged, purged and sampled the monitor, see Appendix C for procedures and field notes.

SAMPLE PRESERVATION.

Each sample was placed into two, certified clean, glass, 40 ml VOAs with laboratory installed HCl preservative. The samples were then labeled and place on ice and Chain of Custody delivered to North State Environmental laboratories.

ANALYTICAL METHODS AND DHS LABORATORY SELECTED.

WEGE contracted North State Environmental (NSE), (ELAP Certificate No. 1753), P.O. Box 5624, South San South San Francisco, CA. 94083 (415) 588-2838, to perform the analysis of the groundwater samples.

NSE analyzed the samples for Total Petroleum Hydrocarbons as gasoline (TPHg) w/ BTEX distinction utilizing EPA Methods 8020 (GCFID) with 3050 extraction method as described on page 17, Table 2 of the TRI-REGIONAL BOARD STAFF RECOMMENDATIONS FOR

PRELIMINARY EVALUATION AND INVESTIGATION OF UNDERGROUND TANK SITES, 10 AUGUST 1990.

NSE noted that Methyl tertiary-Butyl Ether (MTBE) was evident in all samples. MTBE was confirmed for samples RS-2 RS-3 and RS-4 by EPA method 8260, see Table 1 and Appendix B. The detection limits in water are: TPH-G, 50 ug/L; Benzene, Toluene, Ethylbenzene and MTBE, 0.5 ug/L; Xylenes, 2 ug/L.

RINSEATES AND PURGED GROUNDWATER STORAGE/TREATMENT.

All rinseates and purged water produced from the groundwater sampling and weekly purging of the wells is transferred into 55 gallon DOT H17 drums for later removal (October 14, 1998), by Evergreen Services to be recycled, see Appendix D.

LIMITATIONS

The information presented in this report is based on the following:

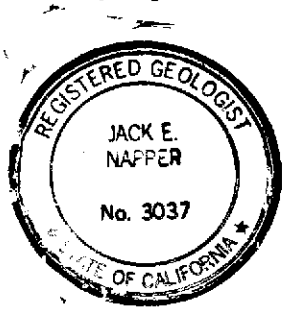
1. The observations and data collected by field personnel.
2. The results of laboratory analyses performed by a state certified analytical laboratory.
3. Our understanding of the regulations of Alameda County, the City of Oakland and the State of California.
4. References reviewed for this report.

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, the City of Oakland and Alameda County. Our work and/or supervision of remediation and/or abatement operations, active or preliminary at this site is no way meant to imply that we are owners or operators of this site. Please note that the 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 yours,



George L. Converse
Project Manager/Geologist-WEGE

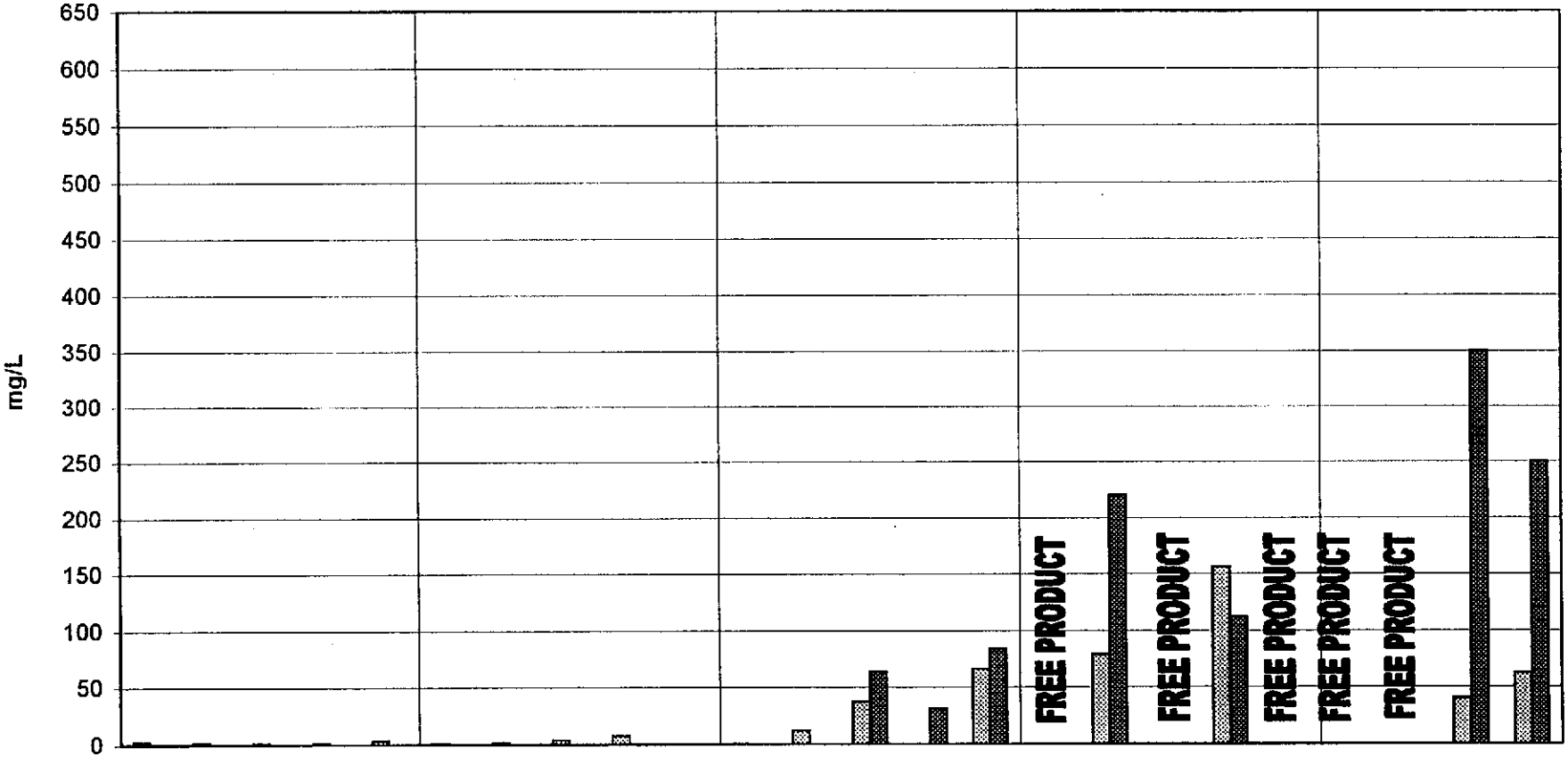
Jack E. Napper
Calif. Reg. Geologist #3037

cc: Mr. Scott Seary, Alameda County Health (510) 567-6774
Mr. Leroy Griffin, City of Oakland

TABLE 1
SUMMARY OF GROUNDWATER MONITORING
DP796
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

WELL	DATE	CASING ELEVATION	DEPTH TO TOP FLUID	DEPTH TO TOP WATER	FREE PRODUCT THICKNESS	GROUND WATER ELEVATION	TPH GASOLINE mg/L	BENZENE ug/L	TOLUENE ug/L	ETHYL-BENZENE ug/L	XYLENES ug/L	MTBE mg/L	SAMPLED BY
RS-1	MAY-90	689.25	7.2	7.2	0.00	682.05	2.7	370	420	40	320		RSI
	MAY-91	689.25	8.35	8.35	0.00	680.9	1.3	580	130	62	240		RSI
	OCT.-91	689.17	10.22	10.22	0.00	678.95	1.1	140	100	45	210		RSI
	JAN.-92	689.17	8.06	8.06	0.00	681.11	1.7	9.9	31	9.7	170		RSI
	JAN.-93	689.17	5.3	5.3	0.00	683.87	3.7	650	9.2	51	170		RSI
	AUG.-93	689.17	8.56	8.56	0.00	680.61	0.9	14	0.6	2.1	8		RSI
	NOV.-93	689.17	8.44	8.44	0.00	680.73	1.4	9.6	ND	0.9	5		RSI
	Jan-94	689.17	6.88	6.88	0.00	682.29	4.2	95	3.1	58	130		RSI
	May-94	675.63	7.87	7.87	0.00	667.76	7.5	270	11	37	96		RSI
	Aug-94	675.63	16.28	16.28	0.00	659.35	0.13	12	0.5	2.6	5		RSI
	Nov-94	675.63	8.02	8.02	0.00	667.61	0.27	4.7	0.7	0.6	15		RSI
	Feb-95	675.63	6.51	6.51	0.00	669.12	12	81	2.3	1	12		RSI
	Jun-95	675.63	7.34	7.34	0.00	668.29	37	460	ND	ND	ND	63	RSI
	Nov-95	675.63	8.71	8.71	0.00	666.92	ND	660	16	140	330	31	RSI
	Feb-96	675.63	6.95	6.95	0.00	668.68	66	110	ND	12	21	84	RSI
	09/18/96	675.63	8.44	8.52	0.08	667.17	ONE INCH FREE PRODUCT						WEGE
	12/11/96	675.63	6.42	6.62	0.20	669.17	79	4000	37000	8000	45000	220	WEGE*
	02/21/97	675.63	6.88	6.92	0.04	668.74	1/2 INCH FLOATING PRODUCT						WEGE
	05/28/97	675.63	7.88	7.96	0.08	667.73	156	9400	51000	7000	45000	112	WEGE*
	09/02/97	675.63	8.34	8.38	0.04	667.28	1/2 INCH FLOATING PRODUCT						WEGE*
	11/24/97	675.63	6.98	7	0.02	668.65	1/4 INCH FLOATING PRODUCT						WEGE*
	02/25/98	675.63	3.51	3.52	0.01	672.12	1/8 INCH FLOATING PRODUCT						WEGE*
	05/27/98	675.63	7.31	7.31	0.00	668.32	40	2200	4000	2300	19000	350	WEGE*
	09/16/98	675.63	8.10	8.1	0.00	667.53	62	2400	2300	2100	14000	250	WEGE*

DP796 - RS1



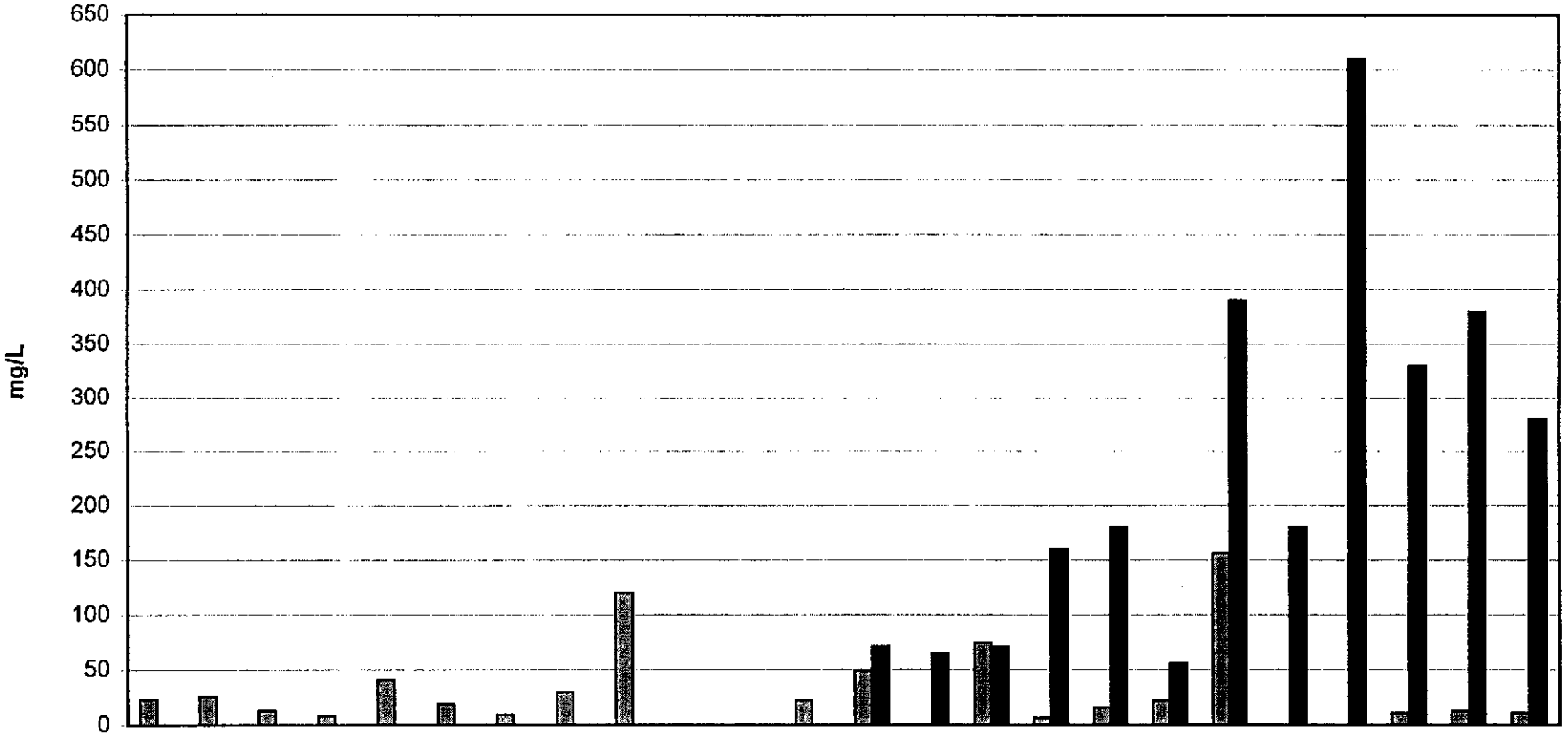
	MAY-90	MAY-91	OCT.-91	JAN.-92	JAN.-93	AUG.-93	NOV.-93	Jan-94	May-94	Aug-94	Nov-94	Feb-95	Jun-95	Nov-95	Feb-96	09/18/96	12/11/96	02/21/97	05/28/97	09/02/97	11/24/97	02/25/98	05/27/98	09/16/98
TPHg	2.7	1.3	1.1	1.7	3.7	0.9	1.4	4.2	7.5	0.13	0.27	12	37	0	66		79		156				40	62
MTBE													63	31	84		220		112				350	250

DATE SAMPLED

TABLE 1
SUMMARY OF GROUNDWATER MONITORING
DP796
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

WELL	DATE	CASING ELEVATION	DEPTH TO TOP FLUID	DEPTH TO TOP WATER	FREE PRODUCT THICKNESS	GROUND WATER ELEVATION	TPH GASOLINE mg/L	BENZENE ug/L	TOLUENE ug/L	ETHYL-BENZENE ug/L	XYLENES ug/L	MTBE mg/L	SAMPLED BY
RS-2	MAY-90	689	7.06	7.06	0.00	681.94	23	7200	4800	300	3300		RSI
	MAY-91	689	7.14	7.14	0.00	681.86	26	14000	1800	750	2900		RSI
	OCT.-91	688.89	8.84	8.84	0.00	680.05	13	4300	910	300	2300		RSI
	JAN.-92	688.89	7.34	7.34	0.00	681.55	8.3	1800	920	140	1700		RSI
	JAN.-93	688.89	4.1	4.1	0.00	684.79	41	7000	210	1200	4200		RSI
	AUG.-93	688.89	7.32	7.32	0.00	681.57	19	5300	62	810	1600		RSI
	NOV.-93	688.89	7.34	7.34	0.00	681.55	9.3	2400	3.9	46	800		RSI
	JAN.-94	688.89	5.52	5.52	0.00	683.37	30	4900	ND	880	2600		RSI
	MAY-94	675.25	6.4	6.4	0.00	668.85	120	3300	330	ND	2200		RSI
	AUG.-94	675.25	22.11	22.11	0.00	653.14	0.51	7.3	3.8	3.5	32		RSI
	NOV.-94	675.25	9.82	9.82	0.00	665.43	0.62	6.6	3.9	1.1	47		RSI
	FEB.-95	675.25	4.81	4.81	0.00	670.44	22	228	80	2	463		RSI
	JUN.-95	675.25	5.8	5.8	0.00	669.45	49	1300	160	200	1600	71	RSI
	NOV.-95	675.25	7.64	7.64	0.00	667.61	ND	670	25	150	360	65	RSI
	FEB.-96	675.25	4.69	4.69	0.00	670.56	75	1400	170	59	460	71	RSI
	09/18/96	675.25	7.34	7.34	0.00	667.91	6.3	2000	48	350	570	160	WEGE
	12/11/96	675.25	5.08	5.08	0.00	670.17	16	2000	840	200	3200	180	WEGE
	02/21/97	675.25	5.42	5.42	0.00	669.83	22	2100	1300	600	5100	56	WEGE*
	05/28/97	675.25	6.4	6.4	0.00	668.85	156	4200	89	1000	6900	390	WEGE*
	09/02/97	675.25	6.93	6.93	0.00	668.32	<0.05	1300	25	360	1400	180	WEGE*
	11/24/97	675.25	5.93	5.93	0.00	669.32	<0.05	600	ND	ND	ND	610	WEGE*
	02/25/98	675.25	4.59	4.59	0.00	670.66	11	1100	<50	320	2400	330	WEGE*
	05/27/98	675.25	5.61	5.61	0.00	669.64	13	2000	150	600	2700	380	WEGE*
	09/16/98	675.25	6.84	6.84	0.00	668.41	11	1600	20	1600	1600	280	WEGE*

DP796 - RS2



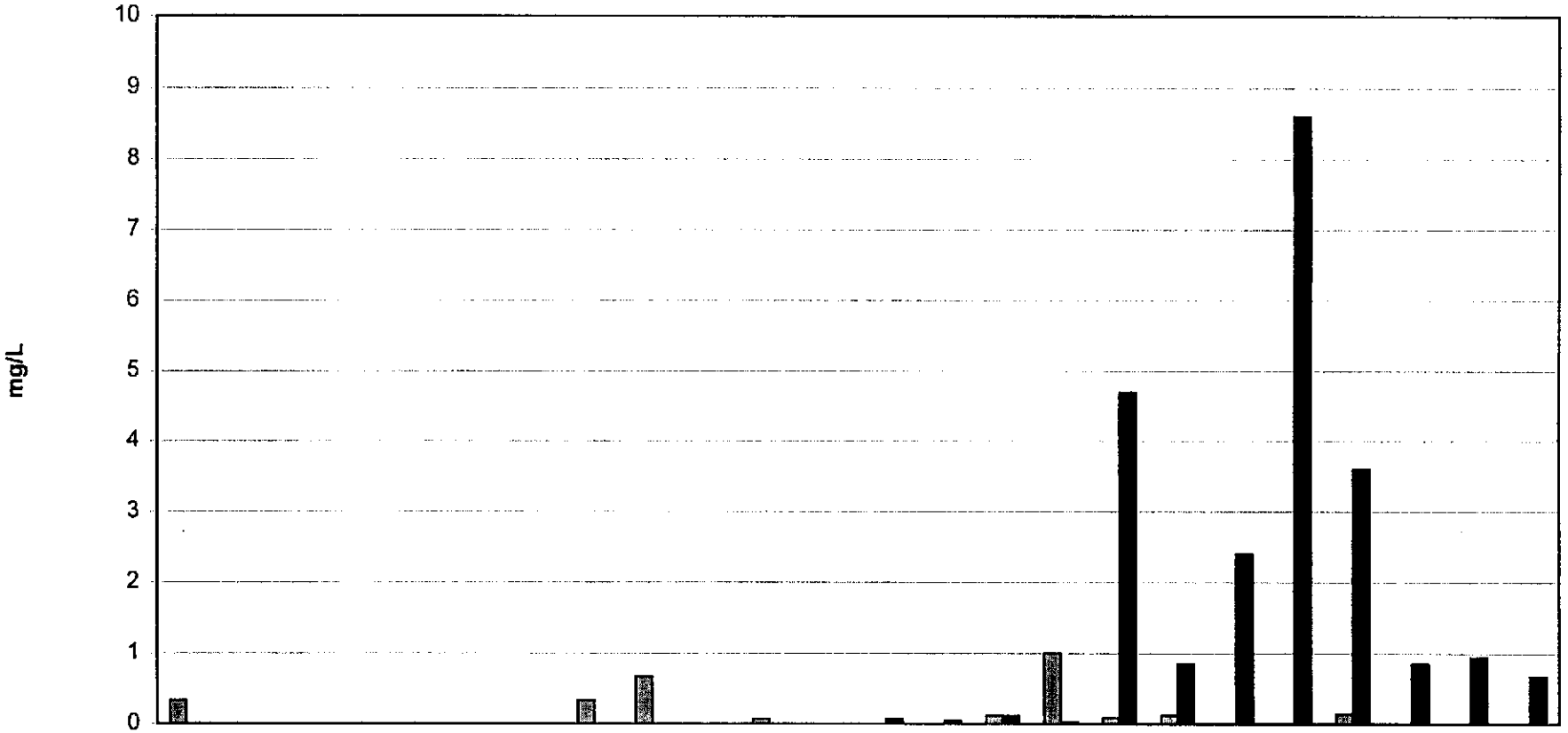
	MAY-90	MAY-91	OCT.-91	JAN.-92	JAN.-93	AUG.-93	NOV.-93	JAN.-94	MAY-94	AUG.-94	NOV.-94	FEB.-95	JUN.-95	NOV.-95	FEB.-96	09/18/96	12/11/96	02/21/97	05/28/97	09/02/97	11/24/97	02/25/98	05/27/98	09/16/98
TPHg	23	26	13	8.3	41	19	9.3	30	120	0.51	0.62	22	49	0	75	6.3	16	22	156	0	0	11	13	11
MTBE													71	65	71	160	180	56	390	180	610	330	380	280

DATE SAMPLED

TABLE 1
SUMMARY OF GROUNDWATER MONITORING
DP796
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

WELL	DATE	CASING ELEVATION	DEPTH TO TOP FLUID	DEPTH TO TOP WATER	FREE PRODUCT THICKNESS	GROUND WATER ELEVATION	TPH GASOLINE mg/L	BENZENE ug/L	TOLUENE ug/L	ETHYL-BENZENE ug/L	XYLENES ug/L	MTBE mg/L	SAMPLED BY
RS-3	MAY-90	670	6	6	0.00	664.00	0.33	2	1	1	150		RSI
	MAY-91	670	6.76	6.76	0.00	663.24	ND	0.4	ND	0.8	8		RSI
	OCT.-91	670	8.98	8.98	0.00	661.02	ND	ND	ND	ND	ND		RSI
	JAN.-92	670	6.81	6.81	0.00	663.19	ND	2.2	7.2	0.6	4		RSI
	JAN.-93	670	4.05	4.05	0.00	665.95	ND	ND	ND	ND	ND		RSI
	AUG.-93	670	7.19	7.19	0.00	662.81	ND	30	6	2.4	5		RSI
	NOV.-93	670	7.12	7.12	0.00	662.88	ND	4.8	0.4	0.6	2		RSI
	JAN.-94	670	5.42	5.42	0.00	664.58	0.33	25	3.2	3.9	12		RSI
	MAY-94	676.2	5.78	5.78	0.00	670.42	0.67	34	4	28	70		RSI
	AUG.-94	676.2	5.86	5.86	0.00	670.34	ND	ND	ND	ND	ND		RSI
	NOV.-94	676.2	5.08	5.08	0.00	671.12	0.069	2.5	3.1	1	4		RSI
	FEB.-95	676.2	4.51	4.51	0.00	671.69	ND	0.3	0.4	ND	1		RSI
	JUN.-95	676.2	5.29	5.29	0.00	670.91	ND	ND	ND	ND	ND	0.066	RSI
	NOV.-95	676.2	7.1	7.1	0.00	669.10	ND	ND	ND	ND	ND	0.044	RSI
	FEB.-96	676.2	4.48	4.48	0.00	671.72	0.12	ND	ND	ND	ND	0.11	RSI
	09/18/96	676.2	6.92	6.92	0.00	669.28	1	13	8.6	10	17	0.033	WEGE
	12/11/96	676.2	4.9	4.9	0.00	671.30	0.085	20	2	<0.5	14	4.7	WEGE
	02/21/97	676.2	4.94	4.94	0.00	671.26	0.12	5	2	2	6	0.85	WEGE*
	05/28/97	676.2	7.92	7.92	0.00	668.28	<0.05	6	<0.5	<0.5	<2	2.4	WEGE
	09/02/97	676.2	6.6	6.6	0.00	669.60	<0.05	0.9	<0.5	<0.5	<2	8.6	WEGE*
	11/24/97	676.2	5.89	5.89	0.00	670.31	0.14	13	2	1	12	3.6	WEGE*
	02/25/98	676.2	4.29	4.29	0.00	671.91	<0.05	<0.5	<0.5	<0.5	4	0.85	WEGE*
	05/27/98	676.2	5.01	5.01	0.00	671.19	<0.05	7	<0.5	<0.5	11	0.94	WEGE*
	09/16/98	676.2	6.21	6.21	0.00	669.99	<0.05	2	2	2	10	0.67	WEGE*

DP796 - RS3



	MAY-90	MAY-91	OCT.-91	JAN.-92	JAN.-93	AUG.-93	NOV.-93	JAN.-94	MAY-94	AUG.-94	NOV.-94	FEB.-95	JUN.-95	NOV.-95	FEB.-96	09/18/96	12/11/96	02/21/97	05/28/97	09/02/97	11/24/97	02/25/98	05/27/98	09/16/98
TPHg	0.33	0	0	0	0	0	0	0.33	0.67	0	0.069	0	0	0	0.12	1	0.085	0.12	0	0	0.14	0	0	0
MTBE													0.066	0.044	0.11	0.033	4.7	0.85	2.4	8.6	3.6	0.85	0.94	0.67

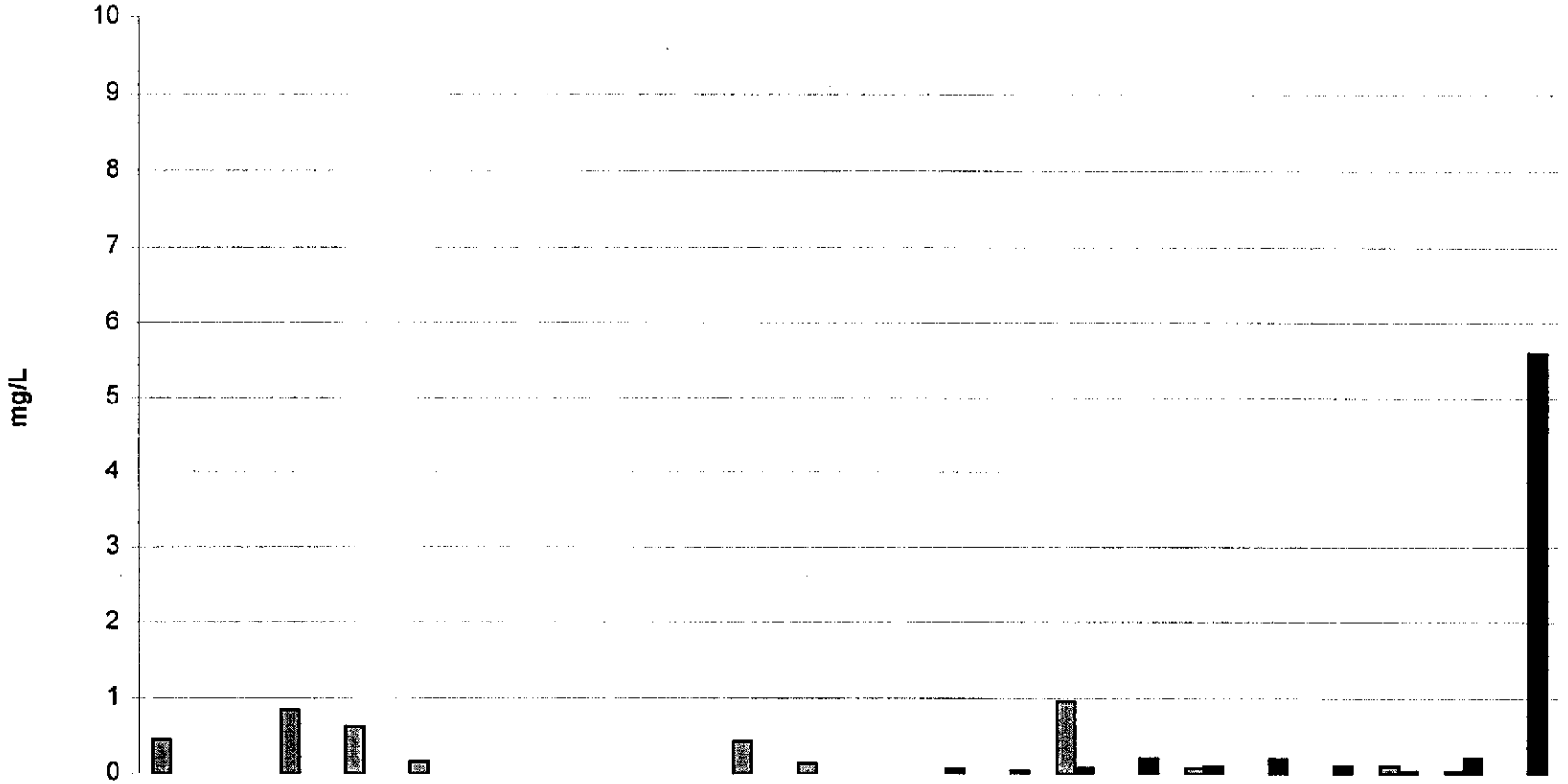
DATE SAMPLED

TABLE 1
SUMMARY OF GROUNDWATER MONITORING
DP796
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

WELL	DATE	CASING ELEVATION	DEPTH TO TOP FLUID	DEPTH TO TOP WATER	FREE PRODUCT THICKNESS	GROUND WATER ELEVATION	TPH GASOLINE mg/L	BENZENE ug/L	TOLUENE ug/L	ETHYL-BENZENE ug/L	XYLENES ug/L	MTBE mg/L	SAMPLED BY
RS-4	MAY-90	689.06	8.34	8.34	0.00	680.72	0.44	9	11	9	49		RSI
	MAY-91	689.06	9.5	9.5	0.00	679.56	ND	8	4	3	5		RSI
	OCT.-91	689.1	10.82	10.82	0.00	678.28	0.83	280	120	24	170		RSI
	JAN.-92	689.1	9.31	9.31	0.00	679.79	0.62	34	8.3	2.1	21		RSI
	JAN.-93	689.1	6.89	6.89	0.00	682.21	0.15	32	1.7	5.8	13		RSI
	AUG.-93	689.1	9.68	9.68	0.00	679.42	ND	0.9	0.7	ND	0		RSI
	NOV.-93	689.1	9.83	9.83	0.00	679.27	ND	ND	ND	ND	ND		RSI
	JAN.-94	689.1	8.17	8.17	0.00	680.93	ND	1.7	ND	0.81	2		RSI
	MAY-94	675.38	8.69	8.69	0.00	666.69	ND	ND	ND	ND	1		RSI
	AUG.-94	675.38	9.04	9.04	0.00	666.34	0.42	6.5	4.1	1.9	40		RSI
	NOV.-94	675.38	8	8	0.00	667.38	0.13	4.1	0.7	1.7	8		RSI
	FEB.-95	675.38	7.93	7.93	0.00	667.45	ND	6	1.2	3.5	13		RSI
	JUN.-95	675.38	8.61	8.61	0.00	666.77	ND	ND	ND	ND	ND	0.069	RSI
	NOV.-95	675.38	10.43	10.43	0.00	664.95	ND	ND	ND	ND	ND	0.047	RSI
	FEB.-96	675.38	7.44	7.44	0.00	667.94	0.96	ND	ND	0.6	ND	0.08	RSI
	09/18/96	675.38	9.58	9.58	0.00	665.80	<0.05	<0.5	<0.5	<0.5	<2	0.2	WEGE
	12/11/96	675.38	7.5	7.5	0.00	667.88	0.075	<0.5	0.6	<0.5	<0.5	0.104	WEGE
	02/21/97	675.38	8.26	8.26	0.00	667.12	<0.05	1	1	<0.5	1	0.19	WEGE*
	05/28/97	675.38	8.92	8.92	0.00	666.46	<0.05	6	<0.5	<0.5	<2	0.11	WEGE
	09/02/97	675.38	9.39	9.39	0.00	665.99	0.1	3	<0.5	<0.5	<2	0.039	WEGE*
	11/24/97	675.38	8.22	8.22	0.00	667.16	0.041	<0.5	2	<0.5	<2	0.21	WEGE*
	02/25/98	675.38	7.19	7.19	0.00	668.19	<0.05	3	<0.5	<0.5	<1	5.6	WEGE*
	05/27/98	675.38	8.4	8.4	0.00	666.98	<0.05	<0.5	<0.5	<0.5	<1	2.4	WEGE*
	09/16/98	675.38	9.26	9.26	0.00	666.12	<0.05	<0.5	<0.5	<0.5	<1	0.23	WEGE*
WATER METER BOX													
							mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	
	08/06/97	SOIL AT ONE FOOT DEPTH BELOW SURFACE					1900	0.45	0.6	6.5	9.9	ND	WEGE

MTBE Methyl t-Butyl Ether
TPH Total Petroleum Hydrocarbons
mg/L Milligrams per liter (ppm)
ND or < Below laboratory detection limits
ug/L Micrograms per liter (ppb)
* MTBE confirmed by GC/MS 8260 method.

DP796 - RS4



	MAY-90	MAY-91	OCT.-91	JAN.-92	JAN.-93	AUG.-93	NOV.-93	JAN.-94	MAY-94	AUG.-94	NOV.-94	FEB.-95	JUN.-95	NOV.-95	FEB.-96	09/18/96	12/11/96	02/21/97	05/28/97	09/02/97	11/24/97	02/25/98
TPHg	0.44	0	0.83	0.62	0.15	0	0	0	0	0.42	0.13	0	0	0	0.96	0	0.075	0	0	0.1	0.041	0
MTBE													0.069	0.047	0.08	0.2	0.104	0.19	0.11	0.039	0.21	5.6

DATE SAMPLED

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

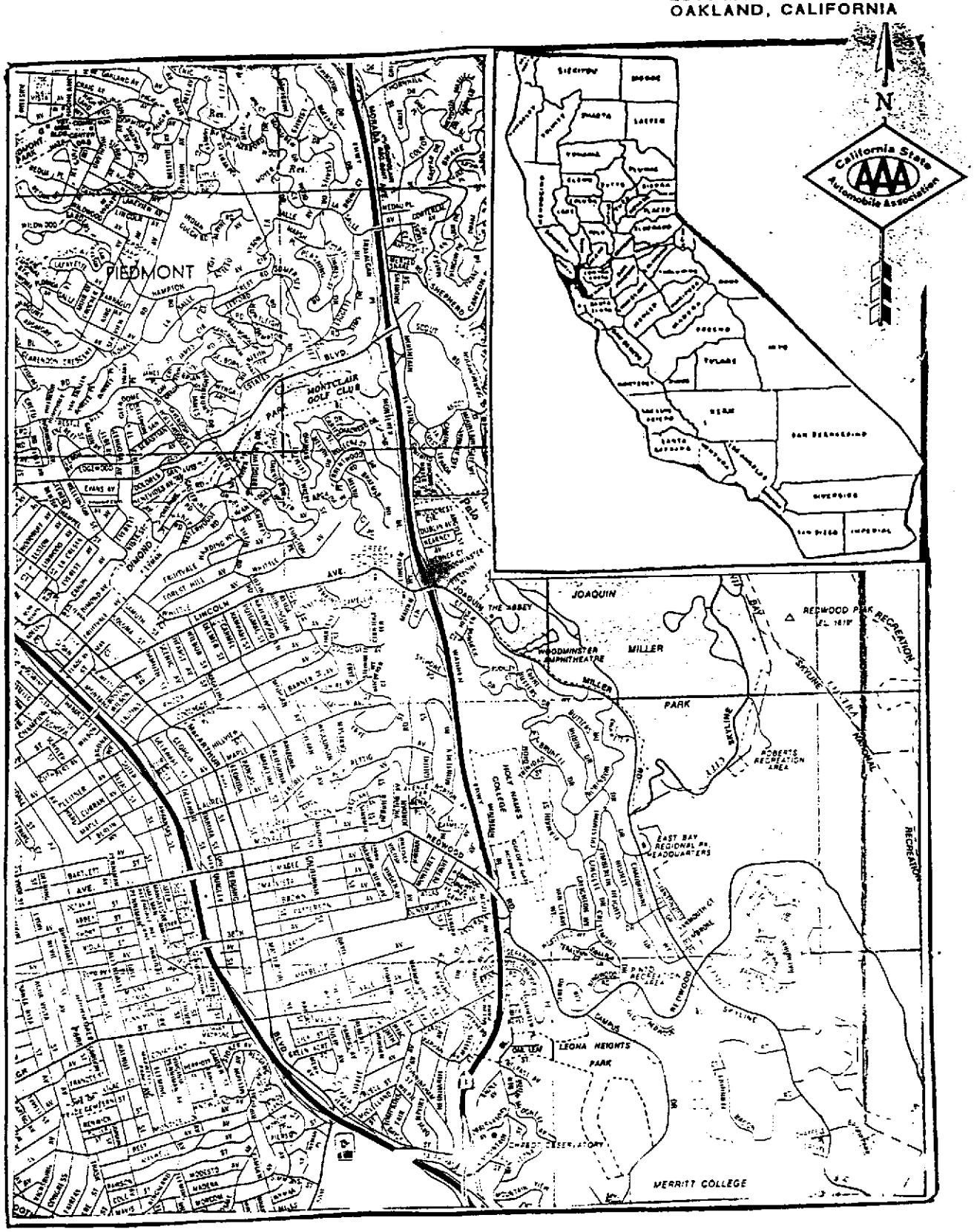


FIGURE 1

Location (AAA Map)

-WEGE-

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

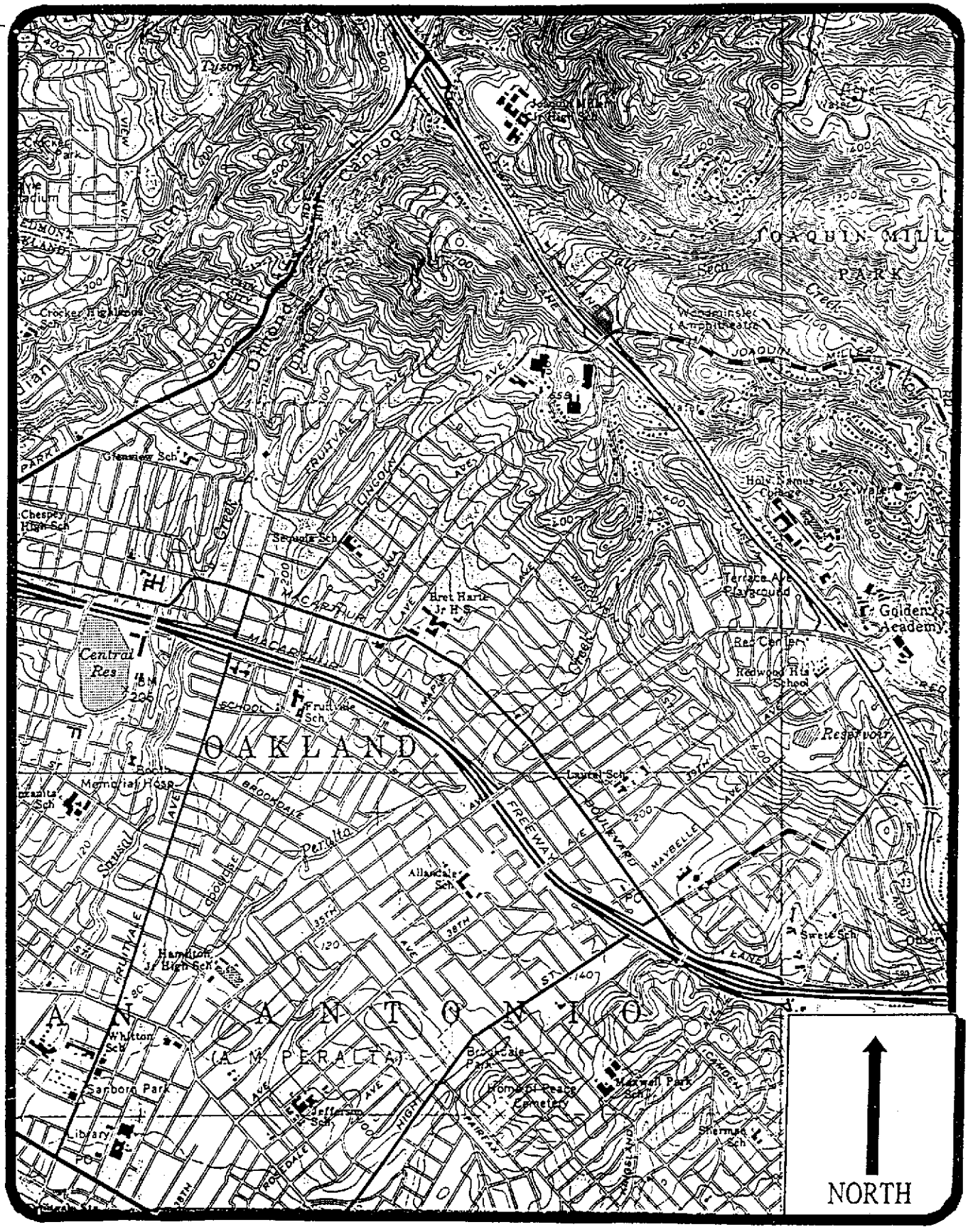


FIGURE 2, USGS TOPOGRAPHIC MAP

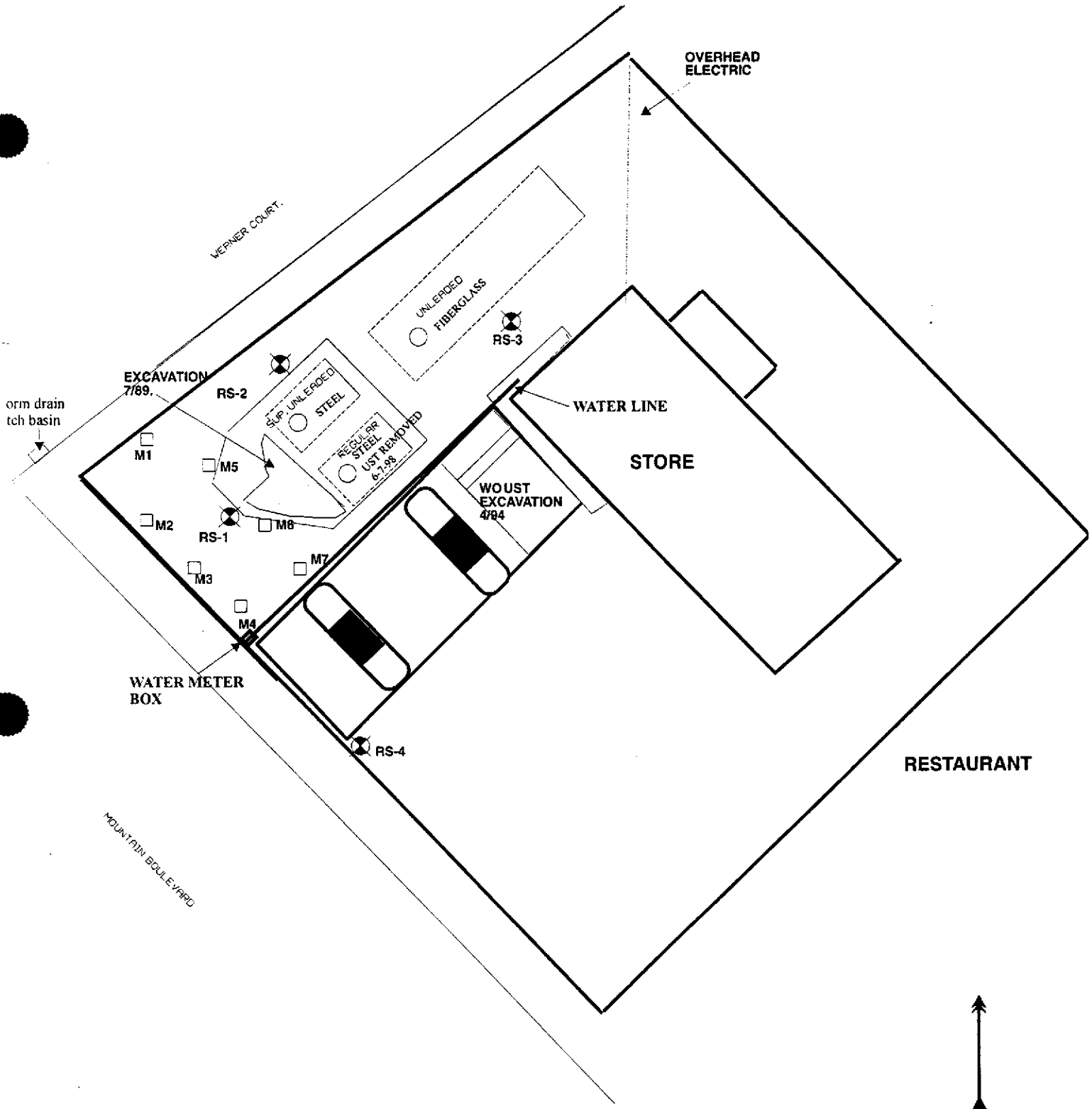


FIGURE 3

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SITE CONDITIONS
SEPTEMBER 16, 1998.

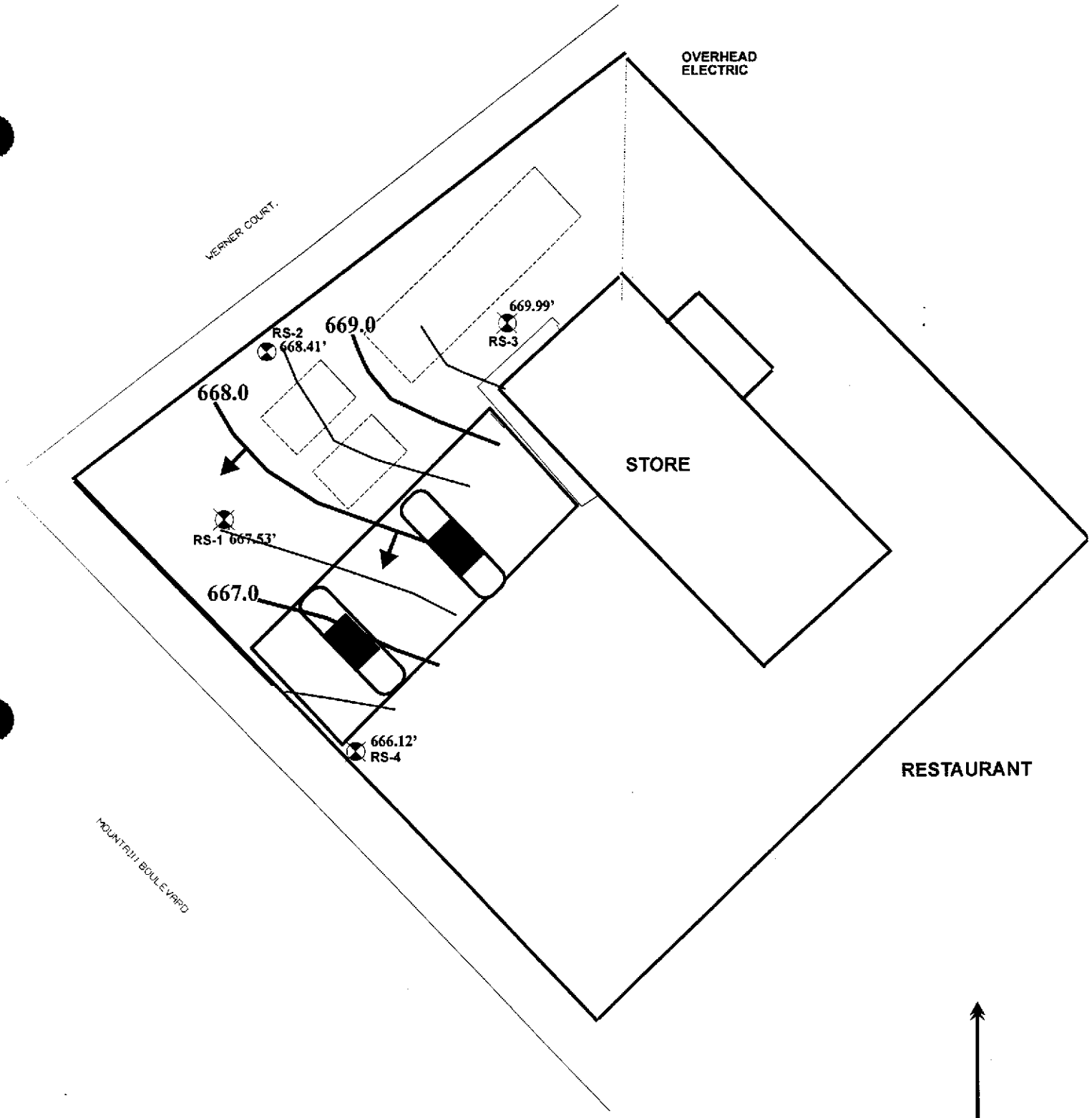


FIGURE 4

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

GROUNDWATER GRADIENT
SEPTEMBER 16, 1998

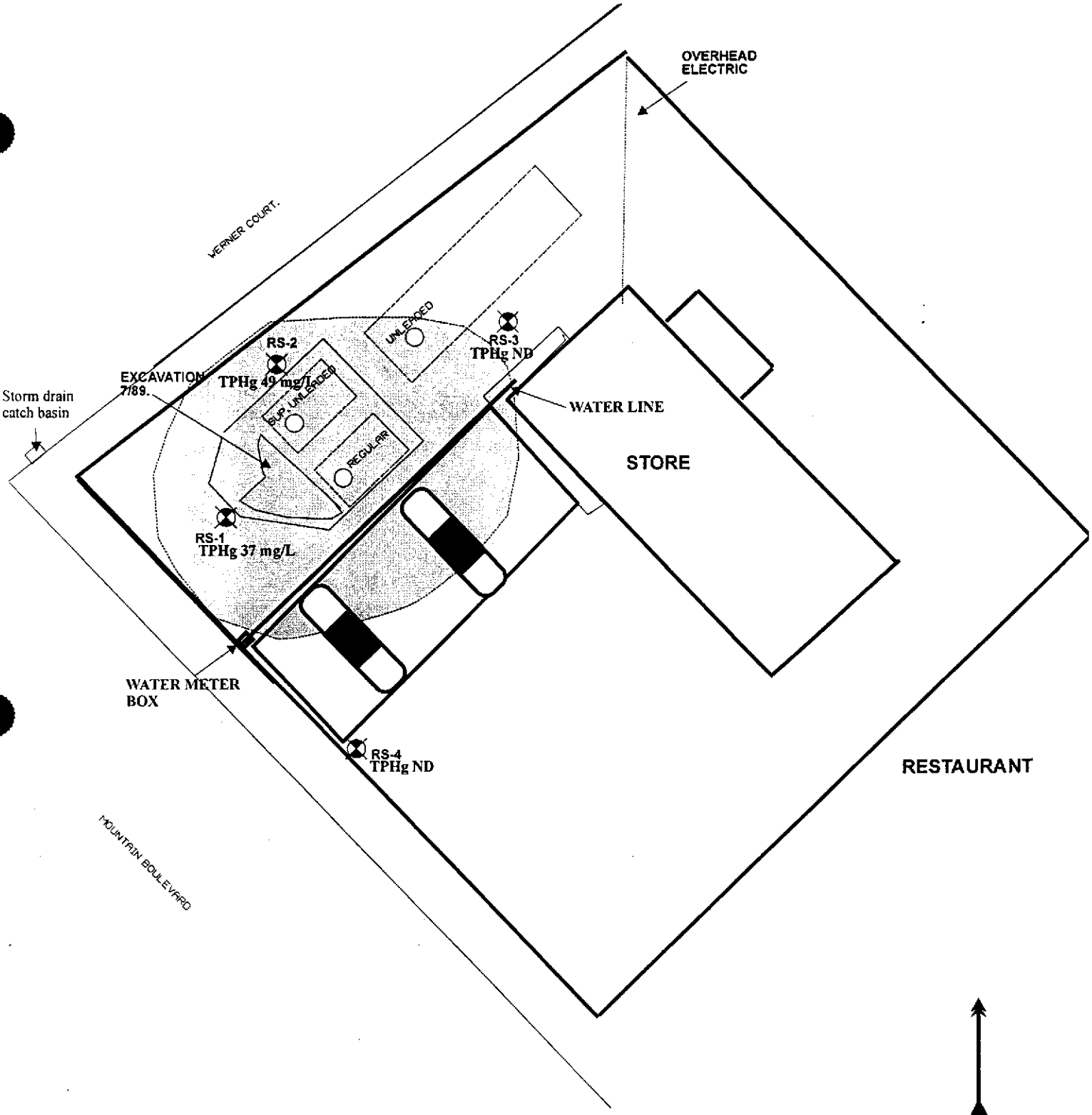


FIGURE 5A

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SITE CONDITIONS - Gasoline Range Hydrocarbon Plume
JUNE 1995

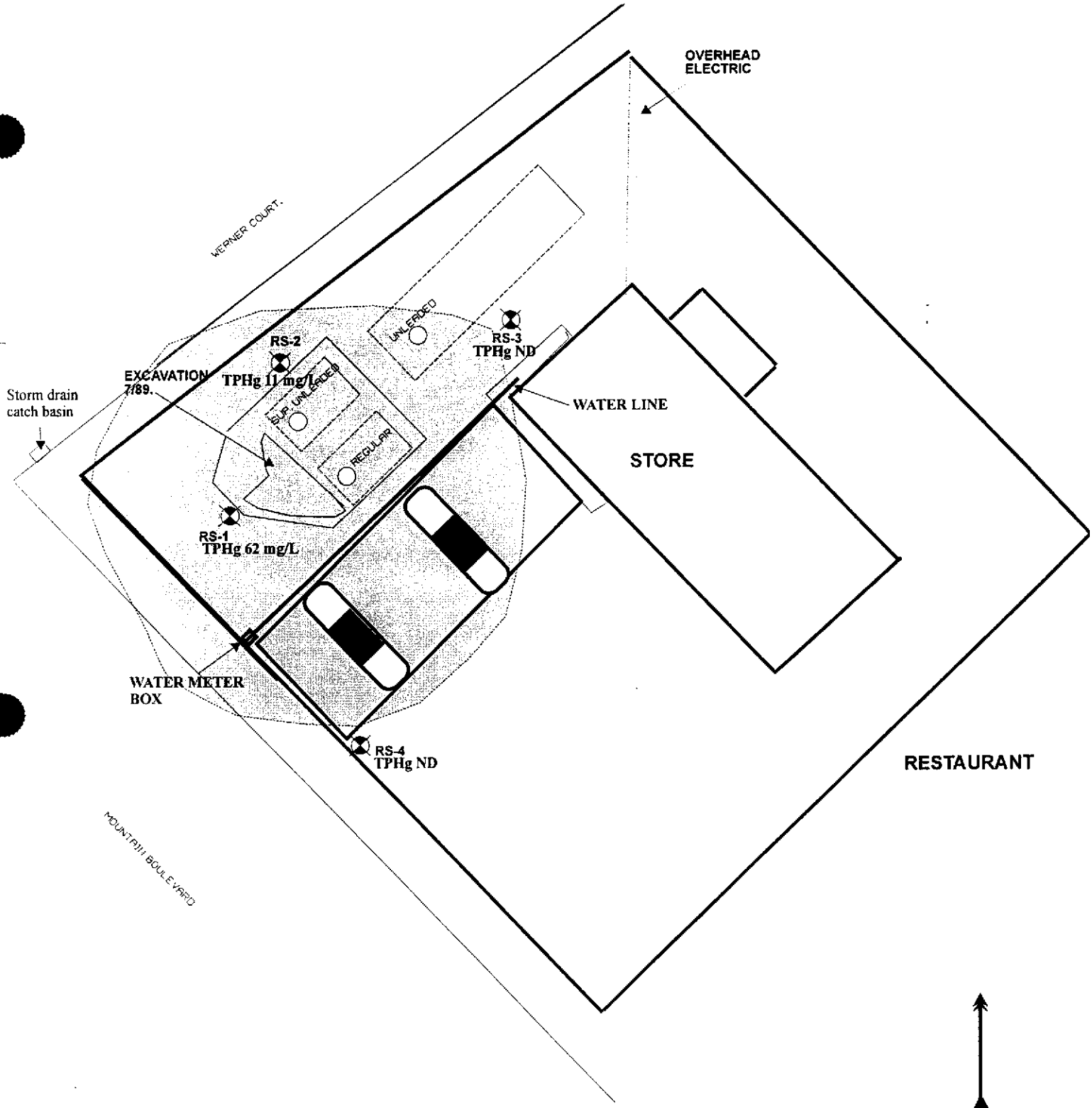


FIGURE 5B

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SITE CONDITIONS - Gasoline Range Hydrocarbon Plume
SEPTEMBER 16, 1998

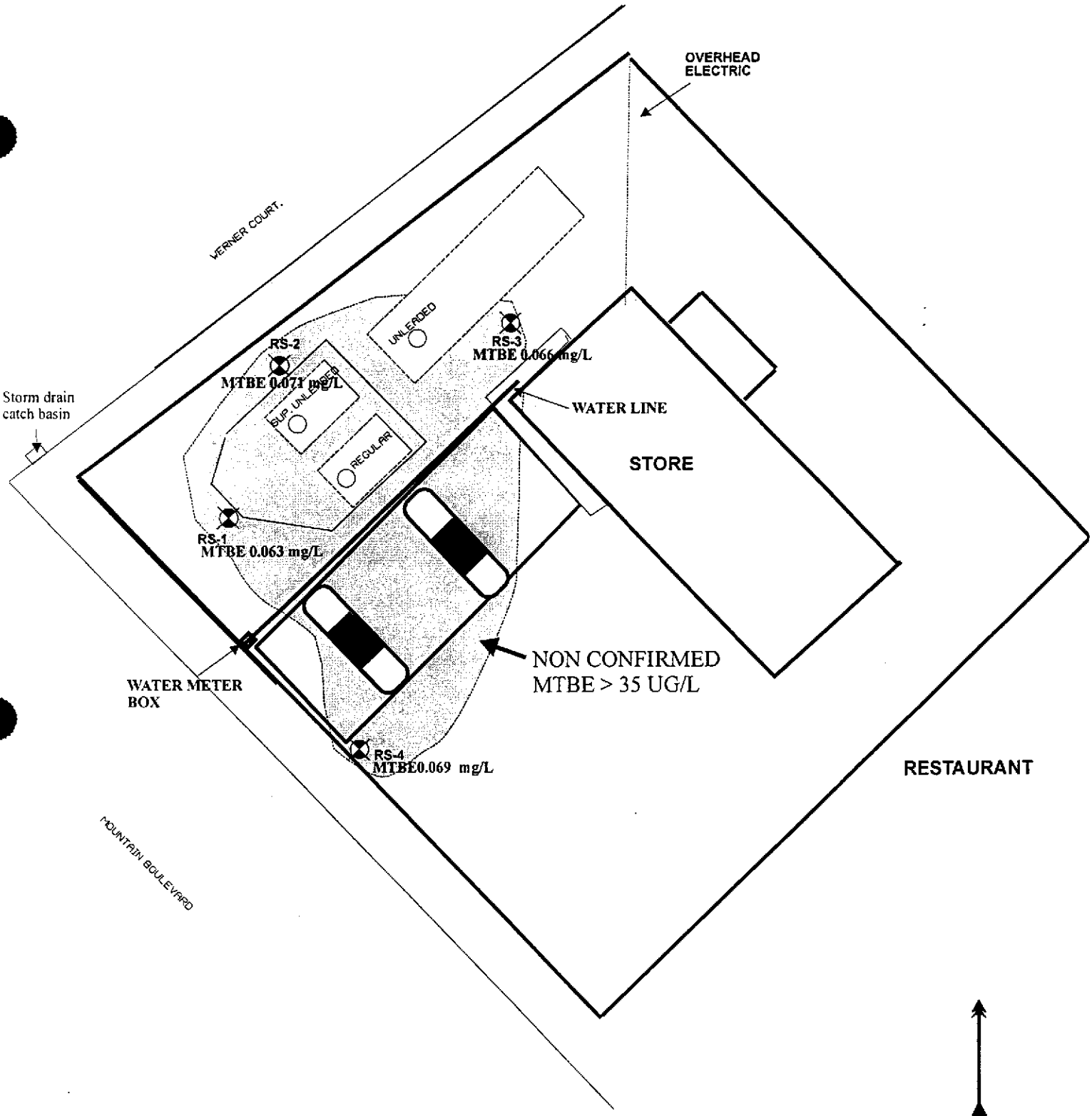
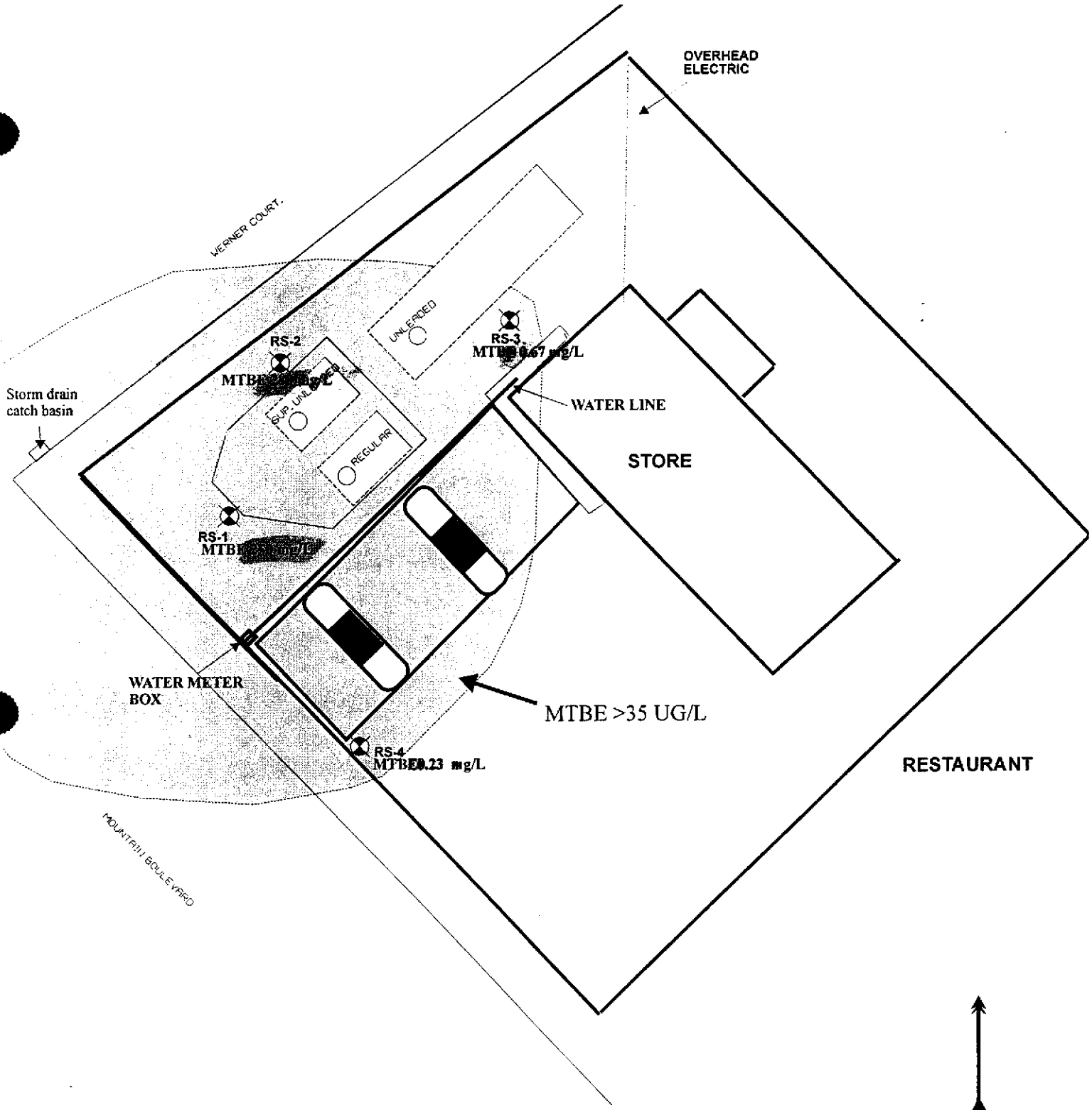
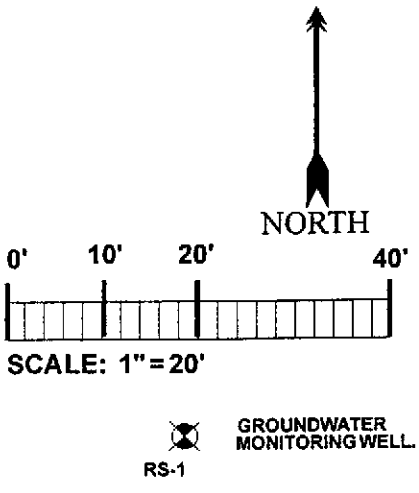


FIGURE 6A

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SITE CONDITIONS - MTBE Plume
JUNE 1995





GROUNDWATER MONITORING WELL.
RS-1

FIGURE 6B

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SITE CONDITIONS - MTBE Plume
SEPTEMBER 16, 1998

WESTERN GEO-ENGINEERS
CALIF CONTRACTOR # 513857 A CORPORATION
REGISTERED GEOLOGISTS

1386 EAST BEAMER STREET
WOODLAND, CA 95776-6003
FAX (916) 662-0273
(916) 668-5300

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

February 27, 1997

RE: Interim remedial workplan - excavate and remove gasoline tainted soils associated with former Desert Petroleum Station #796, located at 2844 Mountain Boulevard, Oakland, CA 94602.

Dear Mr. Rutherford:

As requested the following is the workplan describing the excavating and removal of gasoline tainted soil from the above mentioned site. The need for a brief, descriptive workplan, with figures showing approximate area to be excavated, is needed for presentation to Ms. Jennifer Eberle, Alameda County Department of Environmental Health, Health Care Services Agency.

INTRODUCTION

An unauthorized release was reported in 1989 by Desert Petroleum, Inc. when Diablo Tank & Equipment identified petroleum hydrocarbon impacted soils during replacemnt of product lines in March, 1989. Analytical results of soil samples collected contained Total Petroleum Hydrocarbons (TPH) of 8,400 mg/Kg at the 10 foot depth of the southern edge of the pemium unleaded tank and less than 100 mg/Kg TPH beneath the lines near the pump islands.

In July 1989, On-Site Technologies (OST) excavated and disposed of and estimated 90 to 150 cubic yards of contaminated soil from the southern end of the premium unleaded tank. OST collected 12 soil samples from the sides of the excavation and reported TPHg ranging between ND to 3,300 mg/Kg.

In May 1990 four groundwater monitoring wells (RS-1 through RS-4) were installed and quarterly groundwater sampling commenced.

Soil Vapor extraction using the Remediation Service, Int'l, S.A.V.E. ICE (internal combustion engine) occurred from 1991 until 1994, removing an estimated 1,000 pounds of hydrocarbons from the soil and groundwater.

In April 1994 the waste oil underground storage tank was removed. The soil sample under the tank contained 160 mg/Kg TPHg and 4,600 mg/Kg Oil and Grease. Over-excavation removed 40 cubic yards of

hydrocarbon tainted soils. Five soil samples were then obtained from the base and sidewalls to document the over-excavation. Analytical results showed that TPHg ranged between ND (<1 mg/Kg) to 38 mg/Kg and Oil and Grease ranged between ND (100 mg/Kg) to 700 mg/Kg. The 40 cubic yards of excavated soil was transported to and disposed at Laidlaw Landfill, Buttonwillow, California.

In May 1996, RSI presented a Risk Base Corrective Action Plan (RBCA) and recommended the site for closure. Alameda County Health review (dated June 17, 1996) of the RSI RBCA found it to be insufficient in detail and requested continued groundwater sampling until site closure is obtained.

On September 19, 1996, Western Geo-Engineers (WEGE), performed the monitor well sampling and discovered free product in RS-1. The interim free product removal commenced on October 1, 1996 and terminated on December 3, 1996 removed, by bailing and limited vapor extraction, 30.4 gallons of gasoline and an estimated 1077 gallons of gasoline tainted groundwater.

On January 17, 1997, WEGE conducted a free product delineation in the area around RS-1, seven test holes were driven to the 15 foot depth and soil and water samples obtained. Free liquid phase product was present in RS-1 and test hole M7, see Table and Figures 1 through 5 in Appendix A.

Currently the site is and operating service station with mini mart. Three underground storage tanks (UST's) with individual storage capacities of 3,000, 4,000, and 10,000 gallons and two pump islands service the site. Desert Petroleum does not own the site, the present owner is planning to have the tanks relined and the product dispensing piping upgraded in the very near future.

PROPOSED WORK DESCRIPTION

Western Geo-Engineers in proposing to perform limited over-excavated of the RS-1 and M7 areas during station closure for tank and line upgrades. This over-excavation will need to be coordinated with the present station owner and his contractor to insure accessibility to the site and areas to be excavated, while they have the tanks open for relining.

Monitor well RS-1 must be destroyed, prior to excavating the site. Since this area will be excavated, the well will be grouted to surface.

As depicted on the boring logs reviewed in previous RSI reports and as found during the SPS investigation, the subsurface consists of silty clays to approximately 10 feet below ground surface (bgs), with silty clayey sands extending to 30 feet bgs. Groundwater was encountered in the SPS holes between 10 and 15 feet bgs. Monitor well soundings show groundwater static levels to range between 5 and 16.5 feet bgs at RS-1.

Experience has shown that in-situ remediations (vapor extraction, bio-venting, steam flooding/injecting with vapor extraction, bio-flooding/injecting, etc.) are not very successful on silty clay or clayey silt formations similar to these found at this site. The cost beneficial means to alleviate silty/clayey soil that are contaminated with gasoline range hydrocarbons is by excavating, if the excavation does not exceed too great a depth (about 25 feet below the surface).

Western Geo-Engineers, proposes to excavate the gasoline tainted soils to about the fifteen foot depth. The excavation will begin at the southwest edge of the UST area (M5, RS-1, M6 locations) an proceed to depth. Once depth has been achieved the sidewalls of the excavation will be field screened for the presence of gasoline range hydrocarbons using a Photovac 10S50 photoionizing gas chromatograph and vapor head space method, see Methods in Appendix A.

Excavating will continue laterally to around the area outlined on Figure 3, towards the pump dispensers (M7) and the southwest property line to where field screening indicates that less than 50 mg/Kg of gasoline remains in the soil.

Once the excavating has been accomplished sidewall samples for certified conformation analyses will be obtained between the 10 and 15 foot depths. The sample frequency will be at one per 25 linear feet of excavated sidewall.

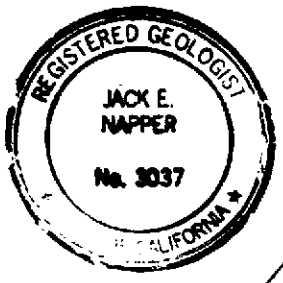
Samples will be obtained from the bucket of the excavator and will represent a freshly exposed surface. North State Environmental laboratory has been contracted to perform the analyses (DHS# 1753). Samples will be analyzed for total petroleum hyudrocarbons as gasoline with methyl tertiary-butyl ether (MTBE), benzene, toluene, ethylbenzene and xylenes distinction (TPHg-MBTEX).

All soil generated (estimated 160 cubic yards) from the excavation will be hauled under non-hazardous manifest to Forward Landfill, Stockton, California. The soil will be stockpiled at this facility (Class II landfill) until laboratory results indicate how the soil is to be handled, ie., Class III or Class II disposal.

Immediately after the excavation has been sampled, clean pea gravel will be used to backfill the excavation. At that time 6 inch Sch40 0.020 inch slot PVC casing will be placed at the soutwest corner of the excavation for later free product removal, if found necessary. This casing (well) will be installed vertically and secured with a traffic box set in the resurface concrete and lockable water tight well cap.

If you have any questions, please call me at (916) 668-5300.

Sincerely,



George L. Converse
Project Geologist

Jack E. Napper
CA. Reg. Geologist #3037

cc: Ms. Jennifer Eberle, Alameda County Department of Environmental Health

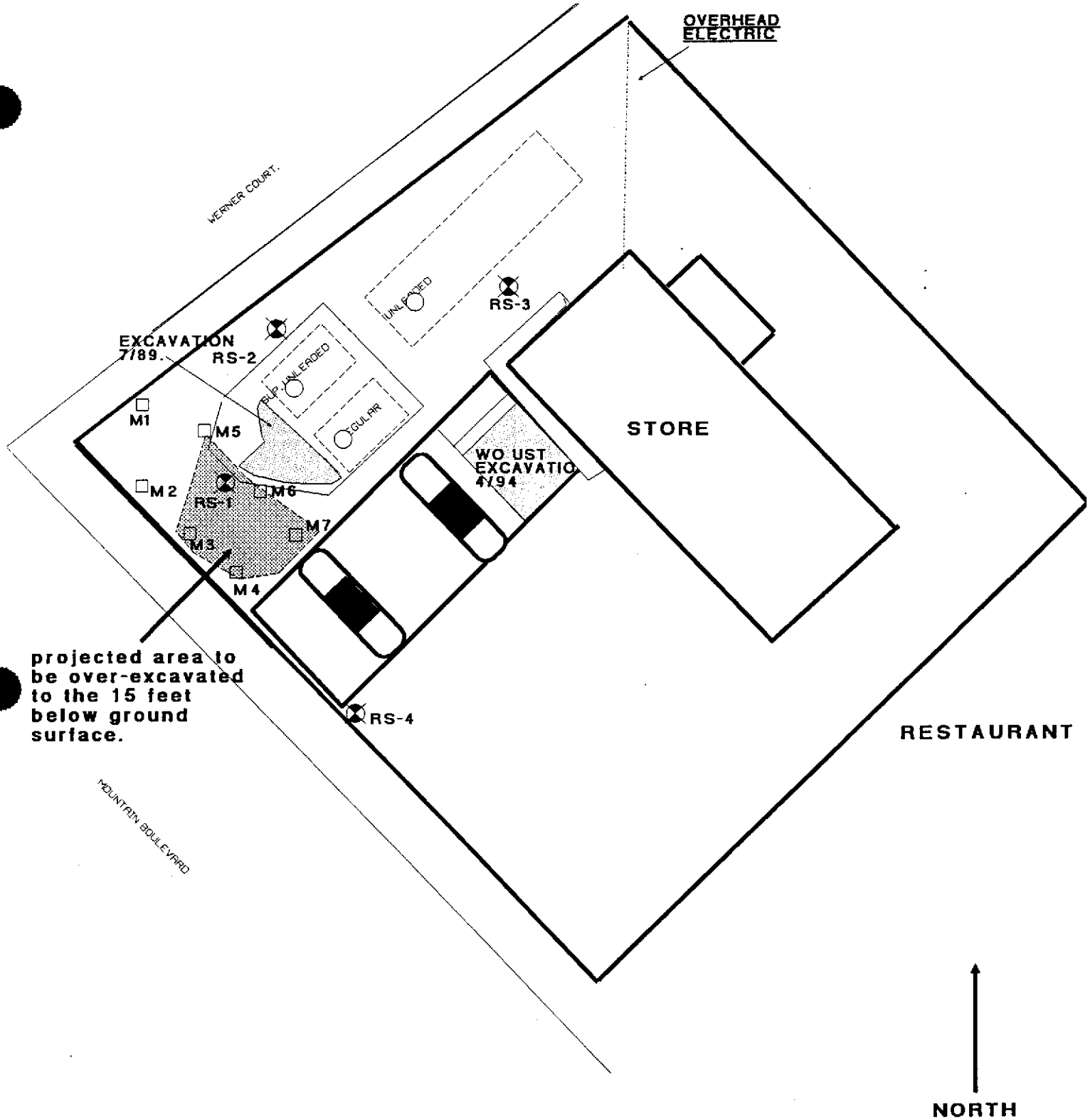


FIGURE 3

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SITE CONDITIONS
JANUARY 17, 1997.

APPENDIX A

FIELD SCREENING:

A WEGE geologist using a portable photoionizing gas chromatograph (PID-GC) will obtain sidewall samples for on-site field screening. Screening will exploit the high vapor pressure of gasoline range hydrocarbons using the heated head space method of analysis, to direct the over-excavation activities. This area will also be field screened using a UV fluorescence scope which uses the fluorescing nature of petroleum hydrocarbons under UV (ultraviolet) light.

Screening Methods

PID-GC

The PID-GC method employs the high vapor pressure of gasoline range hydrocarbons and most of the chlorinated solvents and the separation capability of gas chromatography. A 10 to 20 gram sample is placed into a pre-weighed 40 ml vial sealed with a septia cap and weighed. The sample is then placed on a hot plate and heated to around 140°F. A 0.5 cc sample of the headspace gases is then removed from the sample with a needle/syringe and injected into a 10s50 Photovac PID-GC, the resulting chromatogram is then compared to the chromatogram produced from the gasoline standard(s) used and calculated as mg/Kg as gasoline. Detection limits for this field screening is approximately 50 ug/Kg.

UV FLUORESCENCE

The UV screening favorably exploits petroleum hydrocarbon's fluorescing characteristics under ultraviolet light. Approximately 20 grams of sample is placed into a clean 40 ml vial and sealed with a teflon septia cap. This vial is then placed into the UV viewing chamber and inspected for fluorescence. If no fluorescence is seen, the sample is then cut with hexane, which will physically strip petroleum hydrocarbons from the soil, producing a UV excited fluorescing stream. Detection limits for this method is near 100 mg/L, dependent upon the size of sample used.

TABLE 1:DP796
DATE SAMPLED

HOLE	HOLE DEPTH		TFH PPM	BENZENE ppb	TOLUENE ppb	ETHYLB ppb	XYLENES ppb	MTBE ppb
TABLE 1:DP796								
DATE SAMPLED								
HOLE	HOLE DEPTH		TFH PPM -MTBE	BENZENE ppb	TOLUENE ppb	ETHYLB ppb	XYLENES ppb	MTBE ppb
1	15		0.488	14	<1	<2	<6	13813
2	15		0.443	96	<1	<2	<6	15560
3	15		22.799	5425	4576	1416	11441	35668
4	15		11.500	946	435	513	4346	31678
5	15		7.197	355	53	<2	<6	15763
6	15		13.361	2197	1906	137	775	60934
7	15		NOT RUN, FLOATING PRODUCT					
			MG/KG TPH WITHOUT MTBE	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	5	CLAY	0.2	<0.02	<0.03	<0.03	<0.11	<0.06
1	10	CLAY	4.7	<0.01	<0.01	<0.01	<0.02	0.33
1	15	CLAY	5.9	<0.02	<0.04	<0.04	<0.12	8.29
2	5	CLAY	0.8	0.02	<0.01	<0.01	<0.02	0.34
2	10	CLAY	8.9	2.08	<0.01	<0.01	<0.04	8.15
2	15	CLAY	0.8	0.00	<0.01	<0.01	<0.03	9.97
3	5	CLAY	1.8	0.06	<0.01	<0.01	0.19	1.62
3	10	CLAY	101.9	1.88	1.38	4.11	40.05	40.59
3	15	CLAY	22.4	0.35	0.13	0.37	2.43	33.14
4	5	CLAY	2.2	0.07	<0.01	<0.01	<0.04	0.88
4	10	CLAY	58.7	1.15	4.98	2.02	20.66	47.98
4	15	CLAY	1.6	0.04	<0.01	<0.01	<0.04	10.23
5	5	CLAY	11.8	0.02	<0.01	<0.01	<0.03	11.48
5	10	CLAY	5.8	0.14	<0.01	<0.01	<0.03	32.99
5	15	CLAY	0.4	0.05	<0.01	<0.01	<0.03	14.36
6	5	CLAY	9.1	0.16	0.07	<0.01	<0.03	15.40
6	10	CLAY	92.0	3.07	28.79	2.27	23.48	275.63
7	5	CLAY	33.0	0.17	<0.01	<0.01	<0.03	43.41
7	10	CLAY	259.2	3.99	0.05	6.38	63.32	199.26

TFH = TOTAL FUEL HYDROCARBONS (GASOLINE RANGE)
PPM = MILLIGRAMS/KILOGRAM (SOIL) = MILLIGRAMS/LITER (WATER)
ETHYLB = ETHYLBENZENE

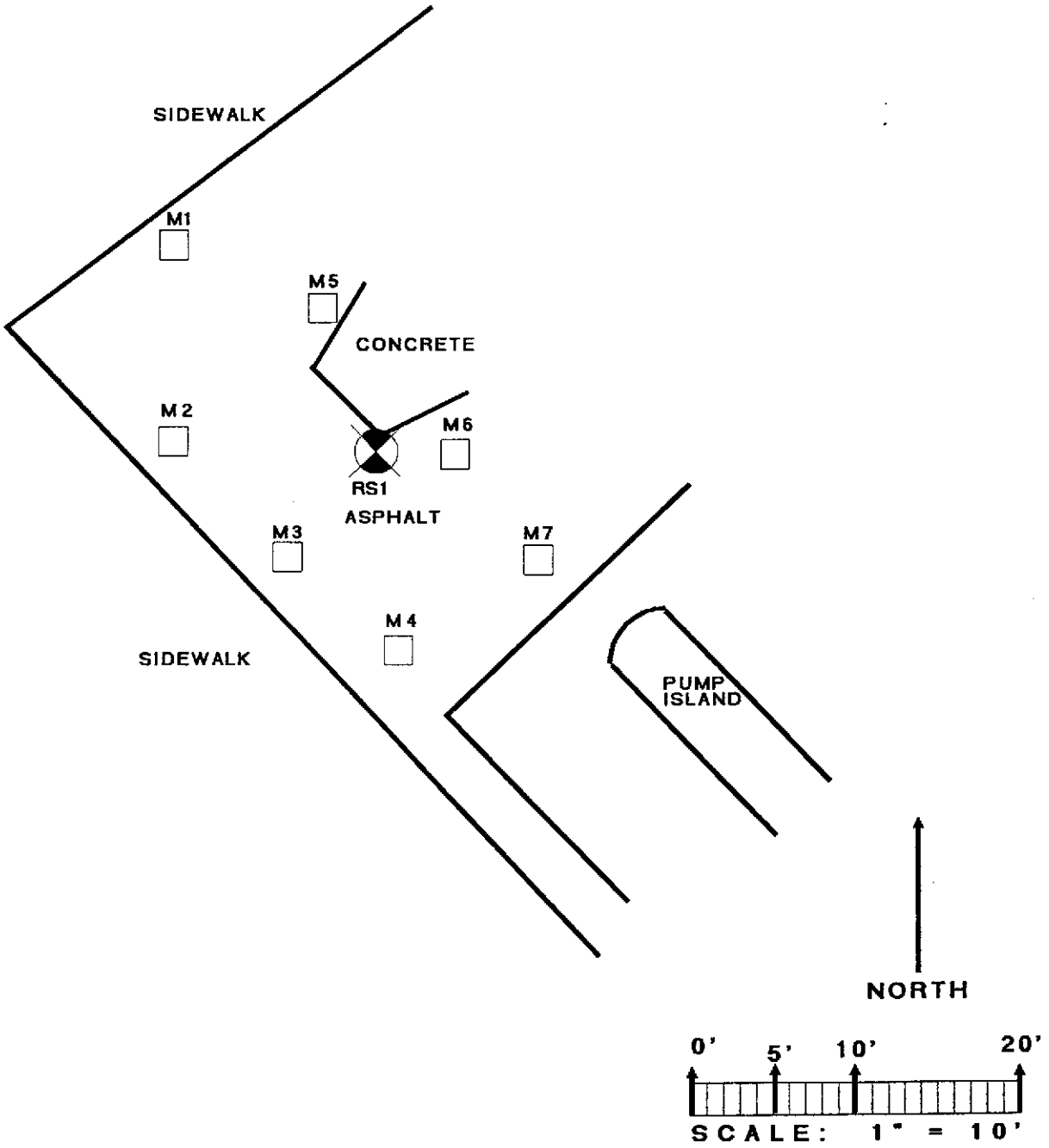


FIGURE 1

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SOIL PROBE SURVEY HOLE
LOCATIONS: JANUARY 17, 1997

GROUNDWATER MONITORING WELL.
RS-2 (16) well disignation with mg/L TPHg in water.

SOIL PROBE TEST HOLE, JANUARY 17, 1997.
M1

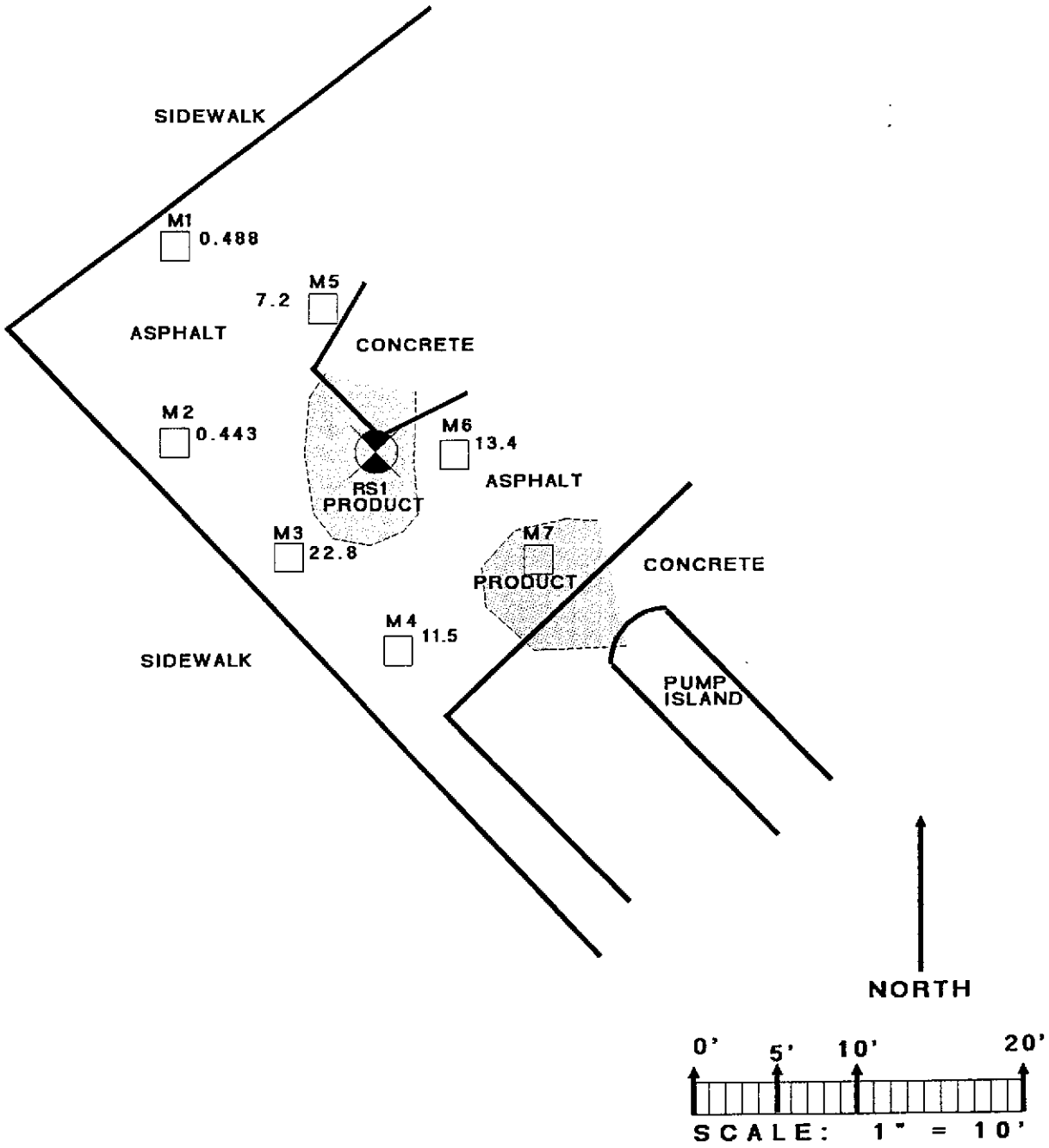


FIGURE 2 - GROUNDWATER SAMPLES

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SOIL PROBE SURVEY TOTAL
PETROLEUM HYDROCARBONS
GASOLINE RANGE: JANUARY 17, 1997

0.488 mg/L TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

RS-1 GROUNDWATER MONITORING WELL.

M1 SOIL PROBE TEST HOLE, JANUARY 17, 1997.

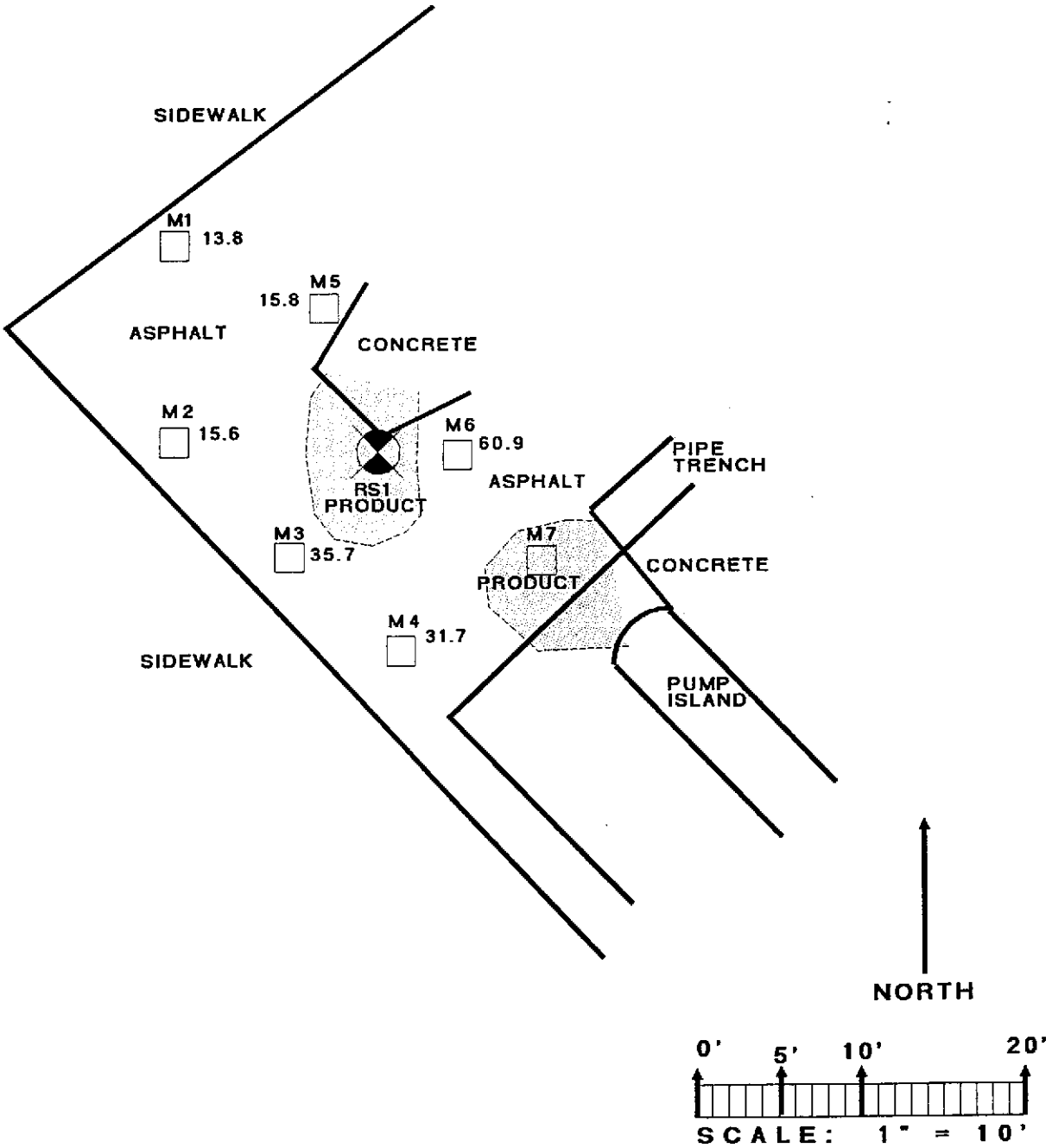


FIGURE 3 - GROUNDWATER SAMPLES

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SOIL PROBE SURVEY, MTBE:
JANUARY 17, 1997

13.8 mg/L METHYL t-BUTYL ETHER (MTBE)

RS-1 GROUNDWATER MONITORING WELL.

M1 SOIL PROBE TEST HOLE, JANUARY 17, 1997.

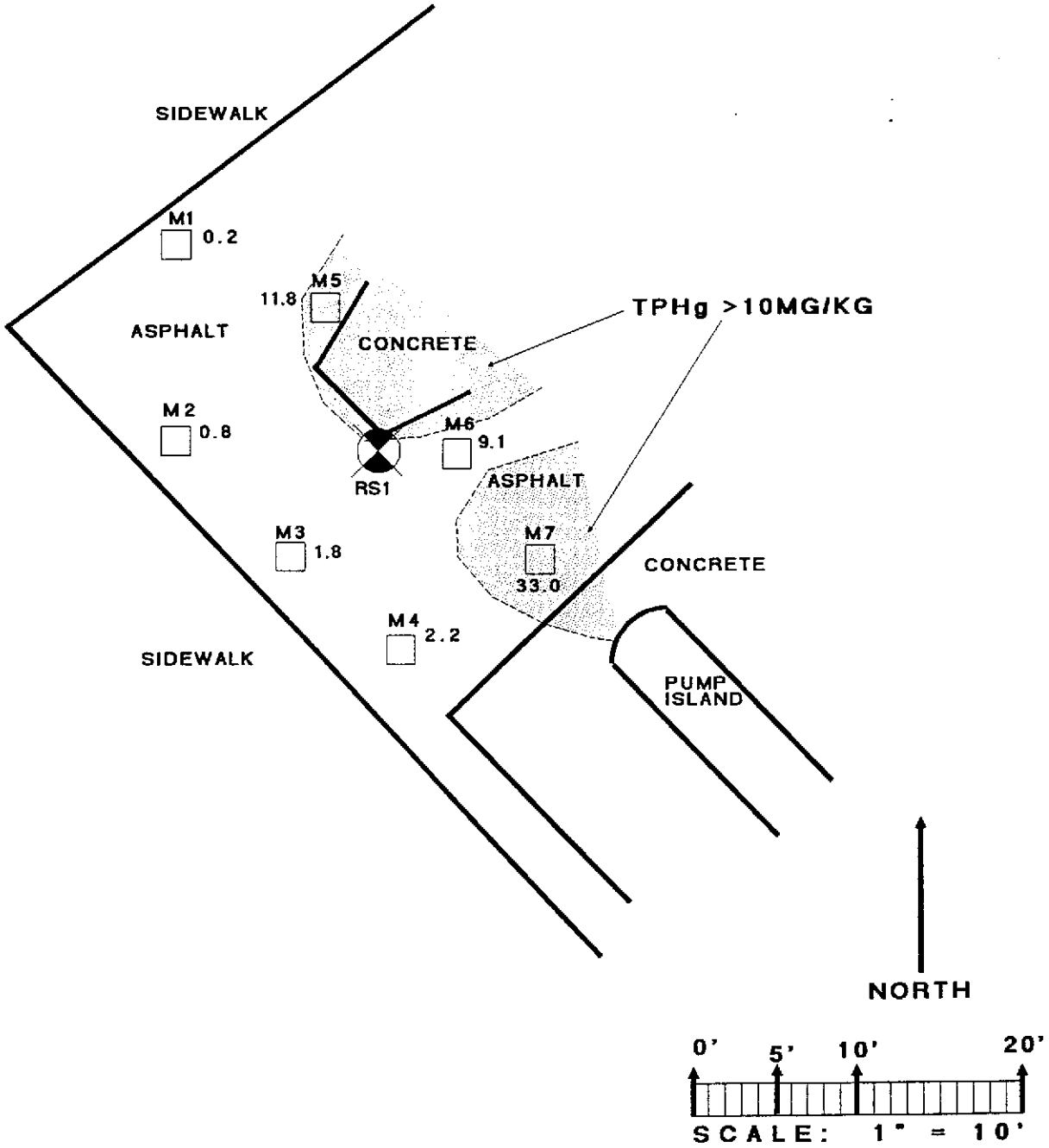


FIGURE 4 - SOIL SAMPLES 5 FEET

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SOIL PROBE SURVEY TOTAL PETROLEUM HYDROCARBONS GASOLINE RANGE: JANUARY 17, 1997

0.2 mg/Kg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

RS-1 GROUNDWATER MONITORING WELL.

M1 SOIL PROBE TEST HOLE, JANUARY 17, 1997.

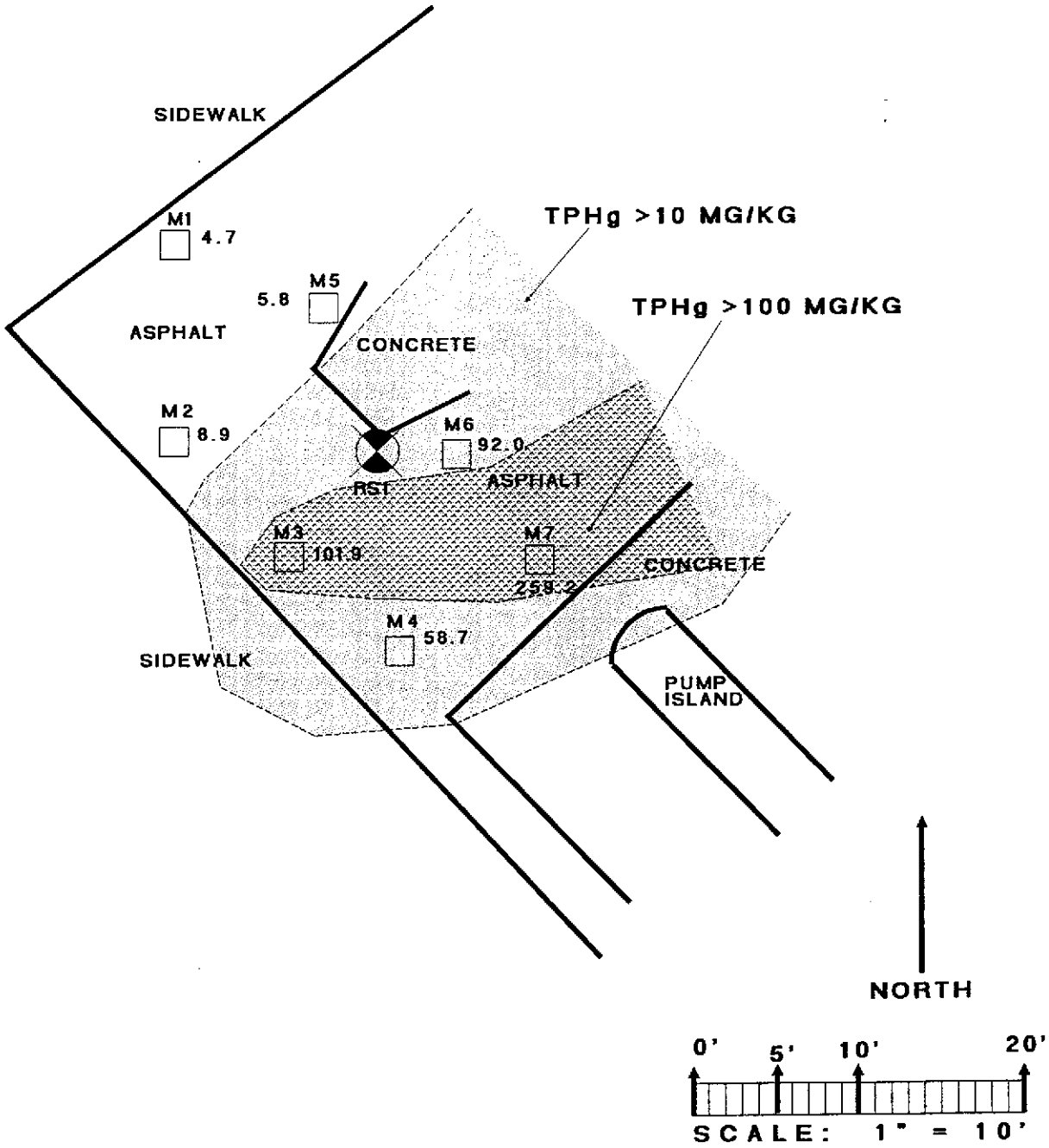


FIGURE 5 - SOIL SAMPLES 10 FEET

FORMER DESERT PETROLEUM #796
2844 MOUNTAIN BOULEVARD
OAKLAND, CALIFORNIA

SOIL PROBE SURVEY TOTAL
PETROLEUM HYDROCARBONS
GASOLINE RANGE: JANUARY 17, 1997

4.7 mg/Kg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

RS-1 GROUNDWATER MONITORING WELL.

M1 SOIL PROBE TEST HOLE, JANUARY 17, 1997.

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

FAX

Date 10/13/98

Number of pages including cover sheet- 7

TO: George Conversi

Phone

Fax Phone 531-662-0273

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P.O. Box 5624
South San Francisco, CA 94083

Phone 650.266.4563
Fax Phone 650.266.4560

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

98-761

North State Environmental Analytical Laboratory

Phone: (415) 588-9652 Fax: (415) 588-1950

Chain of Custody / Request for Analysis

Lab Job No.: _____ Page ___ of ___

Client: Desert Petroleum	Report to: George Converse	Phone: 530 668 5300	Turnaround Time
Mailing Address: WESTCE 1386 E. Beamer st Woodland, CA 95776-6003	Billing to: Desert Petroleum P.O Box 1601 Oxnard, CA 93032	Fax:	
		PO# / Billing Reference:	Date:
			Sampler:

Project / Site Address: DP 796

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH/g BTEX	MTBE	Oxygenates	Comments / Hazards
RS 1	H_2O	4/VOAs	HCL	9-16-98/ 15:50				
RS 2				16:06				
RS 3				14:45				
RS 4				15:26				

Relinquished by: Stephanie Bradburn	Date: 9/16/98 Time: 17:30	Received by: Jack E Kaffle	Lab Comments
Relinquished by: Jack E Kaffle	Date: 9/18/98 Time: 11-ish	Received by: Rob.	
Relinquished by: Rob	Date: 9/18/98 Time: 12:35	Received by: Edward Hunt	

Oct-13-98 12:12P

P.02

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98 1161
Client: Western Geo-Engineers
Project: DP 796

Date Reported: 09/30/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1161-01 Client ID: RS 1				09/16/98	WATER
Gasoline	8015M	62000	ug/L		09/28/98
Benzene	8020	2400	ug/L		
Ethylbenzene	8020	2100	ug/L		
MTBE	8020	*250000	ug/L		
Toluene	8020	2300	ug/L		
Xylenes	8020	14000	ug/L		
Sample: 98-1161-02 Client ID: RS 2				09/16/98	WATER
Gasoline	8015M	11000	ug/L		09/28/98
Benzene	8020	1600	ug/L		
Ethylbenzene	8020	1600	ug/L		
MTBE	8020	*280000	ug/L		
Toluene	8020	20	ug/L		
Xylenes	8020	1600	ug/L		
Sample: 98-1161-03 Client ID: RS 3				09/16/98	WATER
Gasoline	8015M	ND			09/28/98
Benzene	8020	2	ug/L		
Ethylbenzene	8020	2	ug/L		
MTBE	8020	*670	ug/L		
Toluene	8020	2	ug/L		
Xylenes	8020	10	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-1161
Client: Western Geo-Engineers
Project: DP '96

Date Reported: 09/30/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1161-04	Client ID: RS 4			09/16/98	WATER
Gasoline	8015M	ND			09/28/98
Benzene	8020	ND			
Ethylbenzene	8020	ND			
MTBE	8020	*230	ug/L		
Toluene	8020	ND			
Xylenes	8020	ND			

*Confirmed by GC/MS method 8260.

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CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 98·1161
Client: Western Geo-Engineers
Project: DP 796

Date Reported: 09/30/98

Gasoline and BTEX by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Gasoline	8015M	50	ug/L	ND	101	5
Benzene	8020	0.5	ug/L	ND	108	17
Ethylbenzene	8020	0.5	ug/L	ND	104	15
Toluene	8020	0.5	ug/L	ND	102	15
Xylenes	8020	1.0	ug/L	ND	116	18
MTBE	8020	0.5	ug/L	ND	122	12

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

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C E R T I F I C A T E O F A N A L Y S I S

Job Number: 98-1161
Client : Western Geo Engineers
Project : DP 796

Date Sampled : 09/16/98
Date Analyzed: 09/28/98
Date Reported: 09/30/98

Volatile Organics by GC/MS Method 8260

Laboratory Number	98 1161 01	98-1161-02	98-1161 03	98 1161-04
Client ID	RS 1	RS 2	RS 3	RS 4
Matrix	WATER	WATER	WATER	WATER
Analyte	ug/L	ug/L	ug/L	ug/L
Ethanol	ND<500	ND<500	ND<500	ND<500
Methyl t Butyl Ether	250000	280000	670	230
Di-isopropyl Ether	ND<5	ND<5	ND<5	ND<5
tertiary Butyl Alcohol	ND<5	ND<5	ND<5	ND<5
Ethyl t Butyl Ether	ND<5	ND<5	ND<5	ND<5
t-Amyl Methyl Ether	980	2600	ND<1	ND<1
SUR Dibromofluoromethane	129% Rec	128% Rec	79 % Rec	73 % Rec
R Toluene-d8	105% Rec	105% Rec	107% Rec	95 % Rec
R-4-Bromofluorobenzene	100% Rec	100% Rec	113% Rec	120% Rec

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North State Environmental
Chemical Waste Disposal · Trucking · Consulting

C E R T I F I C A T E O F A N A L Y S I S

Job Number: 98-1161
Client : Western Geo-Engineers
Project : DP 796

Date Sampled : 09/16/98
Date Analyzed: 09/28/98
Date Reported: 09/30/98

Volatile Organics by GC/MS Method 8260
Quality Control/Quality Assurance Summary

Laboratory Number	98-1161	MS/MSD	RPD
Client ID	Blank	Recovery	
Matrix	WATER	WATER	
Analyte	Results ug/L	%Recoveries	
Ethanol	ND<500		
Methyl t Butyl Ether	ND<1		
Di isopropyl Ether	ND<5		
tertiary Butyl Alcohol	ND<5		
Ethyl-t-Butyl Ether	ND<5		
t-Amyl Methyl Ether	ND<1		
1,1 Dichloroethene	ND<1	170	9
Benzene	ND<1	105	2
Trichloroethene	ND<1	95	4
Toluene	ND<1	100	10
Chlorobenzene	ND<1	108	5
SUR Dibromofluoromethane	94 % Rec	104/108	4
SUR-Toluene d8	100% Rec	96/102	6
SUR 4 Bromofluorobenzene	105% Rec	86/92	7

Reviewed and Approved

John A. Murphy
Laboratory Director

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Appendix C
Methods and Procedures
QA/QC

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

Gauging and Measuring Monitor Wells

Prior to sampling a well, WEGE personnel obtain three measurements:

1. the depth to groundwater (DTW);
2. the product thickness using a battery powered depth to water-product interface probe and/or by using a specially designed bailer;
3. the total depth of casing, to calculate the total water volume in the well.

The DTW-product interface probe is lowered into the well casing until the instrument signals when the top of free phase floating product (if present) and/or the top of water is reached. The distance from the top of free phase floating product and/or water to the top of casing is read from the tape that is attached to the probe. The probe is then lowered to the bottom of the well and the tape is read again. 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 and the difference between the top of groundwater and the base of the well is noted to establish water volume in the well. The probe and tape 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: BGS, Below Ground Surface; DTW, Depth to Water (from surface reference i.e. 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 by removing groundwater 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 are 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 borehole volumes, unless otherwise stated.

$$BV = (7.48/4) \times (CD2+P\ (BD2-CD)\ 2) \times (WD-GW)$$

BV borehole volume (gallons)
CD casing diameter (feet)
GW depth to groundwater (feet)
BD borehole diameter (feet)
WD well depth (feet)
P porosity of the gravel pack, 25%

Table of Common Boring and Casing Diameters

Boring diameter inches	Casing diameter inches	Volume gallons/ foot	3 Volumes X (WD-GW) gallons /foot
4	1	0.042	0.126
6	1	0.082	0.246
6	2	0.173	0.519
8	2	0.277	0.831
8	4	0.671	2.013
10	2	0.572	1.716
10	4	0.844	2.532

EXAMPLE: An 8 inch boring with 2 inch casing requires removal of 0.831 gallons of water per foot of water column.

The water collected during purging is either safely stored on- site in 55 gallon DOT 17H drums for later disposition, transported to an approved on-site/off-site treatment facility or to a sewer discharge system.

Collection of Water Sample for Analysis

The groundwater in the well is allowed to recover, to at least 80% of its volume prior to purging, if practical, before the groundwater sample is collected.

$$\text{Percent Recovery} = \left(1 - \frac{\text{Residual drawdown}}{\text{Maximum drawdown}}\right) \times 100.$$

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 are placed in ziplock bags and stored in a chest cooled to 4 °C with ice. The preserved samples are COC (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, i.e. TPH-d for diesel ranges 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.

Laboratory lower detection limits unless otherwise noted, due to matrix interference or elevated concentrations of target compounds, are as follows:

TPHg	50 ug/L	MTBE	0.5 ug/L
Benzene	0.5 ug/L	Toluene	0.5 ug/L
Ethyl Benzene	0.5 ug/L	Total Xylenes	1.0 ug/L

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.

Vapor Recovery System Monitoring and Sampling

INFLUENT SAMPLE

The influent sample is obtained from a sample port located on the

Sample ports are located at the orifice plate of the well adapter-venting tree. This lateral is under vacuum. A 1-liter tedlar bag fitted with a special septum "valve" and tubing bib is placed within an air tight vacuum sample box (ATVSB). Sterile poly tubing is then used to attach the intake port of the ATVSB to the tedlar bag.

Sterile poly tubing is also used to attach the intake of the ATVSB to the sample port of the orifice plate. The exhaust port for the ATVSB is then attached to a vacuum pump, which creates a vacuum inside the ATVSB allowing the tedlar bag to pull the sample from the valved manifold sample port without the danger of cross contamination, as could occur when using an in-line pump. Once the tedlar bag is filled, its valve is closed and locked and the appropriate label is placed on the tedlar bag.

The label for the tedlar bag sample show the date, time, sample ID# and analyses to be run.

The tedlar bag sample is Chain of Custody hand delivered to WEGE's laboratory that same day.

WEGE's laboratory analyzes the vapor samples by injection into a FID (Flame Ionizing Detector) chromatograph. The resulting chromatogram is compared to standard chromatograms of known TFH (Total Fuel Hydrocarbons, gasoline) and BTEX (benzene, toluene, ethylbenzene, and xylenes) concentrations. CO2 measurement is obtained with a Draager tube.

The standards are produced by injecting measured volumes of known density gasoline or BTEX compounds into tedlar bags filled with a measured amount of air, usually one liter. Injecting 10 microliters (ul) of 0.75-mg/L gasoline makes the gasoline standard into one liter of air, the density was previously determined by weighing a know volume of gasoline. The resulting concentration is 10 ul x 0.75 mg/L / 1l = 7.5 mg/L. The BTEX standard is made by injecting 5 ul of each compound into one liter of air, and using the following densities to calculate the concentration:

- Benzene, 0.88 mg/ul;
- Toluene, 0.87 mg/ul;
- Ethylbenzene, 0.87 mg/ul
- Xylenes, 0.87 mg/ul.

The following are the resulting concentrations: Benzene, 4.4 mg/l; Toluene, 4.35 mg/l; Ethylbenzene, 4.35 mg/l; and Xylenes 4.35 mg/l.

CALCULATIONS

To calculate the pounds (lb) per day the concentration is multiplied by the volume of air produced in one day.

The lab reports the Concentrations (C) of the air sampling in ug/liter. The first step is to convert this value to lbs/cf (pounds per cubic foot). 1 ug/l x 0.000001g/ug x 0.002205l/g x 28.32l/cf = 0.0000000621lb/cf

The volume of air produced in one day, equals the flow rate (Q) x the time of flow.

$V = Q \times T$ = cf/day = cf/min x 1440min/day

The volume must be corrected to standard temperature and pressure (STP).

P = Pressure = 14.7 lb/in^2 @ STP

V = Volume cf
T = Temperature in degrees above absolute Zero = 491.58oR @ STP.

Using the Ideal Gas Law P1V1/T1 = P2V2/T2
Solving for V2 =P1V1T2/P2T1
Assuming P1 = P2 = 14.7 lb/in^2, P cancels from the equation
Leaving V2 = V1T2/T1.

V1 = Q cf/m x 1440 min/day
T2 = 491.58oR T1 = 459.58 + T^{0F} at site.
V2 = Q cf/min x 1440 min/day x 491.58oR/(459.58o + T^{0F})

X lb/day = C ug/l x 0.0000000621 lb l/ug cf x Q cf/min x
1440 min/day x 491.58oR/(459.58o + T^{0F})
Q for the Influent sample = The well flow rate.

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) is 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 C of the sampling report.

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 796	DATE 9-16-98	TIME 15:35
WELL RS 1	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 8.1	DTB 29.66	
FLUID ELEVATION		
BAILER TYPE Disposable Bailed		
PUMP GTT David		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1538	1st Bailer	79.8	6.41	4.48
1541	30 gal	75.1	6.57	4.08
1544	15	74.1	6.56	4.61
1546	15	73.2	6.52	4.42
1548	15	73.3	6.51	4.47

FINAL VOLUME PURGED	31.5 gal
TIME SAMPLED	1550
SAMPLE ID.	RS 1
SAMPLE CONTAINERS	40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX / MTBE
LABORATORY	NSE
NOTES:	1st Bailer Clear Slight odor

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 796	DATE 9-16-98	TIME 1450
WELL RS 2	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	6.84 DTB 25.02	
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP 4TT David		

18
.65
90
168
1170

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1453	1st Bailer	80.7	6.34	3.76
1557	25 gal	75.4	6.81	4.03
1600	.5	79.4	6.73	3.83
1602	.5	73.6	6.69	3.76
16:04	.5	73.5	6.68	3.75

FINAL VOLUME PURGED	26.5gal
TIME SAMPLED	16:06
SAMPLE ID.	RS 2
SAMPLE CONTAINERS	40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX / MTBE
LABORATORY	NSE
NOTES:	1st Bailer Clear Some Odor

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 796	DATE 9-16-98	TIME 14:25
WELL RS 3	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 6.21 DTB 24.40		
FLUID ELEVATION		
BAILER TYPE Disposable Bailed		
PUMP GTT David		

18
.65
90
108
11.7°C

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1427	1st Bailer	85.1	6.11	4.00
1433	30 gal	76.7	6.80	3.57
1438	15	75.8	6.77	3.48
1441	15	75.0	6.76	3.07
1443	15	75.3	6.75	3.08

FINAL VOLUME PURGED	31.5 gal
TIME SAMPLED	1445
SAMPLE ID.	RS 3
SAMPLE CONTAINERS	40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX / MTBE
LABORATORY	NSE
NOTES:	1st Bailer Clear No Oder

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE DP 796	DATE 9-16-98	TIME 1505
WELL RS 4	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	9.26 DTB 25.4	
FLUID ELEVATION		
BAILER TYPE Disposable Bailed		
PUMP ETT David		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
15:08	1st Bailer	81.3	6.63	4.00
15:13	30 gal	77.0	6.87	3.62
15:18	.5	74.6	6.91	3.53
15:20	.5	73.7	6.91	3.44
15:22	.5	73.3	6.88	3.48
15:24	.5	73.2	6.87	3.50

FINAL VOLUME PURGED	32 gal
TIME SAMPLED	1526
SAMPLE ID.	RS 4
SAMPLE CONTAINERS	40cc VOAs
ANALYSIS TO BE RUN	TPHg BTEX / MTBE
LABORATORY	NSE
NOTES:	1st Bailer Clear No Odor

North State Environmental Analytical Laboratory

Phone: (415) 588-9652 Fax: (415) 588-1950

Chain of Custody / Request for Analysis

Lab Job No.: _____ Page ___ of ___

Client: Desert Petroleum	Report to: George Converse	Phone: 530 668 5300	Turnaround Time
Mailing Address: WESTE 1386 E Beamer St Woodland, CA 95776-6003	Billing to: Desert Petroleum P.O. Box 1601 Oxnard, CA 93032	Fax:	
		PO# / Billing Reference:	Date:
			Sampler:

Project / Site Address: DP 796

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPHg BTEX	MTBE	Oxygenates					Comments/Hazards
RS 1	H2O	4/VOAs	HCL	9-16-98/ 15:50								
RS 2	"	"	"	16:06								
RS 3	"	"	"	14:45								
RS 4	"	"	"	15:26								

Relinquished by: Stephen Rodriguez	Date: 9/16/98 Time: 17:30	Received by: Jack E Waffle	Lab Comments
Relinquished by: Jack E Waffle	Date: 9/15/98 Time: 11:--	Received by: Rob	
Relinquished by:	Date: Time:	Received by:	

LAWRENCE TANK TESTING, INC.

PO BOX 407, DOWNIEVILLE, CALIFORNIA 95936
PHONE 916-289-3189 - FAX 916-289-3022

WELL SHEET

TECHNICIAN DAVID

INVOICE NO.
DATE SEPT 16 1998

SITE NAME OAKLAND 796
ADDRESS
CITY STATE
PHONE

CUSTOMER WESTERN GEO
ADDRESS
CITY STATE
PHONE

WELL NO.		DESCRIPTION OF WORK PERFORMED
RS 3	30	GALLONS PURGED
RS 2	25	" "
RS 1	30	" "
RS 4	30	

RATES
LABOR AND TRAVEL TIME $ PER HOUR
MILEAGE $ PER MILE

	HOURS	MINUTES
ARRIVAL TIME	14	
DEPARTURE TIME	16	15
TOTAL TIME AT SITE		

TRAVEL TIME FROM TO TO

TOTAL MILEAGE

MATERIALS USED	QTY	PRICE	TOTAL

TOTAL OF MATERIALS $

TOTAL OF LABOR $

$

$

JOB TOTAL $

NON HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	2. Page 1 of -1	3. Document Number NH- № 1349

GENERATOR

4. Generator's Name and Mailing Address: DP 796, 2844 MOUNTAIN BLVD, OAKLAND, PA.
Generator's Phone: 530-668-5300

EES 19

5. Transporter Company Name	6. US EPA ID Number	7. Transporter Phone
EVERGREEN ENVIRONMENTAL SERVICES	CAD982413262	800-972-5284

8. Designated Facility Name and Site Address	9. US EPA ID Number	10. Facility's Phone
Evergreen Oil, Inc. 6880 Smith Avenue Newark, CA 94560	CAD980887418	510-795-4401

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non-Hazardous waste, liquid Water and oil	001	TT	110	G
b.				

15. Special Handling Instructions and Additional Information

Profile #_____
Do not ingest
Wear protective clothing
In case of emergency call: CHEMTREC 800-424-9300
DOT ERG 171

Handling Codes for Wastes Listed Above	
11a.	11b.

Invoice: 713414
Sales Order:

TRANSPORTER

16. GENERATOR'S CERTIFICATION

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BROADWAY	Stephen Broadway	10	13	98

17. Transporter Acknowledgment

Printed/Typed Name	Signature	Month	Day	Year
JOHN STOICER	John Stoicer	10	13	98

FACILITY

18. Discrepancy Indication Space

19. Facility Owner or Operator

Printed/Typed Name	Signature	Month	Day	Year

WHITE – ORIGINAL (Return to Generator) YELLOW – TSDF (Retain Copy) PINK – TRANSPORTER COPY GOLDENROD – GENERATOR'S COPY