

Site 3985 ✓

JUL 26 2001

Review 9/15/01  
Response to 9/17/01



**GROUNDWATER QUALITY INVESTIGATION**  
at  
**SEKHON GAS STATION**  
6600 Foothill Boulevard  
Oakland, California

Prepared for:

Mr. Ravi S. Sekhon  
6600 Foothill Boulevard  
Oakland, California

July 24, 2001

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**ADVANCED ASSESSMENT AND REMEDIATION SERVICES**



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## ADVANCED ASSESSMENT AND REMEDiation SERVICES (AARS)

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July 24, 2001

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

Subject: **Submittal of Groundwater Quality Investigation Report for  
Petroleum Hydrocarbon Contaminated Soil and Groundwater Site  
Sekhon Gas Station, 6600 Foothill Blvd., Oakland, California**

Dear Mr. Gholami:

Advanced Assessment and Remediation Services (AARS), is pleased to present this groundwater quality investigation report for the above referenced site.

This report has been prepared in general accordance with the Tri-Regional Board Staff Recommendation for Preliminary Investigation and Evaluation of Underground Tank Sites, Addendum to Appendix A, dated August 30, 1991, and the guidelines of Alameda County Environmental Health Department. This report summarizes information pertaining to the underground tank removal and preliminary site investigation at 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

TG/SEKHNP5LRPT

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**GROUNDWATER QUALITY INVESTIGATION**  
at  
**SEKHON GAS STATION**  
**6600 Foothill Boulevard**  
**Oakland, California**

## **1.0 INTRODUCTION**

This report presents the results and findings of the preliminary site investigation conducted by Advanced Assessment and Remediation Services (AARS) at the Sekhon Gas Station, 6600 Foothill Boulevard, Oakland, California. The work performed was based on the results of soil and groundwater sampling conducted during an underground storage tank (UST) removal. Analytical results of the soil and groundwater samples from the tank cavities detected a significant amount of contamination at the site. This work was performed pursuant to the requirements of Alameda County Department of Environmental Health (ACDEH) (as described in the Work Plan for Groundwater Monitoring Well Installation by P & D Environmental dated March 9, 1999).

## **2.0 BACKGROUND**

A brief description of the site location and summary of past activities is presented below.

### **2.1 Site Description**

The project site is located at 6600 Foothill Boulevard, Oakland, California. The site is set in a commercial development and is presently used as a retail gas station with a store building/convenience store with two dispenser islands, and two dispensers on each dispenser island.

The property is bounded by an empty commercial building to the east, Foothill Boulevard to the south, Camden Street to the west and Evergreen Cemetery to the north. The Frick Jr. High School, Luther Burbank School and Markham School are located approximately 2000 feet from the property.

The site is located at an elevation of approximately 80 feet above mean sea level at the foothill of Oakland Hills to the north. San Francisco Bay is located approximately 2 miles west of the project site. A site vicinity map and a site plan are presented in Figure 1 and Figure 2 respectively.

### **2.2 Site History**

"The site is presently used as a retail gasoline station. The site was formerly operated as a gasoline station by Beacon. Mr. Ravi Sekhon (present owner) purchased the property in 1998. At that time underground storage tank (UST) system consisted of two single wall fiberglass USTs and one single wall steel UST.

As part of the UST system upgrade effort, the steel UST and dispensers were removed on December 16, 1998. Mr. Steve Crawford of the Oakland Fire Department was on site to observe site conditions and to direct sample collection. Soil samples were collected from the UST pit sidewalls and from beneath the dispenser islands. There was no evidence of contamination other than MTBE which

was reported in the laboratory reports. Mr. Crawford did not require the pipe trench samples be collected, since the pipe trench between the dispensers and the UST pit was less than 20 feet.

During P&D Environmental site visit on January 9, 1999, approximately 6 inches of groundwater was observed in the bottom of the UST pit. The measured depth to groundwater was 8 feet below the ground surface. Sheen was observed on the water in the UST pit. No petroleum hydrocarbon odors were detected in any of the soil at the site.

Copies of the soil samples results for samples collected from beneath the dispenser islands and from the UST pit sidewalls were forwarded to ACDEH on January 11, 1999. In addition, on December 1998, one groundwater grab sample was collected by Edd Clark & Associates. A copy of these results were also forwarded to the ACDEH.

Review of the laboratory reports shows that the only detected compound in soli has been MTBE (with the exception of 25 ppb of toluene in the east dispenser island soil sample). Review of the groundwater sample from the pit shows that TPH-G, BTEX, and MTBE were detected in the groundwater.

Based on the sample results, P&D recommended that the UST pit be backfilled, the upgrade of remaining UST system be completed, and that a groundwater investigation be performed to determine the extent and origin of petroleum hydrocarbons in groundwater.

Subsequently, groundwater was pumped from the UST pit and stored in above ground storage tanks pending carbon filtration and discharge to the storm drain with an approved San Francisco Bay Regional Water Quality Control Board temporary groundwater discharge permit. In addition, the stockpiled soil generated during UST removal was characterized, profiled and removed from the site to the BFI Vasco Road landfill in Livermore, California (P&D Environmental, March 9, 1999)".

### 2.3 Regional Geology and Hydrogeology

The site is located on the foothill of the Oakland Hills, at the eastern edge of a broad alluvial plain on the east side of San Francisco Bay. The plain is characterized by nearly level topography. The uppermost lithologic member is the San Antonio Formation. The San Antonio sediments were deposited in a complex and ever-changing depositional environment that ranged from alluvial fans to flood plains to lakes to swamps to beaches. Locally, the alluvial deposits consist largely of interfingered lenses of clayey gravel, sandy and silty clays, and sand-silt-clay mixtures. Individual units are discontinuous and difficult to correlate over distance.

Groundwater at this site is shallow. Soil borings drilled during June 4, 2001, encountered groundwater at approximately 15 feet below ground surface (bgs) and stabilized at 10 feet bgs. However, groundwater level may vary with seasonal variations. The general groundwater flow direction is toward San Francisco Bay to the southeast.

## **3.0 SCOPE OF WORK**

This preliminary site investigation was conducted by AARS under the requirements of the ACDEH as described in the Work Plan for Groundwater Monitoring Well Installation by P & D

Environmental dated March 9, 1999. The scope of work included the following tasks:

- Task 1. Summarized the previous site activities;
- Task 2. Researched ACDEH files for groundwater depths of surrounding sites;
- Task 3. Acquired the necessary permits for field activities;
- Task 4. Installed three soil borings, converted them to three groundwater monitoring wells;
- Task 5. Screened soil samples in the field for volatile organic compounds (VOCs) and submitted the selected soil samples for laboratory analysis;
- Task 6. Developed, sampled and surveyed monitoring wells;
- Task 7. Analyzed soil and groundwater samples for specified constituents;
- Task 8. Evaluated soil and groundwater sampling and analytical results and other data;
- Task 9. Prepared a report presenting the results and findings of the above activities and appropriate recommendations.

#### **4.0 FIELD METHODS AND PROCEDURES**

To assess the nature and extent of contamination in groundwater, three soil borings were drilled on-site. All three soil borings were converted into monitoring wells. Soil samples were collected and classified during drilling, starting at one foot bgs, and selected samples were analyzed for petroleum hydrocarbon constituents specified in section 4.0. The monitoring wells were developed, sampled, and surveyed. The procedures and methods used during field activities were in accordance with the requirements and guidelines of the ACDEH and RWQCB.

##### **4.1 Soil Borings and Sampling**

Prior to commencement of drilling activities, permits for the proposed groundwater monitoring wells were obtained from the Alameda County Public Works Agency. The work plan prepared by P&D Environmental was approved by the ACDEH. Underground Service Alert was informed prior to drilling. Copies of the permits are presented in Appendix A.

On June 4, 2001, AARS supervised the drilling of three soil borings. The drilling activities were performed by Exploration Geoservices of San Jose, California, using a truck-mounted B-61 drill rig. All three soil borings MW-1, MW-2 and MW-3 were drilled with an 8-inch diameter hollow-stem augers. Each of the soil borings were drilled to a total depth of 25 feet bgs.

During drilling, soil samples were collected at every five feet interval starting from five feet bgs. Soil samples were collected using a modified California split-spoon sampler lined with clean brass tubes. One soil sample was collected from each borehole for laboratory analyses (in MW-1 at 15 feet bgs; MW-2 at 8 feet bgs; and MW-3 at 10 feet bgs). Selection of the samples for laboratory analyses

were based on the depth of groundwater encountered as well as the Photo Ionization Detector (PID) reading and petroleum hydrocarbon odor. The soil sample tubes were securely sealed with a teflon sheet, polyurethane caps and plastic tape. The soil samples were labeled and placed immediately in an iced cooler for shipment to the analytical laboratory. The soil borings were lithologically logged in the field using the Unified Soil Classification System. Soil samples were screened in the field using a portable PID. Details of the sampling depths are presented in boring logs in Appendix B.

#### 4.2 Groundwater Monitoring Well Construction

Soil borings MW-1, MW-2 and MW-3 were converted into groundwater monitoring wells and completed to a total depth of 25 feet bgs. Each monitoring well was constructed with one 10-foot section flush-threaded, Schedule 40, PVC blank casing and one 10-foot and one five-foot section of two-inch diameter 0.010-inch, slotted PVC casing, which extended to a depth of at least 10 feet beneath the water table. The annular space surrounding the screened portion was backfilled with #2 Lonestar sand to 2 feet above the top of the screened section. A 2-foot thick bentonite annular seal was placed above the filter pack. The remaining annulus was grouted with neat cement to the surface. A well box was installed slightly above grade with a locking watertight well cap to ensure the integrity of the well. Monitoring well construction details are included in Appendix B.

#### 4.3 Monitoring Well Development and Sampling

Well development and sampling procedures were conducted in accordance with RWQCB guidelines and ACEHD requirements.

Monitoring wells MW-1, MW-2 and MW-3 were developed on June 13, 2001, by removing a minimum of 10 casing volumes of water from the wells with a two-inch-diameter PVC bailer. All three monitoring wells were sampled on June 13, 2001.

Prior to sampling of wells a groundwater sample was collected from each for inspection. Groundwater samples from each well were inspected for floating product, sheen and odor. Groundwater samples from all three monitoring wells were clear initially, without floating product or sheen. Petroleum hydrocarbon odor was noted from MW-2 and MW-3 samples. MW-1 water sample was free from odor. During purging of the wells, pH, specific conductivity, and temperature measurements of purged water were recorded and observed to stabilize, indicating that formation water had entered the well. A groundwater sample was then collected from each well at a minimum of 72 % total recovery. Field observations during well development and purging prior to sampling are presented in Appendix C.

The groundwater samples were collected in clean containers and transported in an iced cooler to the laboratory for analysis following standard chain of custody procedures.

#### 4.4 Groundwater Level Monitoring and Surveying

Top-of-well-casing elevations for MW-1 through MW-3 were surveyed on June 13, 2001. A bench mark was established forty feet south of the southeast corner of the store building. The top of well casing elevations were surveyed in reference to MW-1 as the common datum with an assumed elevation of 100.00 feet above mean sea level (MSL) All elevations are relative to this. The

elevations at each well were taken on the top of the well casing.

Groundwater levels in each well were measured to the nearest 0.01 foot on June 13, 2001, from the top of the PVC casing using an electric sounder. Groundwater surface elevation contours, based on interpretation of groundwater level and survey data, are presented in Figure 3. Survey data and water level measurements are presented in Table 1.

#### 4.5 Soil Cuttings and Well Development Water Storage and Disposal

Soil cuttings generated during drilling and sampling of the soil borings were transferred into 55-gallon DOT 17H drums, labeled and stored at the site for proper disposal.

All purged water generated from the well development and sampling, as well as decontamination rinseate, were stored in properly-labeled 55-gallon DOT 17H drums for proper disposal.

### 5.0 ANALYTICAL METHODS AND RESULTS

All soil and groundwater samples were analyzed by North State Environmental Laboratory of South San Francisco, California, a California-certified Laboratory. All chemical analyses of soil and groundwater samples were performed using standard test methods of the United States Environmental Protection Agency (EPA) and the California Department of Health Services (Cal-DHS), as discussed below.

#### 5.1 Analysis of Soil Samples

A total of three soil samples were collected for chemical analysis: one sample from each soil boring at depths of 14½ to 15 feet bgs in MW-1; 8 to 8½ feet bgs in MW-2; and 9½ to 10 feet bgs in MW-3. Soil samples were analyzed for total petroleum hydrocarbon as gasoline (TPHg) using EPA Methods 8015M, benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8020, methyl tertiary butyl ether (MTBE) using EPA Method 8020. Results of soil sample analyses are presented in Table 2. The official laboratory reports, chain of custody documents and chromatograms are included in Appendix D.

#### 5.2 Analysis of Groundwater Samples

All groundwater samples were analyzed for TPHg using EPA Method 8015 modified, BTEX/MTBE using EPA Method 8020. Results of groundwater analyses are summarized in Table 3. The official laboratory reports and chain of custody documents are included in Appendix D.

### 6.0 DISCUSSION OF RESULTS

A brief description of site geology and hydrogeology based on the results of the drilling activities is presented below. The results of the laboratory analysis of the soil and groundwater samples collected during this investigation are also discussed below.



## 6.1 Site Geology

The subsurface lithology in all three soil borings comprises a fine-grained alluvial material consisting of gravel-sand-clay mixture, stiff clay, poorly sorted clay and silty clay to the maximum explored depth of 25 feet bgs. Most of the clays and silty clays are very stiff with high plasticity.

## 6.2 Site Hydrogeology

Groundwater was encountered approximately 16 feet bgs during drilling and stabilized at 10 feet bgs on June 13, 2001. The groundwater elevations from monitoring wells MW-1 through MW-3, as measured on June 13, 2001, were used to develop the groundwater elevation contour map shown in Figure 3. The groundwater flow direction has been calculated to be to the southeast, with an average gradient of approximately 0.05 foot per foot. The average depth to stabilized groundwater in these wells was approximately 10 feet bgs on June 13, 2001, which could vary with seasonal conditions.

## 6.3 Soil analysis

Analytical results of two soil samples, MW-1-S@15' and MW-3-S@10', detected TPHg concentration at 2.3 and 1.1 parts per million (ppm) respectively, and BTEX were below the detection limit in both samples. However, the laboratory reported that these samples do not match the gasoline pattern. Only the soil sample, MW-2-S@8' was found to contain TPHg at 870 ppm, benzene at 4.3 ppm, toluene at 3.8 ppm, ethylbenzene at 12 ppm and xylenes at 69 ppm. MTBE was detected in all three soil samples at concentrations ranging from 0.009 to 0.29 ppm. Results of soil sample analyses are presented in Table 2. The official laboratory reports, chain of custody documents and chromatograms are included in Appendix D.

## 6.4 Groundwater Analysis

Analytical results for groundwater samples from three monitoring wells (MW-1 GW, MW-2 GW and MW-3 GW) are presented in Table 3. The concentrations of TPHg, benzene and MTBE measured during June 13, 2001, are presented in Figure 4, 5 and 6 respectively. Groundwater samples from monitoring well MW-2 found to contain TPHg at 5800 parts per billion (ppb), benzene, toluene, ethylbenzene, xylenes and MTBE at 160, 210, 290, 980 and 94,000 ppb respectively. Only MTBE was detected at 130 ppb in groundwater sample from MW-1. Groundwater samples from MW-3 found to contain TPHg at 300 ppb, benzene, ethylbenzene, xylenes and MTBE at 1, 0.07, 2, and 450 ppb respectively.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the present site investigation, the following conclusions are drawn:

1. The highest petroleum hydrocarbon constituents were detected in MW-2, former UST area, farthest downgradient monitoring well, located at the southeastern corner of the property boundary.
2. MTBE concentrations in MW-2 is high at 94,000 ppb.

3. The groundwater flow direction has been calculated to be to the southeast, with an average gradient of approximately 0.05 foot per foot. The average depth to stabilized groundwater in these wells was approximately 10 feet bgs on June 13, 2001.
4. Maps showing contours TPHg, benzene and MTBE concentrations in groundwater, developed from the results of groundwater analyses indicate that the dissolved-phase petroleum hydrocarbon plume has migrated to the southeast in the direction of groundwater flow. The nature and extent of groundwater contaminant plume within the property has been defined. The extent of contamination in shallow groundwater off-site is unknown at this time.

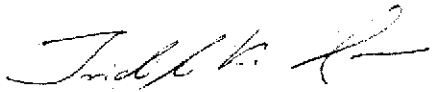
Recommendations are as follows:

1. Further investigation is needed to determine the extent of off-site migration of contaminant plume.
2. The effect of horizontal conduits on contaminant migration as preferential pathways should be determined, since the groundwater is shallow.
3. Initiation of a regular quarterly groundwater monitoring and sampling program at the site to establish a history for water levels, and hydrocarbon concentrations.

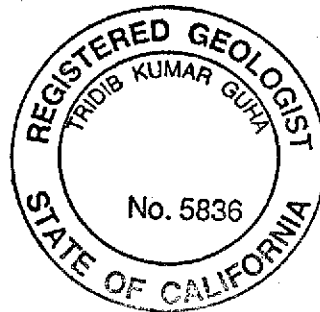
## 9.0 CERTIFICATION

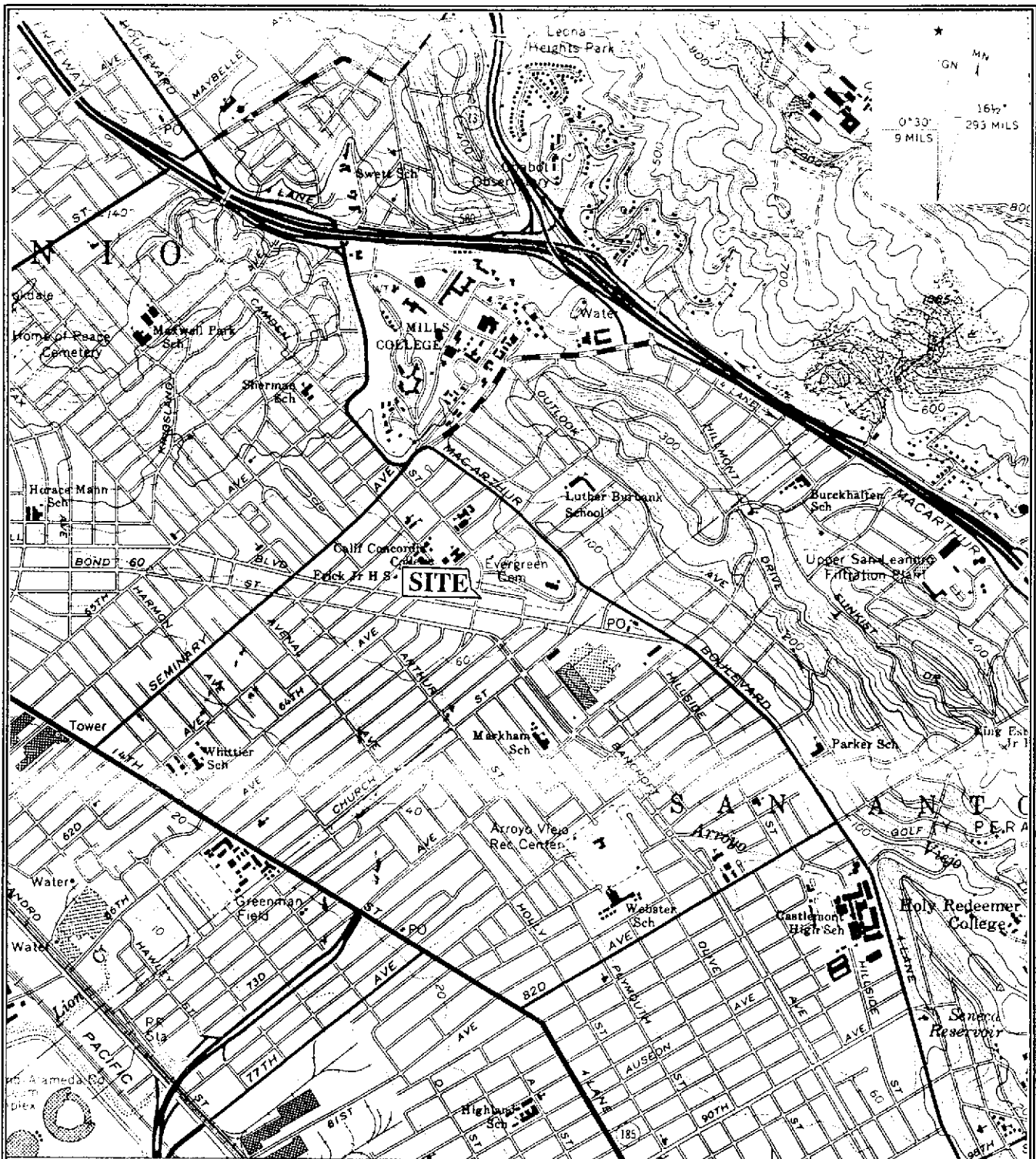
The information provided in this report is based on the recent groundwater and sampling activities conducted at the site. All data presented in this report is believed to be accurate. All conclusions or recommendations provided herein are based on our expertise and experience conducting work of a similar nature.

Advanced Assessment and Remediation Services

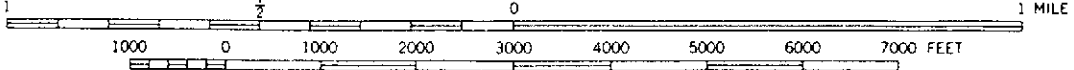


Tridib K. Guha  
Registered Geologist Number 5836





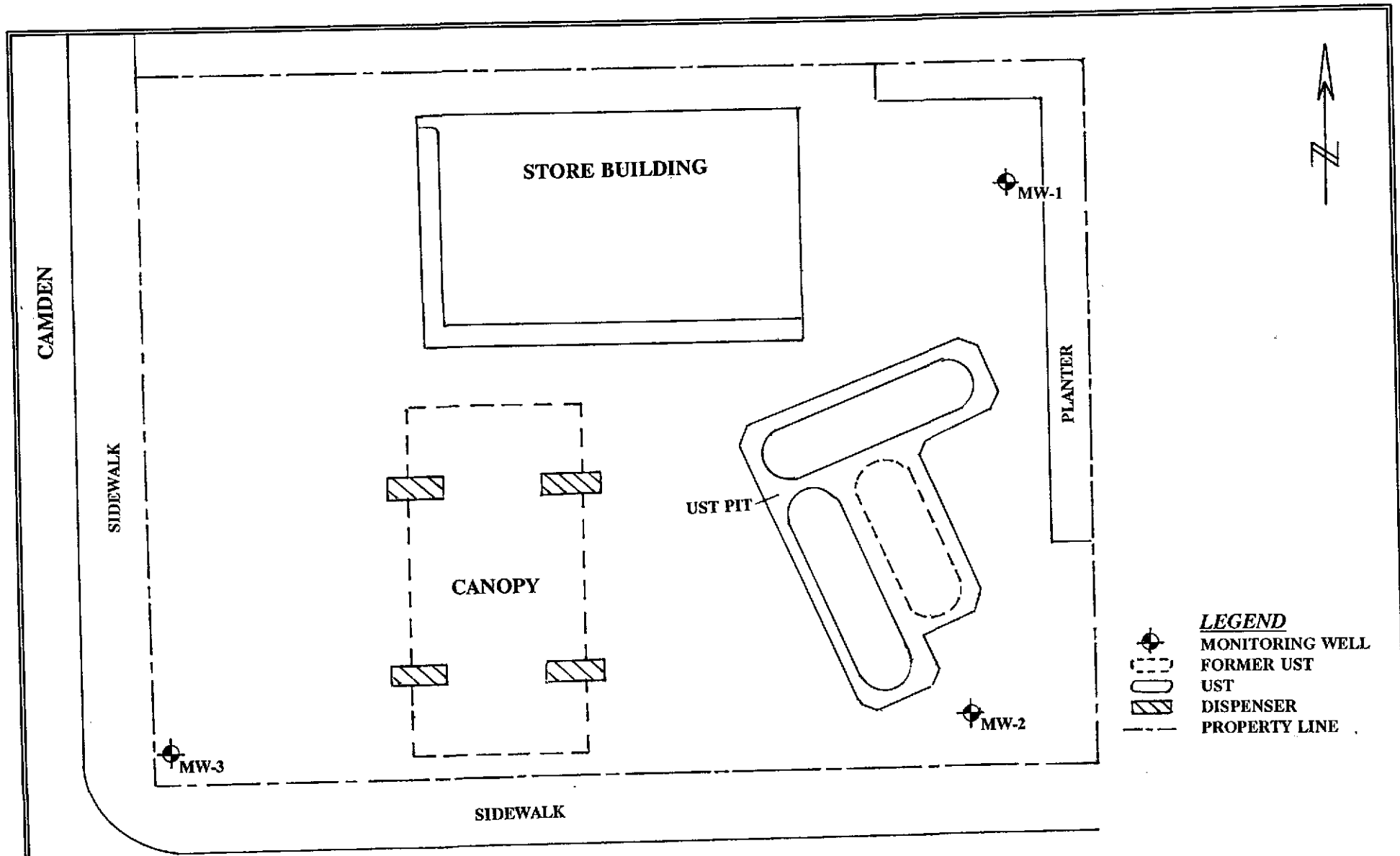
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






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

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 Concord, California



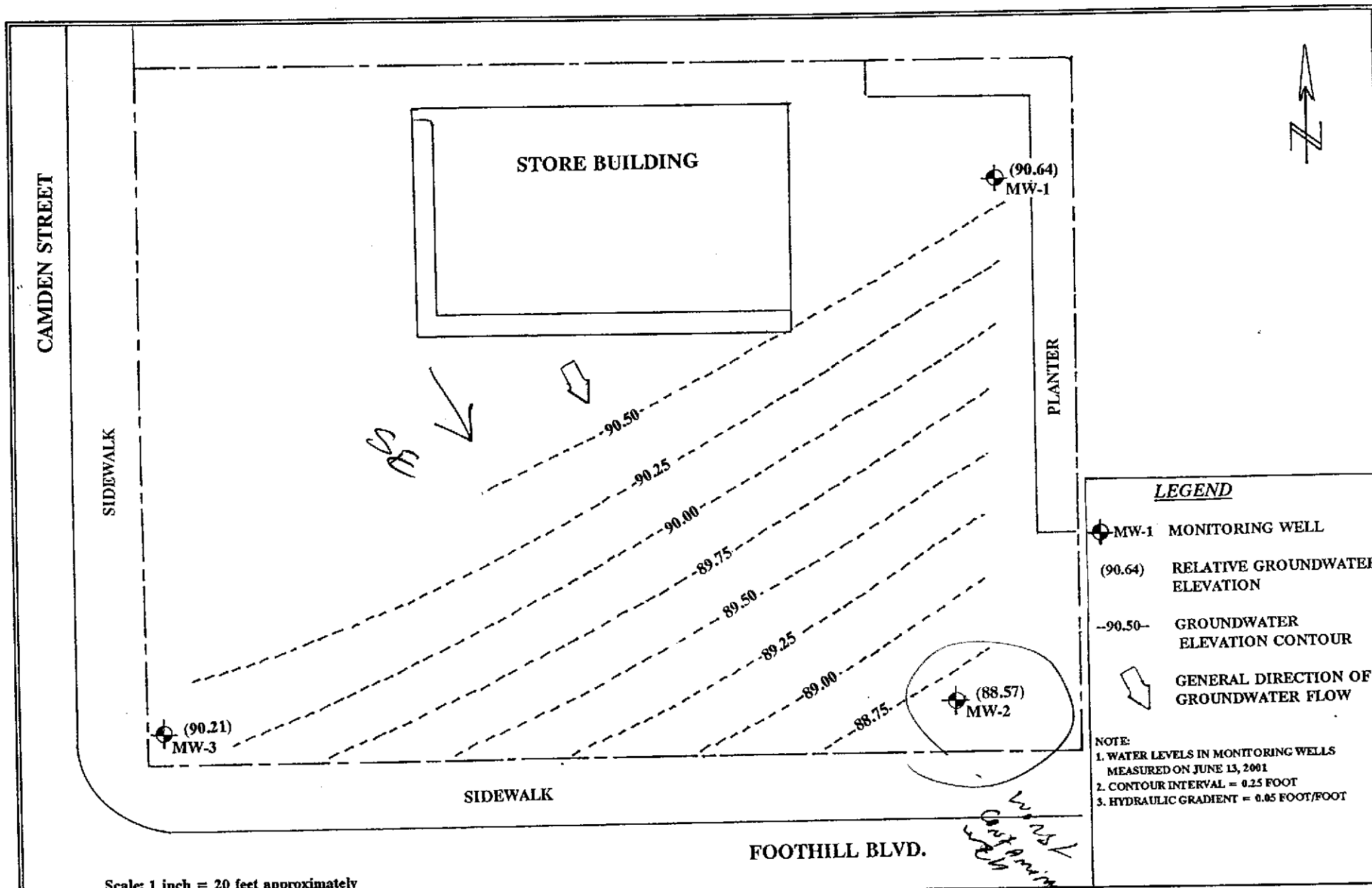
- LEGEND**
-  MONITORING WELL
  -  FORMER UST
  -  UST
  -  DISPENSER
  -  PROPERTY LINE

Scale: 1 inch = 20 feet approximately

Source of base map: P&D Environmental

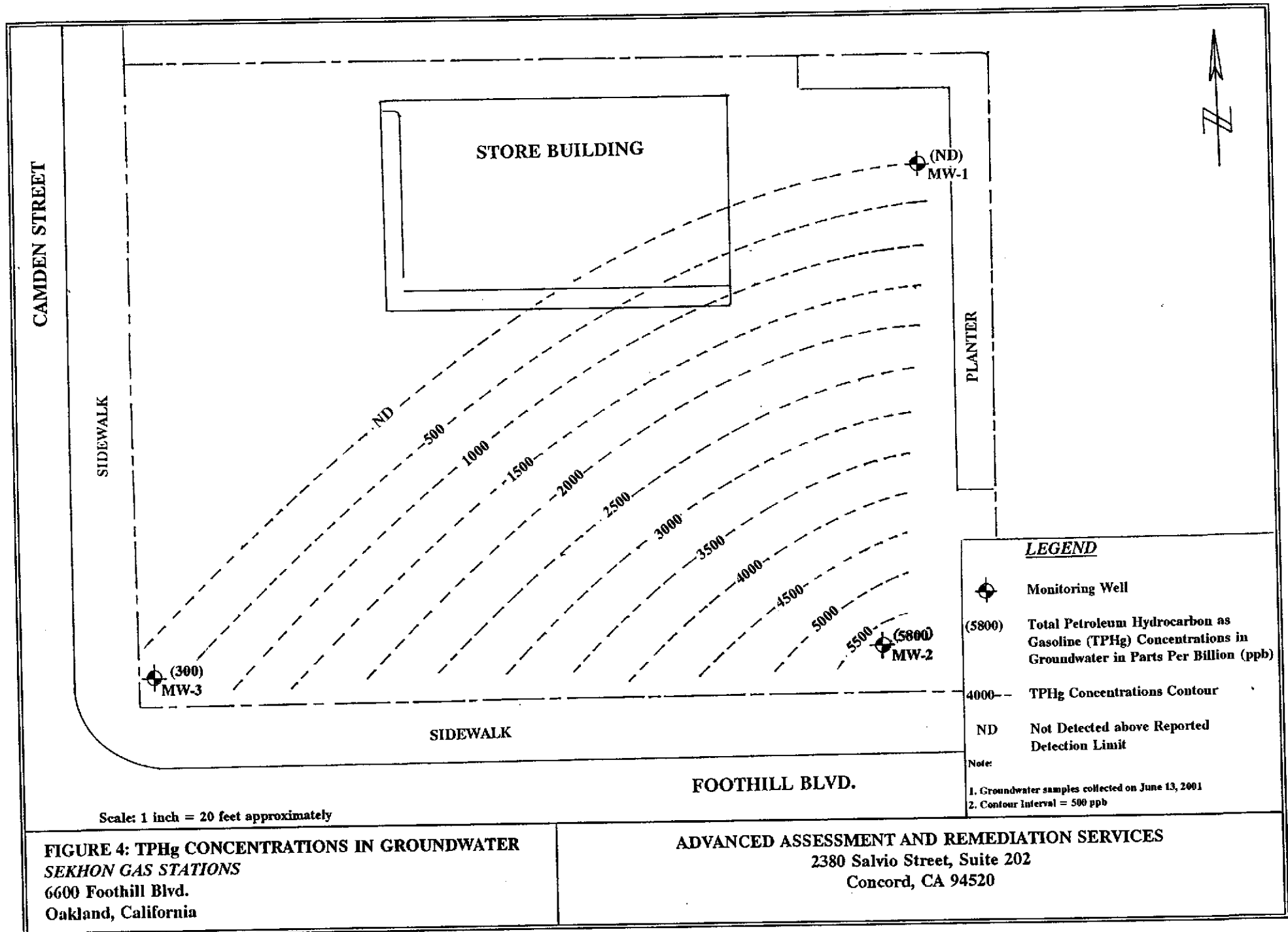
**FIGURE 2: SITE PLAN**  
**SEKHON GAS STATION**  
 6600 Foothill Blvd.  
 Oakland, California

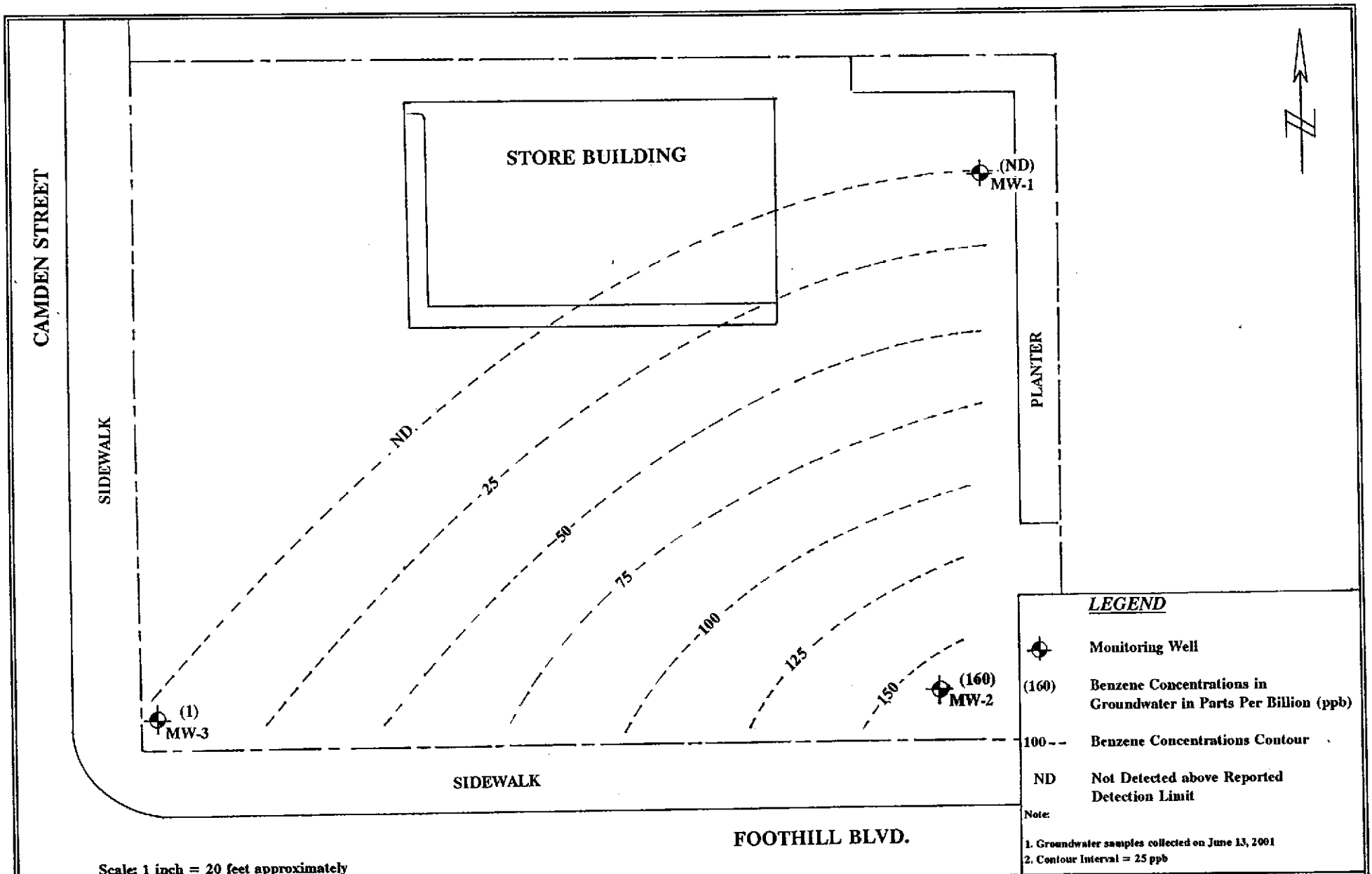
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


**FIGURE 3: GROUNDWATER SURFACE ELEVATIONS (06/13/01)**  
**SEKHON GAS STATION**  
 6600 Foothill Blvd.  
 Oakland, California

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**LEGEND**

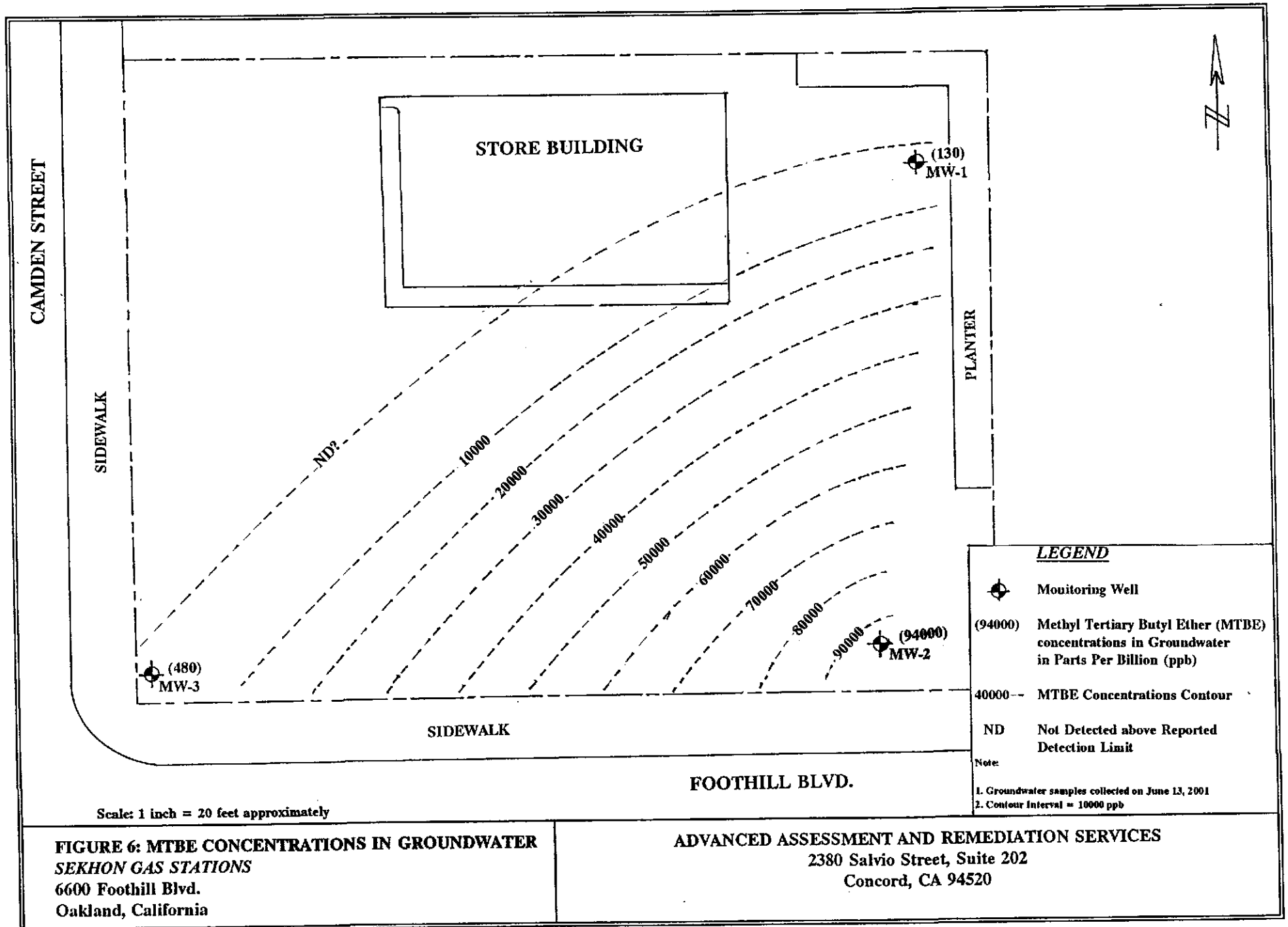
-  Monitoring Well
-  (160) Benzene Concentrations in Groundwater in Parts Per Billion (ppb)
-  100 Benzene Concentrations Contour
-  ND Not Detected above Reported Detection Limit

Note:





1. Groundwater samples collected on June 13, 2001
2. Contour Interval = 25 ppb

**FIGURE 5: BENZENE CONCENTRATIONS IN GROUNDWATER  
SEKHON GAS STATIONS**  
6600 Foothill Blvd.  
Oakland, California

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**LEGEND**

-  Monitoring Well
-  (94000) Methyl Tertiary Butyl Ether (MTBE) concentrations in Groundwater in Parts Per Billion (ppb)
-  40000 -- MTBE Concentrations Contour
-  ND Not Detected above Reported Detection Limit

Note:  
 1. Groundwater samples collected on June 13, 2001  
 2. Contour Interval = 10000 ppb



<b>TABLE 1: SURVEY AND WATER LEVEL MONITORING DATA</b> <b>SEKHON GAS STATION</b> <b>6600 Foothill Blvd.</b> <b>Oakland, California</b>					
Well No.	Date of Measurement	Casing Elevation (Feet - Relative)	Depth to Groundwater (Feet - Relative)	Product Thickness (Feet)	Groundwater Elevation (Feet - Relative)
MW-1	06-13-01	100.00	9.36	0.00	90.64
MW-2	06-13-01	98.71	10.44	0.00	88.57
MW-3	06-13-01	99.90	9.69	0.00	90.21

Note: A bench mark was established at forty feet south of the southeast corner of the Store Building. The top of well casing elevations were surveyed on June 13, 2001, in reference to MW-1 as the common datum with an assumed elevation of 100.00 feet above mean sea level (MSL). All elevations are relative to this.

**TABLE 2: SUMMARY OF ANALYTICAL RESULTS OF SOIL SAMPLING**  
**SEKHON GAS STATION**  
**6600 Foothill Blvd.**  
**Oakland, California**

Sample ID	Date of Sampling	TPHg (mg/kg)	MTBE (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
MW-1-S@15'	06/04/01	2.3**	0.009	ND	ND	ND	ND
MW-2-S@8'	06/04/01	870	0.29*	4.3	3.8	12	69
MW-3-S@10'	06/04/01	1.1**	0.016	ND	ND	ND	ND
RL	06/14/01	0.5	0.005	0.005	0.005	0.005	0.010

Notes:

ND- Not Detected    NA- Not Analyzed    RL- Reporting Limit  
mg/kg- Milligram per kilogram (parts per million)  
TPHg- Total petroleum hydrocarbon as gasoline (EPA method modified 8015)  
MTBE- Methyl Tertiary Butyl Ether (EPA method 8020)  
Benzene, toluene, ethylbenzene, and total xylenes (EPA method 8020)  
\* Confirmed by GC/MS method 8260  
\*\* Laboratory reported does not match gasoline pattern

**TABLE 3: SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLING  
SEKHON GAS STATION  
6600 Foothill Blvd.  
Oakland, California**

Sample ID	Date of Sampling	TPHg (µg/L)	MTBE (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	
MW-1/GW	06/13/01	ND	130	ND	ND	ND	ND	
MW-2/GW	06/13/01	5800	94000*	160	210	290	980	
MW-3/GW	06/13/01	300	450	1	ND	0.07	2	
RL	06/18-20/01	50	0.5	0.5	0.5	0.5	1.0	
Notes: ND- Not Detected    RL- Reporting Limit    NA- Not Analyzed µg/L- Microgram per liter (parts per billion) TPHg- Total petroleum hydrocarbon as gasoline (EPA method modified 8015) MTBE- Methyl Tertiary Butyl Ether (EPA method 8020) Benzene, toluene, ethylbenzene, and total xylenes (EPA method 8020) * Confirmed by GC/MS method 8260								

## **APPENDIX A**

### **Permits**



# ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION  
303 ELMHURST ST. HAYWARD CA. 94541-3395  
PHONE (510) 670-4554  
FAX (510) 782-1935

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 6600 Foothill Blvd.  
Oakland, CA 94605

PERMIT NUMBER NO1-294  
WELL NUMBER \_\_\_\_\_  
APN \_\_\_\_\_

PERMIT CONDITIONS  
Circled Permit Requirements Apply

CLIENT  
Name Ravi S. Sekhon  
Address 6600 Foothill Blvd Phone 510-568-4664  
City Oakland Zip 94605

- A. GENERAL**
  1. A permit application should be submitted 70 days prior to arrive at the ACPWA office five days prior to proposed starting date.
  2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report.
  3. Permit is void if project not begun within 90 days of approval date.

APPLICANT  
Name Advanced Assessment and Remediation Sv Pn 925-363-1996  
Address 2380 Salvia 202 Phone 925-363-1999  
City Concord, CA Zip 94520

**B. WATER SUPPLY WELLS**

1. Minimum surface seal thickness is two inches of cement grout placed by trowel.
2. Minimum seal depth is 30 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

**TYPE OF PROJECT**

Well Construction		Geotechnical Investigation	
Cathodic Protection	<input type="checkbox"/>	General	<input type="checkbox"/>
Water Supply	<input type="checkbox"/>	Contamination	<input type="checkbox"/>
Monitoring	<input checked="" type="checkbox"/>	Well Deactivation	<input type="checkbox"/>

**C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**

1. Minimum surface seal thickness is two inches of cement grout placed by trowel.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 30 feet.

**PROPOSED WATER SUPPLY WELL USE**

New Domestic	<input type="checkbox"/>	Replacement Domestic	<input type="checkbox"/>
Municipal	<input type="checkbox"/>	Irrigation	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	Other	<input type="checkbox"/>

**D. GEOTECHNICAL**

Backfill bore hole by trowel with cement grout or cement grout and sand. Upper two-three feet to placed in hard or with compacted savings.

**DRILLING METHOD:**

Mud Rotary	<input type="checkbox"/>	Air Rotary	<input type="checkbox"/>	Auger	<input checked="" type="checkbox"/>
Cable	<input type="checkbox"/>	Other	<input type="checkbox"/>		

**E. CATHODIC**

Fill hole/cathode zone with concrete placed by trowel.

DRILLER'S NAME Exploration Geoservices

**F. WELL DESTRUCTION**

See attached requirements for destruction of shallow wells. Send a map of work site. A different permit application is required for wells deeper than 45 feet.

DRILLER'S LICENSE NO. C57 484288

**G. SPECIAL CONDITIONS**

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

**WELL PROJECTS**

Drill Hole Diameter	<u>8</u> in.	Maximum	
Casing Diameter	<u>7</u> in.	Depth	<u>50</u> ft.
Surface Seal Depth	<u>33</u> ft.	Operator Well Number	<u>AW-1-9-3</u>

MW-1

**GEOTECHNICAL PROJECTS**

Number of Borings	_____	Maximum	
Hole Diameter	_____ in.	Depth	_____ ft.

ESTIMATED STARTING DATE June 11, 2001  
ESTIMATED COMPLETION DATE July 11, 2001

APPROVED \_\_\_\_\_

DATE 5-16-01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 11-61.

APPLICANT'S SIGNATURE [Signature] DATE 5/14/01

BASE PRINT NAME TRIDIS GUNH Rev. 6-3-00



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
309 ELMHURST ST. HAYWARD CA. 94544-1015
PHONE (510) 870-8514
FAX (510) 782-1935

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 6600 Foothill Blvd.
Oakland, CA 94605

PERMIT NUMBER W01-295
WELL NUMBER
APN

CLIENT Name Ravi S. Sekhon
Address 6600 Foothill Blvd #510-568-4664
City Oakland CA 94605

APPLICANT Name Advanced Assessment and Remediation Svcs
Address 2380 Salvia, 207 Concord, CA
Phone 925-363-1999
Fax 925-362-1999
City Concord, CA Zip 94520

TYPE OF PROJECT
Well Construction
Cathodic Protection
Water Supply
Monitoring
Geotechnical Investigation
General
Contamination
Well Detection

PROPOSED WATER SUPPLY WELL USE
New Domestic
Municipal
Industrial
Replacement Domestic
Irrigation
Other

DRILLING METHOD:
Mud Rotary
Cable
Air Rotary
Cable

DRILLER'S NAME Exploration Geoservices
DRILLER'S LICENSE NO. C57 4842BR

WELL PROJECTS
Drill Hole Diameter 8 in.
Casing Diameter 2 in.
Surface Seal Depth 33 ft.
Maximum Depth 50 ft.
Owner's Well Number MW-2

GEOTECHNICAL PROJECTS
Number of Borings
Hole Diameter
Maximum Depth

ESTIMATED STARTING DATE June 11, 2001
ESTIMATED COMPLETION DATE June 11, 2001

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-48.
APPLICANT'S SIGNATURE TRIDIB R. GUNH DATE 5/14/01
BASE PRINT NAME TRIDIB R. GUNH

- PERMIT CONDITIONS
Circled Permit Requirements Apply
A. GENERAL
1. A permit application should be submitted 30 days prior to arrival at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.
B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 30 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement ground mixture. Upper two-three feet replaced in kind or with compacted savings.
E. CATHODIC
Fill hole annular zone with concrete placed by tremie.
F. WELL DESTRUCTION
See attached requirements for destruction of shallow wells. Send a map of work site. A different permit application is required for wells deeper than 45 feet.
G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [Signature] DATE 4-16-01



# ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION  
399 ELNURST ST. KAYWARD CA 94544-1395  
PHONE (510) 470-2354  
FAX (510) 782-1935

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 6600 Foothill Blvd.  
Oakland, CA 94605

PERMIT NUMBER 1N01-2910  
WELL NUMBER \_\_\_\_\_  
APN \_\_\_\_\_

CLIENT  
Name Ravi S. Sekhon  
Address 6600 Foothill Blvd #510-568-4664  
City Oakland Zip 94605

APPLICANT  
Name Advanced Assessment and Remediation Sv.  
Address 2380 Salvia 202 Phone 925-363-1998  
City Concord, CA Zip 94520

TYPE OF PROJECT  
Well Construction  Geotechnical Investigation   
Cathodic Protection  General   
Water Supply  Contamination   
Monitoring  Well Destruction

PROPOSED WATER SUPPLY WELL USE  
New Domestic  Replacement Domestic   
Municipal  Irrigation   
Industrial  Other \_\_\_\_\_

DRILLING METHOD:  
Mud Rotary  Air Rotary  Auger   
Cable  Other

DRILLER'S NAME Exploration Geoservices

DRILLER'S LICENSE NO. 052 484288

WELL PROJECTS  
Drill Hole Diameter 8 in. Minimum  
Casing Diameter 2 in. Depth 50 ft.  
Surface Seal Depth 33 ft. Owner's Well Number MIN-3

GEOTECHNICAL PROJECTS  
Number of Borings \_\_\_\_\_ Maximum  
Hole Diameter \_\_\_\_\_ in. Depth \_\_\_\_\_ ft.

ESTIMATED STARTING DATE JUNE 11, 2001  
ESTIMATED COMPLETION DATE JUNE 11, 2001

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 71-68.

APPLICANT'S SIGNATURE [Signature] DATE 5/14/01

BASE PRINT NAME TRIDIB GUPTA Rev. 1-3-00

### PERMIT CONDITIONS Circled Permit Requirements Apply

#### A. GENERAL

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

#### B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 30 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

#### C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

#### D. GEOTECHNICAL

Backfill bore hole by tremie with cement grout or cement grout and aggregate. Upper two-thirds feet placed in lift or with compacted cuttings.

#### E. CATHODIC

Fill hole/cathode zone with concrete placed by tremie.

#### F. WELL DESTRUCTION

See attached requirements for destruction of shallow wells. Send a map of work site. A different permit application is required for wells deeper than 45 feet.

#### G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [Signature]

DATE 4/16/01

## **APPENDIX B**

### **Boring Logs and Monitoring Well Installation Details**



## LOG OF EXPLORATORY BORING NO. MW-1

Project: Sekhon Gas Station  
 Drilling Co.: Exploration Geoservices  
 Start Date: 6/4/01  
 End Date: 6/4/01

Drill Method: HSA  
 Driller: David Yeager  
 Drill Rig: B-61

Logged By: T. Guha  
 Sampler: Split Spoon  
 Hole Dia.: 8 inch

LITHOLOGIC DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	DRIVEN in	RECOVERY-in	OVA (ppm)	WELL CONSTRUCTION DETAIL
3" ASPHALT & 6" BASE MATERIAL			0					<p style="text-align: right;">Christy Box</p> <p>Neat Cement                      Bentonite Seal                      2-inch SCH.40 PVC Blank Casing                      2-inch SCH.40 0.010 slotted PVC screen                      Sand #2 Lonestar                      End cap</p>
GRAVELLY SAND: brownish gray, angular gravels, damp	SW		-5-				0	
SILTY CLAY: brown, moist, stiff	CL		-10-				0	
CLAYEY GRAVEL: brown, angular gravels with sand clay mixture, very moist, no odor @ 16 feet, wet	GC		-15-	☒	6	6	6	
			-20-		6	6	6	
<i>BORE HOLE TERMINATED @ 25 feet</i>			-25-					
			-30-					

**ADVANCED ASSESSMENT & REMEDIATION SERVICES**  
 2380 Salvio Street, Suite202  
 Concord, CA 94520

Note:

Project No.  
 00015  
 Page 1 of 1

## LOG OF EXPLORATORY BORING NO. MW-2

Project: Sekhon Gas Station  
 Drilling Co.: Exploration Geoservices  
 Start Date: 6/4/01  
 End Date: 6/4/01

Drill Method: HSA  
 Driller: David Yeager  
 Drill Rig: B-61

Logged By: T. Guha  
 Sampler: Split Spoon  
 Hole Dia.: 8 inch

LITHOLOGIC DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	DRIVEN in	RECOVERY-in	OVA (ppm)	WELL CONSTRUCTION DETAIL
3" ASPHALT & 8" BASE MATERIAL			0					<p style="text-align: right;">Christy Box</p> <p>Neat Cement</p> <p>Bentonite Seal</p> <p>2-inch SCH.40 PVC Blank Casing</p> <p>2-inch SCH.40 0.010 slotted PVC screen</p> <p>Sand #2 Lonestar</p> <p>End cap</p>
SANDY GRAVEL: gray, angular gravels, damp	GP		-5				200	
CLAYEY GRAVEL: greenish gray, angular gravels with clay mixture, moist, strong gasoline odor	GC		-10		6	6	1200	
SILTY CLAY: brown, very moist, very stiff	CL		-15		6	6	20	
wet			-20					
with minor gravels			-25					
<i>BORE HOLE TERMINATED @ 25 feet</i>			-30					

**ADVANCED ASSESSMENT & REMEDIATION SERVICES**  
 2380 Salvio Street, Suite202  
 Concord, CA 94520

*Note: Problem drilling at 2 feet; probe the hole, may be a pipe. Move 1 feet north and drill.*

Project No.  
 00015  
 Page 1 of 1

## LOG OF EXPLORATORY BORING NO. MW-3

Project: Sekhon Gas Station  
 Drilling Co.: Exploration Geoservices  
 Start Date: 6/4/01  
 End Date: 6/4/01

Drill Method: HSA  
 Driller: David Yeager  
 Drill Rig: B-61

Logged By: T. Guha  
 Sampler: Split Spoon  
 Hole Dia.: 8 inch

LITHOLOGIC DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	DRIVEN in	RECOVERY-in	OVA (ppm)	WELL CONSTRUCTION DETAIL
3" ASPHALT & 8" BASE MATERIAL			0					<p style="text-align: right; margin-right: 50px;">Christy Box</p> <p style="text-align: right;">Neat Cement</p> <p style="text-align: right;">Bentonite Seal</p> <p style="text-align: right;">2-inch SCH.40 PVC Blank Casing</p> <p style="text-align: right;">2-inch SCH.40 0.010 slotted PVC screen</p> <p style="text-align: right;">Sand #2 Lonestar</p> <p style="text-align: right;">End cap</p>
CLAYEY GRAVEL: drak gray, angular gravels, damp, loose	GC	[Diagonal lines with dots]	-5-				0	
GRAVEL: brown, angular gravels with very little fines, slightly moist, loose	GW	[Circles]	-10-	[X]	6	6	10	
CLAY: brown, very moist, very stiff	CH	[Diagonal lines]	-15-		6	6	0	
GRAVELEY CLAY: greenish gray, angular gravels, very moist, very stiff wet  color changes to light brown	CL	[Diagonal lines]	-20-					
			-25-					
<i>BORE HOLE TERMINATED @ 25 feet</i>			-30-					

**ADVANCED ASSESSMENT & REMEDIATION SERVICES**  
 2380 Salvio Street, Suite202  
 Concord, CA 94520

Note: .

Project No.  
 00015  
 Page 1 of 1

# UNIFIED SOIL CLASSIFICATION SYSTEM ASTM D2488-84

MAJOR DIVISIONS			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS OVER 50% > NO. 200 SIEVE SIZE	GRAVELS  MORE THAN 1/2 OF COARSE FRACTION > NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	Well graded gravels or gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GRAVELS WITH OVER 12% FINES	GM	Silty gravels, gravel-sand mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS  MORE THAN 1/2 OF COARSE FRACTION < NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	Well graded sands or gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH OVER 12% FINES	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS OVER 50% < NO. 200 SIEVE SIZE	SILTS & CLAYS  LIQUID LIMIT 50% OR LESS		ML	Inorganic silty and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS  LIQUID LIMIT GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

### SYMBOLS KEY

	Driven Interval
	Bulk or Classification Sample
	Laboratory Sample
	Undisturbed Samp. for Classification
	First encountered groundwater level
	Static groundwater level
(10YR 4/4) Munsell soil color 1990 edition	

### GRAIN SIZE CHART

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3'	305 to 76.2
GRAVEL coarse fine	3' to No. 4	76.2 to 4.76
	3' to 3/4"	76.2 to 19.1
SAND coarse medium fine	3/4" to No. 4	19.1 to 4.76
	No. 4 to No. 200	4.76 to 0.074
	No. 4 to No. 10	4.76 to 2.00
	No. 10 to No. 40	2.00 to 0.420
No. 40 to No. 200	0.420 to 0.074	
SILT & CLAY	Below No. 200	Below No. 0.074

**ADVANCED ASSESSMENT &  
REMEDIAL SERVICES**  
2380 Salvio Street, Suite 202  
Concord, CA 94520

## SOIL CLASSIFICATION CHART AND KEY TO BORING LOG

## **APPENDIX C**

### **Monitoring Well Purge/Sample Worksheet**

**GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET**

PROJECT NAME: Sekhon Gas Station

PROJECT NUMBER: 00015

SITE ADDRESS: 6600 Foothill Blvd., Oakland, CA

WELL NUMBER: MW-1 WELL CASING DIA: 2"

DATE: 6/13/01

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 7:07  
 25                      9.36                      15.64

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)  
 15.64                      0.17                      2.66

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): NONE

Sheen/Iridescence: NONE

Odor: NONE

Time	Volume Purged (gal)	Temperature (degrees F)	pH	Conductivity $\mu$ S	Color/Turbidity/Other
7:20	0	69.3	7.33	620	CLEAR
7:30	3	68.1	6.69	779	SLIGHTLY TURBID
7:40	6	67.8	6.50	743	SILTY BROWN
7:55	9	67.3	6.46	761	" "
8:05	12	67.2	6.51	766	" "
8:15	15	67.4	6.53	718	" "
8:25	17	67.4	6.53	737	" "
8:35	19	67.4	6.53	729	" "
8:45	22	67.3	6.51	731	" "
8:55	25	67.2	6.53	726	" "

Purged Water Containment

Purge Method Used:

25 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55 GAL

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 11.27 (I) Initially: 9.36 (S) Before sampling: 9.39 Time: 12:38

(P-S)/(P-I) x 100 = 100 % Total Recovery: 88 %

SAMPLE TIME 12:40

Sample Containers (How many? Preservatives?)

1 liter amber glass: X ; 40 ml VOA: 3 ; 500 ml polypropylene: X

REMARKS:

SAMPLER: TRIDIB GUYHA

SIGNATURE: *Fredrick H. [Signature]*

(Print)

ADVANCED ASSESSMENT AND REMEDIATION SERVICES

**GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET**

PROJECT NAME: Sekhon Gas Station

PROJECT NUMBER: 00015

SITE ADDRESS: 6600 Foothill Blvd., Oakland, CA

WELL NUMBER: MW-2 WELL CASING DIA: 2"

DATE: 6/13/01

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 7:13  
 25 - 10.44 = 14.56

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)  
 14.56 x 0.17 = 2.47

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): NONE

Sheen/Iridescence: YES

Odor: YES

Time	Volume Purged (gal)	Temperature (degrees F)	pH	Conductivity $\mu$ S	Color/Turbidity/Other
11:00	0	70.1	6.72	848	CLEAR
11:10	3	69.8	6.58	868	SLIGHTLY TURBID
11:20	6	69.6	6.59	890	" "
11:30	9	69.7	6.51	894	" "
11:40	12	70.3	6.54	933	TURBID BROWN
11:50	15	70.1	6.60	936	TURBID "
12:00	17	70.3	6.59	913	" "
12:10	19	70.2	6.61	927	" "
12:20	22	70.2	6.59	938	SILTY "
12:30	25	70.1	6.58	927	" "

Purged Water Containment

Purge Method Used:

25 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55 GAL

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 12.32 (I) Initially: 10.44 (S) Before sampling: 10.97 Time: 12:58

(P-S)/P-I x 100 = 100 % Total Recovery: 72%

SAMPLE TIME 13:00

Sample Containers (How many? Preservatives?)

1 liter amber glass: x ; 40 ml VOA: 3 ; 500 ml polypropylene: x

REMARKS:

SAMPLER: TRIDIB GUHA  
 (Print)

SIGNATURE: 

ADVANCED ASSESSMENT AND REMEDIATION SERVICES

**GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET**

PROJECT NAME: Sekhon Gas Station

PROJECT NUMBER: 00015

SITE ADDRESS: 6600 Foothill Blvd., Oakland, CA

WELL NUMBER: MW-3

WELL CASING DIA.: 2"

DATE: 6/13/01

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 7:10  
 25                                      9.69                                      15.31

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)  
 15.31                                      0.17                                      2.6

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): NONE

Sheen/Iridescence: NONE

Odor: YES

Time	Volume Purged (gal)	Temperature (degrees F)	pH	Conductivity $\mu$ S	Color/Turbidity/Other
9:10	0	69.4	6.53	1105	CLEAR
9:20	3	70.6	6.66	683	SLIGHTLY TURBID
9:30	6	70.2	6.70	1068	TURBID BROWNISH GRAY
9:40	9	70.6	6.84	767	" " "
9:55	12	70.3	6.82	718	" " "
10:05	15	70.7	6.85	395	" " "
10:15	17	70.5	6.79	436	" " "
10:25	19	70.5	6.72	517	" " "
10:35	22	70.4	6.70	571	" " "
10:45	25	70.5	6.72	547	" " "

Purged Water Containment

Purge Method Used:

25 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55 GAL

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 11.45 (I) Initially: 9.69 (S) Before sampling: 9.99 Time: 12:48

(P-S)/P-I x 100 = 100 % Total Recovery: 82

SAMPLE TIME 12:50

Sample Containers (How many? Preservatives?)

1 liter amber glass: x ; 40 ml VOA: 3 ; 500 ml polypropylene: x

REMARKS:

SAMPLER: TRIDIB GUHA

(Print)

SIGNATURE: *Tridib Guha*

ADVANCED ASSESSMENT AND REMEDIATION SERVICES



## **APPENDIX D**

**Certified Analytical Reports, Chromatograms and Chain-of-Custody Documents**



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

Lab Number: 01-0796
Client: Advanced Assessment & Remd.
Project:

Date Reported: 06/14/2001

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Table with 6 columns: Analyte, Method, Result, Unit, Date Sampled, Date Analyzed. Contains three sample entries (01-0796-01, 01-0796-02, 01-0796-03) with various chemical analytes and their results.

\*Confirmed by GC/MS method 8260.\*\*Does not match gasoline.



# North State Environmental Laboratory

CA ELAP# 1753

90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

## 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: 01-0796  
Client: Advanced Assessment & Remd.  
Project:

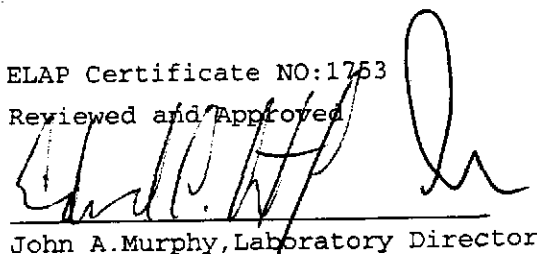
Date Reported: 06/14/2001

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline	8015M	0.5	mg/Kg	ND	106	6
Benzene	8020	.005	mg/Kg	ND	100	3
Toluene	8020	.005	mg/Kg	ND	99	2
Ethylbenzene	8020	.005	mg/Kg	ND	98	2
Xylenes	8020	.010	mg/Kg	ND	97	3
MTBE	8020	.005	mg/Kg	ND	101	3

ELAP Certificate NO: 1753

Reviewed and Approved



John A. Murphy, Laboratory Director



# North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080

Phone: (650) 266-4563 Fax: (650) 266-4560

01-0796

Chain of Custody / Request for Analysis

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

Client: <i>ADVANCED ASSESSMENT &amp; R.S.</i>	Report to: <i>TRIDIB GUHA</i>	Phone: <i>925-363-1999</i>	Turnaround Time <i>5 DAYS</i>
Mailing Address: <i>2380 SALVIO ST. # 202 CONCORD, CA 94520</i>	Billing to:	Fax: <i>925-363-1998</i>	
		PO# / Billing Reference:	Sampler: <i>T. GUHA</i>

Project / Site Address:					Analysis Requested							Comments / Hazards	
Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH	B	BTX	MTSE					
<i>MW-1-SC15</i>	<i>SOIL</i>	<i>1 BRASS T.</i>		<i>6/4/01 8:15</i>	<i>X</i>								<i>SEND CHROMATOGRAMS</i>
<i>MW-2-SC8'</i>	<i>↓</i>	<i>1 BRASS T.</i>		<i>6/4/01 9:30</i>	<i>X</i>								
<i>MW-3-SC10'</i>	<i>↓</i>	<i>1 BRASS T.</i>		<i>6/4/01 10:40</i>	<i>X</i>								

Relinquished by: <i>Tridib K. Guha</i>	Date: <i>6/5/01</i> Time: <i>10:20</i>	Received by: <i>[Signature]</i>	Lab Comments <i>Sample received in good condition</i>
Relinquished by:	Date: _____ Time: _____	Received by:	
Relinquished by:	Date: _____ Time: _____	Received by:	

Quantitation Report

Data File : C:\HPCHEM\1\DATA\06071Y15.D\FID1A.CH  
Acq On : 7 Jun 2010 7:44 pm  
Sample : 01-0796-01  
Misc : soil 1.0g  
IntFile : events1.e

Vial: 15  
Operator: ec  
Inst : Gas-BTEX  
Multiplr: 5.00

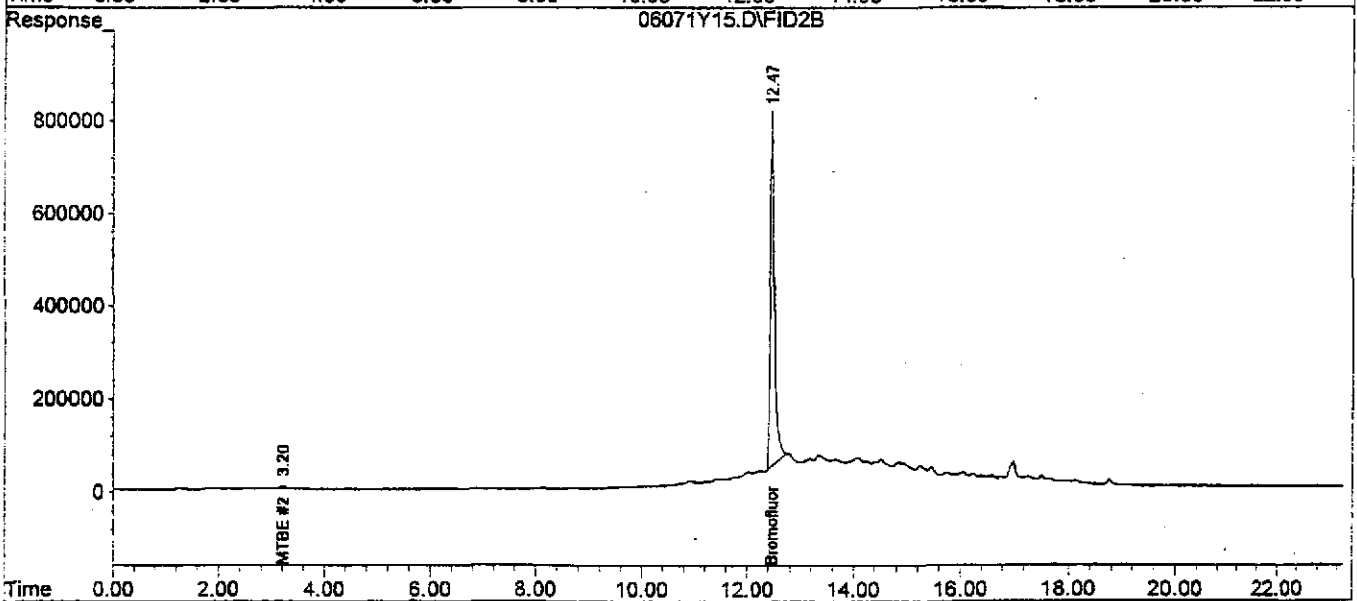
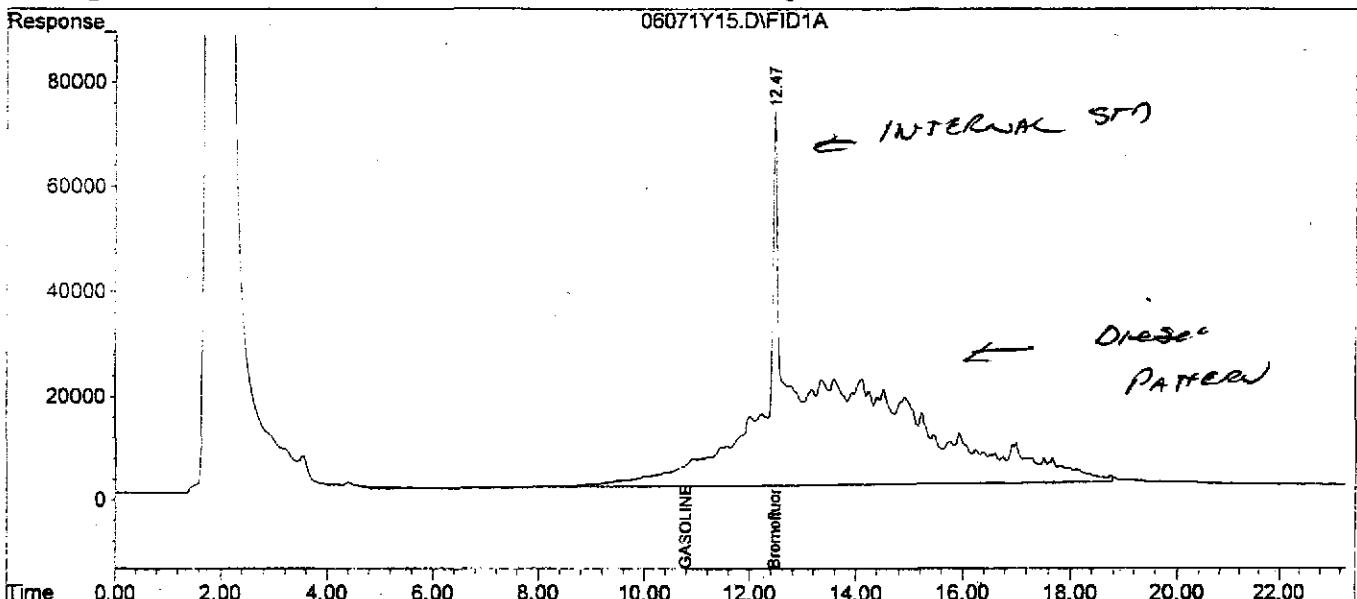
Data File : C:\HPCHEM\1\DATA\06071Y15.D\FID2B.CH  
Acq On : 7 Jun 10 7:44 pm  
Sample : 01-0796-01  
Misc : soil 1.0g  
IntFile : AUTOINT1.E

Vial: 15  
Operator: ec  
Inst : Gas-BTEX  
Multiplr: 5.00

Quant Time: Jun 7 20:07 19101 Quant Results File: GBX.RES

Quant Method : C:\HPCHEM\1\METHODS\GBX.M (Chemstation Integrator)  
Title : Gasoline Aromatics (BTEX-MTBE)  
Last Update : Mon Jun 04 09:43:58 2001  
Response via : Multiple Level Calibration  
DataAcq Meth : GBX.M

Volume Inj. : 5 mL Purge volume  
Signal #1 Phase : DB-624 30M x 0.53 Signal #2 Phase: DB-624 30M x 0.53mm  
Signal #1 Info : OI FID Signal #2 Info : OI PID



Quantitation Report

Data File : C:\HPCHEM\1\DATA\06071Y16.D\FID1A.CH  
Acq On : 7 Jun 2010 8:22 pm  
Sample : 01-0796-02  
Misc : soil 100ul(5X)  
IntFile : eventsl.e

Vial: 16  
Operator: ec  
Inst : Gas-BTEX  
Multiplr: 250.00

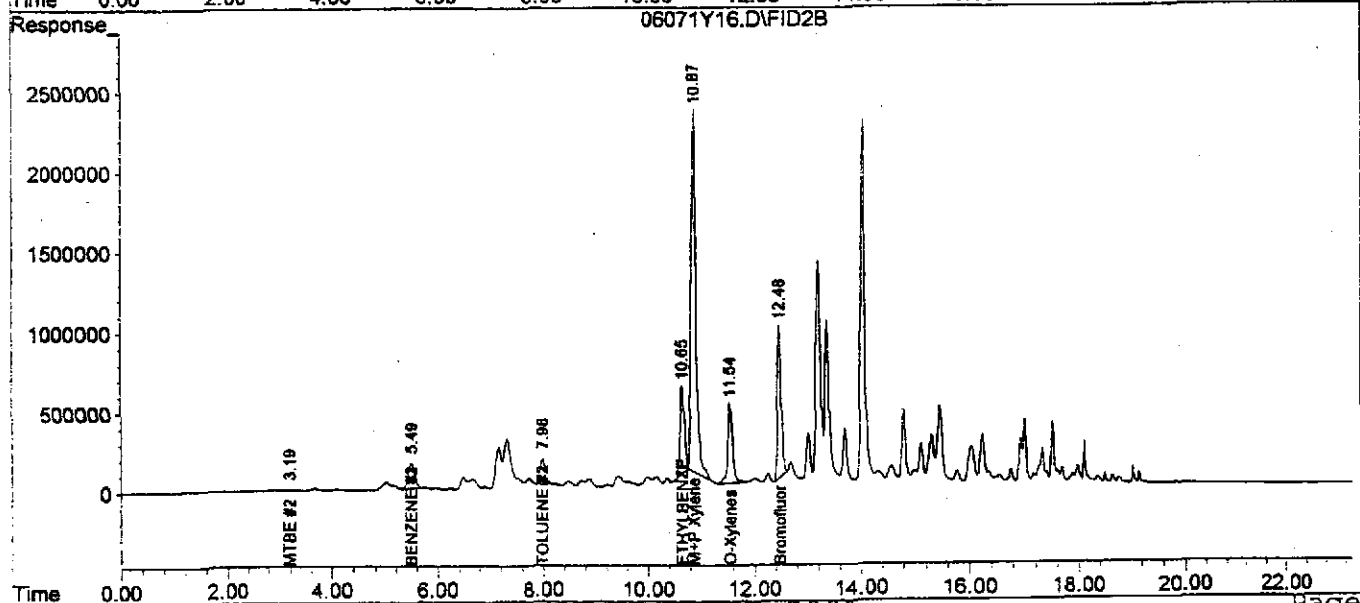
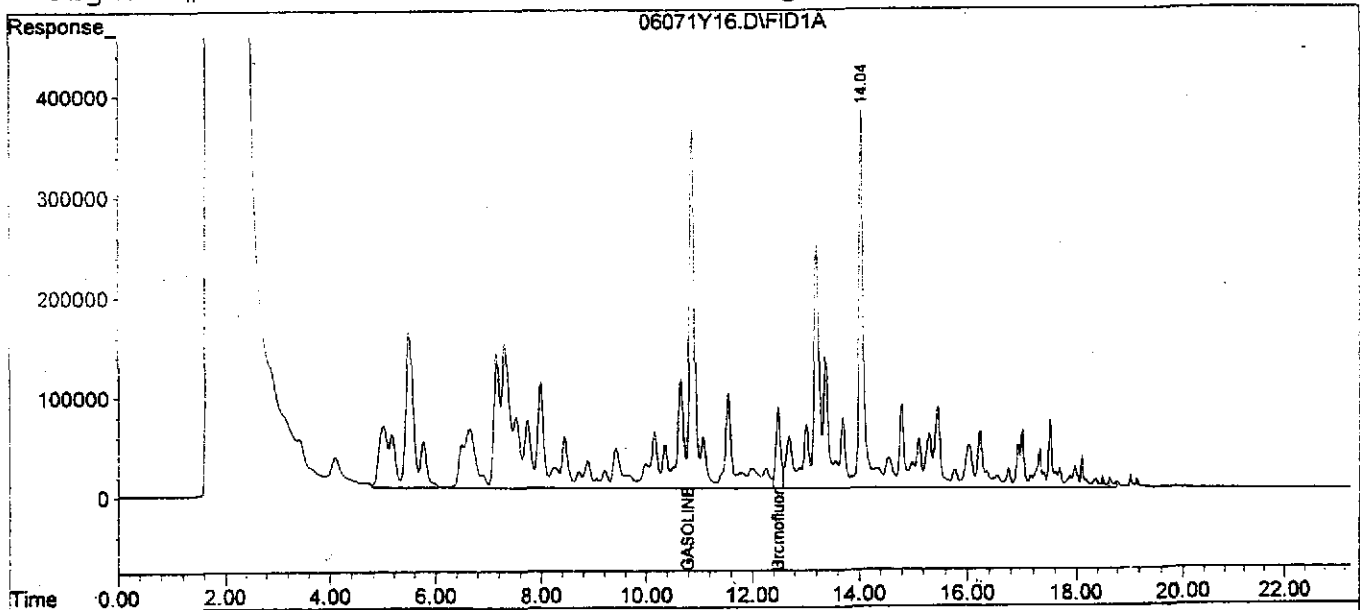
Data File : C:\HPCHEM\1\DATA\06071Y16.D\FID2B.CH  
Acq On : 7 Jun 10 8:22 pm  
Sample : 01-0796-02  
Misc : soil 100ul(5X)  
IntFile : AUTOINT1.E

Vial: 16  
Operator: ec  
Inst : Gas-BTEX  
Multiplr: 250.00

Quant Time: Jun 7 20:46 19101 Quant Results File: GBX.RES

Quant Method : C:\HPCHEM\1\METHODS\GBX.M (Chemstation Integrator)  
Title : Gasoline Aromatics (BTEX-MTBE)  
Last Update : Mon Jun 04 09:43:58 2001  
Response via : Multiple Level Calibration  
DataAcq Meth : GBX.M

Volume Inj. : 5 mL Purge volume  
Signal #1 Phase : DB-624 30M x 0.53 Signal #2 Phase: DB-624 30M x 0.53mm  
Signal #1 Info : OI FID Signal #2 Info : OI PID



Quantitation Report

Data File : C:\HPCHEM\1\DATA\06071Y17.D\FID1A.CH  
Acq On : 7 Jun 2010 9:00 pm  
Sample : 01-0796-03  
Misc : soil 1.0g  
IntFile : events1.e

Vial: 1  
Operator: ec  
Inst : Gas-BTEX  
Multiplr: 5.00

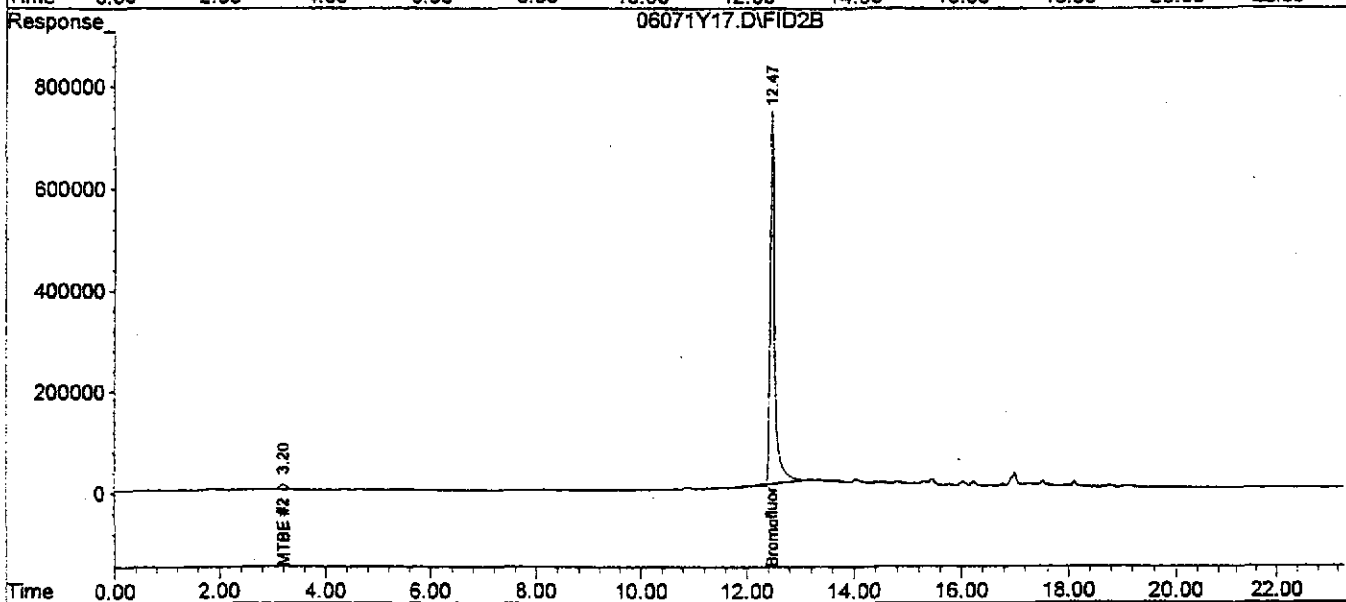
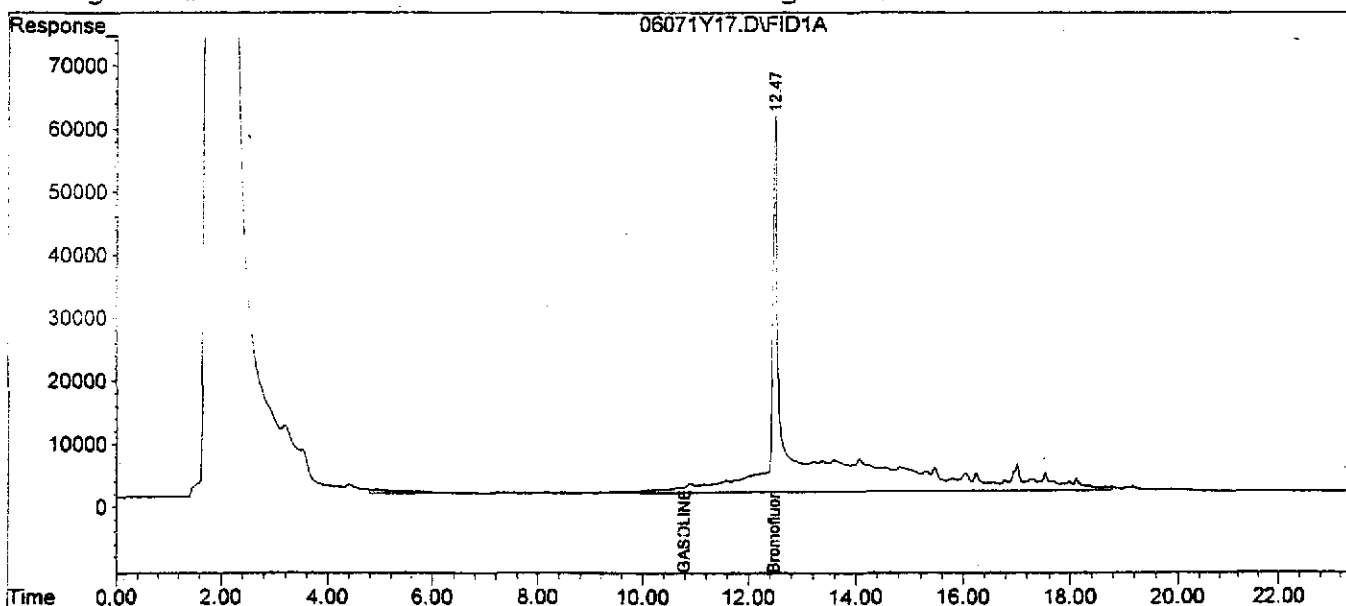
Data File : C:\HPCHEM\1\DATA\06071Y17.D\FID2B.CH  
Acq On : 7 Jun 10 9:00 pm  
Sample : 01-0796-03  
Misc : soil 1.0g  
IntFile : AUTOINT1.E

Vial: 1  
Operator: ec  
Inst : Gas-BTEX  
Multiplr: 5.00

Quant Time: Jun 7 21:24 19101 Quant Results File: GBX.RES

Quant Method : C:\HPCHEM\1\METHODS\GBX.M (Chemstation Integrator)  
Title : Gasoline Aromatics (BTEX-MTBE)  
Last Update : Mon Jun 04 09:43:58 2001  
Response via : Multiple Level Calibration  
DataAcq Meth : GBX.M

Volume Inj. : 5 mL Purge volume  
Signal #1 Phase : DB-624 30M x 0.53 Signal #2 Phase: DB-624 30M x 0.53mm  
Signal #1 Info : OI FID Signal #2 Info : OI PID



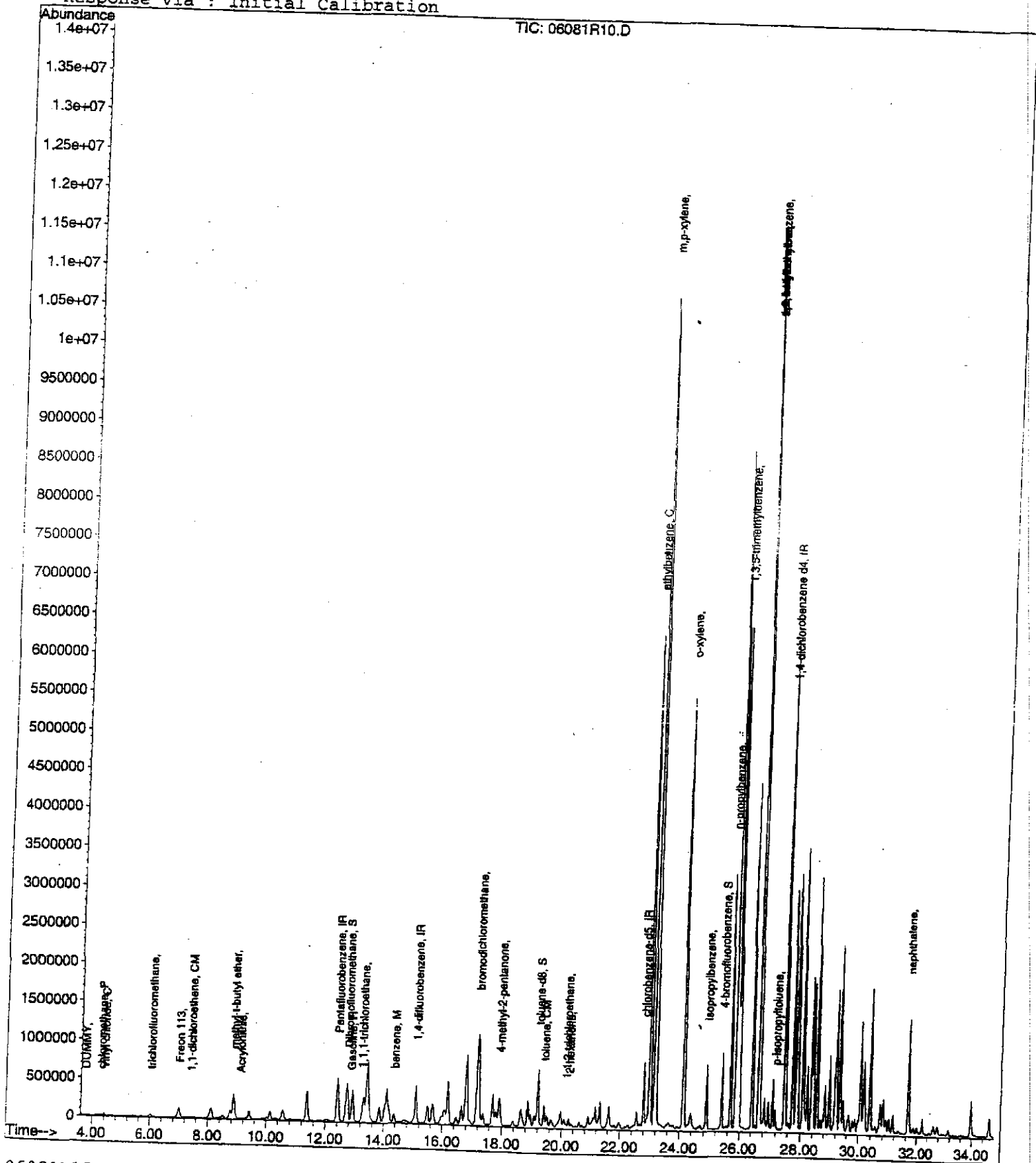
Quantitation Report

Data File : C:\HPCHEM\1\DATA\06081R10.D  
 Acq On : 8 Jun 2001 8:48 pm  
 Sample : 01-0796-02conf  
 Misc : soil 0.25g  
 MS Integration Params: RTEINT.P  
 Quant Time: Jun 8 21:23 19101

Vial: 10  
 Operator: ec  
 Inst : GC/MS Ins  
 Multiplr: 20.00

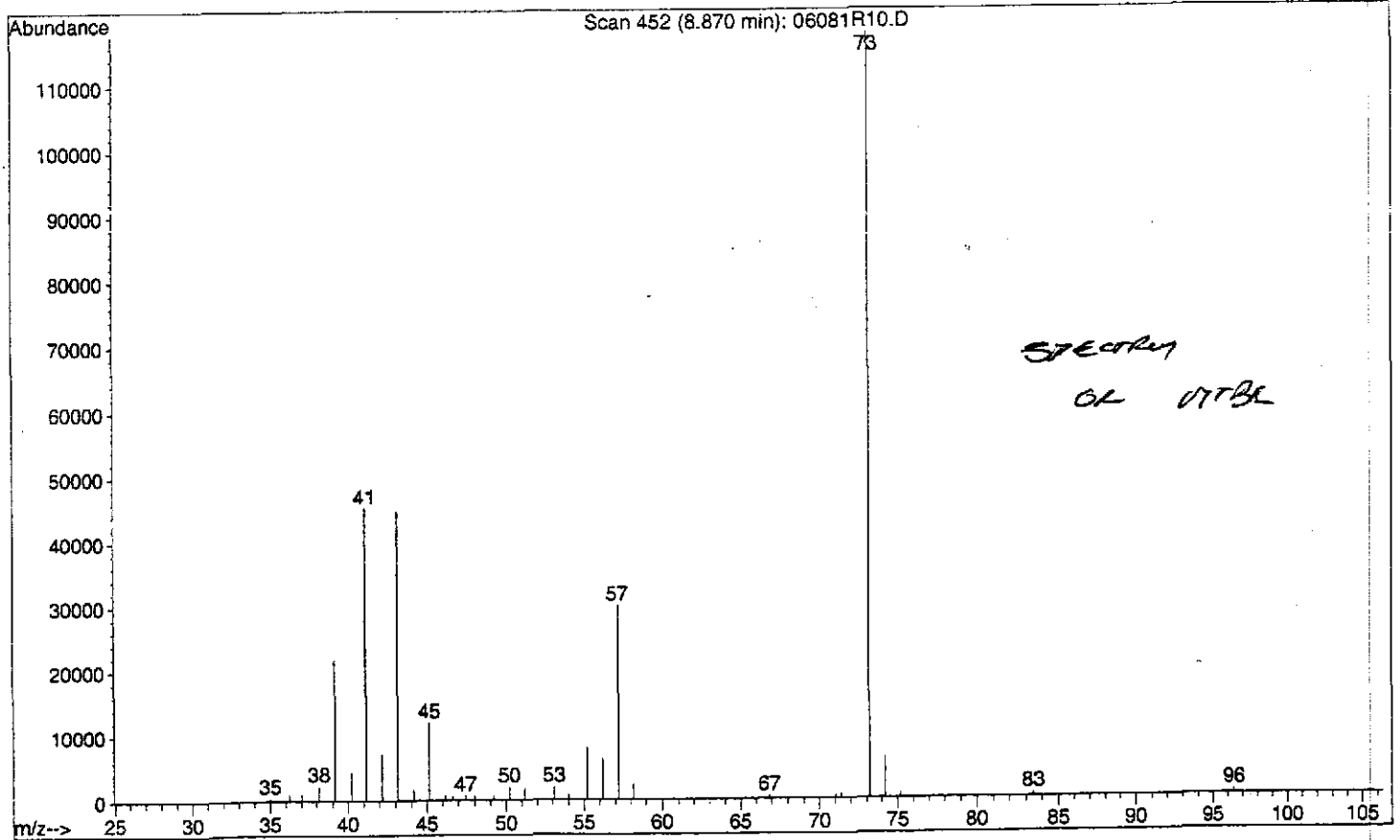
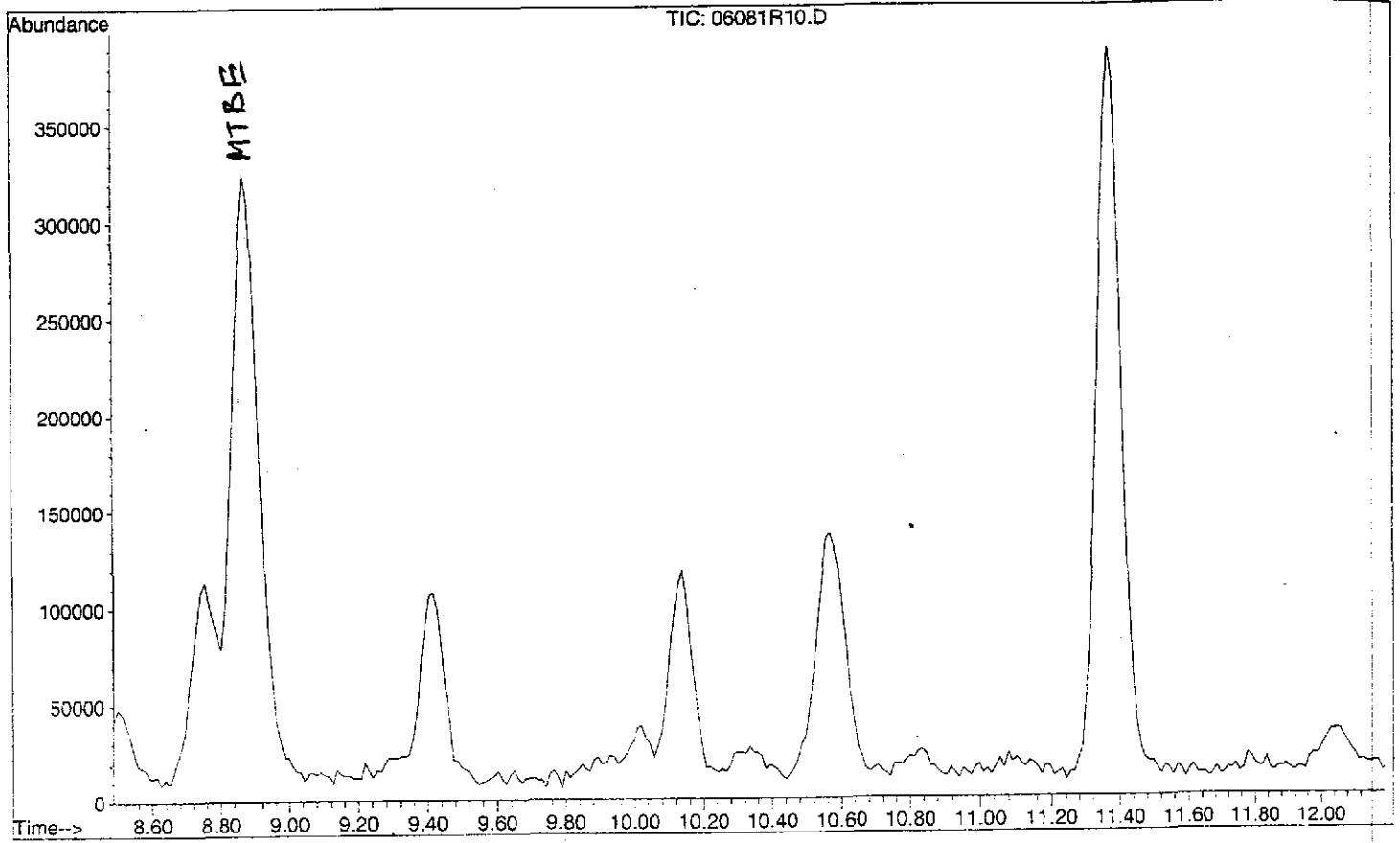
Quant Results File: 8260.RES

Method : C:\HPCHEM\1\METHODS\8260.M (RTE Integrator)  
 Title : gasoline  
 Last Update : Thu Mar 01 15:52:09 2001  
 Response via : Initial Calibration

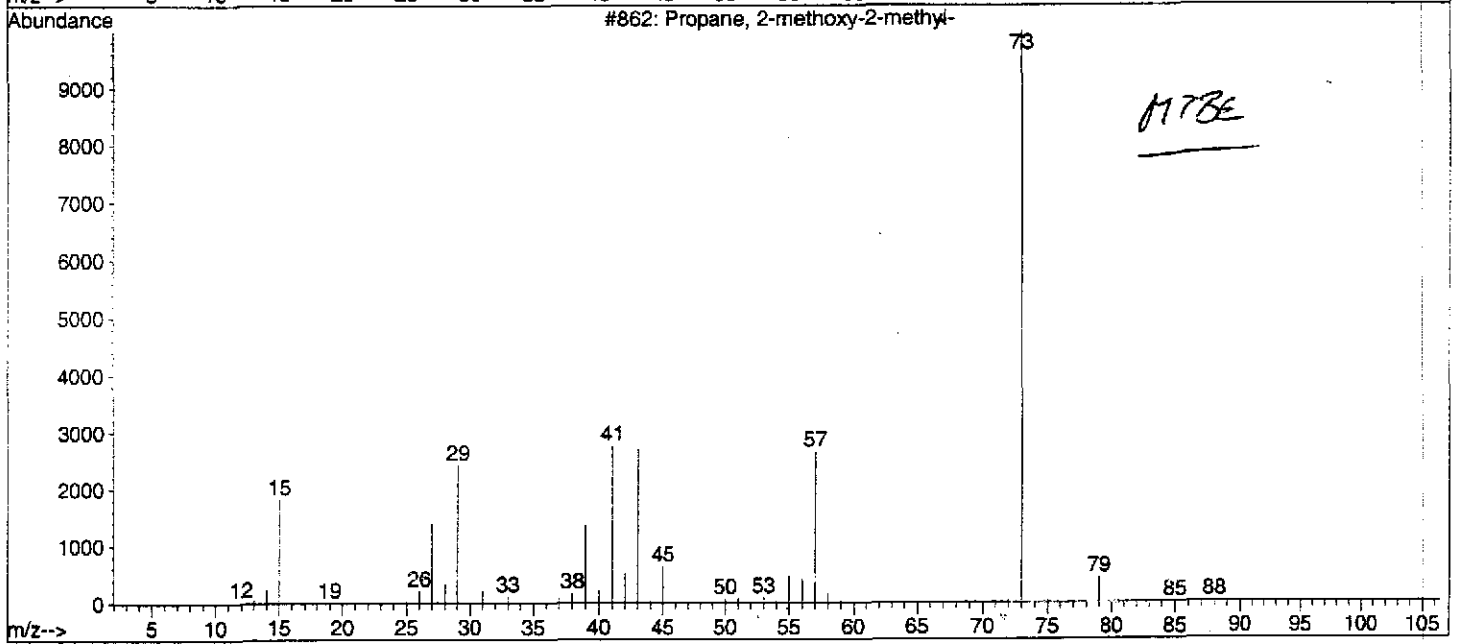
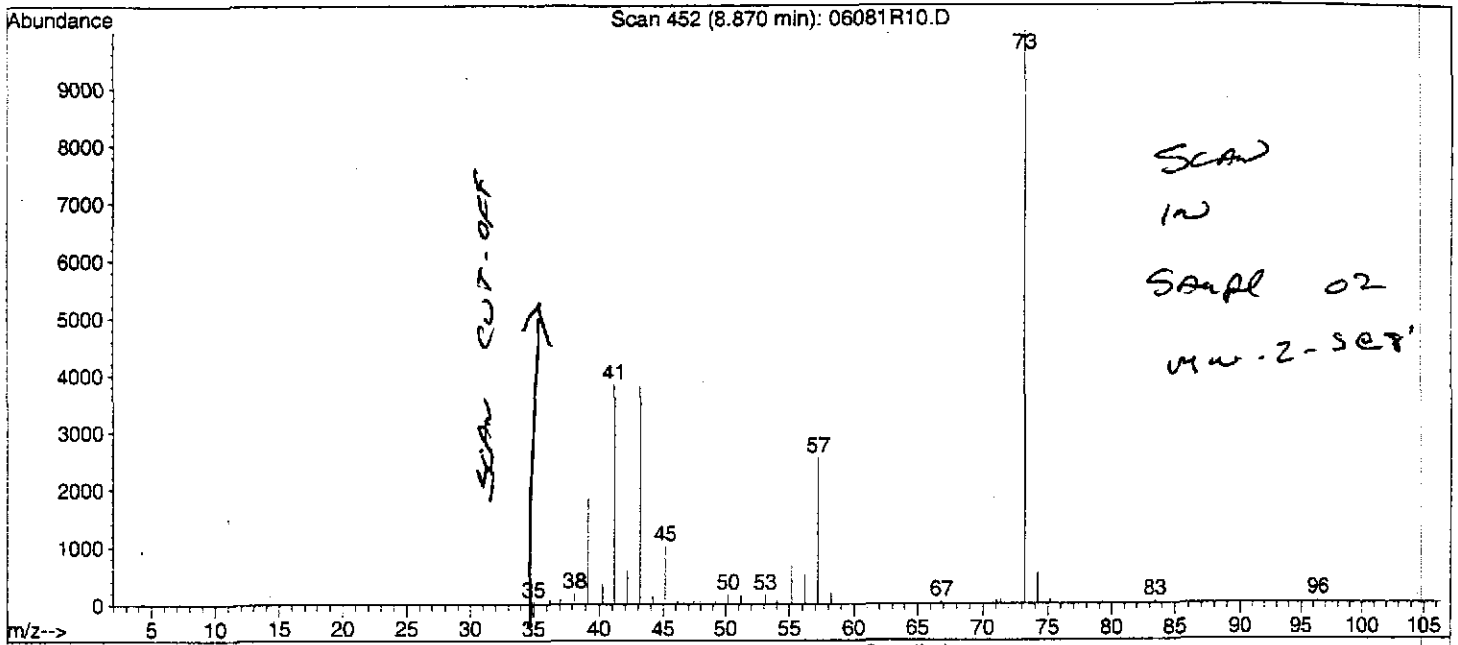




File : C:\HPCHEM\1\DATA\06081R10.D  
Operator : ec  
Acquired : 8 Jun 2001 8:48 pm using AcqMethod 8260  
Instrument : GC/MS Ins  
Sample Name: 01-0796-02conf  
Misc Info : soil 0.25g  
Vial Number: 10



Library Searched : C:\DATABASE\NBS75K.L  
Quality : 40  
ID : Propane, 2-methoxy-2-methyl-





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

Lab Number: 01-0843
Client: Advanced Assessment & Remd.
Project: SEKHOM BEACON/6600 FOOTHILL BLVD/OAKLAND

Date Reported: 06/21/2001

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Table with 6 columns: Analyte, Method, Result, Unit, Date Sampled, Date Analyzed. It contains three sections of data for samples 01-0843-01, 01-0843-02, and 01-0843-03, listing various analytes like Gasoline, Benzene, Ethylbenzene, MTBE, Toluene, and Xylenes with their respective results and units.

\*Confirmed by GC/MS method 8260.



CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 01-0843
Client: Advanced Assessment & Remd.
Project: SEKHOM BEACON/6600 FOOTHILL BLVD/OAKLAND

Date Reported: 06/21/2001

Gasoline, BTEX and MTBE by Methods 8015M and 8020

Table with 7 columns: Analyte, Method, Reporting Limit, Unit, Blank, Avg MS/MSD Recovery, RPD. Rows include Gasoline, Benzene, Toluene, Ethylbenzene, Xylenes, and MTBE.

ELAP Certificate NO:1753

Reviewed and Approved

Handwritten signature of John A. Murphy, Laboratory Director



# North State Environmental Analytical Laboratory

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080

Phone: (650) 266-4563 Fax: (650) 266-4560

01-0843

Chain of Custody / Request for Analysis

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

Client: <u>ADVANCED ASSESSMENT &amp; R.S.</u>	Report to: <u>TRIDIB GUHA</u>	Phone: <u>925-363-1999</u>	Turnaround Time <b>5 DAYS</b>
Mailing Address: <u>2380 SALVIO ST. #202 CONCORD, CA 94520</u>	Billing to:	Fax: <u>925-363-1978</u>	
		PO# / Billing Reference:	Date: <u>6-13-01</u>
			Sampler: <u>T. GUHA</u>

Project / Site Address: SEKHON BEACON  
6600 FOOTHILL BLVD.  
OAKLAND

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Analysis Requested	Comments / Hazards
MW-1/GW	WATER	3 VOAS	HCL	6/13/01 12:40	TPH, INZEX MTBE	SEND CHROMATO
MW-2/GW	WATER	3 VOAS	✓	6/13/01 13:00		GRAPHS WITH THE
MW-3/GW	WATER	3 VOAS	✓	6/13/01 12:50		FINAL REPORT

Relinquished by: <u>[Signature]</u>	Date: <u>6-13-01</u> Time: <u>13:10</u>	Received by: <u>[Signature]</u>	Lab Comments <u>Sample returned in good condition</u>
Relinquished by:	Date: _____ Time: _____	Received by:	
Relinquished by:	Date: _____ Time: _____	Received by:	

Quantitation Report

Data File : C:\HPCHEM\2\DATA\06181N09.D\FID1A.CH  
Acq On : 18 Jun 2010 2:05 pm  
Sample : 01-0843-01  
Misc : water 5ml  
IntFile : TRY1.E

Vial: 9  
Operator: ss  
Inst : GC/MS Ins  
Multiplr: 1.00

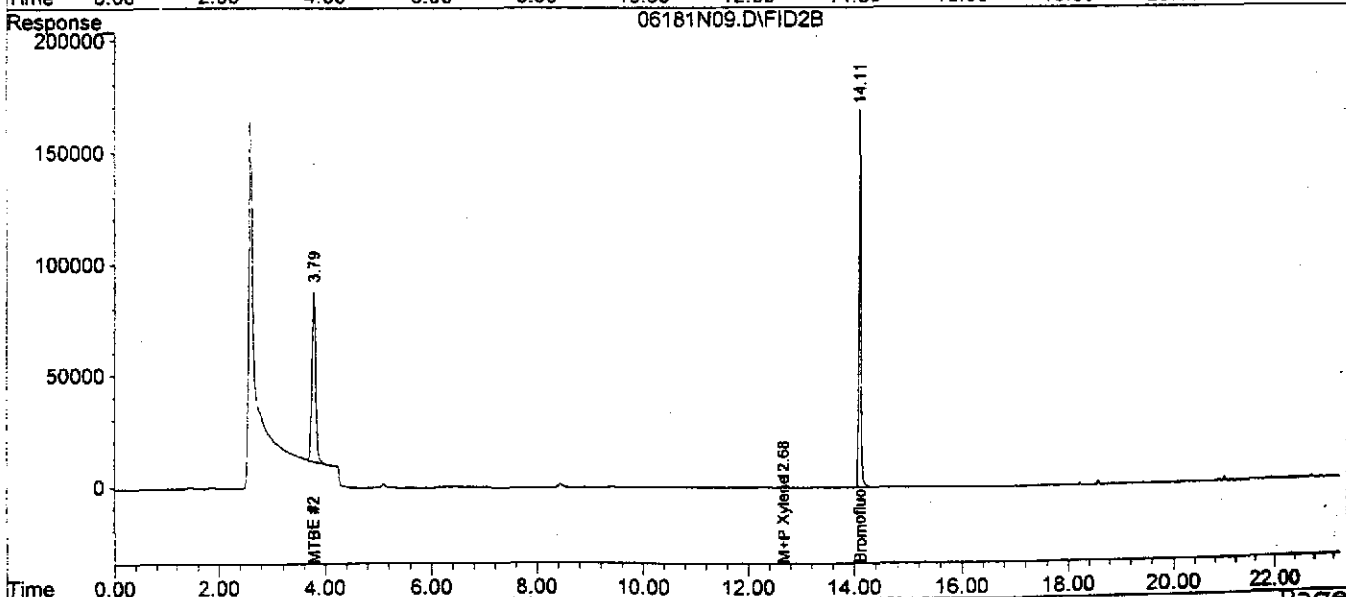
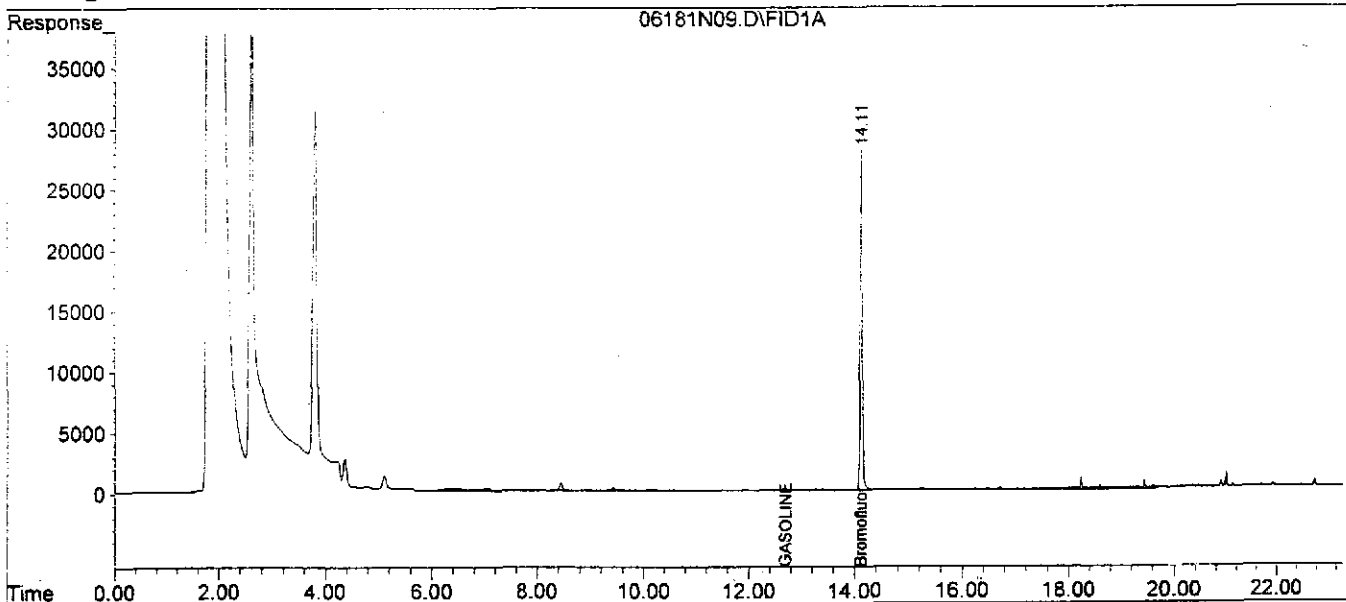
Data File : C:\HPCHEM\2\DATA\06181N09.D\FID2B.CH  
Acq On : 18 Jun 10 2:05 pm  
Sample : 01-0843-01  
Misc : water 5ml  
IntFile : AUTOINT1.E

Vial: 9  
Operator: ss  
Inst : GC/MS Ins  
Multiplr: 1.00

Quant Time: Jun 18 14:29 19101 Quant Results File: GBX.RES

Quant Method : C:\HPCHEM\2\METHODS\GBX.M (Chemstation Integrator)  
Title : Gasoline Aromatics (BTEX-MTBE)  
Last Update : Wed Feb 21 12:23:00 2001  
Response via : Multiple Level Calibration  
DataAcq Meth : GBX.M

Volume Inj. : 5 mL Purge volume  
Signal #1 Phase : DB-624 30M x 0.53 Signal #2 Phase: DB-624 30M x 0.53mm  
Signal #1 Info : OI FID Signal #2 Info : OI PID



Quantitation Report

Data File : C:\HPCHEM\1\DATA\06211Y06.D\FID1A.CH  
Acq On : 21 Jun 2010 11:31 am  
Sample : 01-0843-02r  
Misc : water 10ul  
IntFile : events1.e

Vial: 6  
Operator: my  
Inst : Gas-BTEX  
Multiplr: 500.00

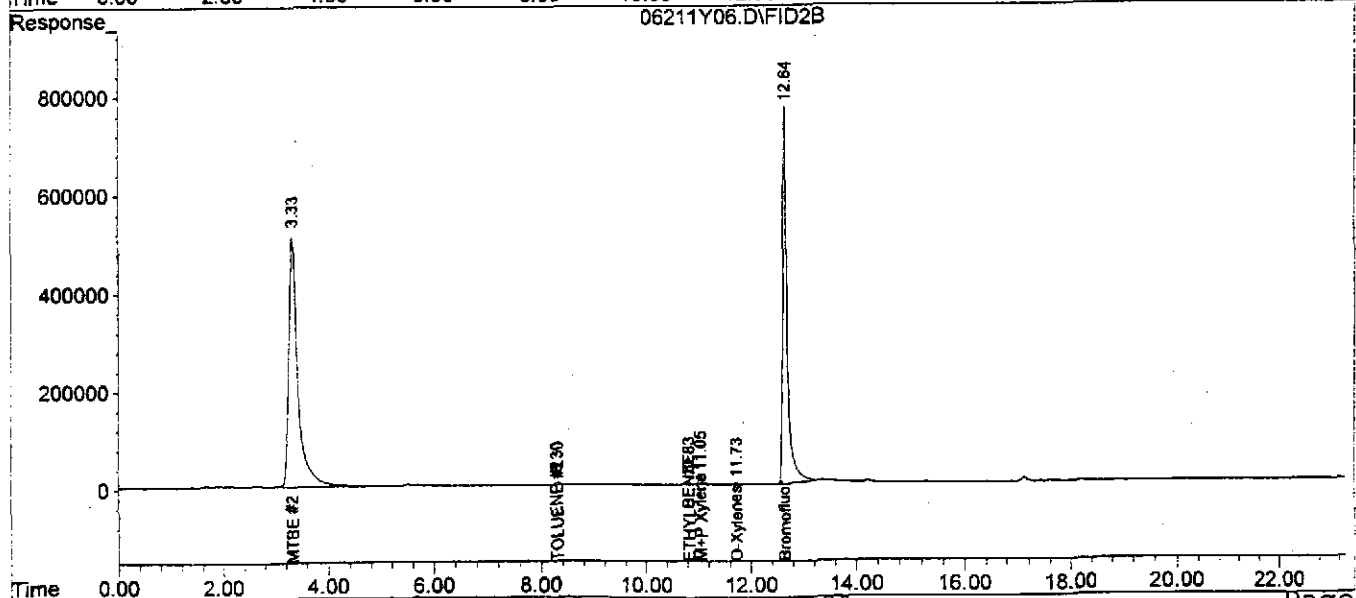
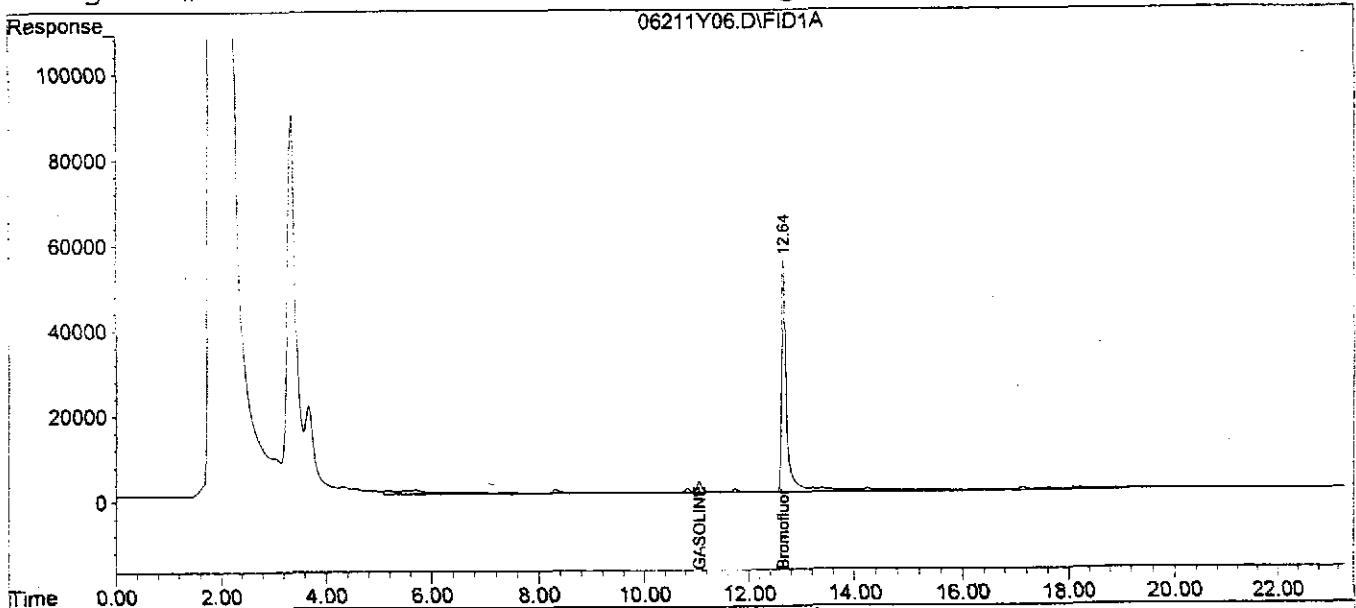
Data File : C:\HPCHEM\1\DATA\06211Y06.D\FID2B.CH  
Acq On : 21 Jun 10 11:31 am  
Sample : 01-0843-02r  
Misc : water 10ul  
IntFile : AUTOINT1.E

Vial: 6  
Operator: my  
Inst : Gas-BTEX  
Multiplr: 500.00

Quant Time: Jun 21 11:55 19101 Quant Results File: GBX.RES

Quant Method : C:\HPCHEM\1\METHODS\GBX.M (Chemstation Integrator)  
Title : Gasoline Aromatics (BTEX-MTBE)  
Last Update : Wed Jun 20 12:03:57 2001  
Response via : Multiple Level Calibration  
DataAcq Meth : GBX.M

Volume Inj. : 5 mL Purge volume  
Signal #1 Phase : DB-624 30M x 0.53 Signal #2 Phase: DB-624 30M x 0.53mm  
Signal #1 Info : OI FID Signal #2. Info : OI PID



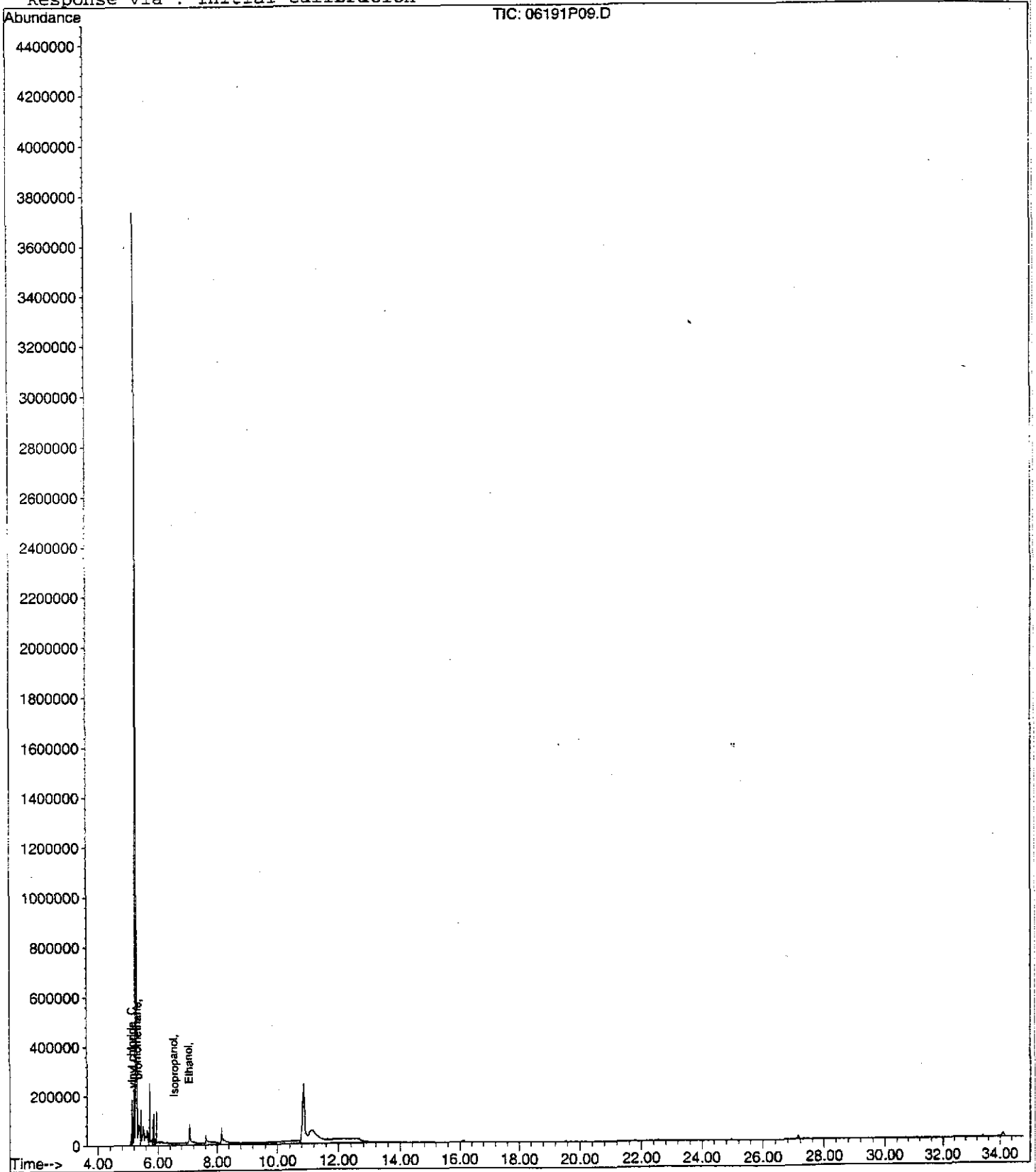
Quantitation Report

Data File : C:\HPCHEM\1\DATA\06191P09.D  
Acq On : 19 Jun 2001 8:35 pm  
Sample : 01-0843-02 conf  
Misc : water 250 ul  
MS Integration Params: RTEINT.P  
Quant Time: Jun 19 21:10 19101

Vial: 9  
Operator:  
Inst : GC/MS Ins  
Multiplr: 20.00

Quant Results File: 8260.RES

Method : C:\HPCHEM\1\METHODS\8260.M (RTE Integrator)  
Title : gasoline  
Last Update : Tue Jun 19 15:50:13 2001  
Response via : Initial Calibration





Quantitation Report

Data File : C:\HPCHEM\2\DATA\06181N11.D\FID1A.CH  
Acq On : 18 Jun 2010 3:07 pm  
Sample : 01-0843-03  
Misc : water 5ml  
IntFile : TRY1.E

Vial: 11  
Operator: ss  
Inst : GC/MS Ins  
Multiplr: 1.00

Data File : C:\HPCHEM\2\DATA\06181N11.D\FID2B.CH  
Acq On : 18 Jun 10 3:07 pm  
Sample : 01-0843-03  
Misc : water 5ml  
IntFile : AUTOINT1.E

Vial: 11  
Operator: ss  
Inst : GC/MS Ins  
Multiplr: 1.00

Quant Time: Jun 18 15:31 19101 Quant Results File: GBX.RES

Quant Method : C:\HPCHEM\2\METHODS\GBX.M (Chemstation Integrator)  
Title : Gasoline Aromatics (BTEX-MTBE)  
Last Update : Wed Feb 21 12:23:00 2001  
Response via : Multiple Level Calibration  
DataAcq Meth : GBX.M

Volume Inj. : 5 mL Purge volume  
Signal #1 Phase : DB-624 30M x 0.53 Signal #2 Phase: DB-624 30M x 0.53mm  
Signal #1 Info : OI FID Signal #2 Info : OI PID

