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QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

at

SEKHON GAS STATION

6600 Foothill Boulevard

Oakland, California

Prepared for:

Mr. Ravi Sekhon
6600 Foothill Boulevard
Oakland, California

May 14, 2004

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May 14, 2004

Mr. Don Hwang
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Submittal of Quarterly Groundwater Monitoring and Sampling Report for *Sekhon Gas Station*, 6600 Foothill Blvd., Oakland, California

Dear Mr. Hwang:

The enclosed report presents the results and findings of the February 2004, quarterly groundwater monitoring and sampling for the above-referenced site.

Please contact Tridib Guha at (925) 363-1999 if you have any questions regarding this report.

Sincerely,

Advanced Assessment and Remediation Services

Tridib K. Guha, R.G., R.E.A.
Principal

Enclosure

cc: Mr. Ravi S. Sekhon, Oakland, California
Mr. Sunil Ramdass, USTCF, Sacramento

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QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT
For
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, California

1.0 INTRODUCTION

This report presents the results and findings of the February 2004, quarterly groundwater monitoring and sampling performed at 6600 Foothill Boulevard, Oakland, California. This report is intended to fulfill quarterly self-monitoring requirements and to establish a groundwater monitoring history for the site. A site vicinity map is shown in Figure 1.

2.0 GROUNDWATER MONITORING WELLS

This section presents the field observations and groundwater elevation measurement, sampling, and analysis procedures, as well as the analytical methods. The location of the groundwater monitoring wells is presented in Figure 2. The work and related field sampling activities were conducted in accordance with the guidelines and requirements of the Alameda County Department of Environmental Health (ACDEH) and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

2.1 Groundwater Elevation Monitoring and Surveying

The groundwater elevation in each well was measured to the nearest 0.01 foot from the top of the PVC casing, using an electronic sounder tape. A groundwater surface elevation map based on interpretation of groundwater elevation measurements taken on February 19, 2004 and survey data is presented in Figure 3. The survey data and groundwater elevation measurements are presented in Table 1. The site was surveyed as per Geotracker requirements on July 11, 2003 by PLS Surveys, Inc., a California licensed surveyor. All groundwater elevations are reported with respect to Mean Sea Level (MSL).

2.2 Field Observations

The well box in MW-6 was full of water. The water was removed before groundwater elevation measurement, followed by purging. Groundwater was purged from a total of six groundwater monitoring wells, MW-1 through MW-6. The purged water from all six monitoring wells was clear initially. As the purging proceeded, the water from monitoring well MW-1 and MW-3 turned clear with brown flakes, from monitoring well MW-2 and MW-6 turned silty brown, from monitoring well MW-5 turned clear with small brown gels, and the purged water from monitoring wells MW-4, turned silty grayish brown. Approximately three well volumes of groundwater were purged from each well. After purging each well was allowed some time for groundwater recovery. Subsequently, the water was again clear and water samples were collected. Floating product was not observed in any of the groundwater samples and sheen was observed in the groundwater from monitoring well MW-4 only. Petroleum odor was noticed in the groundwater samples from monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-6.

2.3 Sampling and Analytical Procedures

Groundwater samples were collected on February 19, 2004, following groundwater elevation measurements. Samples were analyzed by North State Labs of South San Francisco, California (NSL), which is certified by the California Department of Health Services (DHS) to perform the specified analyses.

Before purging, groundwater elevations were measured in all wells with an electronic sounder tape. Purging preceded sampling in order to ensure collection of non-stagnant water. A minimum of three casing volumes was removed before sampling the wells. The purged water was monitored for temperature, pH, and conductivity. Purging was considered complete when these parameters had stabilized. The field parameters for groundwater sampling are presented in Table 4.

To prevent potential cross-contamination, all measuring, purging and sampling equipment was washed in an Alconox detergent solution, rinsed with tap water, and finally with distilled water between wells.

The sampling procedure for each monitoring well involved extracting well water with a clean PVC bailer on a clean nylon cord. Groundwater collected from each monitoring well for analysis of Total Petroleum Hydrocarbon as gasoline (TPHg) and Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE), and fuel oxygenates, Di-isopropyl ether (DIPE), Ethyl-tert-butyl-ether (ETBE), Tert-Amyl methyl ether (TAME) and Tert-Butyl alcohol (TBA) was decanted into two 40-milliliter volatile organic analysis vials with Teflon-lined septa. Samples to be analyzed for TPHg/BTEX/MTBE and fuel oxygenates were preserved using hydrochloric acid to a pH of 2.0. All samples were labeled and placed in an iced cooler, along with the chain-of-custody document (Appendix A). Samples transported to the laboratory were analyzed within the specified holding time.

Groundwater produced during purging and sampling was contained in 55-gallon steel drums. The drummed water was labeled with the source (i.e. well number) and date.

2.4 Analytical Methods

Samples were analyzed for TPHg using EPA Methods 8015M and 8020 and for BTEX and fuel oxygenates using EPA Method 8260B. A summary of the analytical results of groundwater samples from the monitoring wells is presented in Table 2. The certified analytical reports for this sampling event are included in Appendix A.

3.0 INTERPRETATION OF RESULTS

The results of water elevation measurements, groundwater sampling and analytical results are discussed in the following sections.

3.1 Groundwater Elevations and Gradients

A groundwater elevation contour map for February 19, 2004, is presented in Figure 3. The flow directions, based on groundwater elevation data, between monitoring wells MW-1, MW-2 and MW-3 was toward the N40^{0}W; between monitoring wells MW-2, MW-3 and MW-5 was toward the S63^{0}W; and between monitoring wells MW-2, MW-5 and MW-6 was toward the S27^{0}W. The average hydraulic gradient

calculated was approximately 0.008 foot per foot. The depth of groundwater was shallower than previous measurements conducted at the site in all monitoring wells except monitoring well MW-1. The average depth to groundwater in these wells was approximately 6.5 feet below ground surface (bgs). The depth to groundwater in monitoring well MW-4 was 4.73 feet bgs, which is the shallowest depth. In this event, the groundwater measurements were conducted after several days of heavy precipitation. Figure 3A is a rose diagram for historical groundwater flow direction for the site between June 2001 to November 2003. This event's flow direction is not included in this rose diagram.

3.2 Analytical Results

The analytical results for groundwater samples from monitoring wells were found to contain TPHg ranging from 83 to 7,230 parts per billion (ppb); benzene concentrations ranging from ND to 460 ppb; toluene concentrations ND to 265; ethylbenzene concentrations ranging from ND to 497 ppb; and xylenes concentrations ranging from ND to 612 ppb. MTBE was detected in groundwater samples from all monitoring wells at concentrations ranging from 42.7 to 82,000; TAME was detected in MW-2, MW-4, MW-5 and MW-6 at concentrations ranging from 2 to 91 ppb; DIPE was detected only in groundwater samples from MW-5 at concentration of 2.6 ppb; TBA was detected in groundwater samples from all monitoring wells at concentrations ranging from 508 to 8,630 ppb. ETBE was not detected in groundwater samples. Analytical results for groundwater samples from six monitoring wells are presented in Tables 2 and 3. The official laboratory reports and chain of custody documents are included in Appendix A. TPHg, benzene, MTBE and TBA concentrations in groundwater are presented in Figures 4, 5, 6 and 7, respectively.

The NSL Lab Director, reviewed the data and noted "the level of MTBE seen in sample MW-1 from 2/19/2004 is 82,000 ppb. This level of MTBE has been seen from this site in MW-2. In addition, TBA was identified in sample MW-1 at a concentration of 8,630 ppb. It is noted that TBA is a metabolite of MTBE and is seen in samples of water with high MTBE levels after bacterial action. The enzymatic pathway from MTBE to TBA is also seen in the human body degradation of MTBE. TBA has been seen along with MTBE in many sites and it is the subject of many papers detailing this phenomenon. The TBA result was confirmed again by re-analysis."

A copy of the Lab Director's note is presented in Appendix A.

4.0 SELF-MONITORING PROJECT SCHEDULE AND RECOMMENDATIONS

In this sampling event, MTBE was detected in groundwater samples from all six monitoring wells. The highest concentration is in MW-1. The analytical results for this sampling event indicate that the highest concentration of Benzene occurs in the monitoring well, MW-1 and farthest downgradient monitoring well, MW-6. With the possible off-site migration of contamination, further site characterization is warranted. Consequently, an addendum to work plan for additional site characterization has been submitted to ACDEH and is waiting approval. Also, we recommend immediate start of aggressive interim remediation by periodic groundwater extraction and disposal of the extracted water at a designated facility.

5.0 CERTIFICATION

The information provided in this report is based on the groundwater sampling activities conducted at the

site. All data presented in this report are believed to be factual and accurate, unless proven otherwise. Any conclusions or recommendations provided within this report are based on our expertise and experience conducting work of a similar nature.

Advanced Assessment and Remediation Services

Tridib K. Guha, R.G. 5836

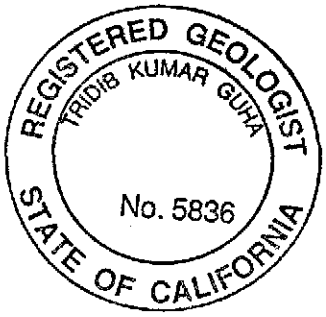


TABLE 1: SURVEY AND WATER LEVEL MONITORING DATA

SEKHON GAS STATION

6600 Foothill Blvd.

Oakland, California

Well No.	Date of Measurement	Casing Elevation (Feet - MSL)	Depth to Groundwater (Feet - MSL)	Product Thickness (Feet)	Groundwater Elevation (Feet - MSL)
MW-1	7/11/03	160.25	8.66	0	151.59
MW-1	11/13/03	160.25	8.10	0	152.15
MW-1	2/19/04	160.25	8.24	0	152.01
MW-2	7/11/03	158.97	7.58	0	150.39
MW-2	11/13/03	158.97	8.01	0	150.96
MW-2	2/19/04	158.97	6.43	0	152.54
MW-3	7/11/03	160.17	9.35	0	150.82
MW-3	11/13/03	160.17	8.85	0	151.32
MW-3	2/19/04	160.17	8.46	0	151.71
MW-4	7/11/03	158.42	6.73	0	151.69
MW-4	11/13/03	158.42	6.54	0	151.88
MW-4	2/19/04	158.42	4.37	0	154.05
MW-5	7/11/03	158.03	7.94	0	150.09
MW-5	11/13/03	158.03	7.41	0	150.62
MW-5	2/19/04	158.03	6.14	0	151.89
MW-6	7/11/03	157.24	7.98	0	149.26
MW-6	11/13/03	157.24	7.47	0	149.77
MW-6	2/19/04	157.24	5.09	0	152.15

Note:
The site was surveyed as per Geotracker standard on July 11,2003, by PLS Surveys, Inc., a California licensed surveyor
All elevations reported with respect to feet above mean sea level (MSL).

TABLE 2: SUMMARY OF TPHg, BTEX ANALYTICAL RESULTS OF GROUNDWATER SAMPLING

Sekhon Gas Station

6600 Foothill Boulevard, Oakland, California

Sample ID	Date of Sampling	TPHg ug/L	Benzene ug/L	Toluene ug/L	Ethylbenzene ug/L	Xylenes ug/L
MW-1/GW	6/13/01	ND	ND	ND	ND	ND
MW-1/GW	3/21/02	95	ND	ND	ND	ND
MW-1/GW	7/9/02	ND	ND	ND	ND	ND
MW-1/GW	7/11/03	ND	0.7	ND	ND	1.2
MW-1/GW	11/13/03	ND<5000	ND	ND	ND	ND
MW-1/GW	2/19/04	1350	460	ND	ND	ND
MW-2/GW	6/13/01	5800	160	210	290	980
MW-2/GW	3/21/02	452	3.4	ND	1.6	2.1
MW-2/GW	7/9/02	497	61.6	ND	ND	1.6
MW-2/GW	7/11/03	553	48.9	ND	ND	ND
MW-2/GW	11/13/03	ND<2500	ND	ND	ND	ND
MW-2/GW	2/19/04	4390	410	265	160	490
MW-3/GW	6/13/01	300	1	ND	0.07	2
MW-3/GW	3/21/02	274	1.1	ND	1	2.5
MW-3/GW	7/9/02	ND	ND	ND	ND	ND
MW-3/GW	7/11/03	ND	ND	ND	ND	ND
MW-3/GW	11/13/03	ND	ND	ND	ND	ND
MW-3/GW	2/19/04	83	ND	ND	ND	ND
MW-4/GW	7/9/02	9680	43	17	369	1990
MW-4/GW	7/11/03	3170	16.5	6.4	71.7	244
MW-4/GW	11/13/03	ND<1000	49	ND	340	900
MW-4/GW	2/19/04	7230	107	7	497	1063
MW-5/GW	7/9/02	275	30.2	ND	ND	3
MW-5/GW	7/11/03	890	10	0.6	ND	7.1
MW-5/GW	11/13/03	ND<1000	ND	ND	ND	ND
MW-5/GW	2/19/04	1310	ND	0.7	ND	2.2
MW-6/GW	7/9/02	12000	432	22	637	1740
MW-6/GW	7/11/03	2970	534	6.3	70.1	278
MW-6/GW	11/13/03	ND<2500	300	ND	ND	52
MW-6/GW	2/19/04	5340	184	5	65	127
SB-1 GW	6/27/02	554	1	0.8	11.6	76.2
SB-2 GW	6/27/02	3000	95.6	10.2	394	831
PQL		#	0.5	0.5	0.5	1

Notes:

ND- Not Detected NA- Not Analyzed PQL- Practical Quantitation Limit

ug/L- Microgram per liter (parts per billion)

TPHg- Total petroleum hydrocarbon as gasoline (EPA method 8015 MOD)

BTEX- Benzene, toluene, ethylbenzene, and xylenex (EPA Method 8260)

TABLE 2: SUMMARY OF TPHg, BTEX ANALYTICAL RESULTS OF GROUNDWATER SAMPLING

Sekhon Gas Station

6600 Foothill Boulevard, Oakland, California

Sample ID	Date of Sampling	TPHg ug/L	Benzene ug/L	Toluene ug/L	Ethylbenzene ug/L	Xylenes ug/L
MW-1/GW	6/13/01	ND	ND	ND	ND	ND
MW-1/GW	3/21/02	95	ND	ND	ND	ND
MW-1/GW	7/9/02	ND	ND	ND	ND	ND
MW-1/GW	7/11/03	ND	0.7	ND	ND	1.2
MW-1/GW	11/13/03	ND<5000	ND	ND	ND	ND
MW-1/GW	2/19/04	1350	460	ND	ND	ND
MW-2/GW	6/13/01	5800	160	210	290	980
MW-2/GW	3/21/02	452	3.4	ND	1.6	2.1
MW-2/GW	7/9/02	497	61.6	ND	ND	1.6
MW-2/GW	7/11/03	553	48.9	ND	ND	ND
MW-2/GW	11/13/03	ND<2500	ND	ND	ND	ND
MW-2/GW	2/19/04	4390	410	265	160	490
MW-3/GW	6/13/01	300	1	ND	0.07	2
MW-3/GW	3/21/02	274	1.1	ND	1	2.5
MW-3/GW	7/9/02	ND	ND	ND	ND	ND
MW-3/GW	7/11/03	ND	ND	ND	ND	ND
MW-3/GW	11/13/03	ND	ND	ND	ND	ND
MW-3/GW	2/19/04	83	ND	ND	ND	ND
MW-4/GW	7/9/02	9680	43	17	369	1990
MW-4/GW	7/11/03	3170	16.5	6.4	71.7	244
MW-4/GW	11/13/03	ND<1000	49	ND	340	900
MW-4/GW	2/19/04	7230	107	7	497	1063
MW-5/GW	7/9/02	275	30.2	ND	ND	3
MW-5/GW	7/11/03	890	10	0.6	ND	7.1
MW-5/GW	11/13/03	ND<1000	ND	ND	ND	ND
MW-5/GW	2/19/04	1310	ND	0.7	ND	2.2
MW-6/GW	7/9/02	12000	432	22	637	1740
MW-6/GW	7/11/03	2970	534	6.3	70.1	278
MW-6/GW	11/13/03	ND<2500	300	ND	ND	52
MW-6/GW	2/19/04	5340	184	5	65	127
SB-1 GW	6/27/02	554	1	0.8	11.6	76.2
SB-2 GW	6/27/02	3000	95.6	10.2	394	831
PQL		#	0.5	0.5	0.5	1

Notes:

ND- Not Detected NA- Not Analyzed PQL- Practical Quantitation Limit

ug/L- Microgram per liter (parts per billion)

TPHg- Total petroleum hydrocarbon as gasoline (EPA method 8015 MOD)

BTEX- Benzene, toluene, ethylbenzene, and xylenex (EPA Method 8260)

TABLE 3: SUMMARY OF FUEL OXYGENATES ANALYTICAL RESULTS OF GROUNDWATER SAMPLING

Sekhon Gas Station

6600 Foothill Boulevard, Oakland, California

Sample ID	Date of Sampling	MTBE ug/L	ETBE ug/L	TAME ug/L	DIPE ug/L	TBA ug/L
MW-1/GW	11/13/03	72,000	ND<5	ND<5	ND<5	22,000
MW-1/GW	2/19/04	82,000	ND<500	ND<500	ND<250	8,630
MW-2/GW	11/13/03	47,000	ND<5	ND<5	ND<5	11,000
MW-2/GW	2/19/04	26,700	ND<10	91	ND<5	3,930
MW-3/GW	11/13/03	37	ND<5	ND<5	ND<5	27
MW-3/GW	2/19/04	42.7	ND	ND	ND	508
MW-4/GW	11/13/03	16,000	ND<5	ND<5	ND<5	4,500
MW-4/GW	2/19/04	14,300	ND<10	29	ND<5	1,440
MW-5/GW	1/28/04	3,400	ND<5	ND<5	ND<5	3,100
MW-5/GW	2/19/04	438	ND	2	2.6	1,340
MW-6/GW	11/13/03	18,000	ND<5	ND<5	ND<5	ND
MW-6/GW	2/19/04	5,310	ND<10	17	ND<5	4,260
RL		0.5	1	1	0.5	10

Notes: ND- Not Detected RL- Reporting Limit

ug/L - Microgram per Liter (parts per billion)

MTBE - Methyl-tert-butyl ether (EPA Method 8260B)

ETBE - Ethyl tert-butyl ether (EPA Method 8260B)

TAME - tert-Amyl methyl ether (EPA Method 8260 B)

DIPE - Di-isoproyl ether (EPA Method 8260B)

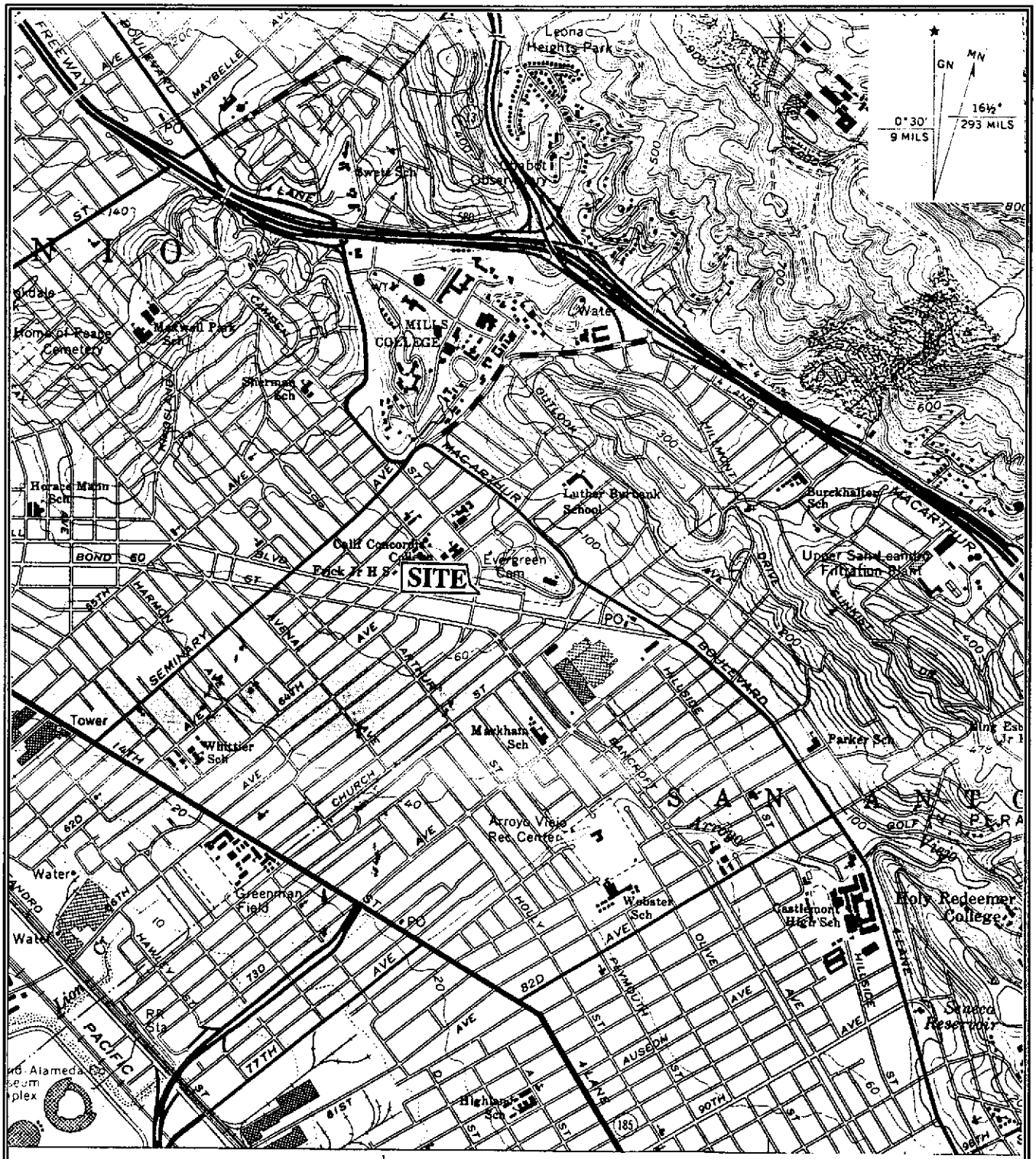
TBA - tert-Butyl alcohol (EPA Method 8260 B)

TABLE 4: FIELD PARAMETERS OF GROUNDWATER SAMPLING
Sekhon Gas Station
6600 Foothill Boulevard
Oakland , California

Sample I.D. No.	Date of Sampling	Temperature °F	pH	Conductivity uS
MW-1	7/11/03	70.1	7.57	682
MW-1	11/13/03	70.2	6.88	658
MW-1	2/19/04	65.8	7.12	964
MW-2	7/11/03	71.6	6.5	598
MW-2	11/13/03	72.3	6.79	863
MW-2	2/19/04	66.2	6.55	816
MW-3	7/11/03	71.2	6.87	166
MW-3	11/13/03	73.6	7.28	144
MW-3	2/19/04	67.4	6.73	403
MW-4	7/11/03	71.3	6.61	1012
MW-4	11/13/03	73	6.71	1002
MW-4	2/19/04	65.2	6.49	958
MW-5	7/11/03	70.6	6.81	515
MW-5	11/13/03	69.3	6.73	558
MW-5	2/19/04	64.3	7.18	455
MW-6	7/11/03	70.6	6.64	978
MW-6	11/13/03	67.1	6.75	983
MW-6	2/19/04	61.2	6.85	682

Note:

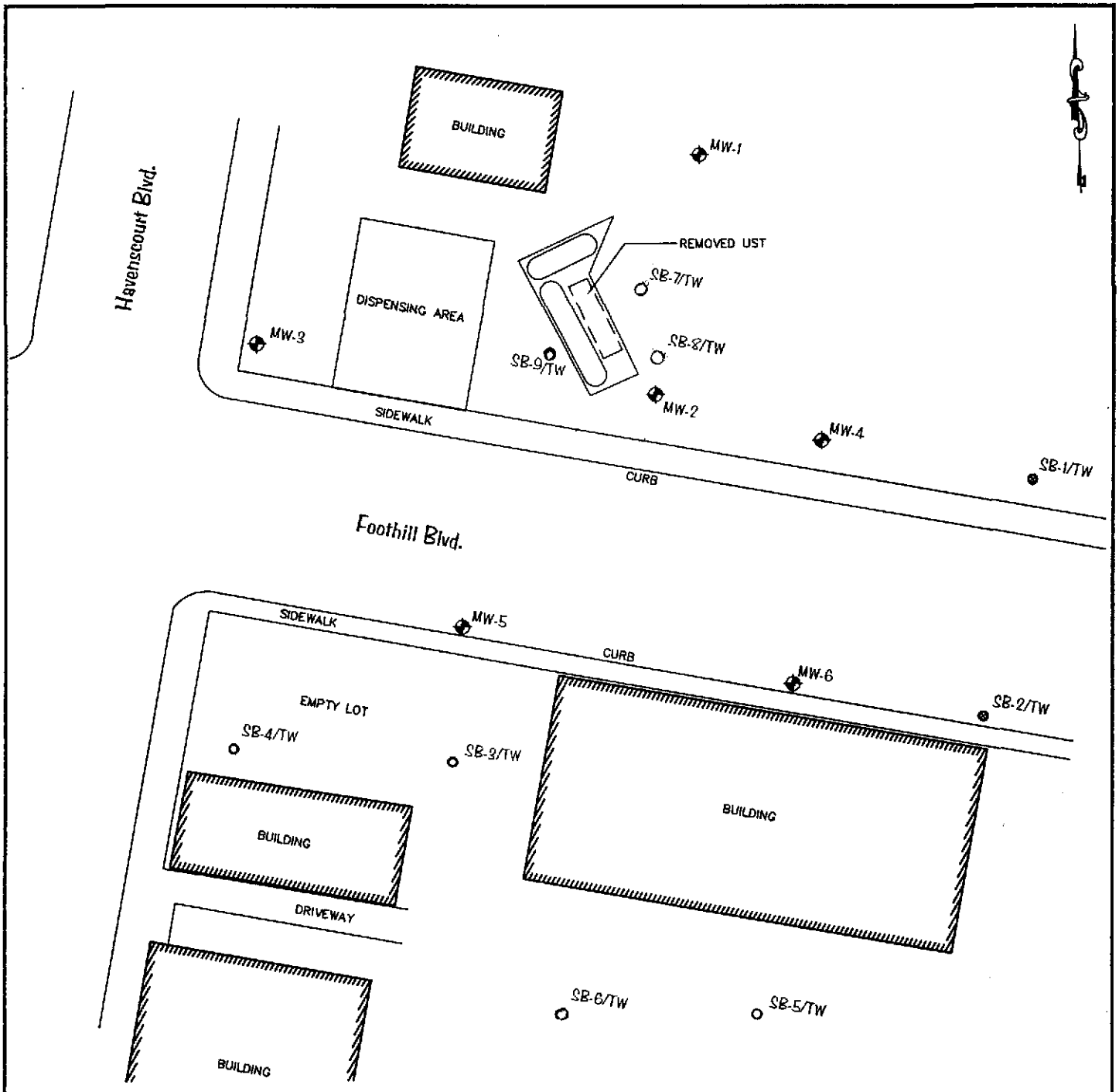
°F = degree Fahrenheit
uS = microSiemens



Source: U.S.G.S. Maps; 7.5 Minute Series (Topographic)
Oakland East Quadrangle, CA
Aerial Photograph taken 1959 Photorevised 1980

FIGURE 1: SITE VICINITY MAP
SEKHON GAS STATION
6600 Foothill Blvd.
Oakland, California

ADVANCED ASSESSMENT AND REMEDIATION SERVICES
2380 Salvio Street, Suite 202
Concord, California



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

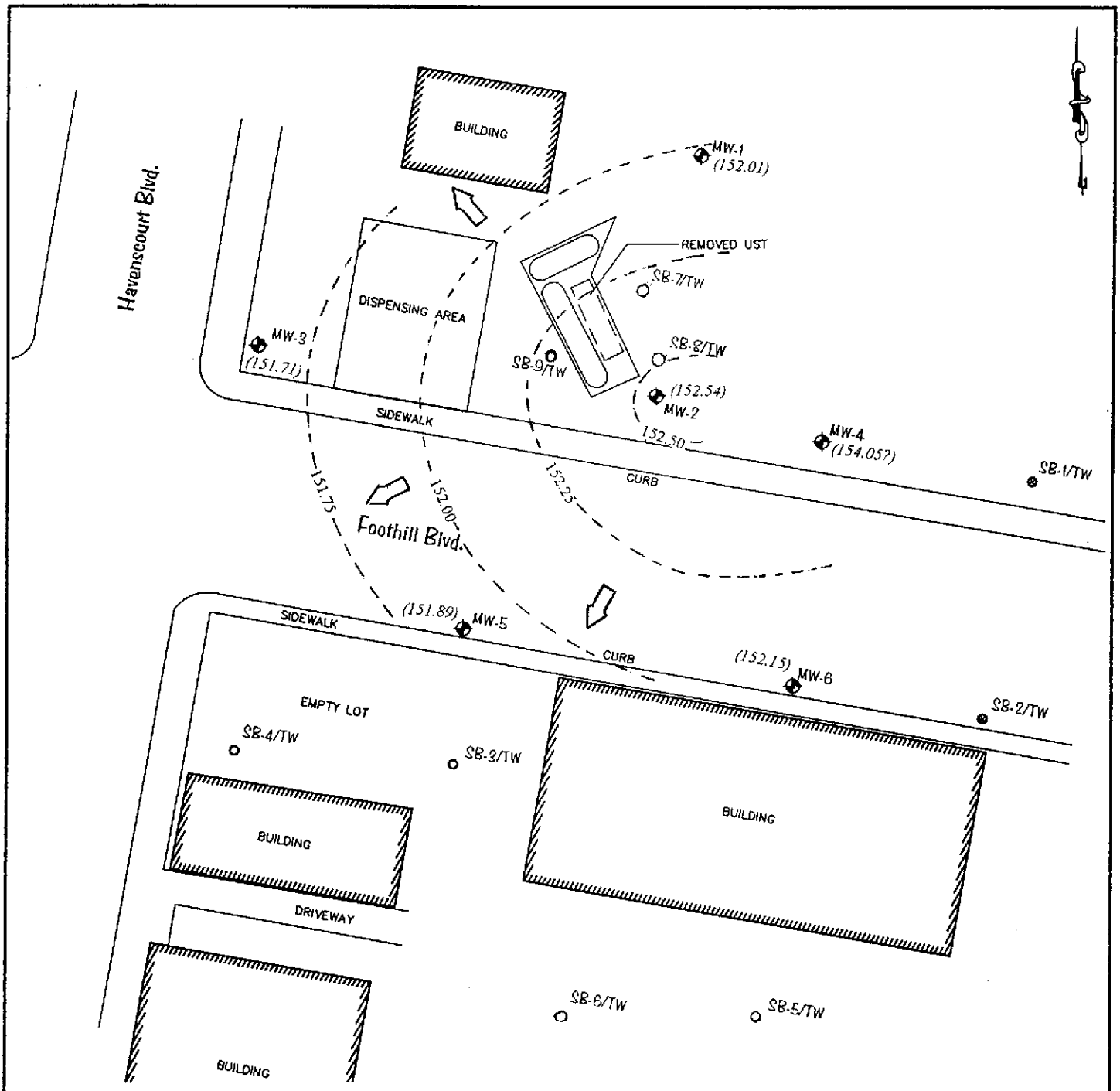
LEGEND

MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

FIGURE 2: SITE PLAN
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

ADVANCED ASSESSMENT and REMEDIATION SERVICES
2380 Salvio Street, Suite 202
Concord, CA 94520



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well
(152.54)	Groundwater Elevations (MSL)
-152.00-	Groundwater Elevation Contour
	General Direction of Groundwater Flow

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

Note:
1. Water Levels in Monitoring Wells Measured on February 19, 2004
2. Contour Interval = 0.25 foot
3. Hydraulic Gradient = 0.008

FIGURE 3: GROUNDWATER SURFACE ELEVATIONS
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

ADVANCED ASSESSMENT and REMEDIATION SERVICES
2380 Salvio Street, Suite 202
Concord, CA 94520

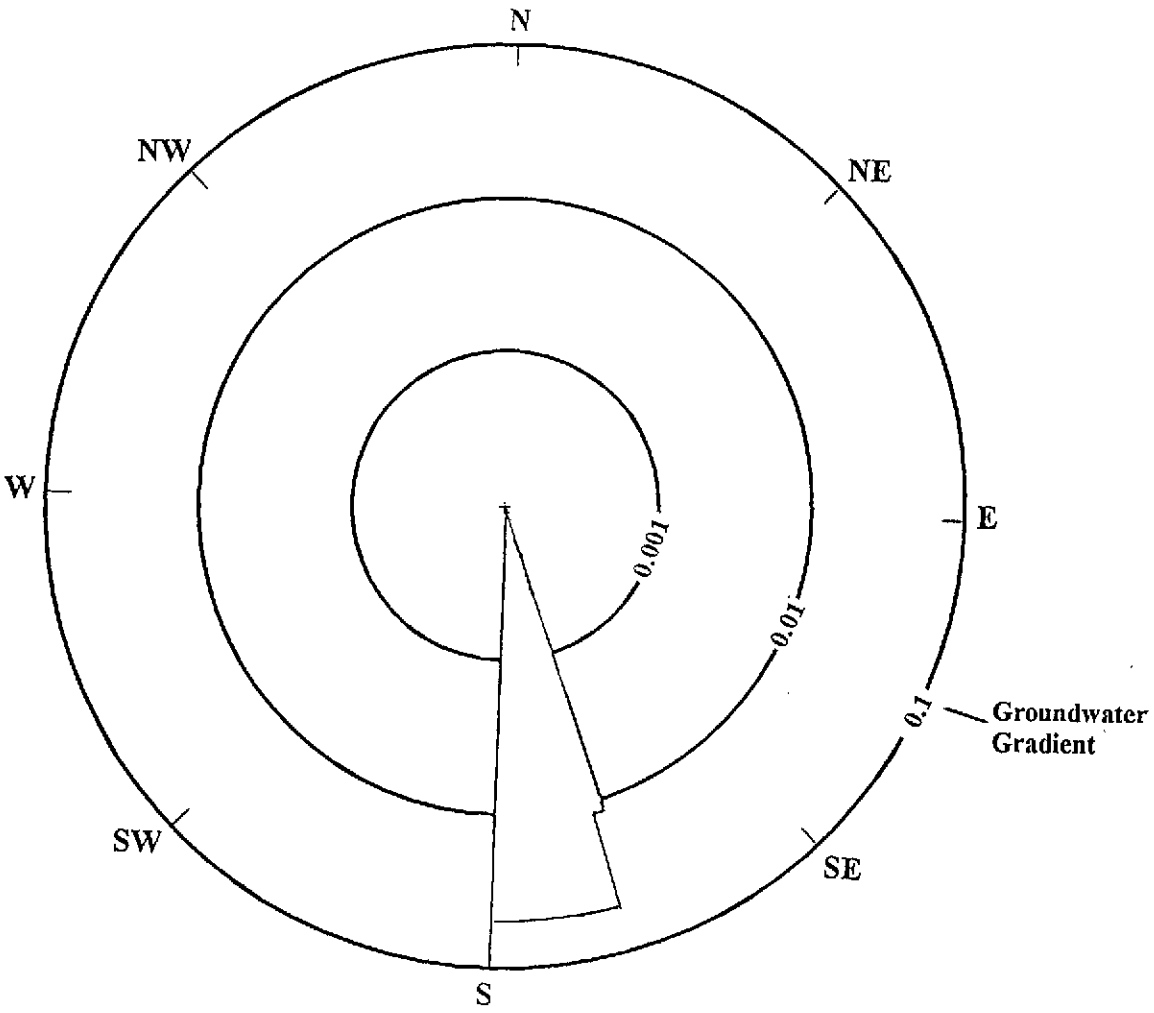
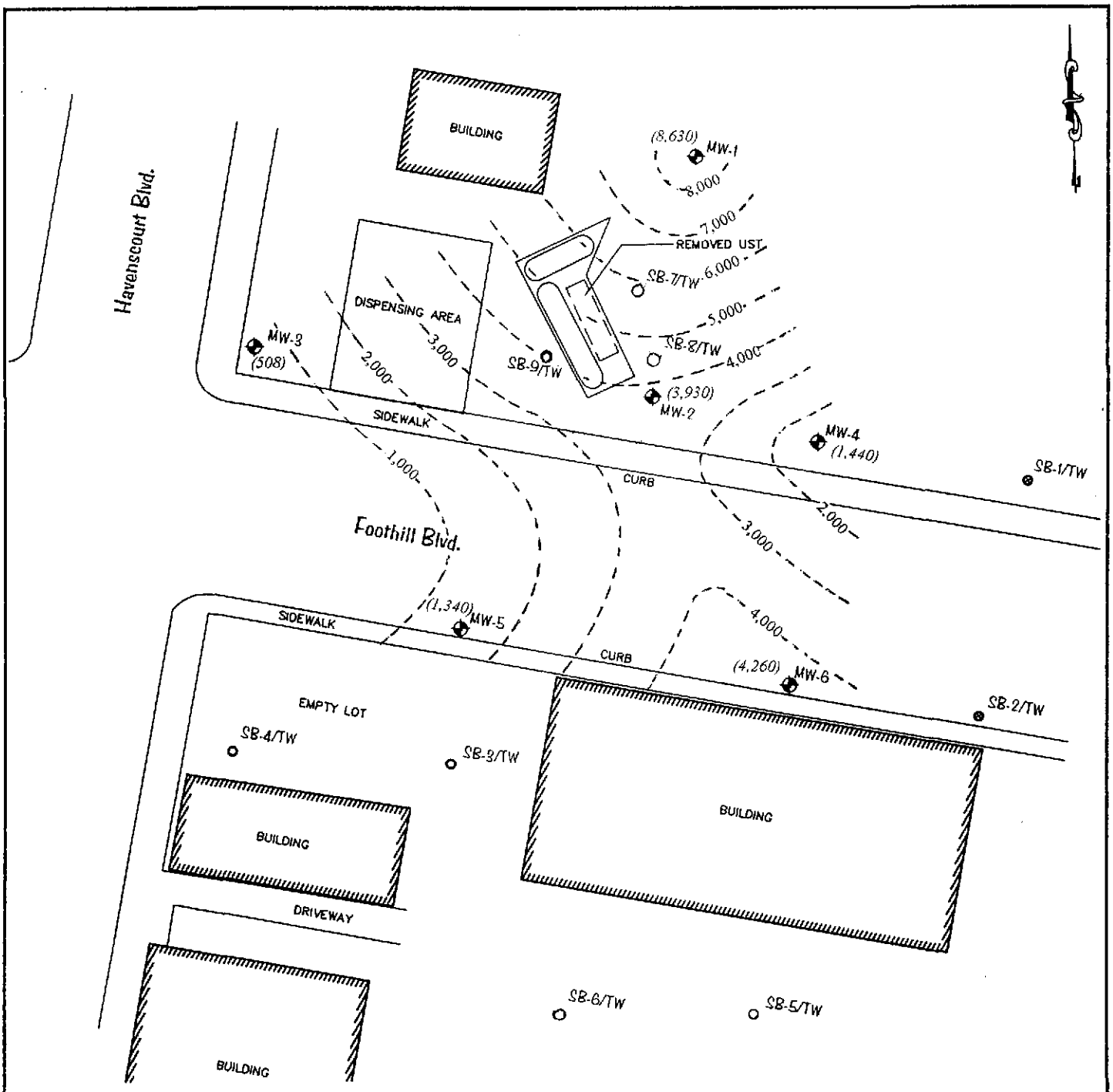


FIGURE 3A: HISTORICAL GROUNDWATER FLOW DIRECTION
(June 2001-November 2003)

SEKHON GAS STATION
6600 Foothill Blvd.
Oakland, California

ADVANCED ASSESSMENT and REMEDIATION SERVICES
2380 Salvio Street, Suite 202
Concord, CA 94520



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

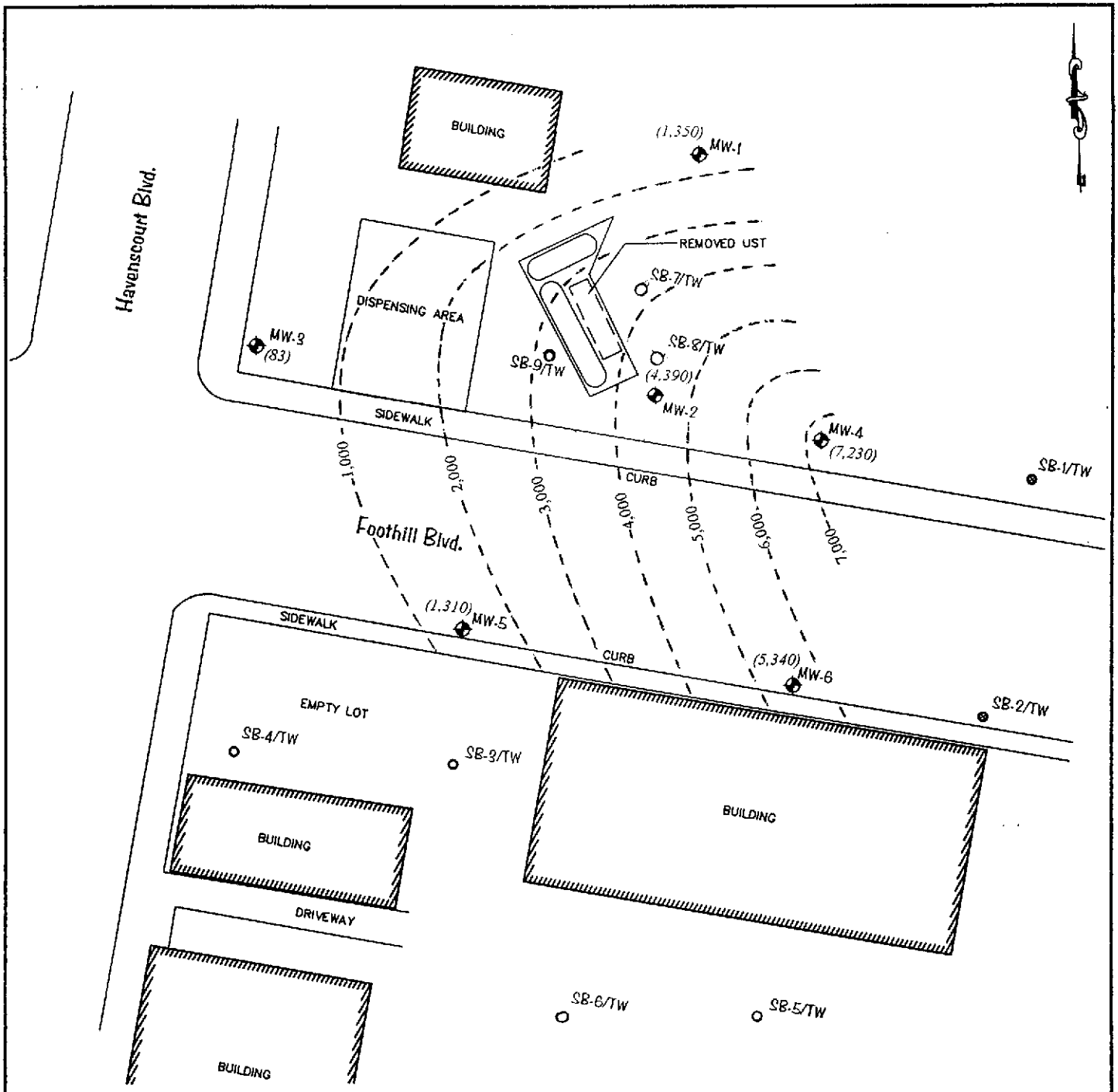
MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well
(8,630)	tert-Butyl alcohol (TBA) concentrations in groundwater in Parts per Billion (ppb)
-7,000-	TBA concentration contour

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

Note:
1. Groundwater samples collected on February 19, 2004
2. Contour interval =1,000 ppb

FIGURE 7: TBA CONCENTRATIONS IN GROUNDWATER
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

ADVANCED ASSESSMENT and REMEDIATION SERVICES
2380 Salvio Street, Suite 202
Concord, CA 94520



GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well
(4,390)	Total Petroleum Hydrocarbon as Gasoline (TPHg) concentrations in Groundwater in Parts per Billion (ppb)
-1,000-	TPHg concentration contour

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

Note:
1. Groundwater samples collected on February 19, 2004
2. Contour interval = 1,000 ppb

FIGURE 4: TPHg CONCENTRATIONS IN GROUNDWATER
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

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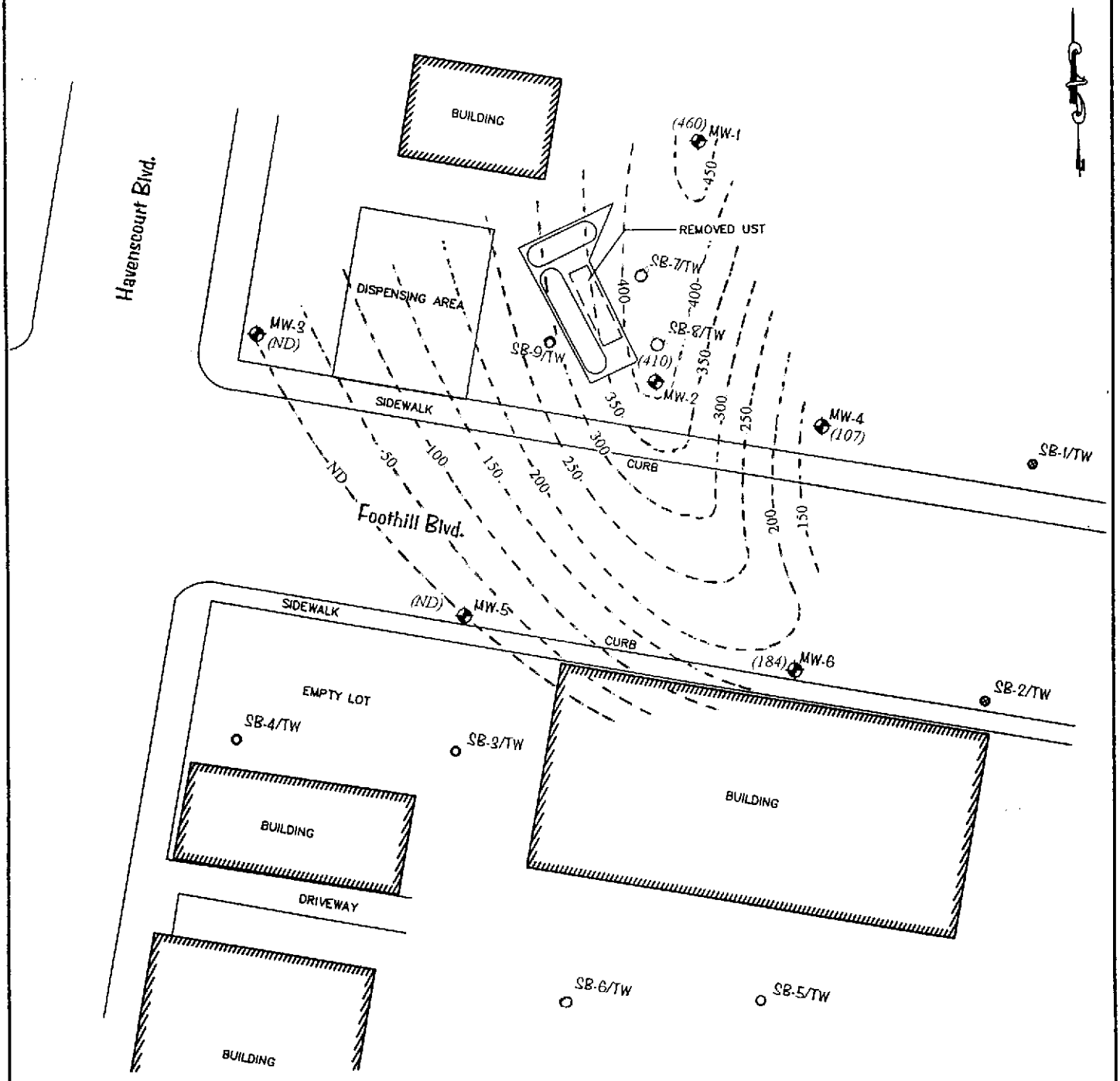

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well
(460)	Benzene concentrations in groundwater in Parts per Billion (ppb)
-350-	Benzene concentration contour
ND	Not detected above reported detection limit

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

Note:
1. Groundwater samples collected on February 19, 2004
2. Contour interval = 50 ppb

FIGURE 5: BENZENE CONCENTRATIONS IN GROUNDWATER
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

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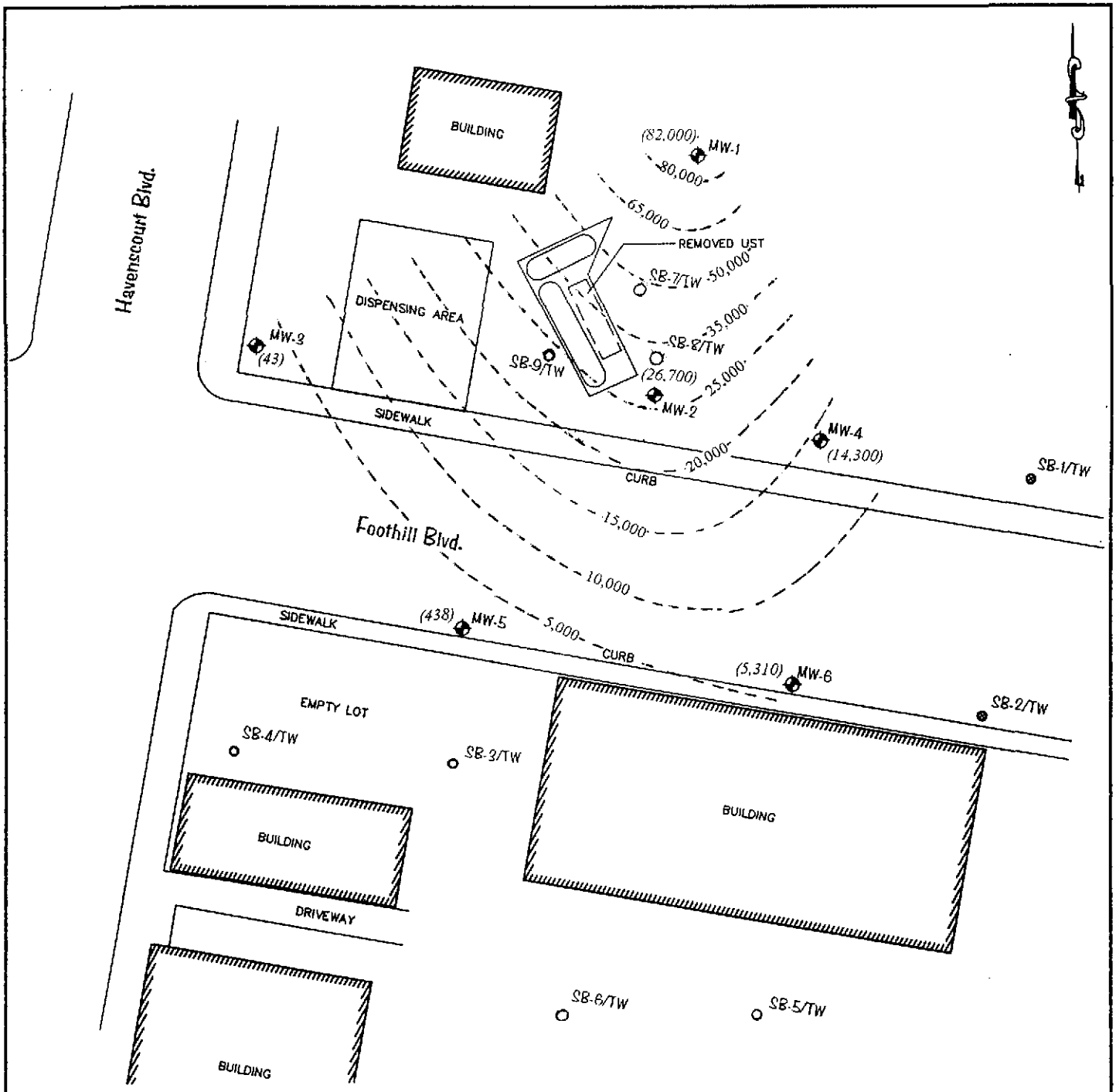

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well
(82,000)	Methyl Tertiary Butyl Ether (MTBE) concentrations in groundwater in Parts per Billion (ppb)
-50,000-	MTBE concentration contour

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

Note:
1. Groundwater samples collected on February 19, 2004
2. Contour interval =As labelled

FIGURE 6: MTBE CONCENTRATIONS IN GROUNDWATER
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

ADVANCED ASSESSMENT and REMEDIATION SERVICES
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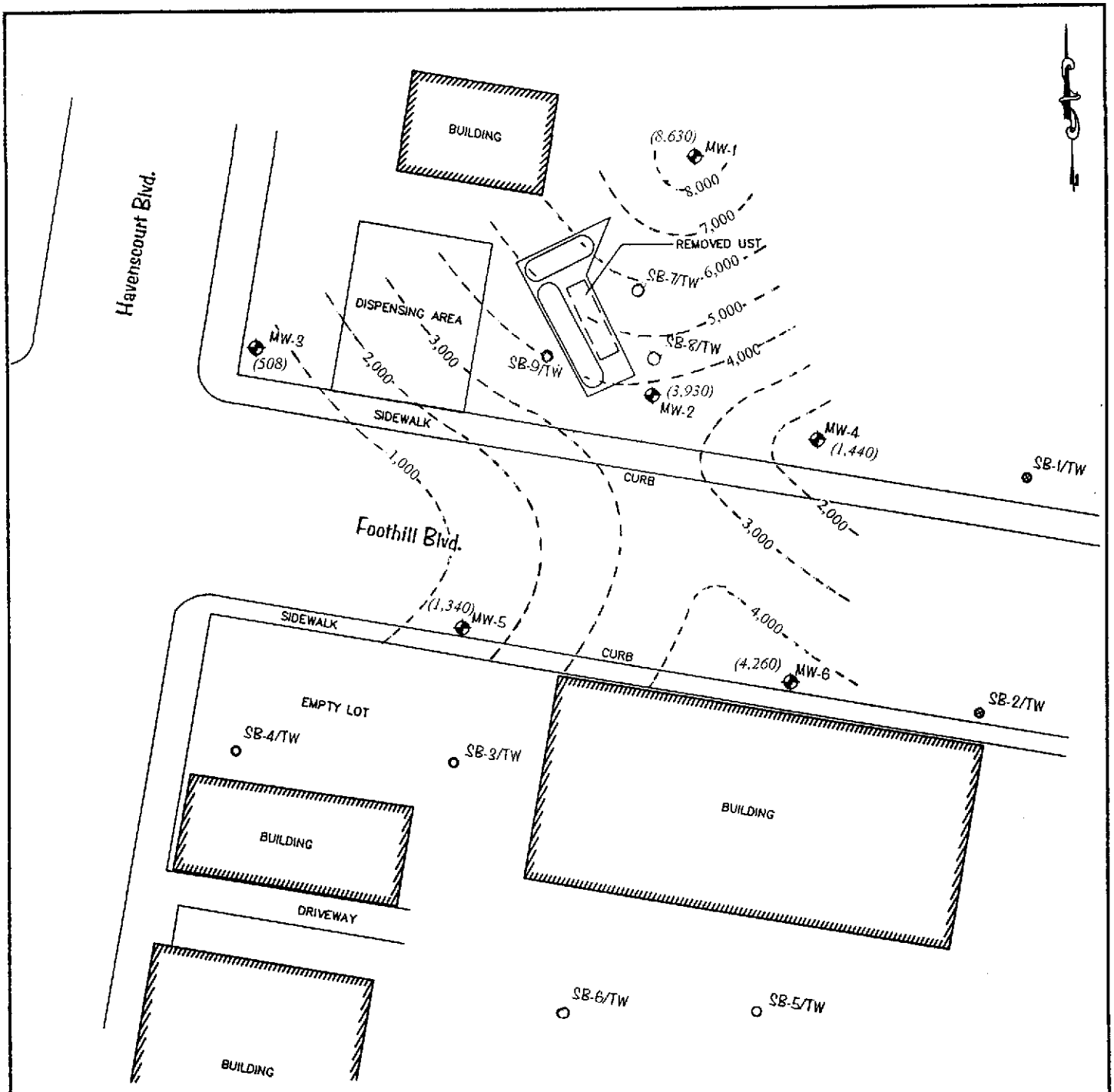

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

MW-1	Monitoring Well
SB-1	Soil boring/Temporary well
SB-5/TW	Proposed Soil boring/Temporary well
(8,630)	tert-Butyl alcohol (TBA) concentrations in groundwater in Parts per Billion (ppb)
-7,000-	TBA concentration contour

Notes:
1. Locations of the wells and borings are georeferenced By GPS Surveying method by PLS Survey, Inc.
2. Background map information from City of Oakland 1/40 scale aerials and P&D Environmental report.

Note:
1. Groundwater samples collected on February 19, 2004
2. Contour interval =1,000 ppb

FIGURE 7: TBA CONCENTRATIONS IN GROUNDWATER
SEKHON GAS STATION
6600 Foothill Boulevard
Oakland, CA 94544

ADVANCED ASSESSMENT and REMEDIATION SERVICES
2380 Salvio Street, Suite 202
Concord, CA 94520

APPENDIX A

Laboratory Reports and Chain of Custody Documents

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

Case Narrative

Client: Advanced Assessment & Remediation Services

Project: 6600 FOOTHILL BLVD., OAKLAND
Lab No: 04-0247
Date Received: 02/20/2004 Date reported: 02/27/2004

Six water samples were received under chain of custody control on 02/20/04 for analysis of gasoline range hydrocarbons by method 8015M, BTEX and fuel additives by GC/MS method 8260B. The QC/QA results met all requirements. No MS/MSD were analyzed for 8015M due to insufficient amount of sample, the LCS/LCSD results met all QC/QA criteria and were reported. No errors occurred during analysis.

John A. Murphy
Laboratory Director

North State Labs
CA ELAP # 1753
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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: 04-0247
Client: Advanced Assessment & Remd.
Project: 6600 FOOTHILL BLVD. OAKLAND

Date Reported: 02/27/2004

Gasoline Range Hydrocarbons by Method 8015M

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-0247-01 Client ID: MW-1/GW				02/19/2004	W
Gasoline Range Organics	SW8020F	1350	UG/L		02/24/2004
Sample: 04-0247-02 Client ID: MW-2/GW				02/19/2004	W
Gasoline Range Organics	SW8020F	4390	UG/L		02/24/2004
Sample: 04-0247-03 Client ID: MW-3/GW				02/19/2004	W
Gasoline Range Organics	SW8020F	83	UG/L		02/24/2004
Sample: 04-0247-04 Client ID: MW-4/GW				02/19/2004	W
Gasoline Range Organics	SW8020F	7230	UG/L		02/24/2004
Sample: 04-0247-05 Client ID: MW-5/GW				02/19/2004	W
Gasoline Range Organics	SW8020F	1310	UG/L		02/24/2004
Sample: 04-0247-06 Client ID: MW-6/GW				02/19/2004	W
Gasoline Range Organics	SW8020F	5340	UG/L		02/24/2004

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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

Quality Control/Quality Assurance

Lab Number: 04-0247
Client: Advanced Assessment & Remd.
Project: 6600 FOOTHILL BLVD. OAKLAND

Date Reported: 02/27/2004
Gasoline Range Hydrocarbons by Method 8015M

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline Range Organics	SW8020F	50	UG/L	ND	122/126	3

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

North State Labs
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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: 04-0247
Client : Advanced Assessment & Remd.
Project : 6600 FOOTHILL BLVD. OAKLAND

Date Sampled : 02/19/2004
Date Analyzed: 02/27/2004
Date Reported: 02/27/2004

Volatile Organics by GC/MS Method 8260

Laboratory Number	04-0247-01	04-0247-02	04-0247-03	04-0247-04	04-0247-05
Client ID	MW-1/GW	MW-2/GW	MW-3/GW	MW-4/GW	MW-5/GW
Matrix	W	W	W	W	W
Analyte	UG/L	UG/L	UG/L	UG/L	UG/L
Methyl-tert-butyl ether	82000	26700	42.7	14300	438
Ethyl tert-butyl ether	ND<500	ND<10	ND<1	ND<10	ND<1
tert-Amyl methyl ether	ND<500	91	ND<1	29	2
Di-isopropyl ether (DIPE)	ND<250	ND<5	ND<0.5	ND<5	2.6
tert-Butyl alcohol	8630	3930	508	1440	1340
1,2-Dichloroethane	ND<500	ND<10	ND<1	ND<10	ND<1
1,2-Dibromoethane	ND<500	ND<10	ND<1	ND<10	ND<1
Ethanol	ND<50000	ND<1000	ND<100	ND<1000	ND<100
Benzene	460	410	ND<0.5	107	ND<0.5
Toluene	ND<250	265	ND<0.5	7	0.7
Ethylbenzene	ND<250	160	ND<0.5	497	ND<0.5
Xylene, Isomers m & p	ND<500	200	ND<1	1000	1
o-xylene	ND<250	290	ND<0.5	63	1.2
SUR-Dibromofluoromethane	106	108	111	113	116
SUR-Toluene-d8	104	104	103	103	103
SUR-4-Bromofluorobenzene	97	96	96	97	103
SUR-1,2-Dichloroethane-d4	99	94	99	99	105

Comments:

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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: 04-0247
Client : Advanced Assessment & Remd.
Project : 6600 FOOTHILL BLVD. OAKLAND

Date Sampled : 02/19/2004
Date Analyzed: 02/26/2004
Date Reported: 02/27/2004

Volatile Organics by GC/MS Method 8260

Laboratory Number	04-0247-06
Client ID	MW-6/GW
Matrix	W
Analyte	UG/L
Methyl-tert-butyl ether	5310
Ethyl tert-butyl ether	ND<10
tert-Amyl methyl ether	17
Di-isopropyl ether (DIPE)	ND<5
tert-Butyl alcohol	4260
1,2-Dichloroethane	ND<10
1,2-Dibromoethane	ND<10
Ethanol	ND<1000
Benzene	184
Toluene	5
Ethylbenzene	65
Xylene, Isomers m & p	118
o-xylene	9
SUR-Dibromofluoromethane	116
SUR-Toluene-d8	104
SUR-4-Bromofluorobenzene	96
SUR-1,2-Dichloroethane-d4	107

Comments:

North State Labs
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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: 04-0247
Client : Advanced Assessment & Remd.
Project : 6600 FOOTHILL BLVD. OAKLAND

Date Sampled : 02/19/2004
Date Analyzed: 02/26/2004
Date Reported: 02/27/2004

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

Laboratory Number	04-0247	MS/MSD	RPD	Recovery	RPD
Client ID	Blank	Recovery		Limit	Limit
Matrix	W	W			
Analyte	Results UG/L	%Recoveries			
Ethanol	ND<100				
Methyl-tert-butyl ether	ND<0.5				
Di-isopropyl ether (DIPE)	ND<0.5				
tert-butyl Alcohol	ND<10				
Ethyl tert-butyl ether	ND<1				
tert-Amyl methyl ether	ND<1				
1,2-Dichloroethane	ND<1				
1,2-Dibromoethane	ND<1				
Benzene	ND<0.5	106/108	2	74-135	21
Ethylbenzene	ND<0.5				
Toluene	ND<0.5	119/121	2	61-141	19
o-xylene	ND<0.5				
Xylene, Isomers m & p	ND<1				
1,1-Dichloroethene	ND<0.5	69/80	15	61-128	25
Trichloroethene	ND<0.5	93/96	3	69-129	20
Chlorobenzene	ND<1	110/115	4	70-139	19
SUR-Dibromofluoromethane	104	107/110	3	67-129	21
SUR-Toluene-d8	101	103/103	0	72-119	16
SUR-4-Bromofluorobenzene	94	96/96	0	78-121	19
SUR-1,2-Dichloroethane-d4	90	95/97	2	85-115	25

Reviewed and Approved

John A. Murphy
Laboratory Director

North State Labs

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

04-0247

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

Client: ADVANCED ASSESSMENT + REMD. SV.	Report to: TRIDIB GUHA	Phone: 925-363-1999	Turnaround Time: 5 DAYS
Mailing Address: 2380 SALVIO STREET SUITE 202 CONCORD, CA 94520	Billing to: SAME	Fax:	
		email: aars@earthlink.net	Date: 2-19-04
		PO# SEKHON	Sampler: T. GUHA

Project / Site Address / Global ID: SEKHON GAS STATION 6600 FOOTHILL BLVD. OAKLAND, CA
T0600102286

Analysis Requested: TPH(D)/TEX FUEL OXY 8260B

EDF ☒

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Field Point ID
1	MW-1/GW	WATER	2 VOAs	HCl	2-19-04 16:15	MW-1
2	MW-2/GW	↓	2 VOA	↓	16:45	MW-2
3	MW-3/GW		2 VOA		16:00	MW-3
4	MW-4/GW		2 VOA		16:30	MW-4
5	MW-5/GW		2 VOA		17:00	MW-5
6	MW-6/GW	↓	2 VOA	↓	17:15	MW-6

SAMPLES RECD @ 4°C IN GOOD CONDITION

Relinquished by:	Date: 2/20/04	Time: 14:15	Received by: NSLABS	Lab Comments/ Hazards
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

March 10, 2004

Tridib Guha
Advanced Assessment
& Remediation
2380 Salvio St. Suite 200
Concord, CA 94520

Re: Sekhon Gas Station 600 Foothill Blvd., Oakland, CA
NSLab ID 04-0247

Tridib: At your request we have examined the data from the analyses of the water samples from this property. The last sampling event was February 19, 2004 and consisted in 6 water samples for fuel oxygenates, BTEX and gasoline.

A review of data for prior sampling events show that the level of contaminants for MW-1 is much higher in the samples taken 2/19/2004 than samples taken from MW-1 in the past. The samples were re-run with results from the re-run confirming the reported results. In addition, the bottles were scrutinized and were confirmed to bear the proper site identification, dates and times. Also, the samples from other projects sampled on that day by AARS were examined and re-analyzed. These also confirmed both the reported results and the bottle label site address, times and other identifications. We conclude that the results reported are not due to sample mix up.

The level of MTBE seen in sample MW-1 from the 2/19/2004 sampling is 82000 ug/L. This level of MTBE has been seen from this site only in MW-2. In addition, tert-butyl alcohol was identified in sample MW-1 at a concentration of 8630 ug/L. It is noted that tert-butyl alcohol is a metabolite of MTBE and is seen in samples of water with high MTBE levels after bacterial action. The enzymatic pathway from MTBE to TBA is also seen in the human body degradation of MTBE. TBA has been seen along with MTBE in many sites and it is the subject of many papers detailing this phenomenon. The TBA result is confirmed again by re-analysis.

It is difficult to track trends in data over a long period of time when the levels of contaminates are very high. In these cases, due to the sensitivity of the instrumentation, high dilutions must be made. At high dilutions the variations from run to run, and the variations that are present from sample to sample are multiplied. It is, therefore, not as easy to make a direct comparison from the data. High levels of MTBE also complicate the analysis of gasoline range hydrocarbons as MTBE, a gasoline additive, is not quantitated in the gasoline range.

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These high level samples are run at multiple high dilutions to allow the reporting of both the high level components and the low level analytes with acceptable detection limits. The data from these runs is combined to give the most information to our client.

To draw conclusions as to long term changes in contaminate levels from minor changes in the reported levels of highly diluted samples is difficult.

Please call me if you have any other questions.

Respectfully,

John A. Murphy
Lab Director