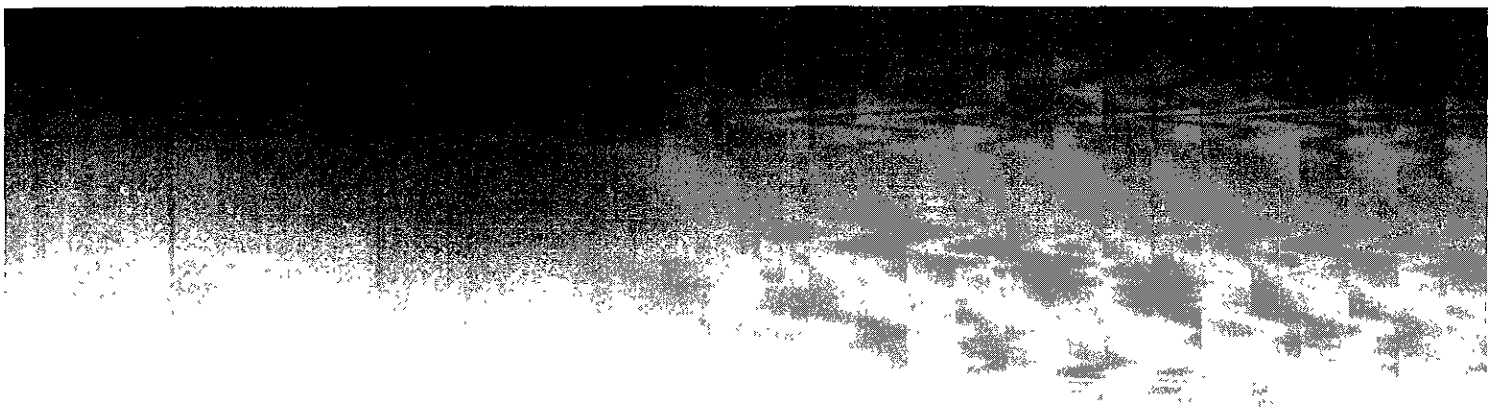
RO-081



WORK PLAN
for
ADDITIONAL INVESTIGATIONS
at
SHEEHAN PROPERTY
845 Pacific Avenue
Alameda, California

Prepared for:

Mr. William J. Sheehan
1236 Bay Street
Alameda, California

July 15, 2002

ADVANCED ASSESSMENT AND REMEDIATION SERVICES

2380 Salvio Street, Suite 202
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ADVANCED ASSESSMENT AND REMEDIATION SERVICES (AARS)

2380 SALVIO STREET, SUITE 202
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July 15, 2002

Ms. Eva Chu
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Submittal of Work Plan for Additional Investigations
Sheehan Property at 845 Pacific Avenue, Alameda, California

Dear Ms. Chu:

Enclosed is the work plan for additional investigations to delineate the extent of the contaminant plume at the above-referred site. The investigation will be conducted in accordance with the guidelines and requirements of the Alameda County Health Agency, Department of Environmental Health (ACHADEH) and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

Please call me at (925) 363-1999 if you have any questions regarding this work plan.

Sincerely,

Advanced Assessment and Remediation Services

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

cc: Mr. William Sheehan, Alameda, California

tg/sheehanwp/Enclosure

TABLE OF CONTENTS

WORK PLAN
For
ADDITIONAL INVESTIGATIONS
At
Sheehan Property
845 Pacific Avenue
Alameda, California

1.0 INTRODUCTION

This work plan presents the scope of work to conduct a groundwater quality investigation to delineate the extent of the contaminant plume at 845 Pacific Avenue, Alameda, California. The proposed scope of work is based on the analytical results of soil and groundwater sampling of previous investigation. Alameda County Health Agency, Department of Environmental Health (ACHADEH) requested the additional investigation, in a letter dated December 14, 1998. The proposed investigative work is designed to evaluate the extent of the subsurface contamination.

2.0 PROJECT BACKGROUND

"In September 1996, HK2 removed one 120 gallon underground gasoline storage tank (UST) and one 750 gallon heating oil UST from the site. The concentration of total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX) in the soil sample collected beneath the former gasoline tank was below the laboratory reporting limit. However, soil sample collected beneath the former heating oil tank contained up to 800 mg/kg TPH as diesel (TPHd), 3.6 mg/kg benzene, 2.5 mg/kg toluene, 2.0 mg/kg ethylbenzene, and 13 mg/kg xylenes. Details are in the Tank Removal Reports prepared by HK2 on October 2 and 10, 1996.

Based on the BTEX concentrations measured in the soil samples collected beneath the heating oil tank, the ACHADEH requested further assessment. Mr. Sheehan contracted HK2 to perform the assessment. HK2 investigation is summarized below.

On May 13 and 14, 1997, HK2 drilled five 2-inch-diameter percussion borings (B-1 through B-5; Figure 2) to 15 feet below grade (fbg) to evaluate the extent of hydrocarbons encountered beneath the heating oil UST. The location of these borings is shown on Figure 2. The borings were drilled in accordance with the ACHADEH approved work plan dated March 21, 1997, and our addendum dated April 8, 1997 except B-1 was moved because hydrocarbons were encountered in B-4. Our general field procedures are in Appendix A. A copy of Zone 7 Water Agency Drilling Permit 97267, City of Alameda Excavation Permit EX97-006, Encroachment Permit EN97-061, and the boring logs are in Appendix A.

Eighteen soil samples were collected with a split-spoon sample. North State Environmental (NSE; a California certified laboratory) analyzed seven of the samples for TPHd and TPHg (Modified EPA Method 8015), BTEX (EPA Method 8020), methyl-tertiary-butyl ether (MTBE; EPA method 8020). Based on the laboratory results, NSE analyzed two additional samples for TPHd. One soil sample was submitted to Cooper Testing Laboratory for grain size (ASTM D-1140) and organic content (ASTM D-2974) analysis. The laboratory results of the hydrocarbon analyses are summarized in Table 1. A copy of the laboratory reports and chain of custody records are in Appendix B. The estimated lateral extent of hydrocarbon-affected soil is shown in Figure 3.

When sampling activities were completed, HK2 removed the drilling rod from the boring and installed 15

feet of 0.75-inch-diameter PVC pipe, the lower 10 feet of which contained 0.010-inch-wide slots. A stainless steel bailer was then lowered down the PVC pipe to collect groundwater samples. The samples were submitted to NSE for analysis of TPHg, TPHd, BTEX and MTBE. A sample from B-4 was additionally analyzed for total dissolved solids (TDS; EPA Method 160.1). The laboratory results are listed in Table 2. The laboratory report and chain of custody record is in Appendix B.

On May 14, 1997, after groundwater sampling activities were completed, HK2 surveyed the top of the PVC casing in each boring and measured depth to groundwater from the top of each casing. Figure 4 is a groundwater elevation contour map based on the monitoring data. The survey was referenced to the top of a garage support footing west of the former gasoline tank cavity. The elevation of the Bench Mark was arbitrarily set at 15 feet above mean sea level. When surveying and fluid level monitoring activities were completed the PVC pipe was removed and the borings were backfilled with neat cement." (HK2, Inc./SEMCO, September 1997).

Key findings of HK2 investigation:

- Depth to groundwater is approximately 9 to 10 fbg. Groundwater gradient was directed toward the north approximately 0.017 foot per foot.
- Fine to medium grained sand was the predominant lithology encountered from grade to approximately 15 fbg.
- TPHd concentrations up to 9,200 mg/kg were measured in soil samples collected from B-3 and B-4; in soil samples from B-1, B-2 and B-5 up to 2 mg/kg TPHd.
- The TPHd concentrations in groundwater samples collected from Borings B-3 through B-5 ranged from 65,000 ug/l (B-5) to 430,000 ug/l (B-4). The dissolved phase TPHd concentration in B-1 and B-2 was <50 ug/l and 2,000 ug/l, respectively. Dissolved phase benzene concentrations were <0.5 ug/l in B-2 and B-3, 2 ug/l in B-1 and B-5, and 35 ug/l in B-4. Dissolved phase MTBE was below the laboratory reporting limit (0.5 ug/l) except in B-5 (27 ug/l). The TDS concentration in B-4 was 594 mg/l.
- The dissolved phase benzene concentration in B-4 exceeds the 10^{-6} residential use Risk Based Screening Level (RBSL) for groundwater ingestion listed in Designation E-1739 published by American Society for Testing and Materials (ASTM). The concentration of benzene in soil and in the groundwater samples collected from the other borings does not exceed the 10-6 RBSL for any other exposure pathway listed in Designation E-1739.
- A sheen was observed on water flowing from soil samples collected beneath the water table in Boring B-4.
- The laboratory report suggests gasoline range hydrocarbons were encountered in many soil and groundwater samples. However, Chromatogram analysis performed by the laboratory indicates the TPHg values reported represent the lighter end of diesel fuel and not gasoline.

3.0 PROPOSED SCOPE OF WORK

The proposed site investigation will be conducted in accordance with the requirements and guidelines of ACHADEH and California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). AARS proposes:

Installation of three soil borings to 20 feet below ground surface (bgs), downgradient to the former tank area and one soil boring upgradient to the former tank area. Convert three soil borings into groundwater monitoring wells (MW-1, MW-2 and MW-3) and one soil boring into temporary well (SB-1/TW). The locations of these monitoring wells and temporary well are presented in Figure 1. Collect soil samples during drilling at every 5 feet intervals or at lithologic changes. Analyze selected soil samples (one

sample per boring) for TPHd with BTEX. The various tasks associated with this site investigation are discussed below.

Task 1: Project Preparation, Submit Work Plan and Acquire Necessary Permits

Information pertinent to the site will be reviewed and will include available literature, previous field work and other sources. A workplan will be prepared, including a health and safety plan, and will be submitted to the ACHADEH. All required permits will be obtained and field activities will be coordinated with the ACHADEH. Site will be marked and Underground Service Alert will be notified prior to drilling of soil borings.

Task 2: Drill Soil Borings; Install three Monitoring Wells

Three soil borings (MW-1, MW-2 and MW-3) ond soil boring (SB-1/TW) will be drilled to 20 feet bgs by using a truck mounted CME 55 or 75 drilling rig with 8-inch-diameter, hollow-stem augers, following the standard procedures and requirements of the ACHADEH. Soil samples will be obtained with a split-spoon sampler lined with clean sampling sleeves. Soil samples will be collected at every 5 feet or at any lithologic changes, starting at 5 feet bgs. Soil borings will be logged lithologically using the Unified Soil Classification System (USCS) and soil samples will be screened in the field using a portable combustible gas indicator. The samples recovered for chemical analysis will be sealed with teflon tape and plastic caps and placed immediately into a cooler with ice and transported to a certified laboratory under chain-of-custody.

All drill cuttings will be stored at the site for proper disposal.

Task 3: Install three Monitoring wells

The three soil borings, MW-1, 2 and 3 will be converted into groundwater monitoring wells. The groundwater monitoring wells will be constructed of clean, 2-inch diameter, flush threaded, schedule 40 PVC blank casing which will be extended from grade level to a depth estimated at the highest anticipated water level, and 2-inch-diameter screened casing with 0.010-inch perforations, extending to a depth of at least 10 feet into the water table. The annular space surrounding the screened portion will be backfilled with No. 2 Monterey sand (filter pack) to approximately 2 feet above the top of the screened section. A bentonite annular seal (approximately 1 foot thick) will be placed above the filter pack. The remaining annulus will be grouted with neat cement to the surface. A monument well box will be installed slightly above grade to minimize infiltration of surface waters. Locking watertight well caps will be installed to ensure the integrity of the well (Appendix B).

Task 4: Sample Temporary Well

One soil boring (SB-1/TW) will be converted into a temporary groundwater well. The soil boring will be advanced 3 to 5 feet beyond the top of the saturated zone (approximately 15 feet bgs). A 2-inch diameter, flush threaded, schedule 40 PVC screened casing with 0.010-inch perforations covered with polyester filter sock will be installed in the bore holes. The water will be allowed to stabilize and a small volume of water (approximately 3 to 5 gallons) will be purged. Following purging a groundwater sample will be collected and the casing will be removed. The boring will then be completely backfilled with neat cement or cement slurry to grade.

The removed water will be transferred to 55-gallon drums, labeled, and stored at the site for proper disposal.

Task 5: Develop, Sample and Survey Monitoring Wells

Prior to sampling, the water level of the well will be recorded, and the presence of free product or sheen will be observed. The well will be properly developed prior to purging and sampling.

During purging, pH, temperature, and conductivity readings will be recorded. As these readings stabilize, indicating that the groundwater is representative of the water in the aquifer, the water samples will be collected in appropriate clean glassware. The samples will be placed in an iced cooler and transported to a California-certified laboratory.

To calculate the hydraulic gradient and groundwater flow direction of the shallow aquifer, the wells will be surveyed from a permanent reference mark at the top of the casing, to 0.01 foot accuracy in reference to mean sea level or a common elevation level.

The removed water will be transferred to 55-gallon drums, labeled and stored at the site for proper disposal.

Task 6: Analyze Soil Samples

Soil samples will be transported to North State Environmental Laboratory in South San Francisco, a California-certified laboratory for analysis following proper chain of custody procedures. A minimum of 1 soil sample (capillary zone) from each boring will be analyzed for TPHd, using EPA Method 3510/8015M; BTEX using EPA Method 8020. The detection limits for TPHd 1.0 milligram per kilogram (mg/kg) and the detection limits for BTEX are 0.005 mg/kg.

Task 7: Analyze Water samples

Groundwater samples collected from the monitoring wells will be analyzed for TPHd, using EPA Method 3510/8015M; BTEX, using EPA Method 8020. The detection limits for TPHd is 50 microgram per liter (μg/L) and the detection limits for BTEX are 0.5 μg/L.

Task 8: Analyze Data and Laboratory Results and Prepare Report

Upon completion of the sample analysis and background research, a detailed evaluation of results and available information will be conducted to assess the extent and nature of groundwater contamination. This will include:

Interpretation of geologic and hydrogeologic information.

Description of field and analytical procedures.

Tabulation of soil and groundwater analytical results.

A report presenting the findings of the investigation including conclusions and recommendations, will be prepared for submission to the ACHADEH.

4.0 SITE SAFETY PLAN

All field procedures and activities related to the conduct of the site investigation will be in accordance with the site specific safety plan has been developed in compliance with applicable requirements of the California Department of Health Services (DHS) and the Federal and State Occupational Health and Safety Administration (OSHA and Cal-OSHA). The site safety plan is presented in APPENDIX C.

5.0 PROPOSED SCHEDULE OF ACTIVITIES

The proposed schedule includes completion of the following items:

Items	Cumulative Days
1. Work plan and health and safety plan	5
2. Receipt of the soil borings/monitoring well permit from the ACPW	10
3. Field work and sample collection	25
4. Chemical analyses	35
5. Data analyses, integration and interpretation	50
6. Report preparation	60

This schedule may be subject to revision depending on timely receipt of work plan approval and approval of boring/well permit to complete the site investigation. Any changes to the schedule will be communicated in advance to the appropriate agencies and parties involved.

6.0 PROPERTY OWNER AND CONSULTANT

Property owner: Mr. William J. Sheehan
1236 Bay Street
Alameda, California 94501

Contact: Mr. William Sheehan (510) 522-0978

Consultant: Advanced Assessment and Remediation Services
2380 Salvio Street, Suite 202
Concord, California 94520

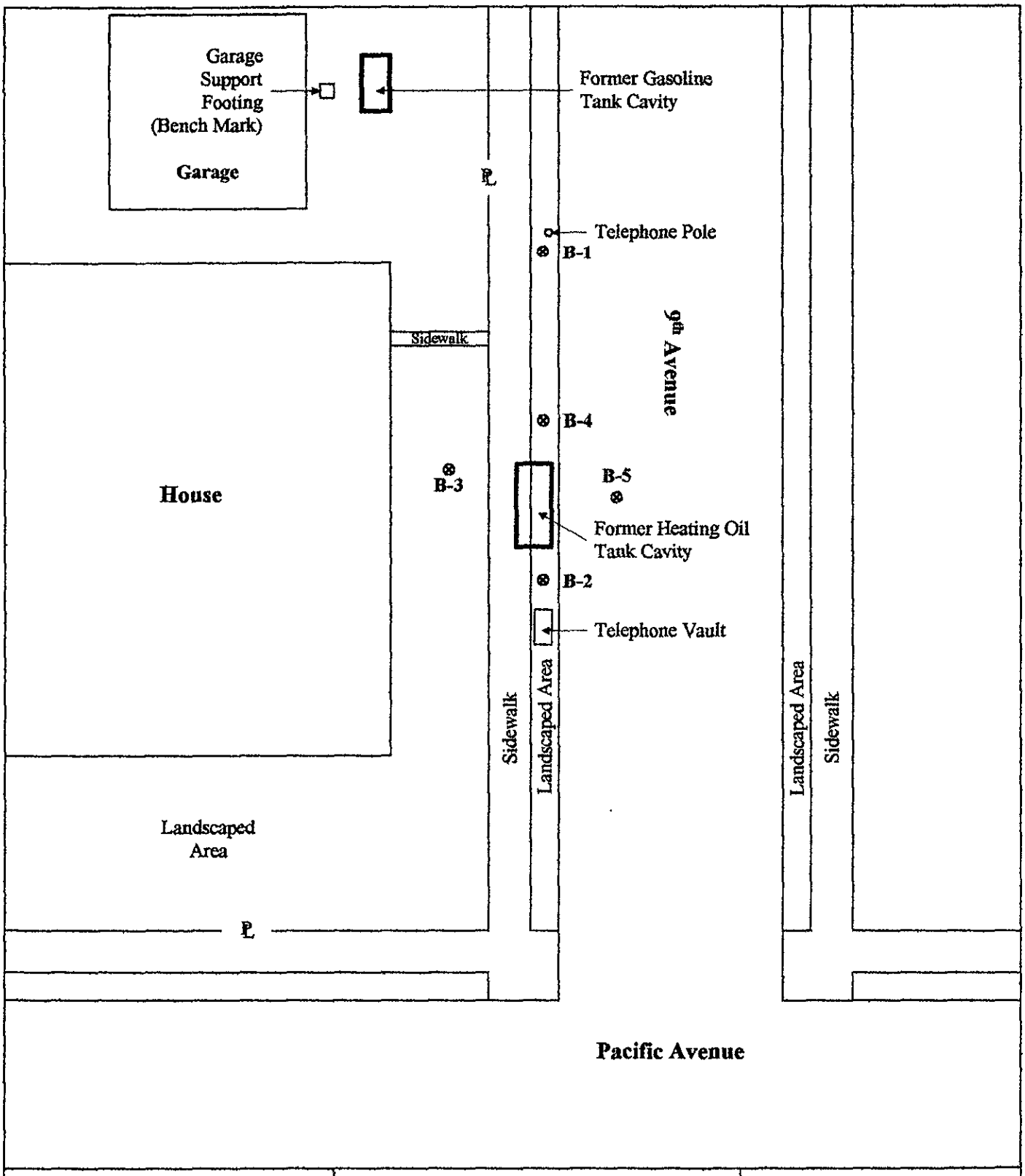
Contact: Tridib Guha (925) 363-1999 Cell: (925) 451-1999

Tridib K. Guha, R.G.

REGISTERED GEOLOGIST
TRIDIB KUMAR GUHA
No. 5836
STATE OF CALIFORNIA

APPENDIX A

Key Enclosures From HK2 Report



HK2, Inc./SEMCO
1751 Leslie Street
San Mateo, California 94402

Project 97-0154

Legend

B-2 Soil Boring

Property Line

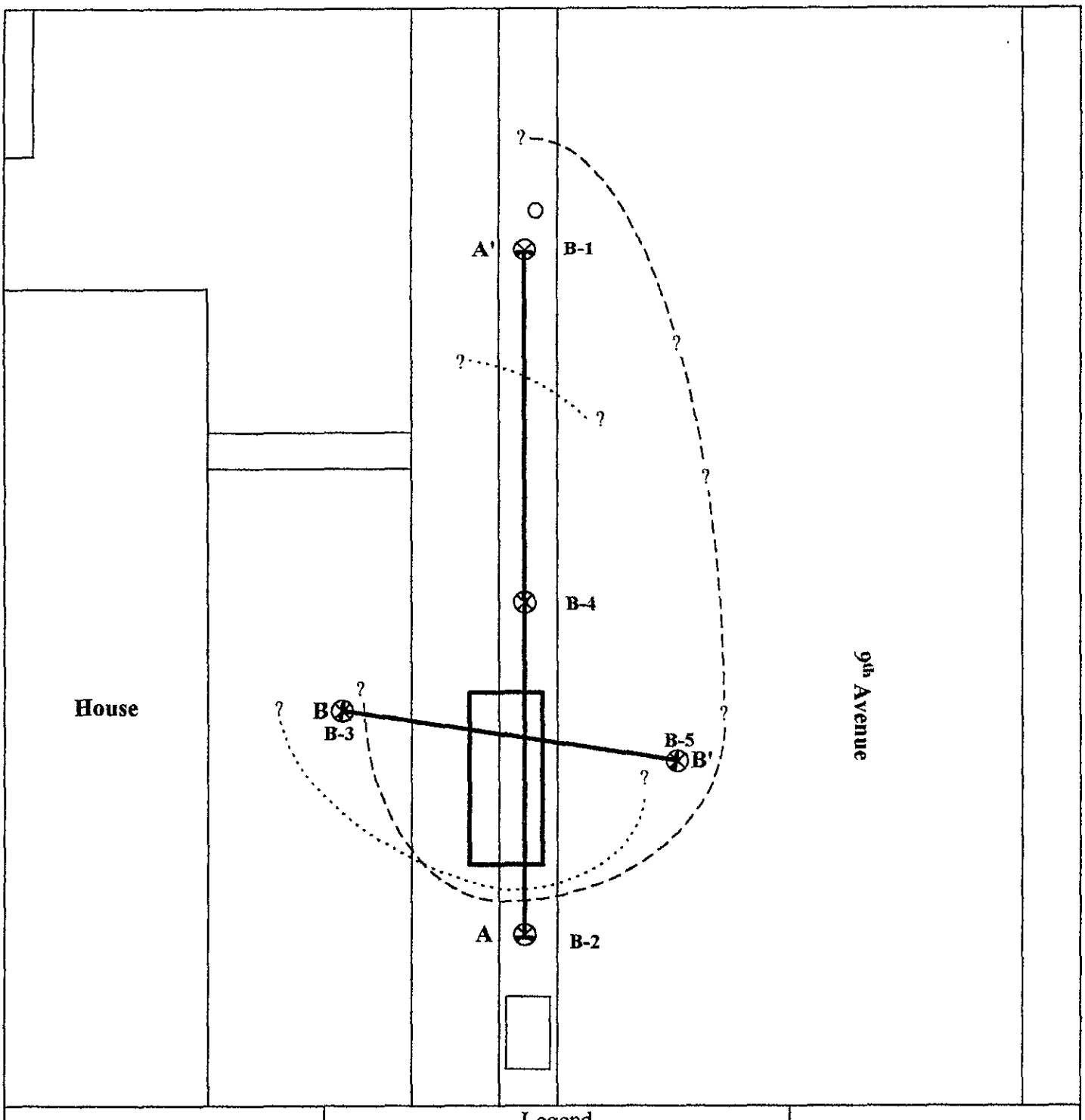
0 10 20
Feet

N E S W

Site Plan

845 Pacific Avenue
Alameda, California

Figure 2



Legend

Estimated 1 ug/l dissolved-phase benzene isoconcentration line

Estimated 100 mg/kg absorbed-phase TPH-D isoconcentration line

N
W
E
S

⊗ B-2 Boring Location

A A' Cross Section Line (See Figure 5)

0 5 10 Feet

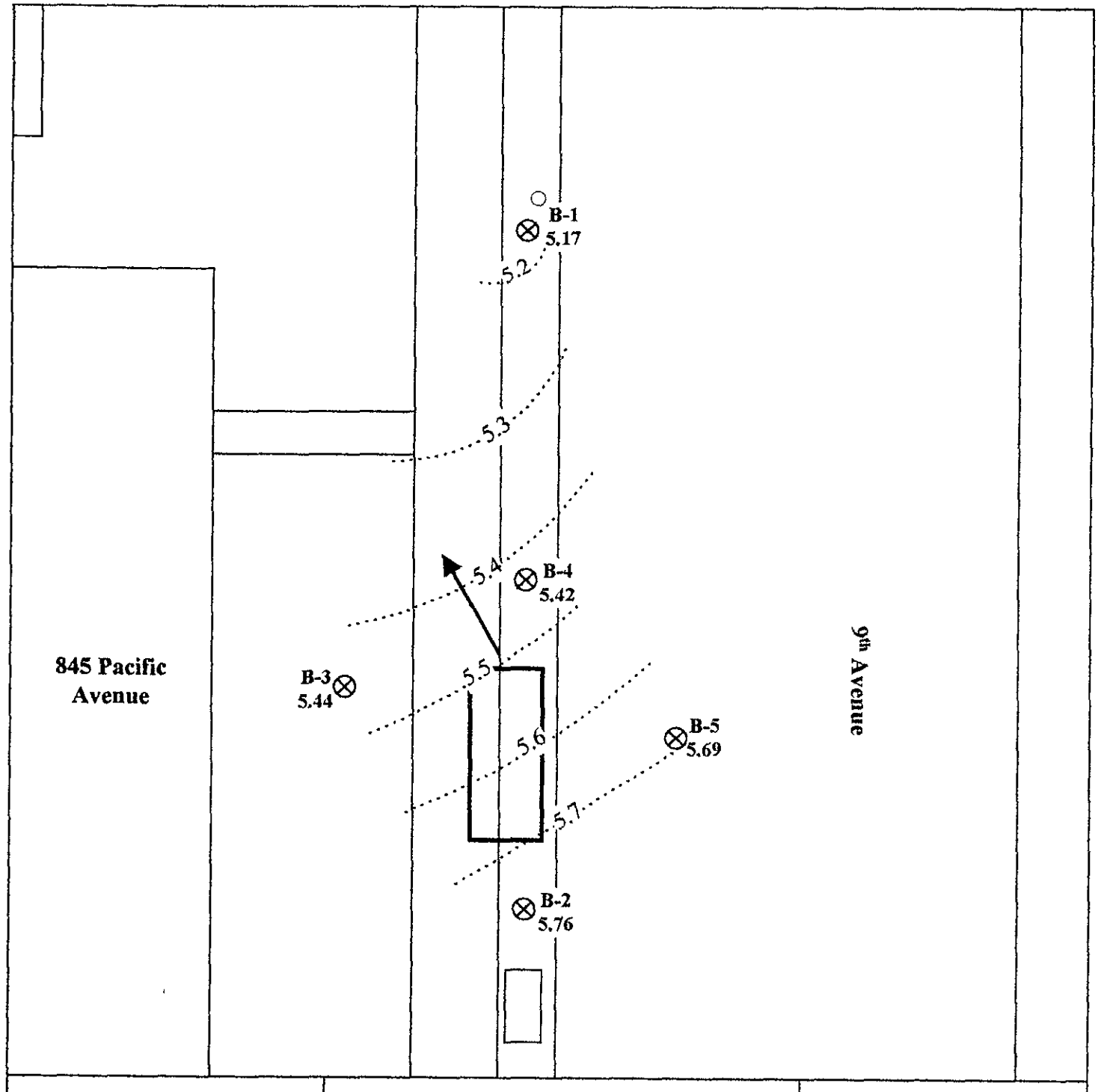
HK2, Inc./SEMCO
1751 Leslie Street
San Mateo, CA 94402

Project No. 97-0154

Estimated Lateral Extent of Hydrocaron-Affected Soil and Groundwater

845 Pacific Avenue
Alameda, California

Figure 3



HK2, Inc./SEMCO
1751 Leslie Street
San Mateo, CA 94402

Project No. 97-0154

Legend

B-2 5.76 — Boring Showing Groundwater Elevation in Feet

5.3 — Groundwater Elevation Contour in Feet

Estimated Direction of Groundwater Gradient

N
W E
S

0 5 10
Feet

Groundwater Elevation Contour Map

845 Pacific Avenue
Alameda, California

Figure 4

Table 1

Laboratory Results of Soil Sample Analyses
845 Pacific Avenue
Alameda, Ca

Boring	Depth (fbg)	TPH-D (mg/kg)	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)
B-1	6.0	2	1.3	ND	ND	ND	ND	ND
	9.0	ND	ND	ND	ND	ND	ND	ND
B-2	8.5	ND	ND	ND	ND	ND	ND	ND
B-3	6.0	ND	1.2	ND	ND	ND	ND	ND
	9.0	9,200	12	ND	0.008	0.024	0.045	ND
	11.0	5,700	--	--	--	--	--	--
B-4	8.0	4,100	12	ND	0.007	0.025	0.014	ND
	11.0	9,200	--	--	--	--	--	--
B-5	8.0	ND	ND	ND	ND	ND	ND	ND
Laboratory Reporting Limit		1.0	0.5	0.005	0.005	0.005	0.010	0.005

Table 2

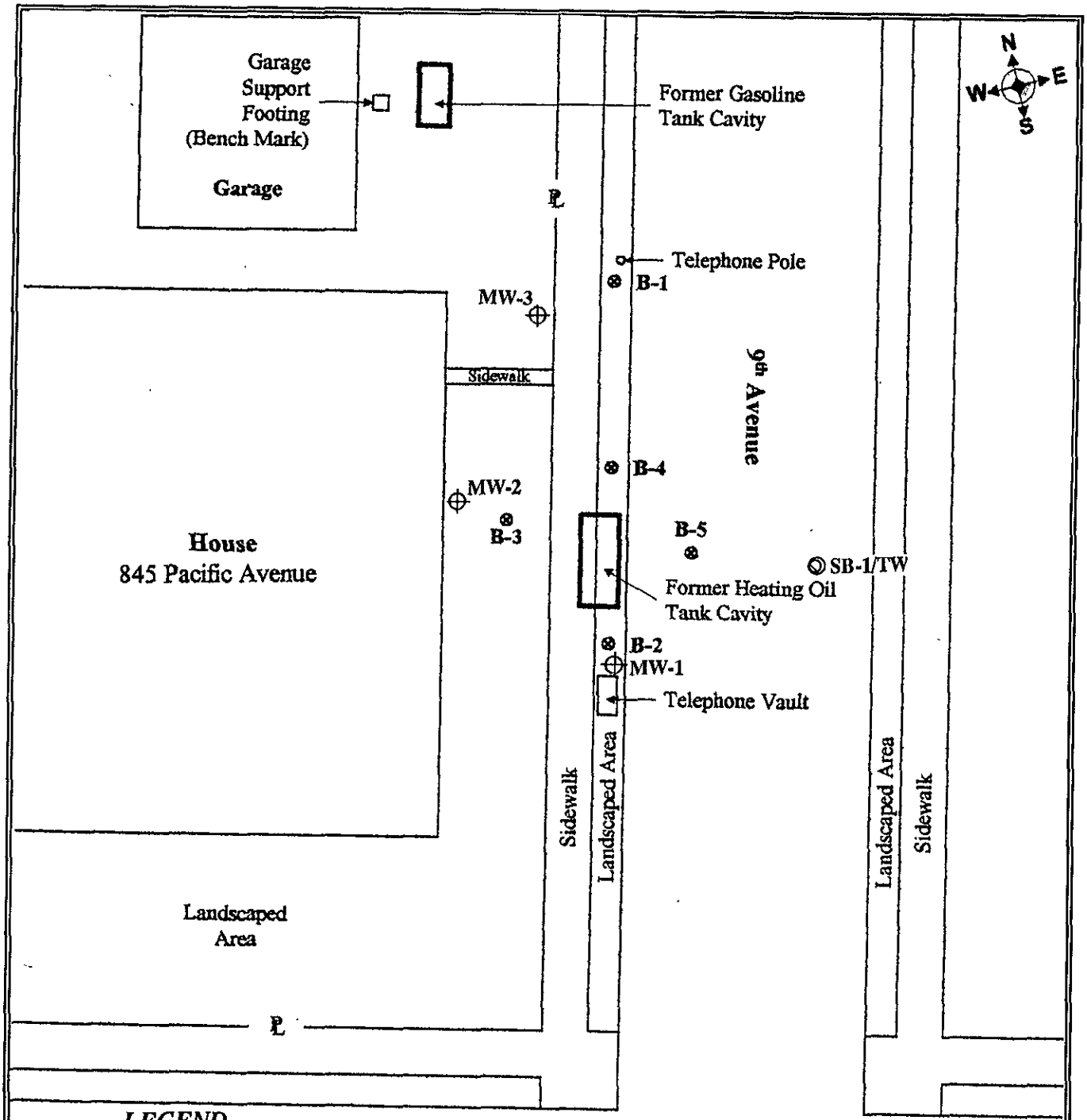
Laboratory Results of Groundwater Sample Analyses
845 Pacific Avenue
Alameda, Ca

Boring	TPH-D (ug/l)	TPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	TDS (mg/l)
B-1	ND	ND	2	2	3	9	ND	--
B-2	2,000	360	ND	ND	1	15	ND	--
B-3	81,000	3,200	ND	ND	3	6	ND	--
B-4	430,000	6,100	35	ND	27	160	ND	594
B-5	65,000	3,100	2	0.5	19	34	27	--
Lab Reporting Limit	50	50	0.5	0.5	0.5	1.0	0.5	1

Note:
TPH-D = Total petroleum hydrocarbons as diesel
TPH-G = Total petroleum hydrocarbons as gasoline
MTBE = Methyl-tertiary-butyl ether
TDS = Total Dissolved Solids
fbg = Feet below grade
mg/kg = milligrams per kilogram
ug/l = micrograms per liter
mg/l = milligrams per liter
-- = Sample not analyzed for this constituent
ND = Concentration less than laboratory reporting limit

APPENDIX B

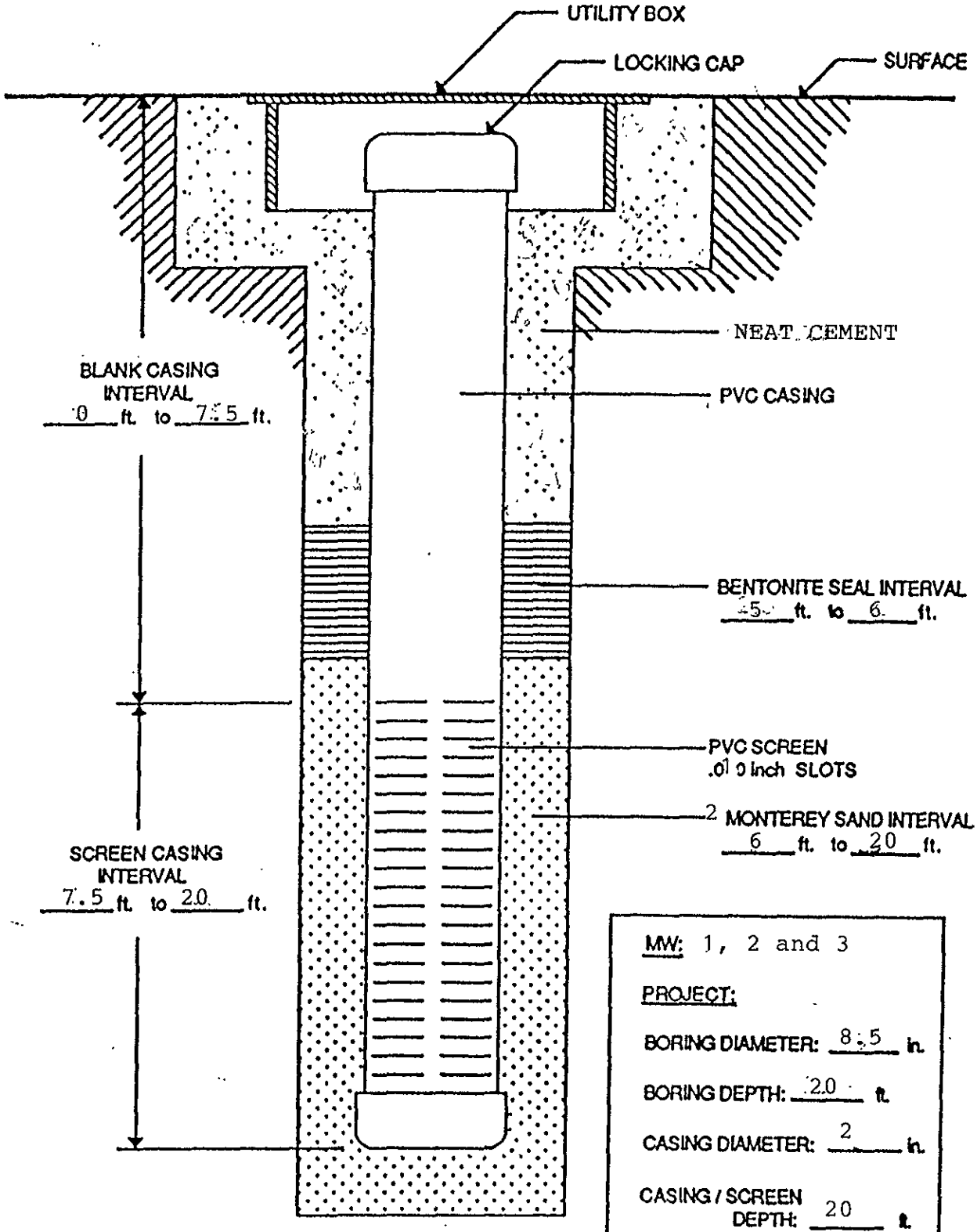
Figure 1, Site Plan, Proposed Well Construction Diagram



Source of Base Map: HK2, Inc./SEMCO report

FIGURE 1: SITE PLAN
SHEEHAN PROPERTY
845 Pacific Avenue
Alameda, California

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



NOT TO SCALE

PROPOSED WELL CONSTRUCTION DIAGRAM

Advanced Assessment and Remediation Services
2380 Salvio Street, Suite 202
Concord, California 94520

APPENDIX C

Site Safety Plan

SITE SAFETY PLAN
Sheehan Property
845 Pacific Avenue
Alameda, California

INTRODUCTION

This site safety plan has been prepared pursuant to requirements of Alameda County Health Agency, Department of Environmental Health (ACHADEH). This plan has been prepared in conformance with the Advanced Assessment and Remediation Services (AARS) Health and Safety Program. It addresses those activities associated with site characterization and will be implemented during all site investigations and field related activities. Compliance with this Site Safety Plan (SSP) is required of all AARS personnel, subcontractors, and third parties who enter the site. The requirements and parameters identified in this SSP will be subject to modification as warranted by existing site conditions or as work progresses. However, no changes will be made without the prior approval of the Project Safety Officer.

PROJECT SAFETY OFFICER

The Project Safety Officer has overall responsibility for the development, coordination, and implementation of the SSP and its conformance with the AARS Health and Safety Program. The Project Safety Officer will also be responsible for field implementation of the SSP. This will include communicating the site-specific requirements to all site personnel and third parties, and assuring compliance with the AARS Health and Safety Program.

AARS PERSONNEL AND SUBCONTRACTORS

All AARS personnel and Subcontractors will be responsible for reading, understanding, signing, and complying with these SSP requirements.

BACKGROUND

In September 1996, HK2 removed one 120-gallon underground gasoline storage tank (UST) and one 750-gallon heating oil UST from the site. The concentration of total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX) in the soil sample collected beneath the former gasoline tank was below the laboratory reporting limit. However, soil sample collected beneath the former heating oil tank contained up to 800 mg/kg TPH as diesel (TPHd), 3.6 mg/kg benzene, 2.5 mg/kg toluene, 2.0 mg/kg ethylbenzene, and 13 mg/kg xylenes. Details are in the Tank Removal Reports prepared by HK2 on October 2 and 10, 1996.

Based on the BTEX concentrations measured in the soil samples collected beneath the heating oil tank, the ACHADEH requested further assessment. In May 1997, site investigation was conducted by HK2 by drilling five 2-inch-diameter percussion borings to evaluate the extent of hydrocarbons encountered beneath the heating oil UST. The TPHd concentrations up to 9,200 mg/kg were measured in soil samples. The TPHd concentrations up to 430,000 ug/l were measured in groundwater samples.

HAZARD SUMMARY

Major potential hazards to personal safety at the site include:

A. Physical Injury

Exposure to this type of injury can occur while working around heavy equipment during the different field operations; e.g., drilling and associated work. If the surface is wet slip, trip and fall can cause injury. Additionaly, exposure to physical injury on this site is increased by the fact this work will be conducted at the sidewalk of a highway, where there will be frequent vehicular traffic.

B. Explosion and Fire

Petroleum products are highly flammable. Liquid petroleum product readily vaporizes from standing pools or saturated soil. Ignition sources of any kind; e.g., engines, impact sparking, and heat or arc from inappropriate equipment or instrumentation pose a major explosion and fire hazard.

C. Inhalation, Ingestion, or Absorption of toxic vapors, liquids, or dusts associated with petroleum hydrocarbons, and organic chemicals

Gasoline vapors in high concentrations (>300 parts per million (ppm)) can cause eye, nose, and throat irritation, headaches, dizziness, and anesthesia. Skin contact and/or absorption of gasoline may result in irritation and dermatitis. Contact with specific toxic petroleum hydrocarbon and organic chemical substances such as the following volatile organic compounds (VOC): benzene, toluene, ethylbenzene, and xylenes (BTEX) may seriously affect an individual health. Benzene is a suspected human carcinogen and along with toluene and xylenes can cause damage to the liver, kidneys, and central nervous system. Ethylbenzene is also known to be a skin irritant in both vapor and liquid forms.

D. Electrical Shock or Electrocution

Electrical power lines are known to be in the vicinity of both drilling and hand augering operations.

E. Hearing Damage

Noise from the drilling will be both constant and extensive.

F. Sun Burn and Heat Stress

Due to time of the year, heat stress is may be expected.

HAZARD ASSESSMENT

Consistent efforts will be made throughout the project to evaluate the chemical and physical hazards described above. Explosion, fire, and VOC exposure hazards will be evaluated through an air monitoring program. Electrical shock, hearing damage, physical damage, and heat stress will be minimized through a hazard reduction program.

AIR MONITORING PROGRAM

A. Fire and Explosion

A direct-reading portable GasTech combustible gas indicator (CGI) (calibrated to hexane) or a photo ionization detector (PID), which measures VOC concentrations in ppm or as a percentage of the lower explosive limit (LEL), will be used to evaluate the possible formation of flammable atmospheres around

the work area. Continuous measurements will be obtained at the top of each borehole throughout the temporary well/monitoring well installation and soil boring operations.

B. Exposure to VOC's

Airborne concentrations of VOC's will be monitored with the CGI described above, and/or a PID. Measurements will be obtained from the top of each borehole and all soil samples.

HAZARD REDUCTION PROGRAM/ENGINEERING CONTROLS

Access to work areas will be limited by the Project Safety Officer to essential personnel.

Drill cuttings and soil will be stored on site on a plastic liner. The stored soils will be removed from the site at the earliest opportunity by the responsible party. Underground utilities will be identified through Underground Service Alert prior to operation, and power lines and pipelines will be shut down, locked-out and tagged, as appropriate.

A. Flammable Atmospheres

In the event that combustible gas indicator readings anywhere on the site exceed 10% of the LEL of gasoline (11,000 ppm), work will be suspended, monitoring will be continued as necessary to isolate the area of concern, and some or all of the following environmental controls will be implemented as appropriate:

1. Borings or wells emitting excessive VOC concentrations will be ventilated, capped, or shut in as necessary.

2. Drilling equipment will be bonded and grounded during all operations to control ignition sources.

B. Airborne Toxic Chemicals

Workers will be required to wear half-face air purifying respirators with organic vapor cartridges under the following circumstances:

1. If the worker is continuously exposed throughout the day to VOC vapors that exceed the permissible exposure level (time weighted average) (PEL-TWA) for gasoline (300 ppm), or
2. If the worker is exposed at any time to VOC vapors that exceed the permissible exposure level (short term exposure limit) (PEL-STEL) for gasoline (500 ppm).

Similar precautions will be taken with regard to other toxic chemicals such as BTEX components. If VOC vapors exceed 1,000 ppm, full-face air purifying respirators with organic vapor canisters will be worn.

C. Physical Contact with Contaminated Soil and Ground Water

Workers who must come in direct contact with contaminated soil or ground water for sampling purposes, will be required to wear protective gloves and/or necessary protective clothing to prevent skin contact.

D. Physical Hazards

Accidents will be prevented by personal protective equipment, engineering controls, and the exercise of reasonable caution during work activities. Traffic control will be performed for entire duration of drilling operation on the sidewalk.

E. Noise Exposures

All workers entering high-noise areas will be required to wear hearing protection (ear plugs or muffs).

H. Heat Stress

Workers will be provided beverages, shaded rest areas, and breaks, as needed, to prevent heat stress.

GENERAL MEASURES AND PROCEDURES

SAFETY INSPECTIONS

Walk-through safety inspections of the work area will be conducted daily before the start of work and as conditions change. The results of these surveys will be communicated to the work crews during regularly scheduled "tailgate safety" meetings. The safety procedures and the day's planned operations will be discussed at these sessions.

PERSONAL PROTECTIVE EQUIPMENT

Field personnel involved in the site investigation will be required to be prepared with the following personal protective equipment:
*Hard hats
*Half-face air purifying respirators with organic vapor cartridges and dust/mist filters
*Safety glasses with side-shields, or splash goggles
*Tyvek coveralls and other suitable work clothing
*Chemical-resistant gloves
*Steel-toe boots or boot covers
*Hearing protectors or ear plugs

EMERGENCY RESPONSE

The Project Safety Officer will have controlling authority during an emergency. In the event that this person is not available, the Alternate Safety Officer (driller) will be in charge. Emergency response organizations and contacts are listed at the end of this plan.

GENERAL SAFETY REQUIREMENTS

The following requirements will also be observed:

1. The Project Safety Officer has the authority to correct unsafe site conditions. All accidents, injuries, and potentially unsafe working conditions shall be reported to the Project Safety Officer immediately.
2. Eating, smoking, and drinking will be allowed only in designated offsite areas. Site personnel will wash their hands and faces thoroughly prior to eating or drinking.
3. Respirators will be cleaned, sanitized, inspected, and maintained by workers after each use.

4. Fire extinguisher will be onsite for use on equipment or small fires only.
5. An adequately stocked first aid kit will be onsite at all times during work activities.

All practical engineering and geological information, experience, and accepted practices will be employed as necessary to control any and all aspects of site safety while carrying out the proposed site investigation work.

LIST OF KEY PERSONNEL

Project Safety Officer:	Tridib Guha, AARS (925) 363-1999; Cell: (925) 451-1999
Alternate Safety Officer:	Driller, Gregg Drilling & Testing.(925) 313-5800
Client Contact:	Mr. William Sheehan (510) 522-0978

EMERGENCY TELEPHONE NUMBERS

911	Police, Fire and Ambulance
(510) 522-3700	Alameda Hospital, 2070 Clinton Avenue, Alameda, CA
(800) 258-6492	Hazardous Waste Hotline (California DHS)
(800) 342-9293	Poison Control Hotline

HOSPITAL ADDRESS AND ROUTE

Location and Directions:

Alameda Hospital Emergency Room is located at 2070 Clinton Avenue, Alameda, between Chestnut and Willow Street.

From the site go to Ninth Street; turn left onto Ninth Street, turn left onto Central Avenue; turn slight right onto Encinal Avenue; turn right onto Chestnut Street; turn left onto Clinton Avenue.

This site safety plan is prepared by:

Tridib K. Guha
Project Safety Officer