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December 17, 1998

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

RE: December 1998 Quarterly Groundwater Sampling Report with ~~Subsurface Conduit Study~~ 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 December 1998 Quarterly Groundwater. Also included is the required Subsurface Conduit Study, requested by Mr. Scott Seary of Alameda County Health during the meeting held on October 20, 1998.

## INTRODUCTION

A WEGE geologist visited the site on November 9, 1998 to verify the presence of underground utilities and of any surface evidence of movement along the Hayward Fault near the site, as part of the underground conduit study. A WEGE sample technician monitored and sampled the four existing groundwater monitoring wells on November 24, 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, see Figures 1 and 2.

## GROUNDWATER SAMPLING

Table 1 is a summary of groundwater monitoring of this site since May 1990. The most recent sampling/monitoring, November 24, 1998 found a thin sheen of free product at RS-1. RS-2 continues to contain high levels of Methyl tertiary Butyl Ether (MTBE), 140 mg/L, which was confirmed using EPA Method 8260. All well samples 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

All wells contained MTBE, see Table 1 and Appendix B for Laboratory Report

## **GROUNDWATER GRADIENT "FLOW DIRECTION"**

Figure 4 depicts groundwater elevations as measured on November 24, 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. To further this investigation, Mr. Scott Seary of Alameda County Health requested a subsurface conduit study, due to the shallow groundwater found beneath the site. This study is presented in this report.

### **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 previously 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. Mr. Scott Seary also **directed Desert Petroleum to conduct a subsurface conduit study involving the underground utilities and the Hayward Fault situated near the site.** This study is presented below.

## SUBSURFACE CONDUIT STUDY

The October 20, 1998 meeting was attended by Mr. Scott Seary (Alameda County Health), Mr. John Rutherford (Desert Petroleum, Inc.), Mr. George Converse (Western Geo-Engineers) and Mr. Sharahn Shenazi (owner of property located at 2844 Mountain Blvd., Oakland, CA.). At that meeting, Mr. Seary requested the Desert Petroleum Inc. conduct a subsurface conduit study.

Western Geo-Engineers conducted the subsurface conduit study of the area at and near the property 2844 Mountain Blvd., Oakland, CA. To optimize the search a library and Internet search was conducted. Utility maps were obtained from the City of Oakland (sewer, and storm water utilities), from the East Bay Municipal Water District (water utility) and from Pacific Gas and Electric (natural gas utility). The electrical utility is above ground. **The routes of the underground utilities were placed onto a figure and then field checked for accuracy by a WEGE geologist on November 9, 1998, see Figure 3.** According to the utility maps and material supplied by the City of Oakland the following burial depths (elevations) are associated with the base of the underground utilities *where?* trenches. The elevation of MW4 was used to compensate the burial depths to elevations that could be compared to the groundwater slope found beneath the site (MW4 top of casing elevation is 696 feet above mean sea level).

UTILITY	UTILITY TRENCH DEPTH BELOW SURFACE	
		<del>Feet above mean sea level</del> <i>City of Oakland datum</i>
WATER	3 FEET	693
SEWER	9 FEET	687
STORM WATER	<u>24 FEET</u> ?	671.8(from map)
NATURAL GAS	3 FEET (APPROXIMATE)	693
ELECTRIC	ABOVE GROUND	
PHONE LINES		
CABLE TV		

The lowest elevation of the utility trenches is approximately 672 feet above mean sea level, which is the storm water as it leaves the corner of Mountain Blvd. and Werner Court headed southwest across Mountain Blvd. Review results of groundwater elevations at the monitor wells on site since May 1994 show that groundwater at RS-1 was above the 672 elevation once, during February 1998. Since May 1994, the other wells RS-2, RS-3 and RS-4 have never had groundwater elevations recorded that high. This would suggest that only a minor amount of, if any, gasoline tainted groundwater could have entered the backfill of the storm water trench allowing the trench to act as a conduit for migration.

Borehole logs prepared by RSI (Remediation Systems International) during the drilling and installation of monitor wells RS1, RS2, RS3 and RS4 on May 29 and 30, 1990 were reviewed. The borehole logs indicate silty clay overlays the clayey sand aquifer with is found at 12 feet bgs (below ground surface) at RS-1 (663.6 feet amsl), 7 feet bgs at RS-2 (668.3 feet amsl), and 8 feet bgs at RS-3 (668.2 feet amsl). At RS-4 clayey sand is at the surface (675.4 feet amsl) to approximately 9 feet bgs (666.4 feet amsl). These elevations are generally lower than the top of

groundwater indicating that the groundwater is found in semi-confined aquifer that would retard the down gradient migration of the gasoline range hydrocarbons.

A Soil Probe Survey conducted on site on January 17, 1997 investigated subsurface conditions to the fifteen-foot depth below ground surface. No groundwater entered the test holes prior to the ten-foot depth (665 feet amsl). Soil plugs indicated that the surface to approximately ten feet bgs is comprised of silty clay. Groundwater was encountered from a silty formation between ten feet bgs (665 feet amsl) and twelve feet bgs (663 feet amsl).

During the November 9, 1998 site visit the WEGE geologist walked the area around the property to survey for any surface evidence of movement and/or conduits created by the Hayward Fault. None were found, see Figures 1 and 2 for Hayward Fault Zone. At that time a water sample was obtained from a retaining wall drain north west of the property. This sample contained trace amounts of Xylenes (3.1 ug/L) and was below laboratory lower detection limits for Benzene, Toluene, Ethylbenzene and MTBE, see Figure 3 for sample location.

## 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, 5B and 5C represent historic and present lateral extent of the dissolved gasoline plume.

Figures 6A, 6B and 6C 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.

A water sample obtained from one of the drains in the retaining wall at the on ramp to Highway 13 northwest of the site contained only trace amounts of Xylenes, see Figure 3. The absence of MTBE and Benzene, the more mobile of the gasoline additives, indicate that the downgradient extent of the gasoline plume is limited and probably has not intercepted the underground utility trenches.

## 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.
8. **Desert Petroleum Inc. should be relieved of the mandatory 1/4ly groundwater sampling of this site and the current groundwater monitoring wells should be assigned to the current owner Mr. Sharahn Shenazi.**

## 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 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 (January 1999), by Evergreen Services to be recycled.

## **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.

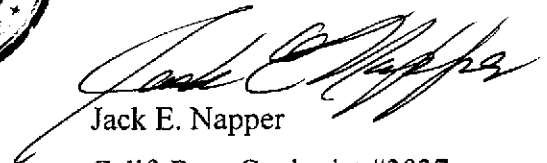
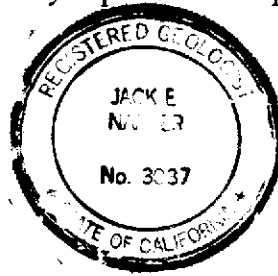
State Certified Laboratory analytical results are included in this report. This laboratory follows EPA and State of California approved procedures; however, WEGE is not responsible for errors in these laboratory results.

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

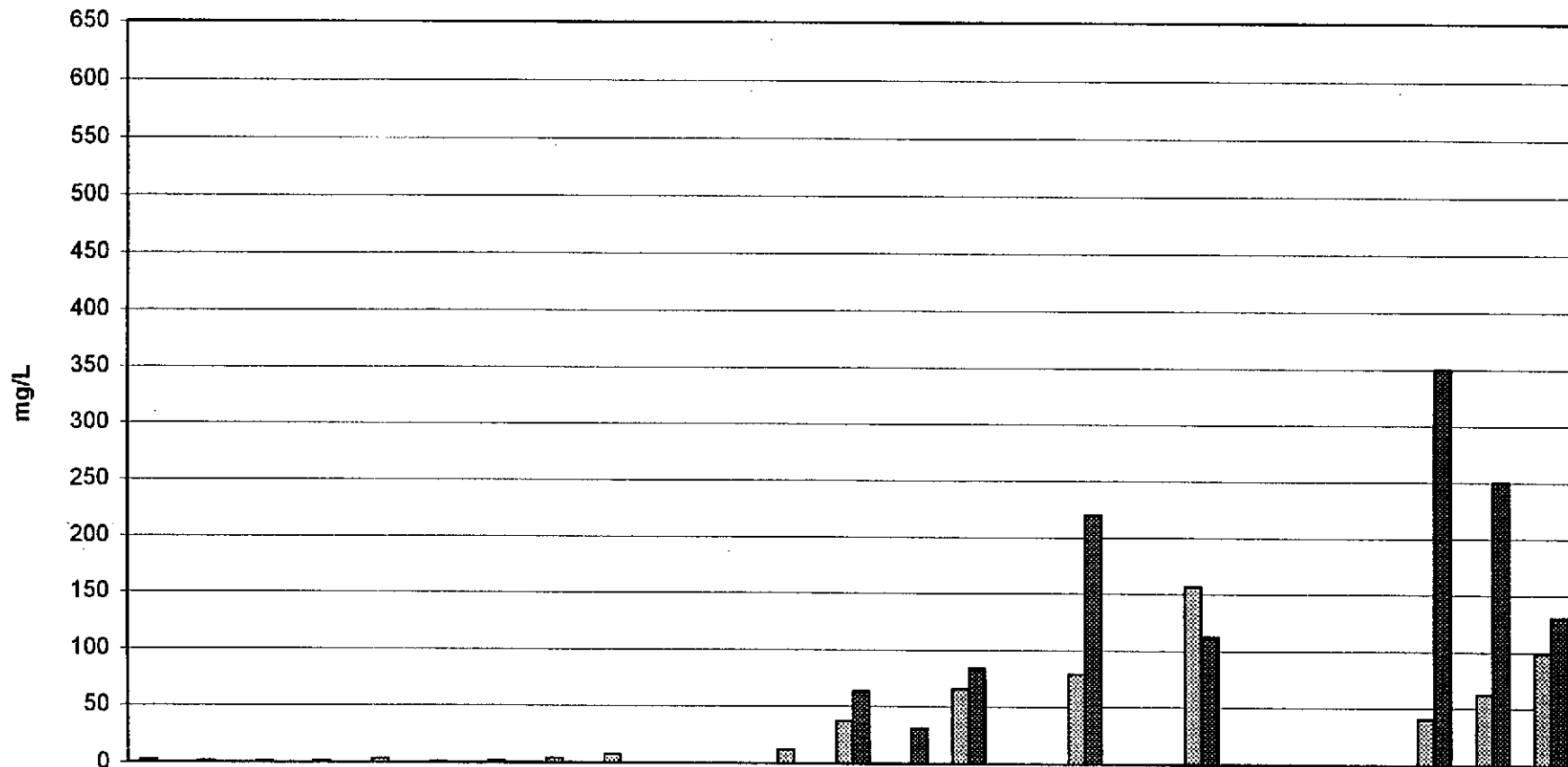
TABLE 1  
SUMMARY OF GROUNDWATER MONITORING  
DP796  
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

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							WGBE
	12/11/96	675.63	6.42	6.62	0.20	669.17	79	4000	37000	8000	45000	220		WGBE*
	02/21/97	675.63	6.88	6.92	0.04	668.74	1/2 INCH FLOATING PRODUCT							WGBE
	05/28/97	675.63	7.88	7.96	0.08	667.73	156	9400	51000	7000	45000	112		WGBE*
	09/02/97	675.63	8.34	8.38	0.04	667.28	1/2 INCH FLOATING PRODUCT							WGBE*
11/24/97	675.63	6.98	7	0.02	668.65	1/4 INCH FLOATING PRODUCT							WGBE*	
02/25/98	675.63	3.51	3.52	0.01	672.12	1/8 INCH FLOATING PRODUCT							WGBE*	
05/27/98	675.63	7.31	7.31	0.00	668.32	40	2200	4000	2300	19000	350		WGBE*	
09/16/98	675.63	8.10	8.1	0.00	667.53	62	2400	2300	2100	14000	250		WGBE*	
11/23/98	675.63	7.10	7.1	0.00	668.53	99	2600	5800	2500	18000	130		WGBE*	

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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	11/23/98
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	0	79	0	156	0	0	0	40	62	99
MTBE													63	31	84		220		112				350	250	130

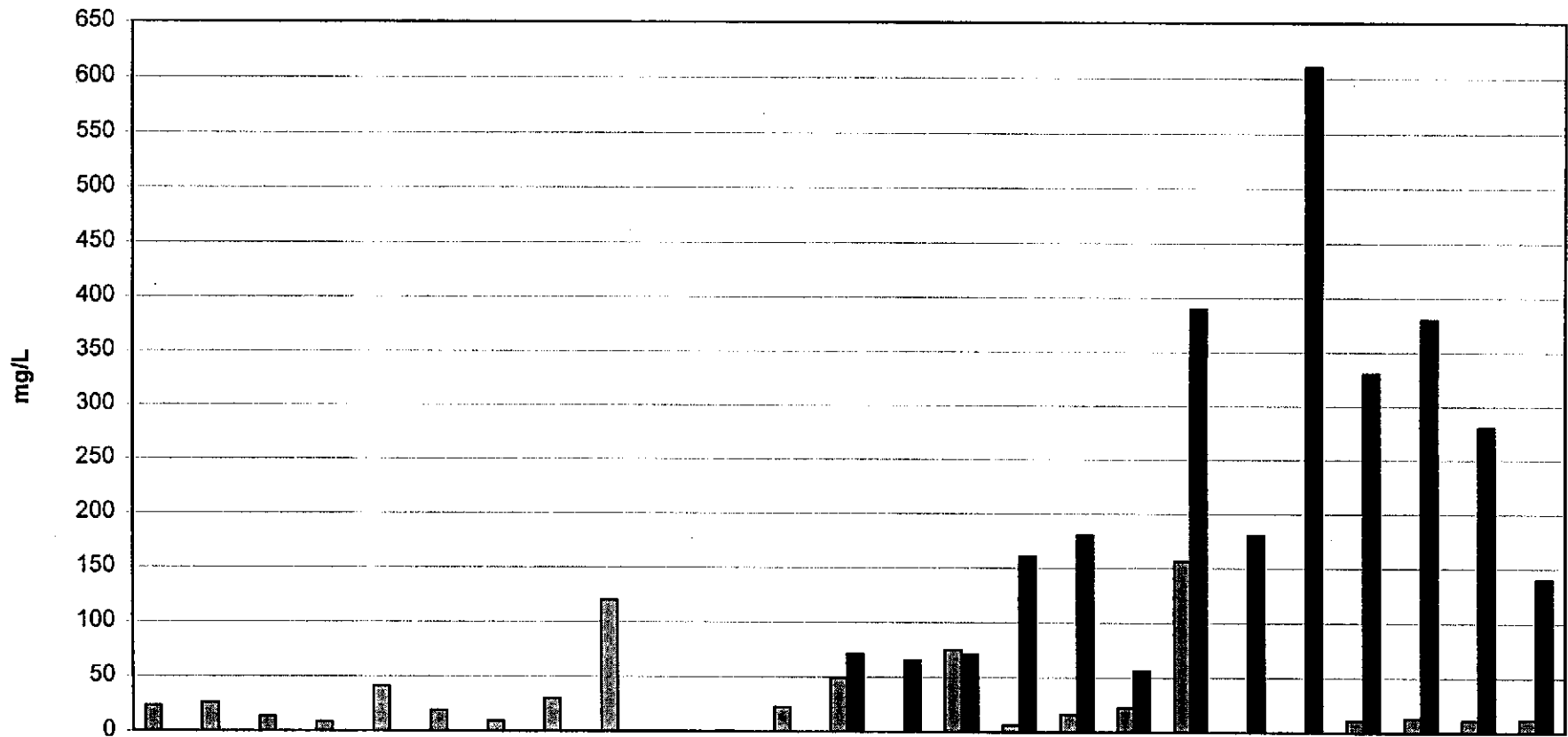
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TABLE 1  
SUMMARY OF GROUNDWATER MONITORING  
DP796  
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

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	WEGB
	12/11/96	675.25	5.08	5.08	0.00	670.17	16	2000	840	200	3200	180	WEGB
	02/21/97	675.25	5.42	5.42	0.00	669.83	22	2100	1300	600	5100	56	WEGB*
	05/28/97	675.25	6.4	6.4	0.00	668.85	156	4200	89	1000	6900	390	WEGB*
	09/02/97	675.25	6.93	6.93	0.00	668.32	<0.05	1300	25	360	1400	180	WEGB*
11/24/97	675.25	5.93	5.93	0.00	669.32	<0.05	600	ND	ND	ND	610	WEGB*	
02/25/98	675.25	4.59	4.59	0.00	670.66	11	1100	<50	320	2400	330	WEGB*	
05/27/98	675.25	5.61	5.61	0.00	669.64	13	2000	150	600	2700	380	WEGB*	
09/16/98	675.25	6.84	6.84	0.00	668.41	11	1600	20	1600	1600	280	WEGB*	
11/23/98	675.25	6.24	6.24	0.00	669.01	12	1200	84	<5	960	140	WEGB*	

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DP796 - RS2



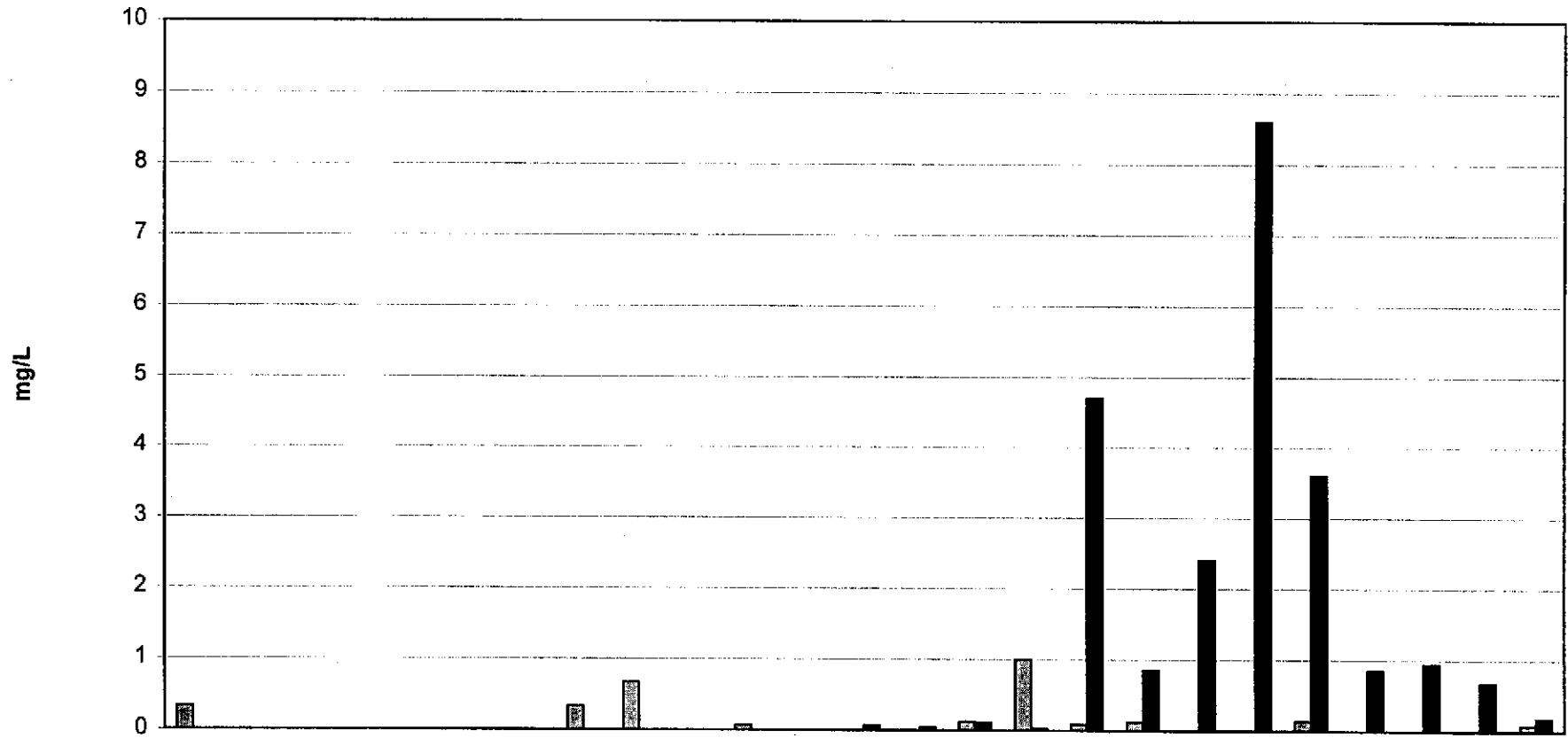
	MAY-90	MAY-91	OCT-91	JAN-92	JAN-93	AUG-93	NOV-93	JAN-94	MAY-94	AUG-94	NOV-94	FEB-95	JUN-95	NOV-95	FEB-96	09/18/96	12/11/96	02/21/97	05/28/97	09/02/97	11/24/97	02/25/98	05/27/98	09/16/98	11/23/98
TPHg	23	26	13	8.3	41	19	9.3	30	120	0.51	0.62	22	49	0	75	6.3	16	22	156	0	0	11	13	11	12
MTBE													71	65	71	160	180	56	390	180	610	330	380	280	140

DATE SAMPLED

TABLE 1  
SUMMARY OF GROUNDWATER MONITORING  
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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	WEGB
	12/11/96	676.2	4.9	4.9	0.00	671.30	0.085	20	2	<0.5	14	4.7	WEGB
	02/21/97	676.2	4.94	4.94	0.00	671.26	0.12	5	2	2	6	0.85	WEGB*
	05/28/97	676.2	7.92	7.92	0.00	668.28	<0.05	6	<0.5	<0.5	<2	2.4	WEGB
	09/02/97	676.2	6.6	6.6	0.00	669.60	<0.05	0.9	<0.5	<0.5	<2	8.6	WEGB*
	11/24/97	676.2	5.89	5.89	0.00	670.31	0.14	13	2	1	12	3.6	WEGB*
	02/25/98	676.2	4.29	4.29	0.00	671.91	<0.05	<0.5	<0.5	<0.5	4	0.85	WEGB*
	05/27/98	676.2	5.01	5.01	0.00	671.19	<0.05	7	<0.5	<0.5	11	0.94	WEGB*
	09/16/98	676.2	6.21	6.21	0.00	669.99	<0.05	2	2	2	10	0.67	WEGB*
	11/24/98	676.2	5.58	5.58	0.00	670.62	0.085	9	23	<0.5	19	0.18	WEGB*

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	11/24/98
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	0.085
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	0.18

DATE SAMPLED

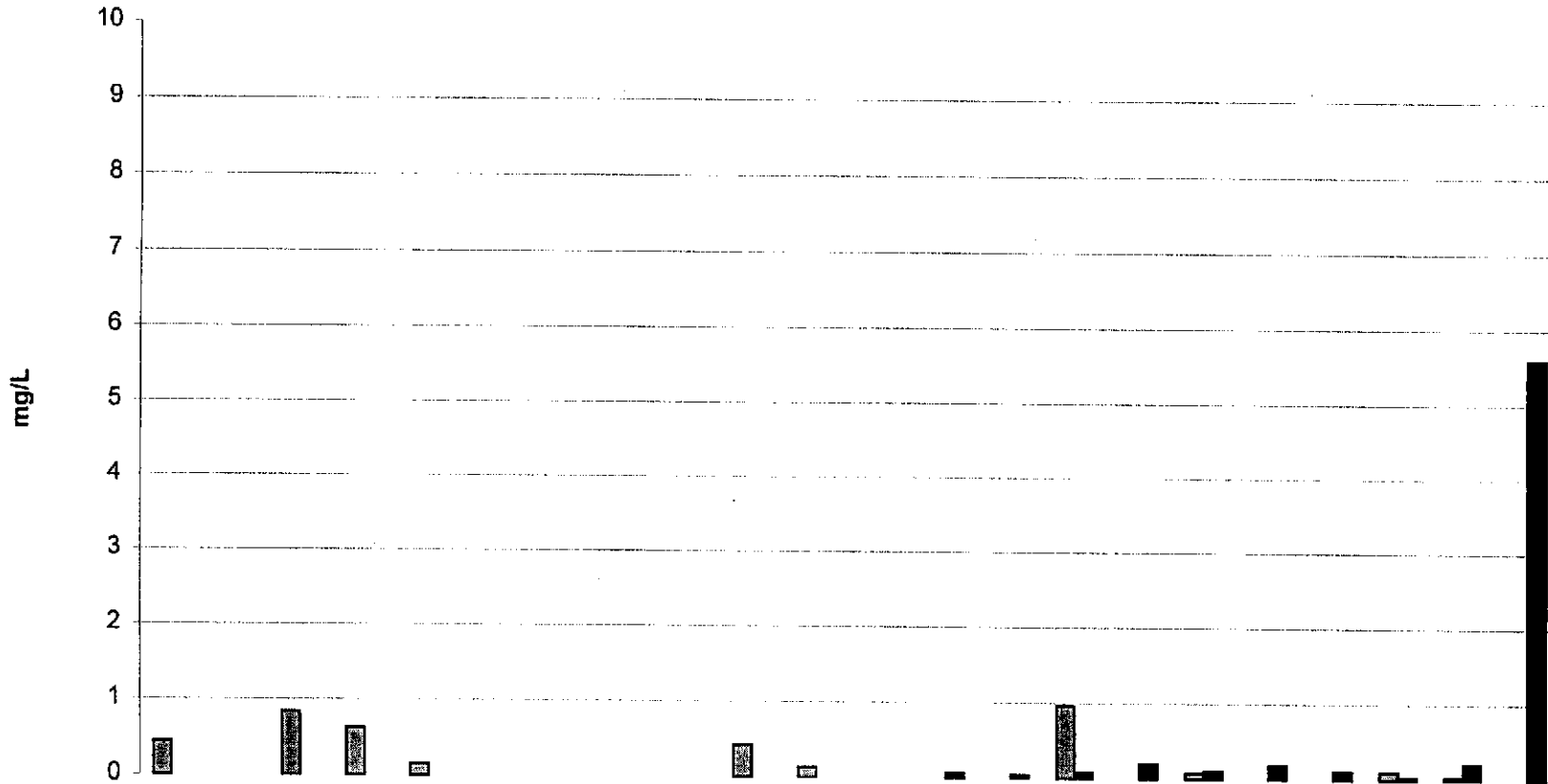
TABLE 1  
SUMMARY OF GROUNDWATER MONITORING  
DP796  
2844 MOUNTAIN BOULEVARD, OAKLAND, CALIFORNIA 94602

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	WBGB	
	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	WBGB	
	02/21/97	675.38	8.26	8.26	0.00	667.12	<0.05	1	1	<0.5	<1	0.19	WBGB*	
	05/28/97	675.38	8.92	8.92	0.00	666.46	<0.05	6	<0.5	<0.5	<2	0.11	WBGB	
	09/02/97	675.38	9.39	9.39	0.00	665.99	0.1	3	<0.5	<0.5	<2	0.039	WBGB*	
11/24/97	675.38	8.22	8.22	0.00	667.16	0.041	<0.5	2	<0.5	<2	0.21	WBGB*		
02/25/98	675.38	7.19	7.19	0.00	668.19	<0.05	3	<0.5	<0.5	<1	5.6	WBGB*		
05/27/98	675.38	8.4	8.4	0.00	666.98	<0.05	<0.5	<0.5	<0.5	<1	2.4	WBGB*		
09/16/98	675.38	9.26	9.26	0.00	666.12	<0.05	<0.5	<0.5	<0.5	<1	0.23	WBGB*		
11/24/98	675.38	8.5	8.5	0.00	666.88	<0.05	2	<0.5	<0.5	<1	0.1	WBGB*		
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	WBGB
WATER FROM							mg/L	ug/L	ug/L	ug/L	ug/L	ug/L		
	11/09/98						<0.05	<0.5	<0.5	<0.5	3.1	<1	WBGB*	

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.

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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

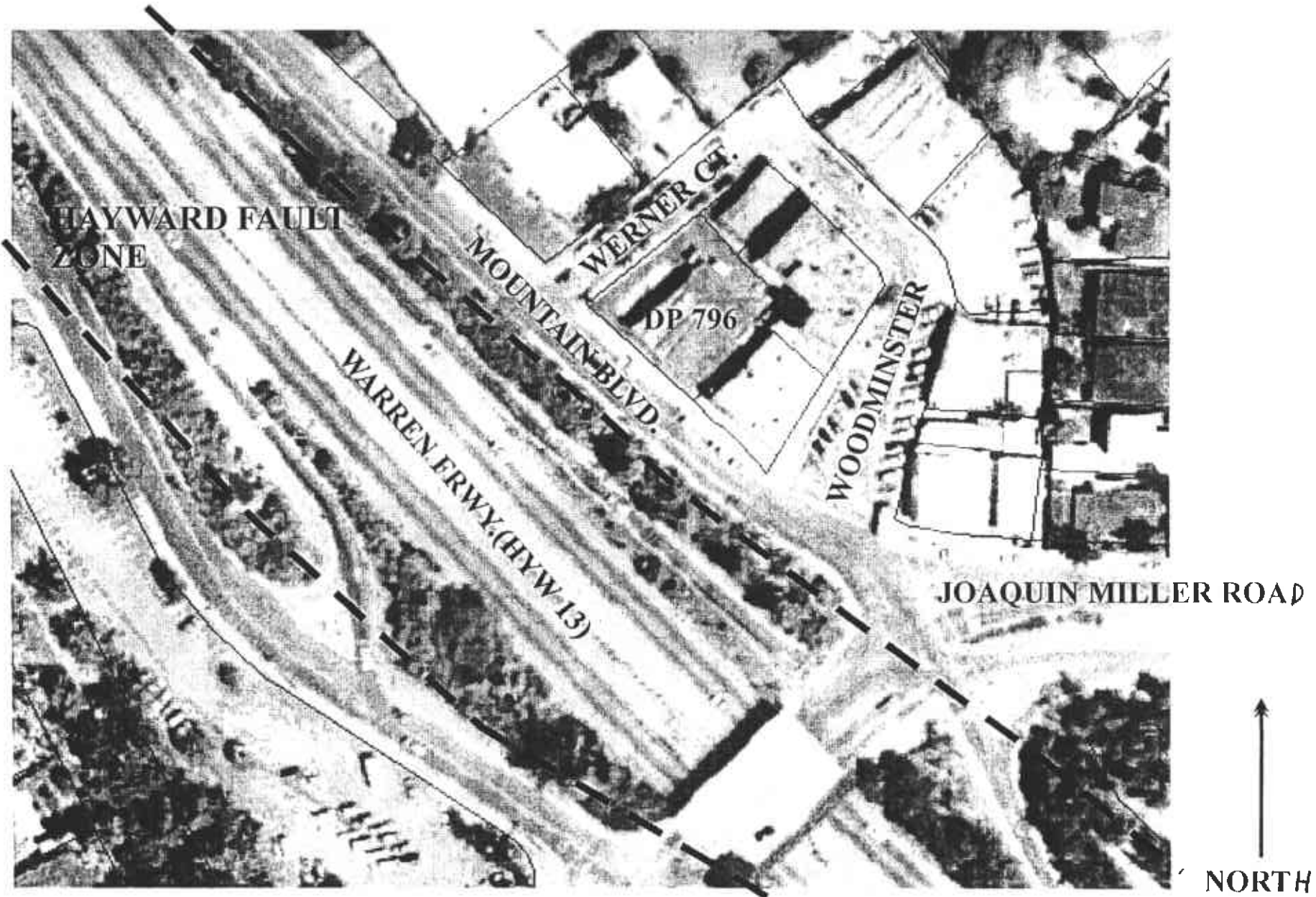


FIGURE 1 PARCEL MAP ON AERIAL PHOTO SHOWING LOCATION OF DP 796, 2844 MOUNTAIN BLVD., OAKLAND, CALIFORNIA AND HAYWARD FAULT.



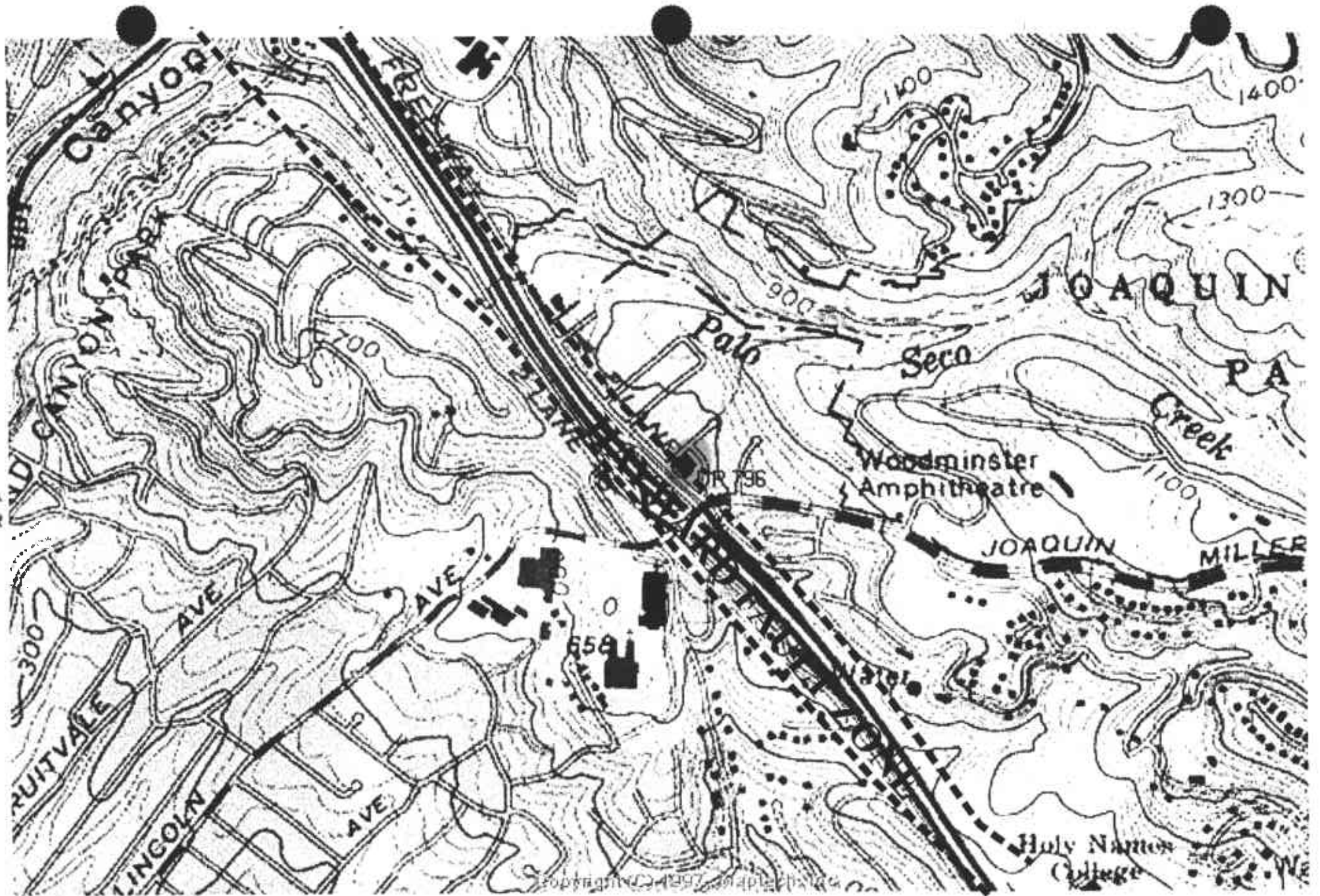
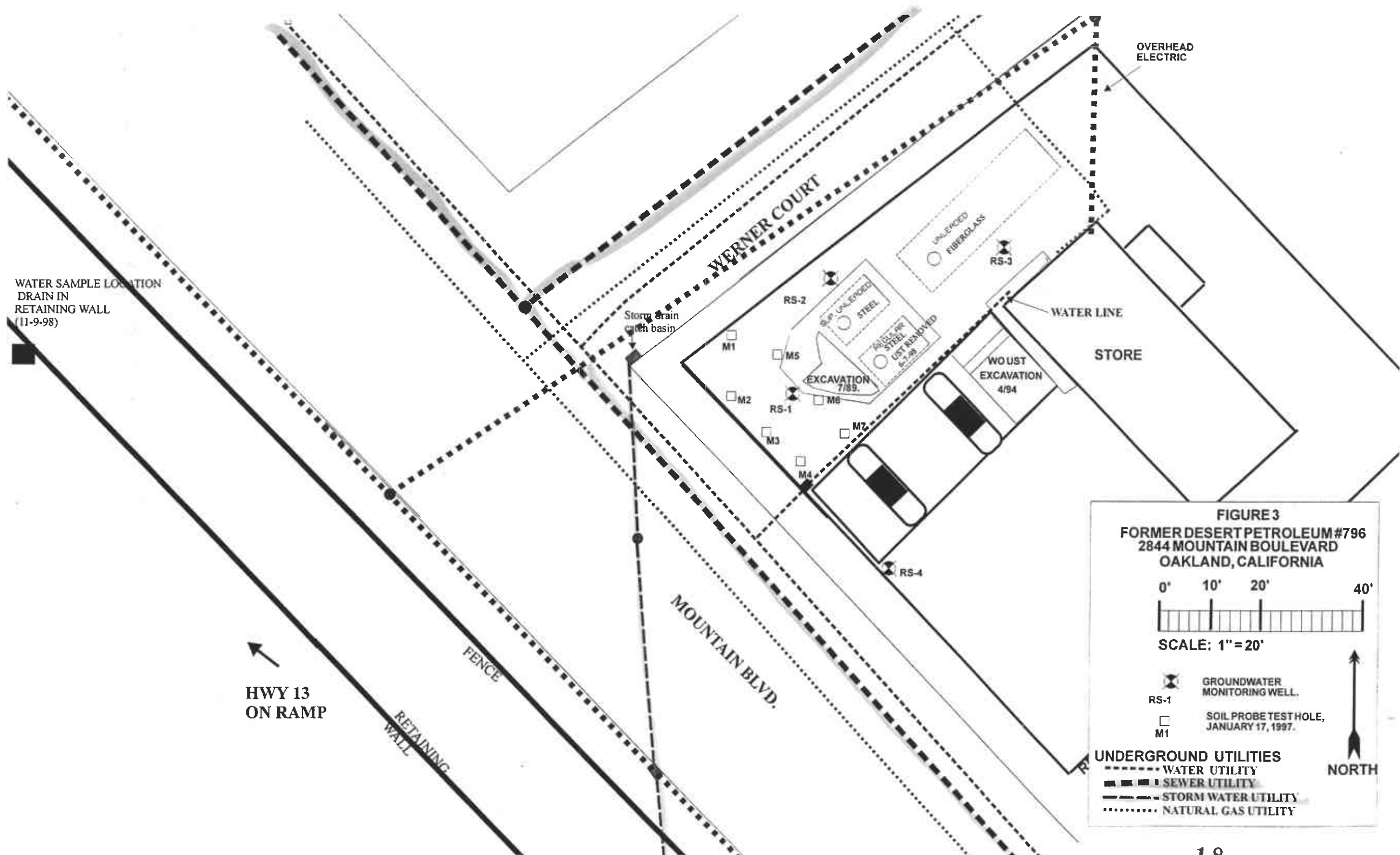


FIGURE 2  
 PORTION OF OAKLAND EAST 7.5 MINUTE QUADRANGLE  
 WITH LOCATION OF DP 796 IN RESPECT TO HAYWARD FAULT



NORTH



**FIGURE 3**  
**FORMER DESERT PETROLEUM #796**  
**2844 MOUNTAIN BOULEVARD**  
**OAKLAND, CALIFORNIA**

0' 10' 20' 40'

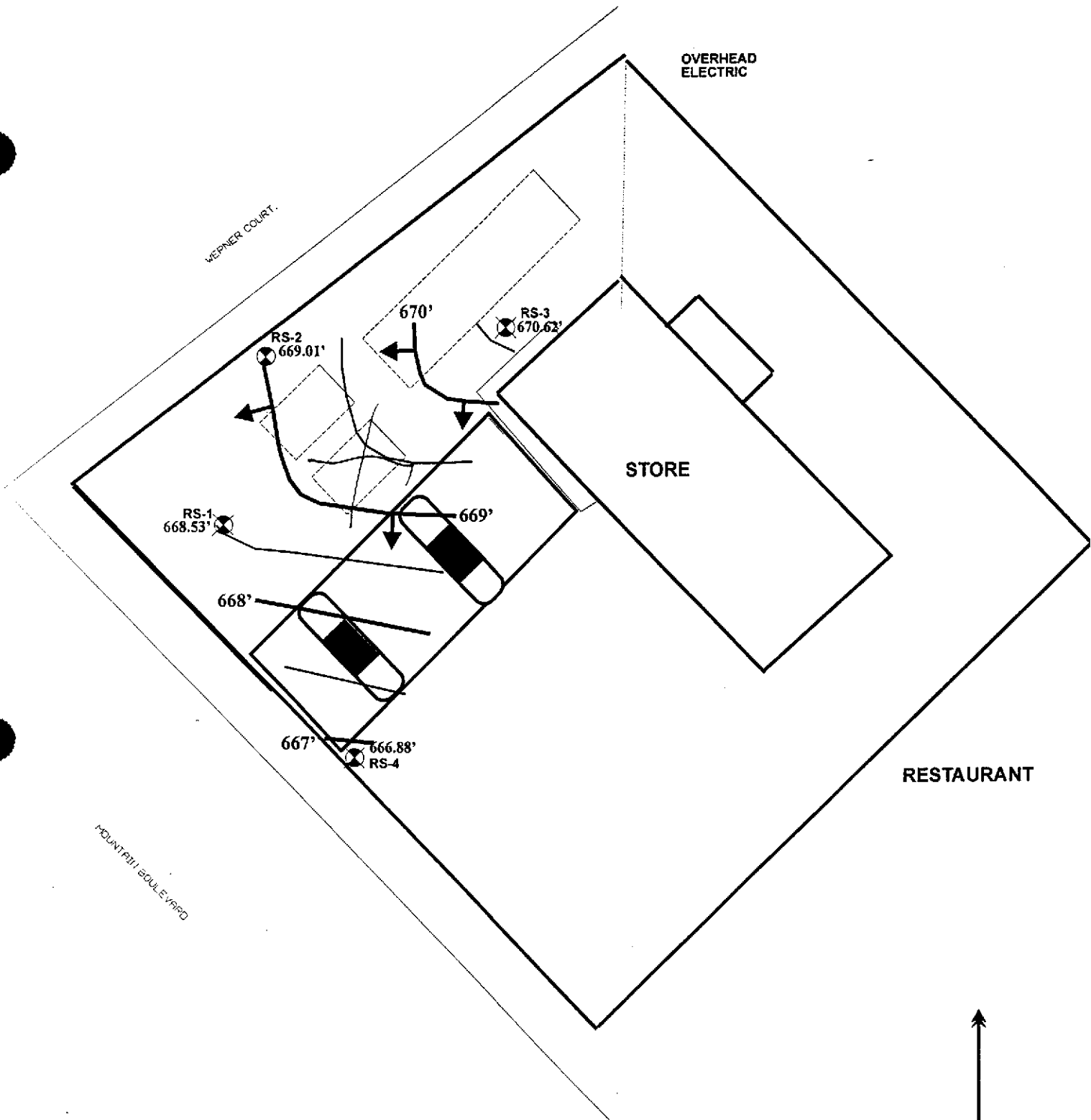
SCALE: 1" = 20'

GROUNDWATER MONITORING WELL.  
 RS-1

SOIL PROBE TEST HOLE, JANUARY 17, 1997.  
 M1

**UNDERGROUND UTILITIES**  
 - - - - - WATER UTILITY  
 - - - - - SEWER UTILITY  
 - - - - - STORM WATER UTILITY  
 ······ NATURAL GAS UTILITY

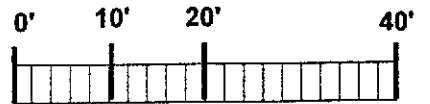
NORTH



**FIGURE 4**

**FORMER DESERT PETROLEUM #796  
2844 MOUNTAIN BOULEVARD  
OAKLAND, CALIFORNIA**

**GROUNDWATER GRADIENT  
NOVEMBER 24, 1998**

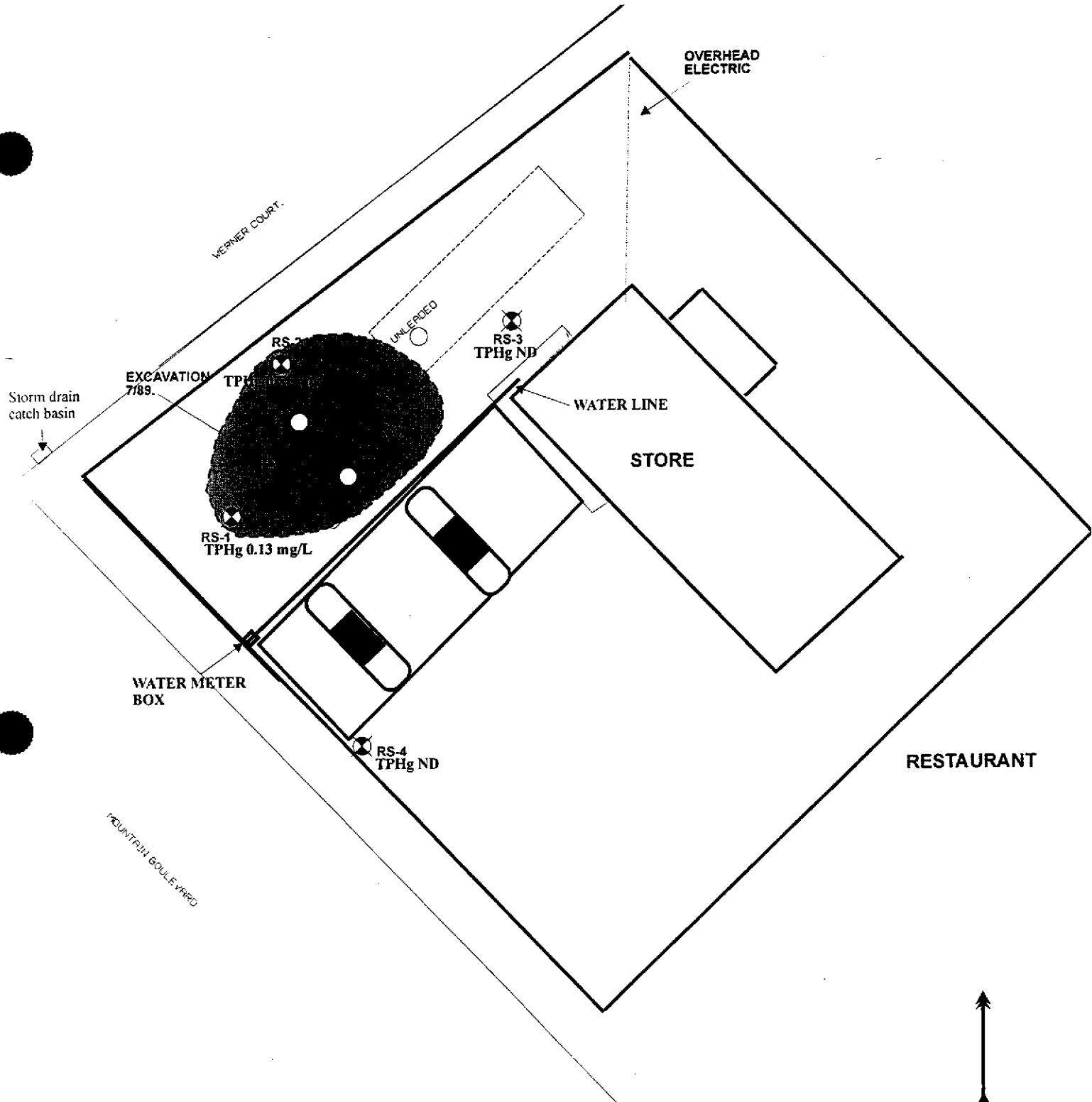


**SCALE: 1" = 20'**

 **GROUNDWATER  
MONITORING WELL.**

RS-1

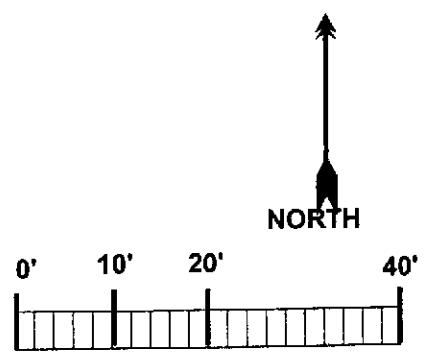
**GROUNDWATER GRADIENT CONTOUR  
INTERVAL IS 0.5 FEET.**



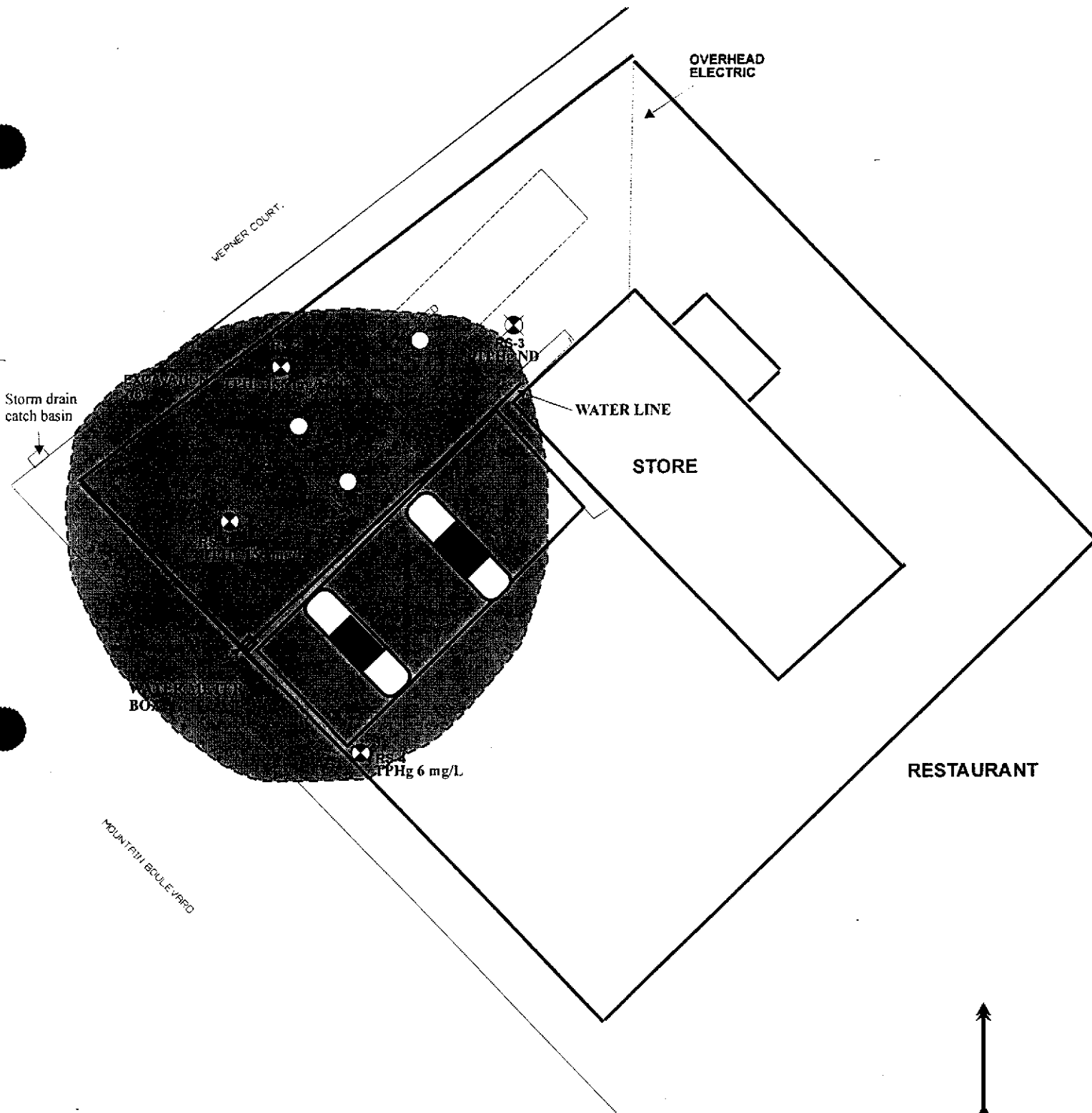
**FIGURE 5A**

**FORMER DESERT PETROLEUM #796  
2844 MOUNTAIN BOULEVARD  
OAKLAND, CALIFORNIA**

**SITE CONDITIONS - Gasoline Range Hydrocarbon Plume  
August 1994**



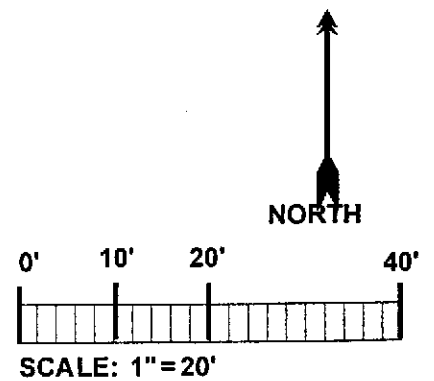
 **GROUNDWATER MONITORING WELL**  
RS-1



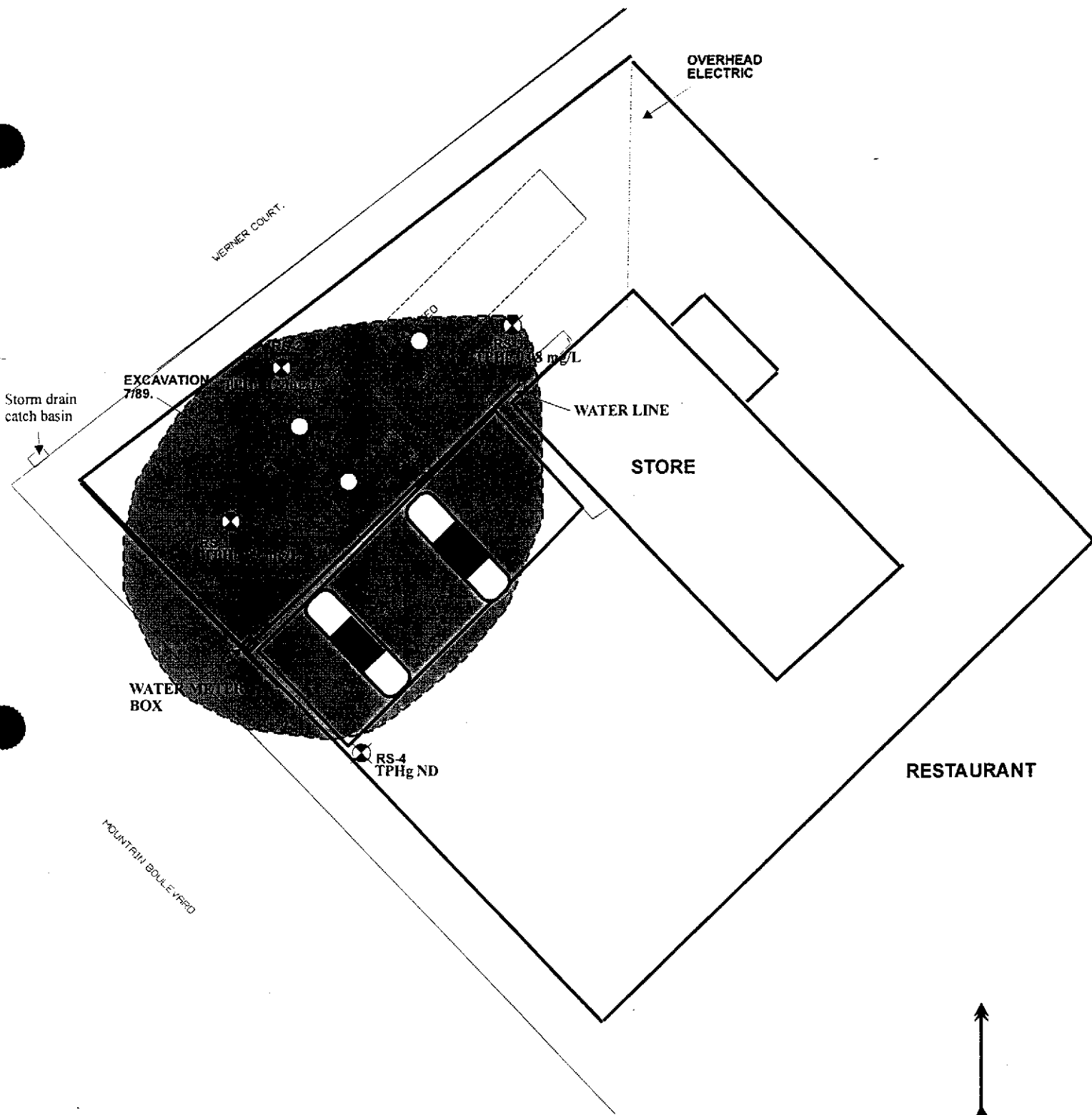
**FIGURE 5B**

**FORMER DESERT PETROLEUM #796  
2844 MOUNTAIN BOULEVARD  
OAKLAND, CALIFORNIA**

**SITE CONDITIONS - Gasoline Range Hydrocarbon Plume  
May 28, 1997**



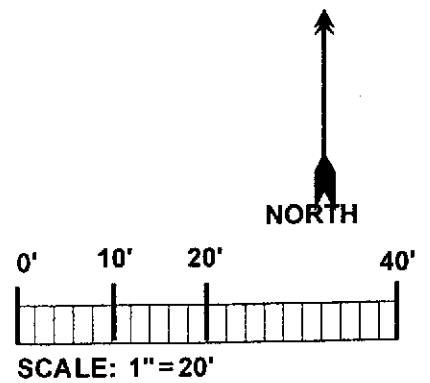

**GROUNDWATER MONITORING WELL**  
 RS-1



**FIGURE 5C**

**FORMER DESERT PETROLEUM #796  
2844 MOUNTAIN BOULEVARD  
OAKLAND, CALIFORNIA**

**SITE CONDITIONS - Gasoline Range Hydrocarbon Plume  
November 23, 1998**




**GROUNDWATER MONITORING WELL.**  
 RS-1

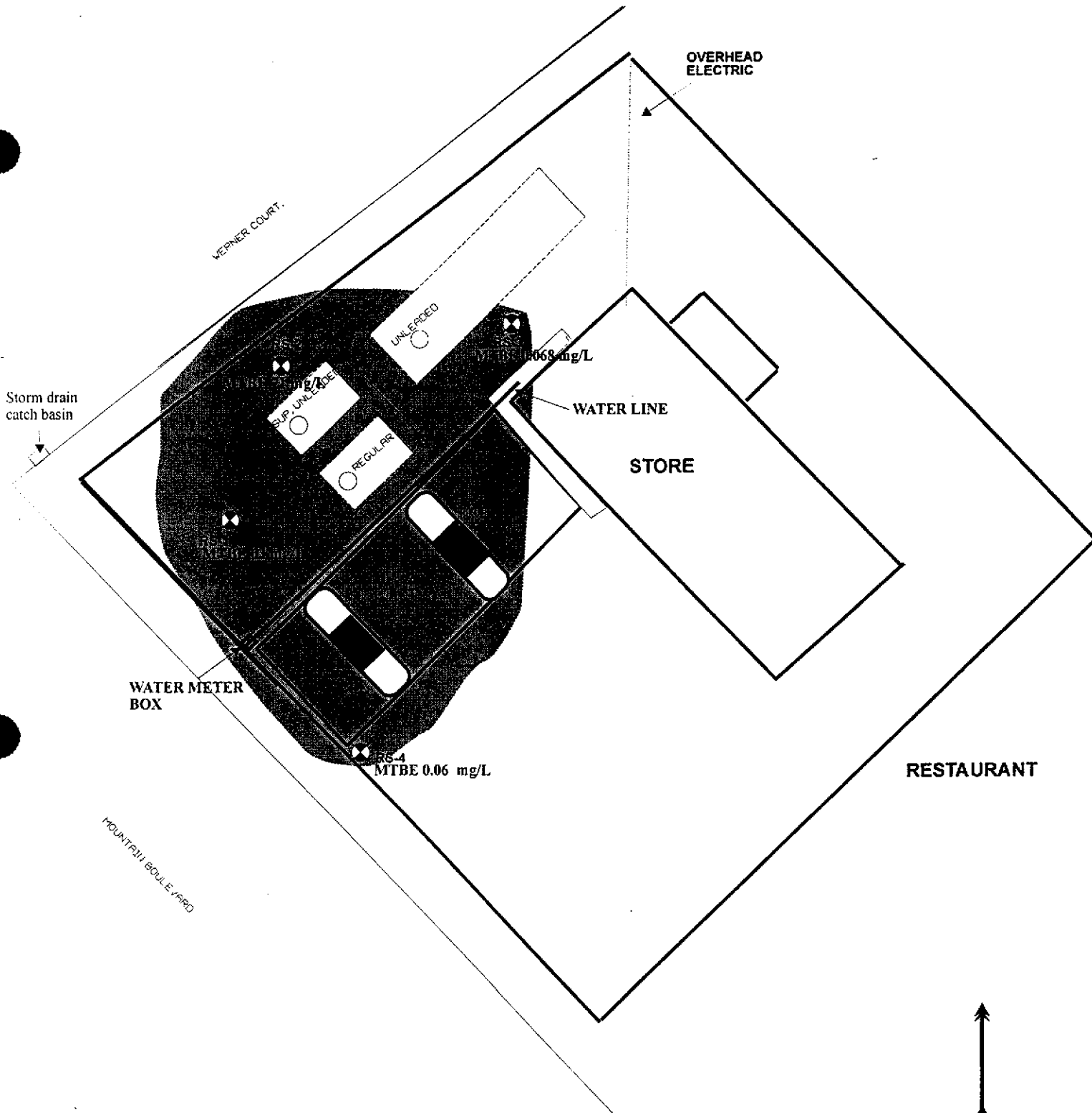
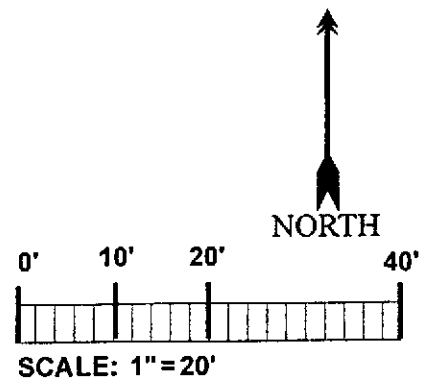


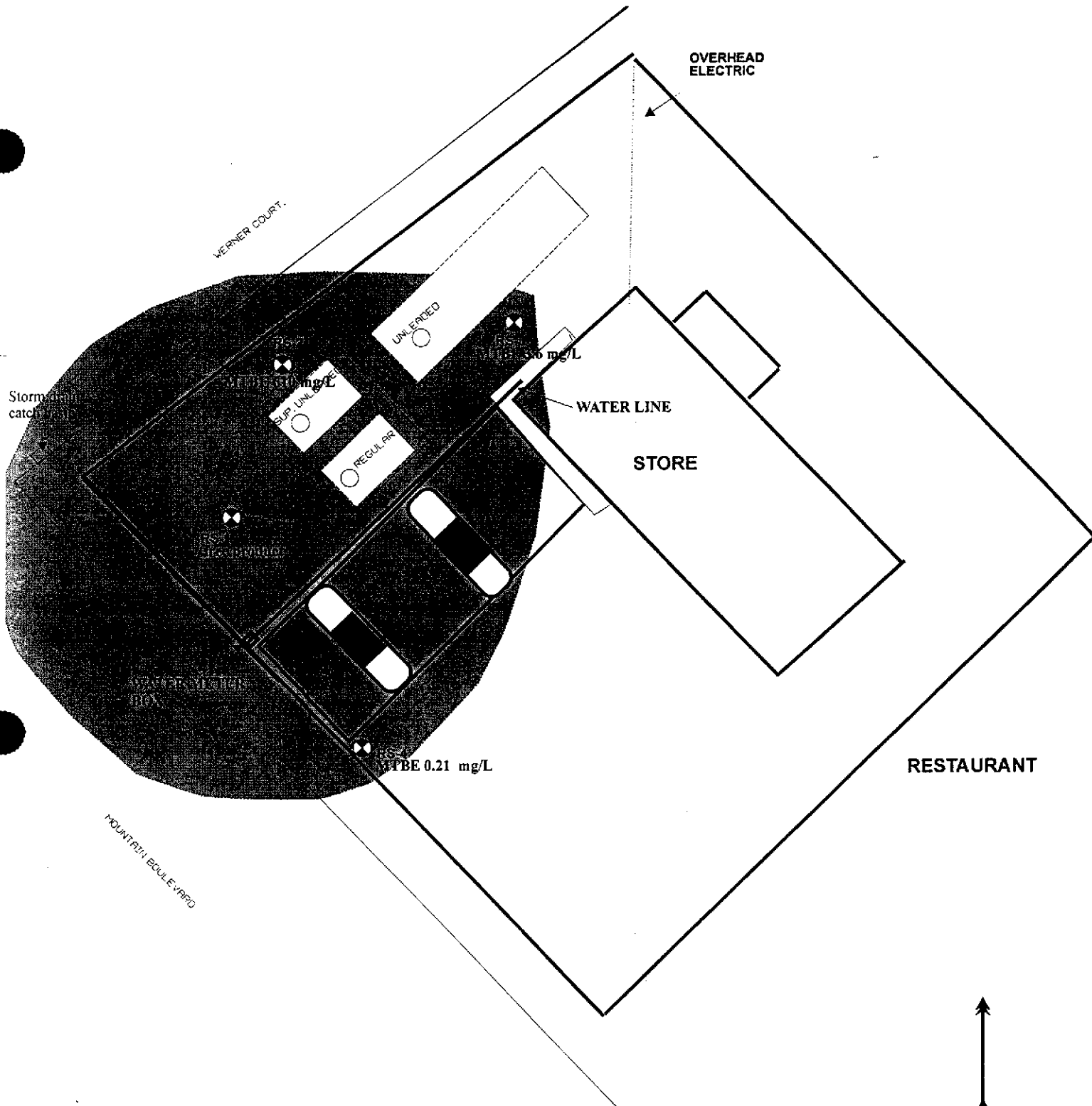
FIGURE 6A

FORMER DESERT PETROLEUM #796  
 2844 MOUNTAIN BOULEVARD  
 OAKLAND, CALIFORNIA

SITE CONDITIONS - MTBE Plume  
 June 1995'



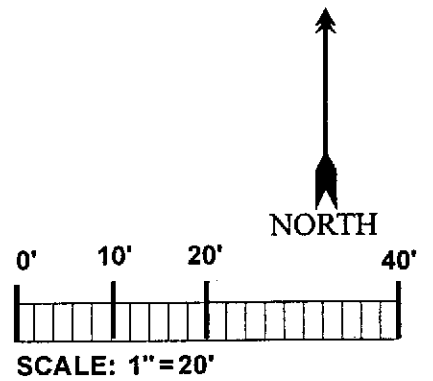

 GROUNDWATER  
 MONITORING WELL  
 RS-1



**FIGURE 6B**

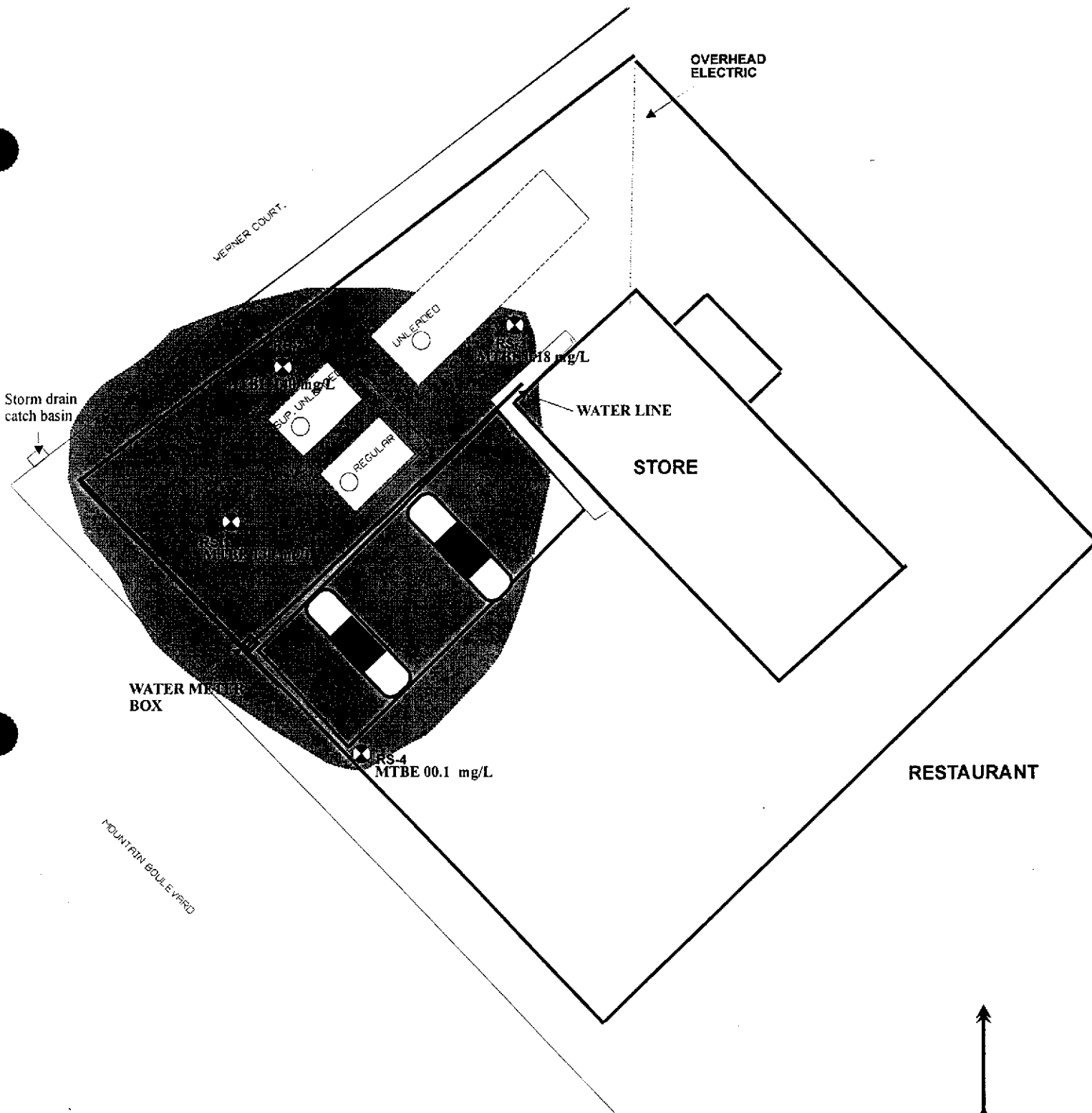
**FORMER DESERT PETROLEUM #796  
2844 MOUNTAIN BOULEVARD  
OAKLAND, CALIFORNIA**

**SITE CONDITIONS - MTBE Plume  
November 24, 1997**




**GROUNDWATER  
MONITORING WELL.**  
RS-1

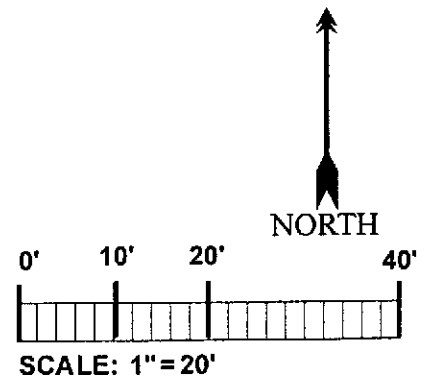




**FIGURE 6C**

**FORMER DESERT PETROLEUM #796  
2844 MOUNTAIN BOULEVARD  
OAKLAND, CALIFORNIA**

**SITE CONDITIONS - MTBE Plume  
November 23, 1998**



 **GROUNDWATER  
MONITORING WELL.**  
RS-1



# 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: <i>Western Geo-Engineers</i>	Report to: <i>SAME</i>	Phone: <i>530-668-5300</i>	Turnaround Time
Mailing Address: <i>1836 E. BEAMER ST WOODLAND, CA 95776-6003</i>	Billing to: <i>SAME</i>	Fax: <i>530-662-0273</i>	
		PO# / Billing Reference:	Date:
			Sampler: <i>BROADWAY</i>

Project / Site Address: <i>DP796 / 2814 Mountain Blvd OAKLAND</i>					Analysis Requested								Comments/Hazards
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	<i>TPH</i>	<i>BTEX</i>							
<i>RS-1</i>	<i>H<sub>2</sub>O</i>	<i>2 VOLS</i>	<i>HCL</i>	<i>11-24-98/1120</i>									
<i>RS-2</i>				<i>1103</i>									
<i>RS-3</i>				<i>1049</i>									
<i>RS-4</i>				<i>1138</i>									

Relinquished by: <i>Stephen J. Broadway</i>	Date: <i>11/24/98</i> Time: <i>1416</i>	Received by: <i>[Signature]</i>	Lab Comments
Relinquished by: <i>[Signature]</i>	Date: <i>11/25/98</i> Time: <i>1205</i>	Received by: <i>[Signature]</i>	
Relinquished by:	Date: Time:	Received by:	

# WELL SAMPLING DATA SHEET

SITE DP 796	DATE 11-24-98	TIME 1107
WELL RS-1	SAMPLED BY. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	7.10	DTB 29.60
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP LTT DAVID		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
1110	1st Bailer	71.3	7.26	3.11
1115	25 gal	71.8	7.36	3.10
1117	.5	71.6	7.28	3.10
1118	.5	71.6	7.22	3.09
1119	.5	71.5	7.20	3.08

FINAL VOLUME PURGED	26.5 gal
TIME SAMPLED	1130
SAMPLE ID.	RS-1
SAMPLE CONTAINERS	2/40cc VORS
ANALYSIS TO BE RUN	TPH, BTEX / MTBE
LABORATORY	NSE
NOTES:	1st Bailer Floating product strong odor product too thick enough to measure

# WELL SAMPLING DATA SHEET

SITE <i>DP 796</i>	DATE <i>11-24-98</i>	TIME <i>10:54</i>
WELL <i>RS-2</i>	SAMPLED BY. <i>BROADWAY</i>	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER <i>6.24</i> DTB <i>25.02</i>		
FLUID ELEVATION		
BAILER TYPE <i>Disposable Bailed</i>		
PUMP <i>LTT DAVID</i>		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
<i>1055</i>	<i>1st Bailer</i>	<i>70.8</i>	<i>6.83</i>	<i>2.83</i>
<i>1059</i>	<i>30 gal</i>	<i>70.6</i>	<i>6.96</i>	<i>2.82</i>
<i>1101</i>	<i>5'</i>	<i>70.9</i>	<i>7.00</i>	<i>2.82</i>

FINAL VOLUME PURGED <i>30.5 gal</i>
TIME SAMPLED <i>11:03</i>
SAMPLE ID. <i>RS-2</i>
SAMPLE CONTAINERS <i>2/40cc VORs</i>
ANALYSIS TO BE RUN <i>TPH, BTEX / MTBE</i>
LABORATORY USE
NOTES: <i>1st Bailer slightly turbidity / particulate some color</i>

# WELL SAMPLING DATA SHEET

SITE DP 796	DATE 11-23-98	TIME
WELL RS-3	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 5.58 DTB 24.40		
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP LTT David		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
10:42	1st Bailer	68.6	7.39	2.07
10:44	30 gal	69.5	7.24	2.54
10:46	.5	70.0	7.33	2.56
10:48	.5	70.1	7.34	2.55

FINAL VOLUME PURGED 31 gal
TIME SAMPLED 1049
SAMPLE ID. RS-3
SAMPLE CONTAINERS 2/40cc VORs
ANALYSIS TO BE RUN TPHg BTEX / MTBE
LABORATORY USE
NOTES: 1st Bailer CLEAR No odor

# WELL SAMPLING DATA SHEET

SITE DP 796	DATE 11-24-98	TIME 11:22
WELL RS-4	SAMPLED BY. K. BROADWAY	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER 8.50 DTB 25.14		
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP LTT DAVID		

WELL PURGING RECORD				
TIME	VOLUME REMOVED	TEMP.	pH	COND.
11:24	1st Bailer	71.1	6.87	2.73
11:30	30 gal	71.1	7.07	2.85
11:32	.5	71.1	7.13	2.96
11:34	.5	71.1	7.22	2.83
11:36	.5	71.1	7.23	2.82

FINAL VOLUME PURGED 31.5 gal
TIME SAMPLED 11:38
SAMPLE ID. RS-4
SAMPLE CONTAINERS 2/40cc VORs
ANALYSIS TO BE RUN TPH, BTEX / MTBE
LABORATORY USE
NOTES: 1st Bailer slight turbidity / precipitate slight odor
<i>[Signature]</i>

# LAWRENCE TANK TESTING, INC.

PO BOX 407, DOWNEYVILLE, CALIFORNIA 95936  
 PHONE 916-289-3109 - FAX 916-289-1322

## WELL SHEET

TECHNICIAN DAVID

INVOICE NO. \_\_\_\_\_  
 DATE NOV 24 1998

SITE NAME #796 OAKLAND  
 ADDRESS MOUNTAIN  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_  
 PHONE \_\_\_\_\_

CUSTOMER WESTERN GEO  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_  
 PHONE \_\_\_\_\_

WELL NO. DESCRIPTION OF WORK PERFORMED

WELL NO.	DESCRIPTION OF WORK PERFORMED
	<u>GALLOUS PURGED</u>
<u>RS 3 30</u>	
<u>RS 2 30</u>	
<u>RS 1 25</u>	
<u>RS 4 30</u>	

RATES		MATERIALS USED			
LABOR AND TRAVEL TIME \$	PER HOUR		QTY	PRICE	TOTAL
PER MILEAGE \$					
ARRIVAL TIME		HOURS	MINUTES	TOTAL OF MATERIALS \$	
DEPARTURE TIME		<u>10</u>	<u>15</u>	TOTAL OF LABOR \$	
TOTAL TIME AT SITE		<u>12</u>	<u>00</u>	TRAVEL TIME FROM _____ TO _____ \$	
TRAVEL TIME FROM _____ TO _____ \$					
TOTAL MILEAGE _____ \$					
		JOB TOTAL \$ _____			



# North State Environmental Analytical Laboratory

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

98-102

Chain of Custody / Request for Analysis  
Lab Job No.: \_\_\_\_\_ Page 1 of 1

Client: <u>Wege</u>	Report to: <u>Wege</u>	Phone: <u>530 668 5300</u>	Turnaround Time
Mailing Address: <u>1386 E Beama St Woodland, CA 95660</u>	Billing to: <u>Wege</u>	Fax: <u>530 662 0273</u>	
		PO# / Billing Reference:	Date: <u>11-9-98</u>
			Sampler: <u>Converse</u>

Project / Site Address: <u>DP796</u>					Analysis Requested					Comments/Hazards
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TOTALS - RTE	M T B E 8260				
<u>Retaining Wall</u>	<u>water</u>	<u>2/veg's</u>	<u>HCl</u>	<u>11-9-98 / 3:00 PM</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Relinquished by: <u>[Signature]</u>	Date: <u>11/11/98</u> Time: <u>13:05</u>	Received by: <u>[Signature]</u>	Lab Comments
Relinquished by: <u>[Signature]</u>	Date: <u>11/11/98</u> Time: <u>14:40</u>	Received by: <u>[Signature]</u>	
Relinquished by:	Date: Time:	Received by:	





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: 98-1502  
Client: Western Geo-Engineers  
Project: DP796

Date Reported: 11/25/98

Gasoline Range Hydrocarbons by Method 8015M  
MTBE, Benzene, Toluene, Ethylbenzene and Xylenes by 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1502-01	Client ID: RETAINING WALL			11/09/98	WATER
Gasoline	8015M	ND			11/19/98
Benzene	8020	ND			
Ethylbenzene	8020	ND			
Toluene	8020	ND			
Xylenes	8020	3.1	ug/L		



North State Environmental  
Chemical Waste Disposal · Trucking · Consulting

## CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 98-1502  
Client: Western Geo-Engineers  
Project: DP796

Date Reported: 11/25/98

Gasoline Range Hydrocarbons by Method 8015M  
MTBE, Benzene, Toluene, Ethylbenzene and Xylenes by 8020

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Gasoline	8015M	50	ug/L	ND	97	3
Benzene	8020	0.5	ug/L	ND	104	4
Ethylbenzene	8020	0.5	ug/L	ND	104	3
Toluene	8020	0.5	ug/L	ND	105	16
Xylenes	8020	1.0	ug/L	ND	109	50

ELAP Certificate NO:1753

Reviewed and Approved

John A. Murphy, Laboratory Director

Page 2 of 2

P. O. Box 5624 · South San Francisco, California 94083 · 650-588-2838 FAX 588-1950



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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: 98-1502  
Client : Western Geo-Engineers  
Project : DP796

Date Sampled : 11/09/98  
Date Analyzed: 11/19/98  
Date Reported: 11/25/98

Volatile Organics by GC/MS Method 8260

Laboratory Number	98-1502-01
Client ID	RETAINING
Matrix	WATER
Analyte	ug/L
MTBE	ND<1



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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

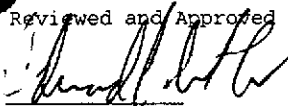
Job Number: 98-1502  
Client : Western Geo-Engineers  
Project : DP796

Date Sampled : 11/09/98  
Date Analyzed: 11/19/98  
Date Reported: 11/25/98

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

Laboratory Number	98-1502	MS/MSD	RPD
Client ID	Blank	Recovery	
Matrix	WATER	WATER	
Analyte	Results ug/L	%Recoveries	
Methyl-t-Butyl Ether	ND<1		
1,1-Dichloroethene	ND<1	46	6
Benzene	ND<1	134	9
Trichloroethene	ND<1	86	13
Toluene	ND<1	116	8
Chlorobenzene	ND<1	123	4
SUR-Dibromofluoromethane	129% Rec	141/143	2
SUR-Toluene-d8	108% Rec	109/113	4
SUR-4-Bromofluorobenzene	92% Rec	92/91	1

Reviewed and Approved

  
John A. Murphy  
Laboratory Director



# North State Environmental Analytical Laboratory

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

981586

Chain of Custody / Request for Analysis  
Lab Job No.: \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_

Client: <i>Western Geo-Engineers</i>	Report to: <i>Same</i>	Phone: <i>530-668-5300</i>	Turnaround Time
Mailing Address: <i>1836 E. Beamer St Woodland, CA 95776-6003</i>	Billing to: <i>Same</i>	Fax: <i>530-662-0273</i>	
		PO# / Billing Reference:	Date:
			Sampler: <i>Broadway</i>

Project / Site Address: <i>DP796 / 2844 Mountain Blvd Oakland</i>					Analysis Requested							Comments/Hazards
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	<i>TPH</i>	<i>BTEX</i>						
<i>RS-1</i>	<i>H<sub>2</sub>O</i>	<i>2 VORS</i>	<i>NCL</i>	<i>11-24-98/1120</i>								
<i>RS-2</i>				<i>1103</i>								
<i>RS-3</i>				<i>1049</i>								
<i>RS-4</i>				<i>1138</i>								

Relinquished by: <i>Stephen Z Broadway</i>	Date: <i>11-24-98</i> Time: <i>14:16</i>	Received by: <i>E. Conner</i>	Lab Comments
Relinquished by: <i>[Signature]</i>	Date: <i>11/25/98</i> Time: <i>10:05</i>	Received by: <i>[Signature]</i>	
Relinquished by:	Date: Time:	Received by:	



North State Environmental  
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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: 98-1586  
Client: Western Geo-Engineers  
Project: 2844 Mountain Blvd. /DP796

Date Reported: 12/02/98

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1586-01 Client ID: RS-1				11/24/98	WATER
Gasoline	8015M	99000	ug/L		12/03/98
Benzene	8020	2600	ug/L		
Ethylbenzene	8020	2500	ug/L		
MTBE	8020	*130000	ug/L		
Toluene	8020	5800	ug/L		
Xylenes	8020	18000	ug/L		
Sample: 98-1586-02 Client ID: RS-2				11/24/98	WATER
Gasoline	8015M	12000	ug/L		12/03/98
Benzene	8020	1200	ug/L		
Ethylbenzene	8020	ND<5	ug/L		
MTBE	8020	*140000	ug/L		
Toluene	8020	84	ug/L		
Xylenes	8020	960	ug/L		
Sample: 98-1586-03 Client ID: RS-3				11/24/98	WATER
Gasoline	8015M	85	ug/L		12/03/98
Benzene	8020	9	ug/L		
Ethylbenzene	8020	ND			
MTBE	8020	*180	ug/L		
Toluene	8020	23	ug/L		
Xylenes	8020	19	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: 98-1586  
Client: Western Geo-Engineers  
Project: 2844 Mountain Blvd. /DP796

Date Reported: 12/02/98

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1586-04		Client ID: RS-4		11/24/98	WATER
Gasoline	8015M	ND			12/03/98
Benzene	8020	2	ug/L		
Ethylbenzene	8020	ND			
MTBE	8020	*100	ug/L		
Toluene	8020	ND			
Xylenes	8020	ND			

\*Confirmed by GC/MS method 8260.



North State Environmental  
Chemical Waste Disposal · Trucking · Consulting

## CERTIFICATE OF ANALYSIS

### Quality Control/Quality Assurance

Lab Number: 98-1586  
Client: Western Geo-Engineers  
Project: 2844 Mountain Blvd. /DP796

Date Reported: 12/02/98

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Gasoline	8015M	50	ug/L	ND	112	4
Benzene	8020	0.5	ug/L	ND	104	0
Ethylbenzene	8020	0.5	ug/L	ND	91	0
Toluene	8020	0.5	ug/L	ND	102	3
Xylenes	8020	1.0	ug/L	ND	101	4
MTBE	8020	0.5	ug/L	ND	102	1

ELAP Certificate NO:1753

Reviewed and Approved

John A. Murphy, Laboratory Director

Page 4 of 4



## **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.

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

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. CO<sub>2</sub> measurement is obtained with a Draeger 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  $10 \text{ ul} \times 0.75 \text{ mg/L} / 11 = 7.5 \text{ mg/L}$ . 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).  $1 \text{ ug/l} \times 0.000001\text{g/ug} \times 0.0022051/\text{g} \times 28.32/\text{cf} = 0.00000006211\text{lb/cf}$

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

$$V = Q \times T = \text{cf/day} = \text{cf/min} \times 1440\text{min/day}$$

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

$$P = \text{Pressure} = 14.7 \text{ lb/in}^2 \text{ @ STP}$$

V = Volume cf

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

Using the Ideal Gas Law  $P_1V_1/T_1 = P_2V_2/T_2$

Solving for  $V_2 = P_1V_1T_2/P_2T_1$

Assuming  $P_1 = P_2 = 14.7 \text{ lb/in}^2$ , P cancels from the equation

Leaving  $V_2 = V_1T_2/T_1$ .

$V_1 = Q \text{ cf/m} \times 1440 \text{ min/day}$

$T_2 = 491.58\text{oR}$   $T_1 = 459.58 + T^{\text{OF}}$  at site.

$V_2 = Q \text{ cf/min} \times 1440 \text{ min/day} \times 491.58\text{oR}/(459.58\text{o} + T^{\text{OF}})$

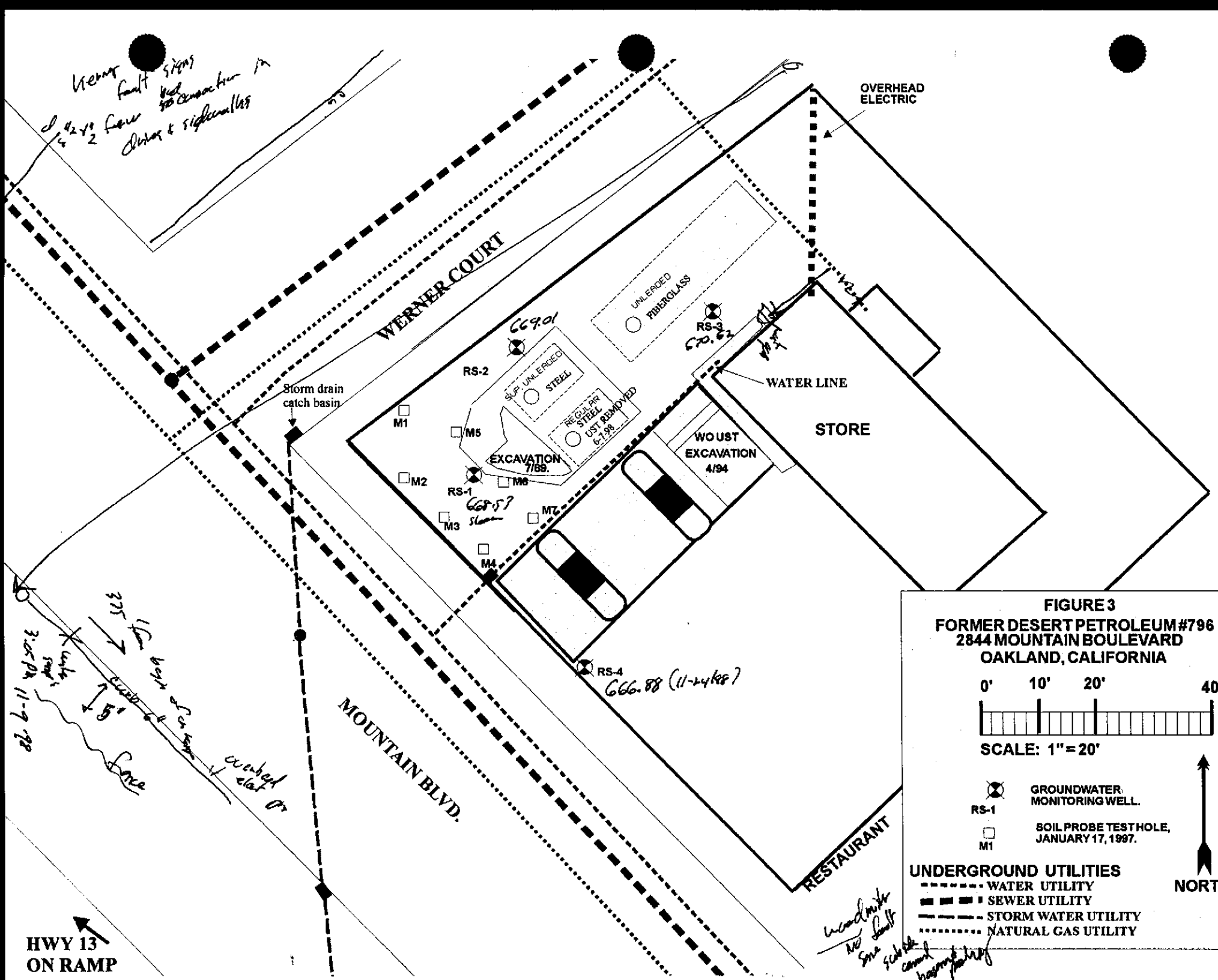
$X \text{ lb/day} = C \text{ ug/l} \times 0.0000000621 \text{ lb l/ug} \text{ cf} \times Q \text{ cf/min} \times 1440 \text{ min/day} \times 491.58\text{oR}/(459.58\text{o} + T^{\text{OF}})$

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 B of the sampling report.

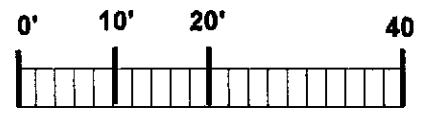


Kerns fault signs  
 2 1/2 yr sewer  
 2 dates & sightings

3.75' (1 inch) high 3' x 3' concrete  
 3.5' x 3.5' concrete  
 3.5' x 3.5' concrete  
 covered slot on

HWY 13 ON RAMP

**FIGURE 3**  
 FORMER DESERT PETROLEUM #796  
 2844 MOUNTAIN BOULEVARD  
 OAKLAND, CALIFORNIA



- GROUNDWATER MONITORING WELL.
- SOIL PROBE TEST HOLE, JANUARY 17, 1997.

- UNDERGROUND UTILITIES**
- WATER UTILITY
  - SEWER UTILITY
  - STORM WATER UTILITY
  - NATURAL GAS UTILITY



wood miter  
 no steel  
 schedule  
 cannot  
 has some patches



# North State Environmental Analytical Laboratory

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

Chain of Custody / Request for Analysis

Lab Job No.: \_\_\_\_\_ Page 1 of 1

Client: <i>Agri</i>	Report to: <i>Agri</i>	Phone: <i>530 668 5300</i>	Turnaround Time
Mailing Address: <i>175 E. Pierson St Woodland, CA 95666</i>	Billing to: <i>Agri</i>	Fax: <i>530 662 0273</i>	
		PO# / Billing Reference:	Date: <i>11-9-98</i>
			Sampler: <i>Convette</i>

Project / Site Address: <i>DP796</i>					Analysis Requested										Comments/Hazards			
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH <sub>3</sub> -BTEX	MTBE	5260											
<i>Return well</i>	<i>water</i>	<i>2/6A'</i>	<i>HCl</i>	<i>11-9-98 / 3:00 PM</i>	<i>✓</i>	<i>✓</i>												

Relinquished by: <i>Greg Conner</i>	Date: <i>11/11/98</i>	Time: <i>13:05</i>	Received by: <i>Bob [Signature]</i>	Time: <i>9:11</i>	Lab Comments
Relinquished by:	Date:	Time:	Received by:		
Relinquished by:	Date:	Time:	Received by:		

ALAMEDA COUNTY  
HEALTH CARE SERVICES



AGENCY  
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES

1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577  
(510) 567-6700  
(510) 337-9335 (FAX)

September 25, 1998

STID 851

Mr. Shahram Shahnazi  
140 Geldert Drive  
Tiburon, CA 94520

Mr. John Rutherford  
Desert Petroleum  
P.O. Box 1601  
Oxnard, CA 93030

TO:  
GEORGE CONVERSE : Info.  
(will confirm date)  
*[Signature]*

RE: 2844 Mountain Boulevard, Oakland

Dear Messrs. Shahnazi and Rutherford:

This letter is a request for a meeting to discuss the next phases of work needed to appropriately assess the extent of the releases at the subject site and fair apportionment of project responsibilities. I would like to schedule this meeting within the next 3 weeks.

Please contact me at (510) 567-6783 no later than Thursday, October 1, 1998 so that we may determine an amenable meeting date.

Sincerely,

*[Signature]*  
Scott O. Seery, CHMM  
Hazardous Materials Specialist

*meeting  
10-20-98*

cc: Mee Ling Tung, Director, Environmental Health  
Chuck Headlee, RWQCB  
Leroy Griffin, Oakland Fire Department  
Robert Weston, ACDEH