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August 20, 1997

Ms. Madhulla Logan  
Department of Environmental Health  
1131 Harbor Bay Parkway  
Room 250  
Alameda, California 94502

9/2/97

RE: Request for Closure  
**Thrifty Oil Station #052**  
20200 Hesperian Boulevard  
Hayward, California

Dear Ms Logan:

Presented herein is a request for closure prepared for Thrifty Oil Station #052 located at 20200 Hesperian Boulevard, Hayward, California. This closure request has been prepared in light of the findings from quarterly groundwater monitoring events performed during the last four quarters that ends April 30, 1997. Presented in this request for closure is a brief site description and recommendations for closure.

### **SITE DESCRIPTION**

Thrifty Station #052 is an active retail gasoline station leased to, and operated by ARCO as ARCO Station #5387. The site is located northeast of the intersection of Hesperian Boulevard and West 'A' street in Hayward, California (**figure 1**). Land use of the vicinity appears to be light commercial, with three active and one abandoned retail gas stations directly south of the site, near the said streets intersection. Site improvements include four dispenser islands and four underground storage tanks. The tanks and lines passed the tank tightness tests performed by independent contractors in 1987, 1990, 1991, and 1992. In 1993, automatic leak detector was installed.

### **Hydrocarbons in Soil**

Six separate site assessments events have been conducted at the site consisting of drilling and sampling of 29 soil borings and converting 10 borings into groundwater monitoring wells, 2 borings to recovery wells, 8 borings into sparge wells, 4 borings into vapor extraction wells, and one boring into dual sparge/vapor extraction well. Analytical results of soil samples collected during these assessments indicated a maximum TPH and benzene concentrations of only 160 parts per million (ppm) and 0.37 ppm, respectively, beneath the site (**figure 2**). Cummulative soil analyses data are summarized in Table 1. In general, gasoline constituents in soil are contained on site, mostly in the vicinity of the underground storage tanks and pump islands. These gasoline



constituents are limited vertically from 10 feet below grade to 14.5 feet below grade, which is the capillary fringe. For further details of soil conditions beneath the site, a reference list is provided at the end of this letter request.

### **Hydrocarbons in Groundwater**

A quarterly groundwater monitoring program was initiated in December 1991. Results of this program are summarized in Table 2. The maximum dissolved benzene concentration in groundwater reported during the April 1997 event was 0.4 micrograms per liter ( ug/L), detected in well A-10 located off site, west of Thrifty site. Other wells did not indicate the presence of benzene above the detection limit. Distribution of dissolved benzene in groundwater for April 1997 sampling event is shown in **figure 3**.

### **Source Removal**

Efforts to mitigate groundwater and soil was implemented in January 1994, by installing an air sparging and vapor extraction system at the site. The system was installed by Golden West Construction Company. On February 15, 1994, the remediation system began operation. A 150 cfm VR System internal combustion engine (ICE) coupled with a 3 HP, 25 cfm sparge blower were used to perform this task. The system operates under the Bay Area Air Quality Management District Permit to operate No. 11813. The system was shut off and removed from site on August, 1995.

### **REQUEST FOR CLOSURE**

Based on the following summary of site conditions, Thrifty proposes that no further assessment, corrective action, or monitoring be required.

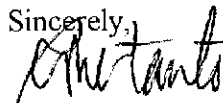
- 1) The extent of hydrocarbons in soil prior to initiation of remedial action appeared to be limited only to the capillary zone area beneath the tank and pump area, at low concentrations (maximum TPH in soil was 160 ppm; benzene 0.16 ppm).
- 2) Quarterly groundwater monitoring conducted since December 1991 has indicated the following:
  - \* No free phase hydrocarbons were detected in any of the wells within Thrifty site.
  - \* Dissolved hydrocarbons in groundwater are reducing. The historical trend of dissolved benzene in groundwater indicates a significant decline over time. Observations conducted in the last four quarters that ends April 30, 1997, indicated concentrations of less than 1 ug/L benzene in all of the wells, except well MW-2 which indicated concentrations of 1.7 ppb benzene when measured in October 1996. Observation during the first and second quarters of 1997, however indicated that none of the wells contained benzene at or greater than 1 ug/L.

- 3) Efforts to mitigate hydrocarbons impacted soil and groundwater has been conducted in February 1994 through August 1995 by way of groundwater sparging and vapor extraction.
- 4) All underground storage tanks and lines were tested to be tight by independent competent contractors in 1987, 1990, 1991, and 1992. Automatic leak detector was Installed in 1993.
- 5) Thrifty has no plans for alternate site usage.

Due to the apparent continued "plume" reduction in groundwater, prior mitigation effort, and continued effort to prevent unauthorized release of hydrocarbons as a source, Thrifty proposes that the use of active remediation not be required at the site, and any residual hydrocarbons be allowed to degrade naturally. Since 6 years of groundwater monitoring have shown a continued trend of "plume" reduction and stability, no additional monitoring should be required. Thrifty proposes no further action at this site, and upon receiving your concurrence with this request, will proceed to properly abandon all groundwater monitoring wells, sparging wells, and vapor extraction wells.

All interpretations expressed in this report are based upon review of data collected by Earth Management Co. Should you have any questions or require additional information, please contact either of the undersigned at (562)923-9876.

Sincerely,



Roi Hertanto  
Geologist



Bryan Van Wagner  
Registered Geologist #5820

cc: ARCO Products Co.

**Reference:**

Letter Report Vapor Extraction/Air Sparging System Start-Up and Quarterly Groundwater Monitoring, First Quarter 1994: Geo Strategies, Inc., June 30, 1994.

Well Installation report: Geo Strategies, Inc., June 23, 1994.

Additional remedial Investigation and Interim Remedial Action Plan: Geo Strategies, Inc., December 13, 1993.

Quarterly Monitoring Well Installation Report: Geo Strategies, Inc., January 29, 1993.

Continuing Site Assessment/Quarterly Monitoring Report, Third Quarter 1992:  
Geo Strategies, Inc., December 21, 1992.

Site Assessment Investigation Report: Groundwater Technology, Inc., August 221, 1986.

TABLE 1  
 CUMULATIVE SOIL ANALYSES DATA  
 ARCO Station 5387  
 Hayward, California

SAMPLE I.D.	SAMPLE DEPTH (FEET)	TPH-G or [TRPH] (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZE NE (PPM)	XYLENES (PPM)
<u>August 1986</u>						
MW-1	9-9.5	[ < 10 ]	N/A	N/A	N/A	N/A
MW-2	9-9.5	[ < 10 ]	N/A	N/A	N/A	N/A
MW-3	11-11.5	[ < 10 ]	N/A	N/A	N/A	N/A
SB-1	9-9.5	[ < 10 ]	N/A	N/A	N/A	N/A
SB-2	9-9.5	[ 49 ]	N/A	N/A	N/A	N/A
SB-3	9-9.5	[ 42 ]	N/A	N/A	N/A	N/A
SB-4	9-9.5	[ 20 ]	N/A	N/A	N/A	N/A
<u>October 1991</u>						
A-4-10	10	24	0.012	0.042	0.072	0.052
A-4-15	15	< 1.0	0.011	< 0.0050	0.028	0.0080
A-5-10	10	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
A-5-15	15	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
A-6-10	10	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
A-6-15	15	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
<u>December 1991</u>						
A-7-9.5	9.5	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
A-7-14.5	14.5	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
<u>August 1992</u>						
A-8-10.0	10	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050
A-9-10.0	10	< 1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050

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 ARCO Station 5387  
 Hayward, California

SAMPLE I.D.	SAMPLE DEPTH (FEET)	TPH-G or (TRPH) (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZE NE (PPM)	XYLENES (PPM)
<u>August 1992 cont.</u>						
A-9-15.0	15	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AR-1-10.0	10	1.0	0.16	<0.0050	0.039	<0.0050
AR-1-14.5	14.5	8.8	0.030	<0.0050	0.060	0.070
<u>November 1992</u>						
A-10-13.0	13	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-10-16.5	16.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
<u>March 1993</u>						
A-A-10.0 (AV-1)	10	4.4	0.022	<0.0050	0.033	0.030
A-A-15.0 (AV-1)	15	32	0.12	0.042	0.38	0.22
A-B-10.0 (AV-2)	10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-B-15.0 (AV-2)	15	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-C-10.0 (AV-3)	10	1.0	0.010	0.0060	0.050	0.0080
A-C-15.0 (AV-3)	15	11	0.027	0.081	0.11	0.52
AS-1-10.0	10	<1.0	<0.0050	<0.0050	<0.0050	0.0070
AS-1-15.0	15	17	0.027	0.012	0.090	0.16
AS-2-10.0	10	1.3	0.042	<0.0050	<0.0050	0.020
AS-2-15.0	15	26	0.085	0.012	0.26	0.22
AR-2-10.0	10	<1.0	0.11	<0.0050	<0.0050	0.022
AR-2-15.0	15	16	0.061	0.015	0.14	0.56
<u>December 1993</u>						
AV-4-6.5	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AV-4-11.5	11.5	<1.0	0.048	<0.0050	<0.0050	<0.0050
AV-4-15.5	15.5	2.7	0.030	<0.0050	0.12	0.063

TABLE 1  
 CUMULATIVE SOIL ANALYSES DATA  
 ARCO Station 5387  
 Hayward, California

SAMPLE I.D.	SAMPLE DEPTH (FEET)	TPH-G or (TRPH) (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZE NE (PPM)	XYLENES (PPM)
<u>December 1993 cont.</u>						
AS-3-6.5	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-3-11.5	11.5	<1.0	0.0068	<0.0050	<0.0050	<0.0050
AS-3-39.5	39.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-4-11.5	11.5	3.0	0.18	0.0062	0.15	0.22
AS-4-34.5	34.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-5-6.5	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-5-11.5	11.5	1.7	0.067	<0.0050	0.073	0.049
AS-5-16.5*	16.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-5-36.5*	36.5	110	<0.125	<0.125	1.7	1.4
AS-7-6.5	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-7-11.5	11.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-7-16.5	16.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-7-36.5	36.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-8-6.5	6.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-8-11.5	11.5	2.8	0.016	<0.0050	0.048	0.0068
AS-8-16.5	16.5	54	0.093	<0.010	0.84	2.8
AS-8-40.5	40.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
AS-9-6.5	6.5	<1.0	0.011	<0.0050	0.058	0.035
AS-9-11.5	11.5	20	0.032	0.026	0.18	0.69
AS-9-16.5	16.5	160	<0.025	<0.025	1.4	0.53
AS-9-40.5	40.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
<u>January 1994</u>						
AS-6-4.5	4.5	<1.0	0.0060	<0.0050	<0.0050	<0.0050
AS-6-10	10	2.4	0.13	0.0060	0.055	<0.0050

TABLE 1

CUMULATIVE SOIL ANALYSES DATA  
 ARCO Station 5387  
 Hayward, California

SAMPLE I.D.	SAMPLE DEPTH (FEET)	TPH-G or (TRPH) (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZE NE (PPM)	XYLENES (PPM)
<u>January 1994 cont.</u>						
AS-6-14.5	14.5	56	0.37	<0.05	0.97	0.097
AS-6-34	34	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

- TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline (analyzed using EPA Method 8015).
- TRPH = Total Recoverable Petroleum Hydrocarbons (analyzed using EPA Method 418.1).
- PPM = Parts Per Million.
- N/A = Not Analyzed.
- \* = Sample results appear to be anomalous compared to adjacent borings, possibly switched in the field or laboratory.

Sample Identification:

AS-6-34





**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPII (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	EthylBenzene (ug/L)	XYLENE (ug/L)	MIBK (ug/L)					
<b>Monitoring Well AR-1</b>											
09/14/92	820	67	<1.0	8.8	6.7	-	15.21	NP	0.00	38.11	22.90
11/12/92	140	66	<0.50	4.3	3.7	-	15.36	NP	0.00	38.11	22.75
02/11/93	360	190	<2.5	8.6	<2.5	-	12.81	NP	0.00	38.11	25.30
04/14/93	420	240	5.2	30	8.7	-	11.77	NP	0.00	38.11	26.34
08/12/93	370	150	<2	11	<2	-	13.55	NP	0.00	38.11	24.56
10/26/93	240	98	<2	11	<2	-	13.98	NP	0.00	38.11	24.13
02/17/94	4,700	1,100	<10	140	26	-	12.15	NP	0.00	37.46	25.31
05/03/94	620	130	1.3	48	4.3	-	12.03	NP	0.00	37.46	25.43
08/17/94	3,600	630	<5	200	12	-	12.92	NP	0.00	37.33	24.41
11/18/94	12,100	720	6.1	337	15	-	12.41	NP	0.00	37.33	24.92
09/26/95	ND	8.3	ND	ND	ND	-	11.34	NP	0.00	37.46	26.12
12/06/95	120	20	ND	20	0.6	-	11.87	NP	0.00	37.46	25.59
02/14/96	ND	ND	ND	ND	0.52	-	10.48	NP	0.00	37.46	26.98
10/29/96	ND	ND	0.99	ND	ND	-	11.80	NP	0.00	37.46	25.66
01/29/97	<50	0.41	<0.3	<0.3	<0.3	<20	11.25	NP	0.00	37.46	26.21
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	12.24	NP	0.00	37.46	25.22
<b>Monitoring Well AR-2</b>											
03/30/93	390	4.1	1.6	<0.5	47	-	11.53	NP	0.00	38.39	26.86
04/14/93	310	18	<0.5	0.67	36	-	11.87	NP	0.00	38.39	26.52
08/12/93	130	16	<0.5	1.7	0.57	-	13.59	NP	0.00	38.39	24.80
10/26/93	110	15	<0.5	1.8	<0.5	-	14.25	NP	0.00	38.39	24.14
02/17/94	130	2.9	<0.5	15	0.8	-	12.76	NP	0.00	37.98	25.22
05/03/94	<50	<0.5	<0.5	<0.5	<0.5	-	12.60	NP	0.00	37.98	25.38
08/17/94	3,000	140	140	220	91	-	13.86	NP	0.00	38.18	24.32
11/18/94	623	10.5	10.5	27.9	8	-	13.33	NP	0.00	38.18	24.85
09/26/95	ND	ND	ND	ND	ND	-	11.67	NP	0.00	37.98	26.31
12/06/95	320	12	12	23	2.1	-	12.32	NP	0.00	37.98	25.66
02/14/96	ND	ND	ND	ND	0.76	-	10.74	NP	0.00	37.98	27.24
10/29/96	ND	ND	ND	ND	ND	-	11.95	NP	0.00	37.98	26.03
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	11.35	NP	0.00	37.98	26.63
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	12.15	NP	0.00	37.98	25.83
<b>Monitoring Well-1</b>											
08/08/86	7,040	132	8.7	439	230	-	11.25	NP	0.00	38.36	27.11

**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	Ethylbenzene (ug/L)	XYLENE (ug/L)	MTHB (ug/L)					
12/24/91	2,200	190	8.5	6.9	2.6	-	16.12	NP	0.00	38.36	22.24
03/10/92	2,800	270	29	56	39	-	13.34	NP	0.00	38.36	25.02
06/09/92	2,900	960	27	99	63	-	14.12	NP	0.00	38.36	24.24
09/14/92	2,600	450	<5.0	45	21	-	15.34	NP	0.00	38.36	23.02
11/12/92	1,600	310	7.2	22	8.9	-	15.46	NP	0.00	38.36	22.90
02/11/93	4,000	510	47	200	91	-	11.95	NP	0.00	38.36	26.41
04/14/93	1,700	260	20	100	70	-	11.65	NP	0.00	38.36	26.71
08/12/93	830	60	3.8	39	3.6	-	12.93	NP	0.00	38.36	25.43
10/26/93	8,800	140	<10	41	<10	-	14.13	NP	0.00	38.36	24.23
02/17/94	1,200	130	12	54	58	-	11.86	NP	0.00	37.26	25.40
05/03/94	-	-	-	-	-	-	11.58	NP	0.00	37.26	25.68
08/17/94	3,900	86	5.1	78	9.4	-	12.78	NP	0.00	37.33	24.55
11/18/94	6,350	112	8.4	107	35	-	12.31	NP	0.00	37.33	25.02
09/26/95	ND	ND	ND	ND	ND	-	11.26	NP	0.00	37.26	26.00
12/06/95	4,100	0.86	0.46	0.38	0.92	-	12.16	NP	0.00	37.26	25.10
02/14/96	ND	ND	0.56	ND	0.82	-	8.53	NP	0.00	37.26	28.73
10/29/96	130	ND	ND	ND	ND	-	10.23	NP	0.00	37.26	27.03
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	8.15	NP	0.00	37.26	29.11
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	8.05	NP	0.00	37.26	29.21
<b>Monitoring Well-2</b>											
08/08/86	1,910	20.1	2.8	1.8	-	-	11.62	NP	0.00	38.58	26.96
12/24/91	23,000	1,500	1,100	480	1,400	-	16.50	NP	0.00	38.58	22.08
03/10/92	210,000	44,000	3,900	1,700	5,800	-	13.50	NP	0.00	38.58	25.08
06/09/92	33,000	2,300	370	780	2,600	-	14.52	NP	0.00	38.58	24.06
09/14/92	16,000	3,700	10	470	1,000	-	15.78	NP	0.00	38.58	22.80
11/12/92	16,000	3,800	86	470	910	-	15.98	NP	0.00	38.58	22.60
02/11/93	27,000	3,500	720	1,600	380	-	12.27	NP	0.00	38.58	26.31
04/14/93	27,000	3,500	220	2,200	5,100	-	12.01	NP	0.00	38.58	26.57
08/12/93	16,000	1,600	27	1,300	1,200	-	13.81	NP	0.00	38.58	24.77
10/26/93	12,000	1,200	<25	510	330	-	14.53	NP	0.00	38.58	24.05
02/17/94	15,000	1,800	21	850	540	-	12.81	NP	0.00	38.58	25.77
05/03/94	-	-	-	-	-	-	12.63	NP	0.00	38.58	25.95
08/17/94	14,000	850	13	640	270	-	13.69	NP	0.00	37.99	24.30
11/18/94	14,900	640	3.4	532	156	-	13.18	NP	0.00	38.06	24.88
09/26/95	5,100	40	25	2.5	18	-	12.23	NP	0.00	37.99	25.76

**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	EthylBenzene (ug/L)	XYLENE (ug/L)	MTHB (ug/L)					
12/06/95	810	34	23	11	11	-	12.82	NP	0.00	37.99	25.17
02/14/96	420	0.75	0.54	0.64	0.53	-	10.87	NP	0.00	37.99	27.12
10/29/96	670	1.7	1.3	0.6	0.8	-	12.95	NP	0.00	37.99	25.04
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	11.15	NP	0.00	37.99	26.84
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	11.09	NP	0.00	37.99	26.90
<b>Monitoring Well-3</b>											
08/08/86	7,450	510	549	409	1,380	-	10.61	NP	0.00	37.77	27.16
12/24/91	6,800	450	10	610	45	-	15.60	NP	0.00	37.77	22.17
03/10/92	11,000	2,500	75	400	560	-	12.90	NP	0.00	37.77	24.87
06/09/92	16,000	2,000	69	1,300	2,600	-	13.60	NP	0.00	37.77	24.17
09/14/92	14,000	630	<50	1,500	2,400	-	14.78	NP	0.00	37.77	22.99
11/12/92	7,400	400	<25	860	330	-	14.92	NP	0.00	37.77	22.85
02/11/93	8,600	580	<20	710	300	-	11.65	NP	0.00	37.77	26.12
04/14/93	6,900	300	8.8	580	99	-	11.16	NP	0.00	37.77	26.61
08/12/93	3,400	56	<5	190	<5	-	12.82	NP	0.00	37.77	24.95
10/26/93	2,900	42	<10	76	<10	-	13.60	NP	0.00	37.77	24.17
02/17/94	3,100	160	<10	36	8.6	-	11.53	NP	0.00	36.80	25.27
05/03/94	2,300	44	<2.5	8	<2.5	-	11.36	NP	0.00	36.80	25.44
08/17/94	1,900	7	<9.5	4.4	<5	-	12.38	NP	0.00	36.87	24.49
11/18/94	909	1.1	<0.5	0.9	4	-	11.93	NP	0.00	36.87	24.94
09/26/95	410	1.3	1.9	2.3	3.3	-	10.96	NP	0.00	36.80	25.84
12/06/95	-	0.9	4.6	3	4.3	-	11.56	NP	0.00	36.80	25.24
02/14/96	99	ND	0.49	0.46	ND	-	7.47	NP	0.00	36.80	29.33
10/29/96	250	0.7	0.6	ND	ND	-	9.80	NP	0.00	36.80	27.00
01/29/97	170	<0.3	<0.3	<0.3	<0.5	<20	7.50	NP	0.00	36.80	29.30
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	12.10	NP	0.00	36.80	24.70
<b>Monitoring Well A-1</b>											
03/06/91	34,000	11,000	870	2,500	2,100	-	13.22	NP	0.00	39.46	26.24
12/24/91	1,900	29	1.9	25	29	-	17.60	NP	0.00	39.86	22.26
03/10/92	7,400	37	<0.60	11	73	-	14.76	NP	0.00	39.86	25.10
06/09/92	4,500	3.2	1.5	37	16	-	15.63	NP	0.00	39.86	24.23
09/14/92	1,300	<2.5	2.5	61	6.8	-	16.83	NP	0.00	39.86	23.03
11/12/92	610	7.2	0.98	34	0.97	-	16.97	NP	0.00	39.86	22.89
02/11/93	740	2.4	<0.5	5	3.5	-	13.43	NP	0.00	39.86	26.43

**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	EthylBenzene (ug/L)	XYLENE (ug/L)	MTBE (ug/L)					
04/14/93	380	<0.5	<0.5	10	1.6	-	13.06	NP	0.00	39.86	26.80
08/12/93	1,200	0.93	<0.5	0.91	<0.5	-	14.94	NP	0.00	39.86	24.92
10/26/93	160	<0.5	<0.5	1	<0.5	-	15.52	NP	0.00	39.86	24.34
02/17/94	320	0.5	<0.5	28	0.9	-	14.02	NP	0.00	39.46	25.44
05/03/94	130	<0.5	<0.5	1.1	<0.5	-	13.85	NP	0.00	39.46	25.61
08/17/94	62	<0.5	<0.5	<0.5	<0.5	-	14.95	NP	0.00	39.53	24.58
11/18/94	98	1.3	0.6	<0.5	<0.5	-	14.46	NP	0.00	39.53	25.07
12/06/95	ND	0.6	ND	ND	ND	-	13.82	NP	0.00	39.53	25.71
02/14/96	ND	ND	2.3	ND	0.71	-	11.24	NP	0.00	39.53	28.29
10/29/96	140	ND	ND	ND	ND	-	13.50	NP	0.00	39.53	26.03
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	12.65	NP	0.00	39.53	26.88
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	13.97	NP	0.00	39.53	25.56
<b>Monitoring Well A-5</b>											
12/24/91	1,600	21	<0.30	32	52	-	16.85	NP	0.00	38.94	22.09
03/10/92	1,000	1.6	<0.30	43	100	-	13.83	NP	0.00	38.94	25.11
06/09/92	680	34	<1.5	14	16	-	14.91	NP	0.00	38.94	24.03
09/14/92	770	12	<0.30	51	65	-	16.14	NP	0.00	38.94	22.80
11/12/92	520	3	<2.5	29	36	-	16.35	NP	0.00	38.94	22.59
02/11/93	150	1.6	0.96	5.1	1.5	-	13.21	NP	0.00	38.94	25.73
04/14/93	190	5.4	<0.5	1.5	0.97	-	12.97	NP	0.00	38.94	25.97
08/12/93	230	1.7	<0.5	5.3	0.94	-	14.12	NP	0.00	38.94	24.82
10/26/93	190	2.8	<0.5	5.5	2	-	14.72	NP	0.00	38.94	24.22
02/17/94	340	<0.5	<0.5	13	2.9	-	13.20	NP	0.00	38.47	25.27
05/03/94	170	1.4	<0.5	4	1.9	-	13.08	NP	0.00	38.47	25.39
08/17/94	270	0.6	<0.5	7.3	1.1	-	14.18	NP	0.00	38.54	24.36
11/18/94	338		<0.5	4.6	<0.5	-	13.73	NP	0.00	38.54	24.81
09/26/95	ND	0.63	1.1	ND	1.2	-	12.44	NP	0.00	38.47	26.03
12/06/95	ND	ND	ND	ND	ND	-	12.92	NP	0.00	38.47	25.55
02/14/96	ND	ND	2	ND	1.1	-	10.76	NP	0.00	38.47	27.71
10/29/96	ND	ND	ND	ND	ND	-	12.35	NP	0.00	38.47	26.12
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	10.85	NP	0.00	38.47	27.62
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	13.56	NP	0.00	38.47	24.91
<b>Monitoring Well A-6</b>											
12/24/91	<30	<0.3	<0.3	<0.3	<0.3	-	16.88	NP	0.00	39.07	22.19

**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	EthylBenzene (ug/L)	XYLENE (ug/L)	MIBE (ug/L)					
03/10/92	<30	<0.3	<0.3	<0.3	<0.3	-	13.73	NP	0.00	39.07	25.34
06/09/92	<30	<0.3	<0.3	<0.3	<0.3	-	14.95	NP	0.00	39.07	24.12
09/14/92	<50	<0.5	<0.5	<0.5	<0.5	-	16.20	NP	0.00	39.07	22.87
11/12/92	<50	<0.5	<0.5	<0.5	<0.5	-	16.35	NP	0.00	39.07	22.72
02/11/93	<50	<0.5	<0.5	<0.5	<0.5	-	13.04	NP	0.00	39.07	26.03
04/14/93	<50	<0.5	<0.5	<0.5	<0.5	-	12.23	NP	0.00	39.07	26.84
08/12/93	<50	<0.5	<0.5	<0.5	<0.5	-	14.18	NP	0.00	39.07	24.89
10/26/93	<50	<0.5	<0.5	<0.5	<0.5	-	14.85	NP	0.00	39.07	24.22
05/03/94	<50	<0.5	<0.5	<0.5	<0.5	-	13.66	NP	0.00	39.07	25.41
08/17/94	<50	<0.5	<0.5	<0.5	<0.5	-	14.34	NP	0.00	38.78	24.44
11/18/94	<50	<0.5	<0.5	<0.5	<0.5	-	13.76	NP	0.00	38.78	25.02
09/26/95	ND	ND	ND	ND	ND	-	12.56	NP	0.00	38.78	26.22
12/06/95	ND	ND	ND	ND	ND	-	13.18	NP	0.00	38.78	25.60
02/14/96	ND	ND	ND	ND	ND	-	12.46	NP	0.00	38.78	26.32
10/29/96	50	ND	ND	ND	ND	-	12.40	NP	0.00	38.78	26.38
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	13.85	NP	0.00	38.78	24.93
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	12.49	NP	0.00	38.78	26.29
<b>Monitoring Well A-7</b>											
12/24/91	10,000	88	16	170	610	-	18.11	NP	0.00	39.95	21.84
03/10/92	320	9.3	0.54	8.8	34	-	15.30	NP	0.00	39.95	24.65
06/09/92	340	11	1.1	8.9	26	-	16.12	NP	0.00	39.95	23.83
09/14/92	510	12	<2.0	30	51	-	17.35	NP	0.00	39.95	22.60
11/12/92	760	17	0.83	50	73	-	17.47	NP	0.00	39.95	22.48
02/11/93	260	20	1	11	21	-	13.80	NP	0.00	39.95	26.15
04/14/93	1,300	89	2.1	48	87	-	13.60	NP	0.00	39.95	26.35
08/12/93	360	9	<0.50	13	9	-	15.54	NP	0.00	39.95	24.41
10/26/93	99	1.7	<0.50	4	3	-	16.28	NP	0.00	39.95	23.67
02/17/94	1,300	38	<1	35	25	-	14.44	NP	0.00	39.38	24.94
05/03/94	330	8.1	<0.5	7.8	3.7	-	14.34	NP	0.00	39.38	25.04
08/17/94	350	2.2	<0.5	9.6	3.6	-	15.40	NP	0.00	39.45	24.05
11/18/94	412	1.3	<0.5	6.2	2	-	14.95	NP	0.00	39.45	24.50
09/26/95	ND	ND	ND	ND	ND	-	13.92	NP	0.00	39.38	25.46
12/06/95	ND	ND	ND	ND	ND	-	14.42	NP	0.00	39.38	24.96
02/14/96	ND	ND	1.1	ND	0.59	-	12.38	NP	0.00	39.38	27.00
10/29/96	ND	ND	ND	ND	ND	-	12.33	NP	0.00	39.38	27.05

**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

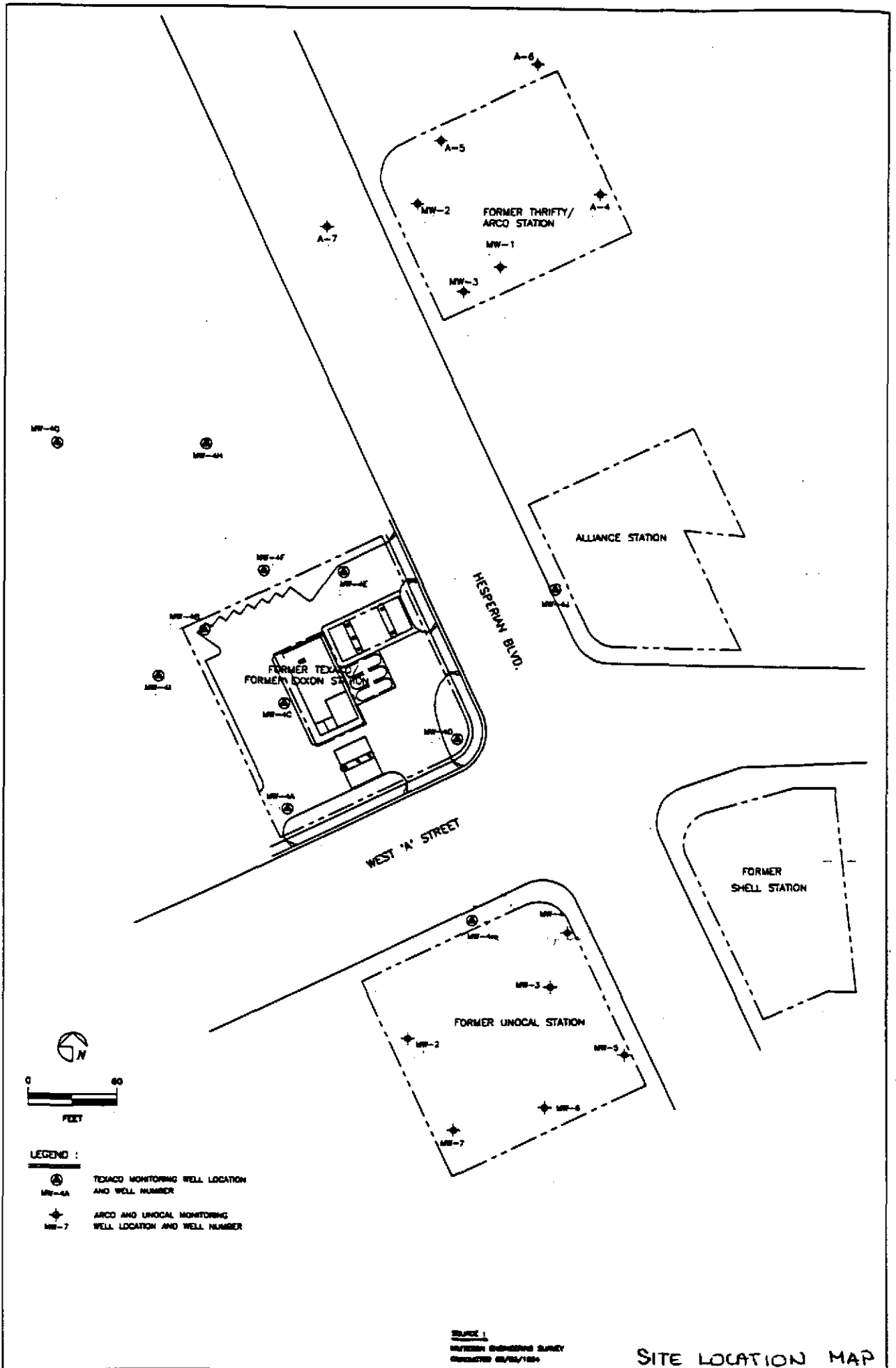
DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	EthylBenzene (ug/L)	XYLENE (ug/L)	MIBE (ug/L)					
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	13.10	NP	0.00	39.38	26.28
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	11.70	NP	0.00	39.38	27.68
<b>Monitoring Well A-8</b>											
09/14/92	<50	<0.5	<0.5	<0.5	<0.5	-	14.19	NP	0.00	37.23	23.04
11/12/92	<50	<0.5	<0.5	<0.5	<0.5	-	14.35	NP	0.00	37.23	22.88
02/11/93	<50	<0.5	<0.5	<0.5	<0.5	-	11.25	NP	0.00	37.23	25.98
04/14/93	<50	<0.5	<0.5	<0.5	<0.5	-	12.33	NP	0.00	37.23	24.90
08/12/93	<50	<0.5	<0.5	<0.5	<0.5	-	12.41	NP	0.00	37.23	24.82
10/26/93	<50	<0.5	<0.5	<0.5	<0.5	-	13.02	NP	0.00	37.23	24.21
02/17/94	<50	<0.5	<0.5	<0.5	<0.5	-	11.47	NP	0.00	36.76	25.29
05/03/94	<50	<0.5	<0.5	<0.5	<0.5	-	11.35	NP	0.00	36.76	25.41
08/17/94	<50	<0.5	1.7	<0.5	1.4	-	12.34	NP	0.00	36.84	24.50
11/18/94	<50	1	<0.5	<0.5	<0.5	-	11.90	NP	0.00	36.84	24.94
09/26/95	ND	ND	ND	ND	ND	-	10.94	NP	0.00	36.76	25.82
12/06/95	ND	ND	ND	ND	ND	-	11.42	NP	0.00	36.76	25.34
02/14/96	ND	ND	0.48	ND	ND	-	8.80	NP	0.00	36.76	27.96
10/29/96	200	ND	ND	ND	ND	-	11.30	NP	0.00	36.76	25.46
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	7.60	NP	0.00	36.76	29.16
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	10.54	NP	0.00	36.76	26.22
<b>Monitoring Well A-9</b>											
09/14/92	<50	<0.5	<0.5	<0.5	<0.5	-	16.12	NP	0.00	38.71	22.59
11/12/92	<50	<0.5	<0.5	<0.5	<0.5	-	16.29	NP	0.00	38.71	22.42
02/11/93	<50	<0.5	<0.5	<0.5	<0.5	-	12.31	NP	0.00	38.71	26.40
04/14/93	<50	<0.5	<0.5	<0.5	<0.5	-	12.01	NP	0.00	38.71	26.70
08/12/93	<50	<0.5	<0.5	<0.5	<0.5	-	13.90	NP	0.00	38.71	24.81
10/26/93	<50	<0.5	<0.5	<0.5	<0.5	-	14.86	NP	0.00	38.71	23.85
02/17/94	<50	<0.5	<0.5	<0.5	<0.5	-	12.99	NP	0.00	38.19	25.20
08/17/94	<50	<0.5	<0.5	<0.5	<0.5	-	14.03	NP	0.00	38.19	24.16
11/18/94	<50	<0.5	<0.5	<0.5	<0.5	-	13.44	NP	0.00	37.24	23.80
09/26/95	ND	<0.5	ND	ND	ND	-	12.43	NP	0.00	38.24	25.81
12/06/95	ND	<0.5	ND	ND	ND	-	13.14	NP	0.00	38.19	25.05
02/14/96	ND	ND	1.8	0.49	0.82	-	9.05	NP	0.00	38.19	29.14
10/29/96	ND	ND	ND	ND	ND	-	12.85	NP	0.00	38.19	25.34
01/29/97	<50	<0.3	<0.3	<0.3	<0.5	<20	9.02	NP	0.00	38.19	29.17

**TABLE 2**  
**GROUNDWATER DATA**  
**THRIFTY OIL STATION #052, HAYWARD, CA**

DATE SAMPLED	ANALYTICAL PARAMETERS						DEPTH TO GROUNDWATER (feet)	DEPTH TO PRODUCT (feet)	PRODUCT THICKNESS (feet)	CASING ELEVATION (feet)	GROUNDWATER ELEVATION (feet)
	TPH (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	EthylBenzene (ug/L)	XYLENE (ug/L)	MTBE (ug/L)					
04/30/97	<20	<0.3	<0.3	<0.3	<0.5	<50	12.05	NP	0.00	38.19	26.14
<i>Monitoring Well A-10</i>											
12/07/92	660	30	<2.5	<2.5	<2.5	-	16.81	NP	0.00	38.94	22.13
02/11/93	210	<0.5	0.97	<0.5	<0.5	-	13.15	NP	0.00	38.94	25.79
04/14/93	770	<0.5	3	0.76	1.9	-	12.19	NP	0.00	38.94	26.75
08/12/93	390	<0.5	<0.5	<0.5	0.84	-	14.87	NP	0.00	38.94	24.07
10/26/93	290	<0.5	<0.5	<0.5	<0.5	-	15.65	NP	0.00	38.94	23.29
02/17/94	52	<0.5	<0.5	<0.5	<0.5	-	14.16	NP	0.00	38.66	24.50
05/03/94	<50	<0.5	<0.5	<0.5	<0.5	-	14.00	NP	0.00	38.66	24.66
08/17/94	<50	<0.5	<0.5	<0.5	<0.5	-	15.08	NP	0.00	38.72	23.64
11/18/94	<50	<0.5	<0.5	<0.5	<0.5	-	14.68	NP	0.00	38.72	24.04
09/26/95	ND	ND	ND	ND	ND	-	13.58	NP	0.00	38.66	25.08
12/06/95	ND	ND	ND	ND	ND	-	14.24	NP	0.00	38.66	24.42
02/14/96	ND	ND	ND	ND	ND	-	6.70	NP	0.00	38.66	31.96
10/29/96	ND	ND	ND	ND	1.1	-	14.10	NP	0.00	38.66	24.56
01/29/97	<50	0.41	4.8	0.60	4.4	37	11.20	NP	0.00	38.66	27.46
04/30/97	<20	0.4	4.2	0.5	3.8	50	12.66	NP	0.00	38.66	26.00

**NOTE:** ND = Nondetectable  
 NP = No free hydrocarbon product  
 NS = No sample collected

Benzene, toluene, ethylbenzene, and xylene analyzed by EPA method 8020.  
 Total petroleum hydrocarbons (TPH) analyzed by EPA method 8015 modified for gasoline  
 Methyl-tert Butyl Ether (MTBE) analyzed by EPA method 8020 or 8260



SOURCE:  
 INTERIM REMEDIATION SURVEY  
 COMPLETED 02/25/1994

SITE LOCATION MAP

FIG. : 1





PARKING LOT

A-10  
ND

PARKING LOT

A-9  
ND

WEST SUNSET DRIVE

HESPERIAN BOULEVARD

BUILDING

LANDSCAPING

TREATMENT SYSTEM ENCLOSURE

STATION BUILDING

**LEGEND**

- A-9 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- AR-1 ● GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION
- AV-2 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- AS-2 ◆ AIR SPARGING WELL LOCATION AND DESIGNATION
- AS-1 ▲ DUAL AIR SPARGE/SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- SB-3 ● SOIL BORING LOCATION AND DESIGNATION

DEPTH	DEPTH IN FEET
TPH	HYDROCARBON CONCENTRATION IN SOIL IN mg/Kg.
BENZENE	
—	NOT ANALYZED
ND	NOT DETECTED

APARTMENT

PRODUCT ISLANDS

BUSINESS

PARKING LOT

10	14.5
1	0.8
0.16	0.03

4.5	10	14.5
ND	2.4	36
0.006	0.13	0.37

10	15
1.3	26
0.04	0.09

10	15
4.4	32
0.02	0.17

11	36
1.7	110
0.07	ND

10	15
1	11
0.01	0.027

9	49
—	—

10	24
—	0.012

15	17
—	0.05

11	16
2.0	160
0.03	ND

11	16
2.3	54
0.016	0.093

SOURCE: MAP BY GEOSTRATEGIES INC.

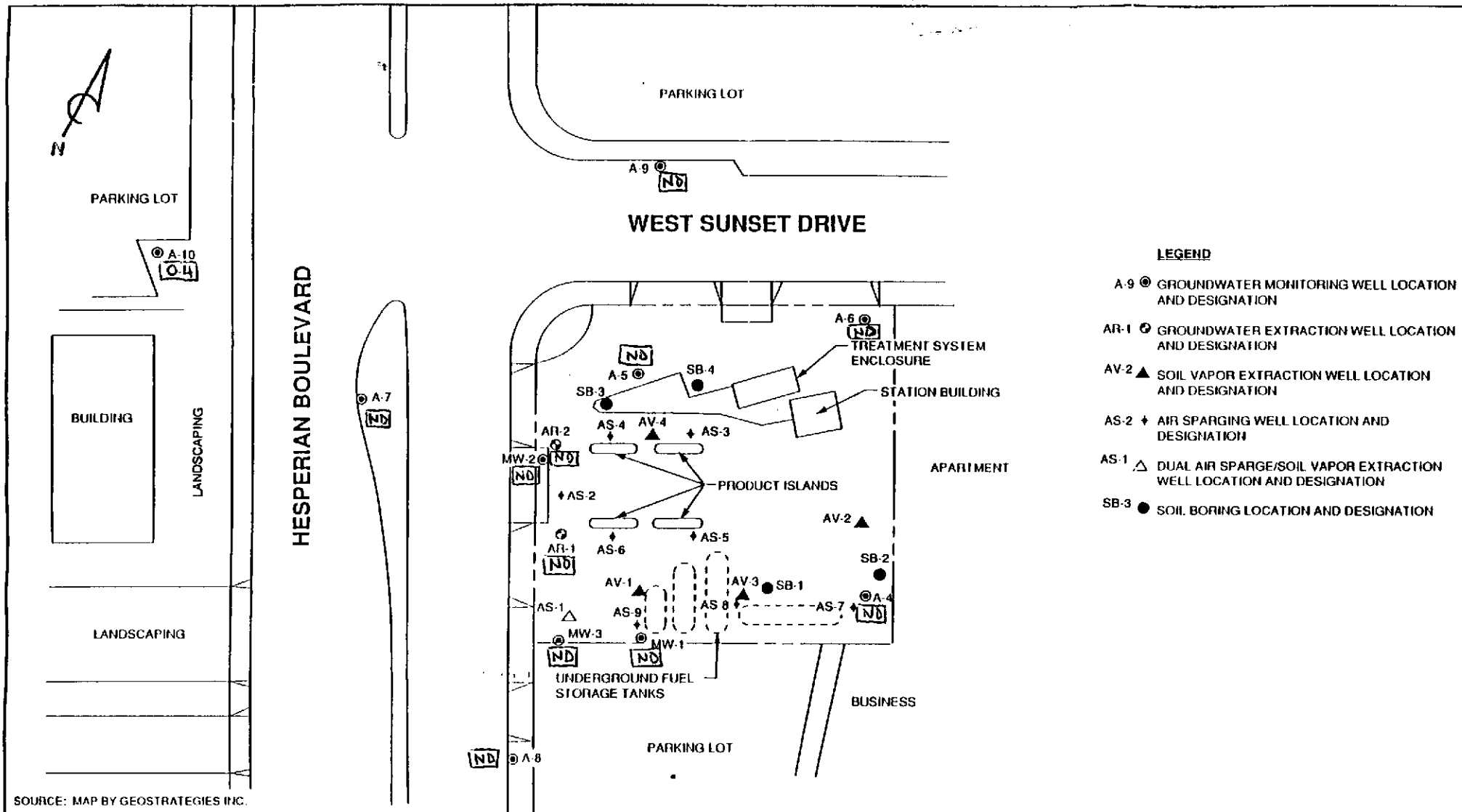
SCALE



ARCO SERVICE STATION 5387  
20200 Hesperian Boulevard at West Sunset Drive  
Hayward, California

HYDROCARBON DISTRIBUTION IN SOIL MAP

FIGURE:  
2  
PROJECT:  
330-110.5A



SOURCE: MAP BY GEOSTRATEGIES INC.

<p>SCALE</p> <p>0 40 80 FEET</p>	<p>ARCO SERVICE STATION 5387 20200 Hesperian Boulevard at West Sunset Drive Hayward, California</p>	<p>FIGURE: <b>3</b></p> <p>PROJECT: 330-110 5A</p>
<p><b>BENZENE DISTRIBUTION MAP, APRIL 30, 1997</b></p>		