HAGEMAN-SCHANK, INC.

Underground Contamination Investigations

3732 Mt. Diablo Blvd. Suite 372
Lafayette, California 94549
(415) 284-1661
FAX (415) 284-1664

July 25, 1990

PROPOSAL FOR SUBSURFACE INVESTIGATION

FORMER CHEVRON STATION
11727 MAIN STREET
SUNOL, CA

I. INTRODUCTION

The proposed scope of work involves the installation of one groundwater monitoring well and two soil borings as the result of subsurface contamination found at the time four underground storage tanks were removed from this site.

The site location is 11727 Main Street, Sunol, CA. In conjunction with the former Chevron station, the site has historically operated four underground storage tanks:

one 550 gallon diesel
one 550 gallon regular gasoline
one 1000 gallon unleaded gasoline
one 1000 gallon premium gasoline

On February 7, 1990, all four underground storage tanks were removed by Hageman Schank, Inc., under permit from the Alameda County Environmental Health Department. Analytical

results for soil samples and other data pertaining to the previous tank removals are included as Attachment A. The results of initial laboratory analyses performed upon samples of native soil collected from beneath the smallest diesel tank (SS#1) and the northern-most gasoline tank (SS#5) indicated concentrations of total petroleum hydrocarbons (TPH) of 200 and 1100 parts per million (ppm), respectively. Further excavation at both of these locations resulted in soil samples with non-detectable concentrations of petroleum hydrocarbons (SS#1-A and SS#5-A)

II. SITE DESCRIPTION

Vicinity Description and Hydrogeologic Setting

The location of the site is shown on the vicinity map (Figure 1). The site is located on the northern edge of Sunol Valley. The Sunol Valley is composed of unconsolidated, Quaternary non-marine terrace deposits (Geologic Map of California, San Jose Sheet, State of California Division of Mines and Geology, 1981). Considering the slope of the surrounding mountains, these deposits can be expected to reach considerable depths beneath the ground surface. As shown in Figure 1, extensive gravel mining is conducted to the south of the site.

The mountains immediately surrounding the site on three sides consist of Plio-Pleistocene non-marine deposits. The Vallecitos Valley to the east consists of more recent Quaternary alluvium. The mountainous areas surrounding the site are drained by Sinbad Creek, Arroyo de la Laguna, and Vallecitos Creek. These three watercourses meet at a location just to the northeast of the site, as shown in Figure 1. Based upon the locations of these watercourses and the large corresponding watershed areas, it can be expected that the unconsolidated alluvium encountered beneath the site was deposited in large quantities under relatively high water velocities. Cobbles, boulders, and gravels with little or no fines can therefore be expected beneath the site. The results of the exploratory boring that is described in Section IV (boring log in Attachment A) supports this geologic scenario.

Based upon the surface topography, as well as the various hydrologic features shown on the vicinity map, the general

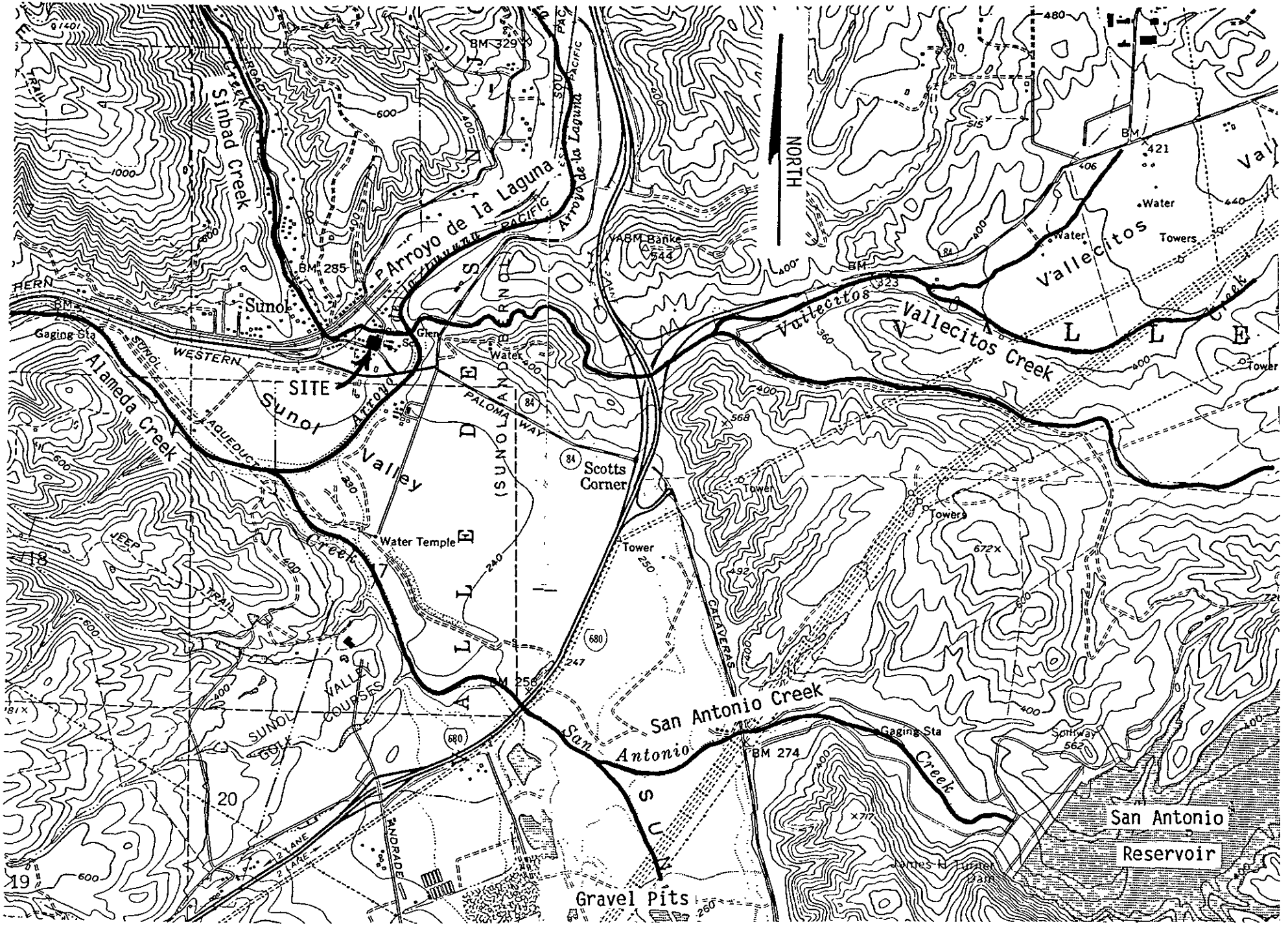


FIGURE 1. Site Vicinity Map

regional shallow groundwater flow in the vicinity of the site can be expected to be to the southeast or to the south-southeast, toward Alameda Creek and Niles Canyon. During the exploratory boring, shallow groundwater was encountered at approximately 70 feet below the ground surface.

Site Description

A map of the site is shown in Figure 2. This map shows the layout of the facility, along with the locations of the previous tank excavations. The only structures remaining at the site are a pump island and a concrete pad (floor of previous lube room).

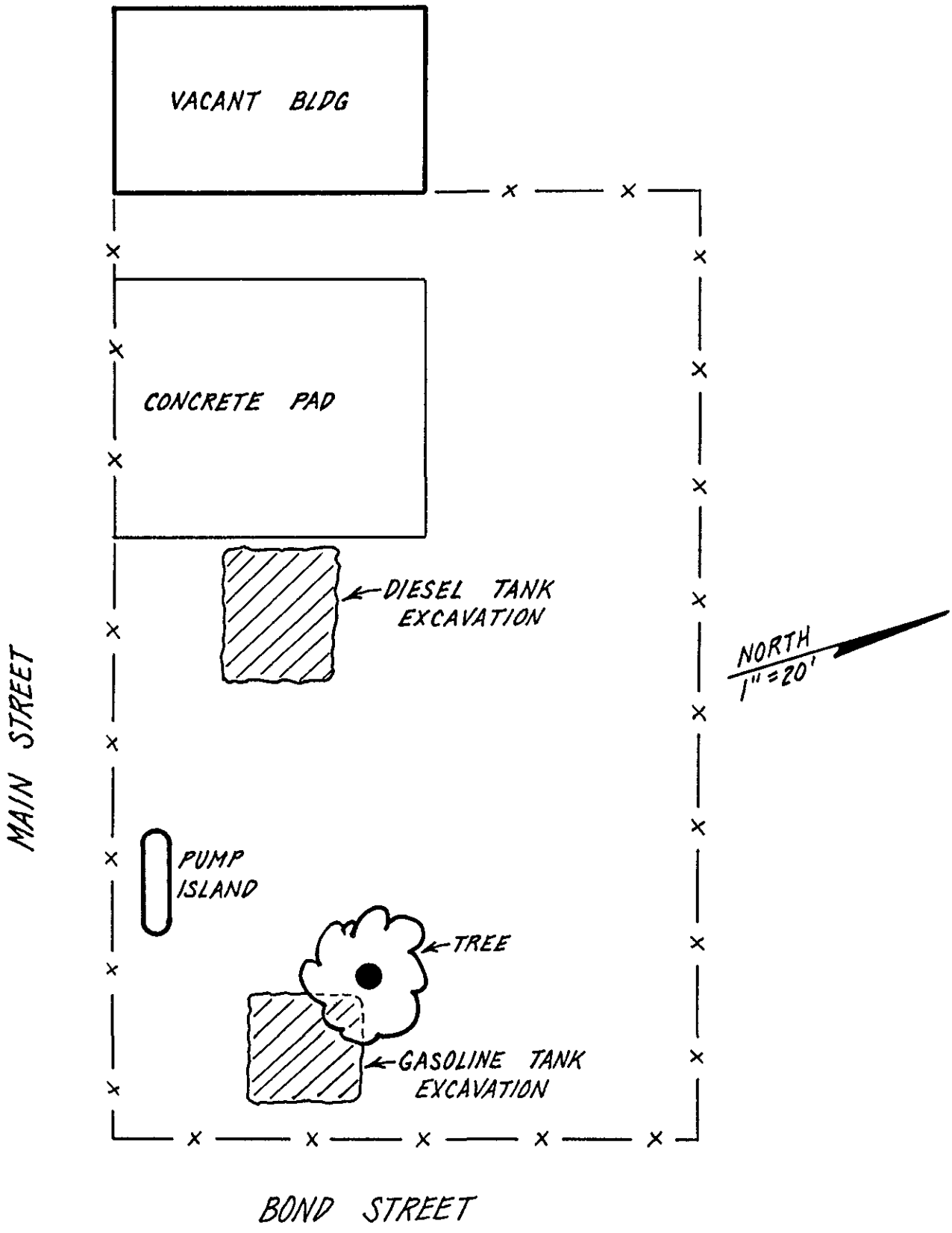


FIGURE 2.
Site Map

III. EXTENT OF SOIL CONTAMINATION ON SITE

Based upon the information presented in Attachment A, one soil sample collected from beneath the 550-gallon diesel tank during the underground tank removals indicated a hydrocarbon level of 200 mg/kg (ppm). In addition, one soil sample collected from beneath one of the 1,000 gallon tanks during the underground tank removals indicated a hydrocarbon level of 1,100 mg/kg (ppm). Soil sampling in both tank pits after additional excavation indicated non-detectable levels of total petroleum hydrocarbons in the native soils. In addition, soils were excavated and native soil beneath was sampled during the underground pipeline removals.

not diesel UST Pit

Soil sampling data collected during the previous tank removals indicate that all contaminated soil has been removed. The plan for determining groundwater contamination, as discussed in Section IV of this proposal, provides for the analysis of all soil and groundwater samples for 1) total petroleum hydrocarbons as gasoline & diesel, and 2) Benzene, Toluene, Xylenes, and Ethylbenzene (BTXE). An attempt will be made to determine the concentrations and extent of these petroleum hydrocarbons that may be present in the soil and shallow groundwater in the immediate area of the previous tank excavations, in the event that residual hydrocarbon contamination is still present in the native soil beneath the site.

IV. PLAN FOR DETERMINING GROUNDWATER CONTAMINATION

Placement of Monitoring Well

The purpose of the proposed groundwater investigation is to install and sample one on-site monitoring well in order to define the extent of any petroleum constituents that may be present in the shallow groundwater in the immediate vicinity of the former gasoline tank excavation. The proposed location of the well is shown in Figure 3. The well will be installed within the previous exploratory boring.

Monitoring Well Installation

Due to the concern about the ability of conventional hollow stem auger drilling equipment to advance a boring through the apparent cobble- and boulder-rich alluvium underlying the site, an exploratory boring was previously drilled on July 13, 1990, using an air-rotary drilling rig. The boring log is included in Attachment A. During the entire boring, several locations of very difficult drilling were encountered (boulders). The majority of the subsurface material between these locations, however, consisted of very loose gravels. Shallow groundwater was encountered at approximately 70 feet below the ground surface. An attempt was made to complete a 2-inch monitoring well within the boring. Due to the very loose nature of the gravels, this was not possible.

It should be noted that in order to keep the boring open as drilling progressed, it was necessary to introduced a non-toxic, organic drilling mud/foaming agent into the boring. The viscosity of this material is designed to break down

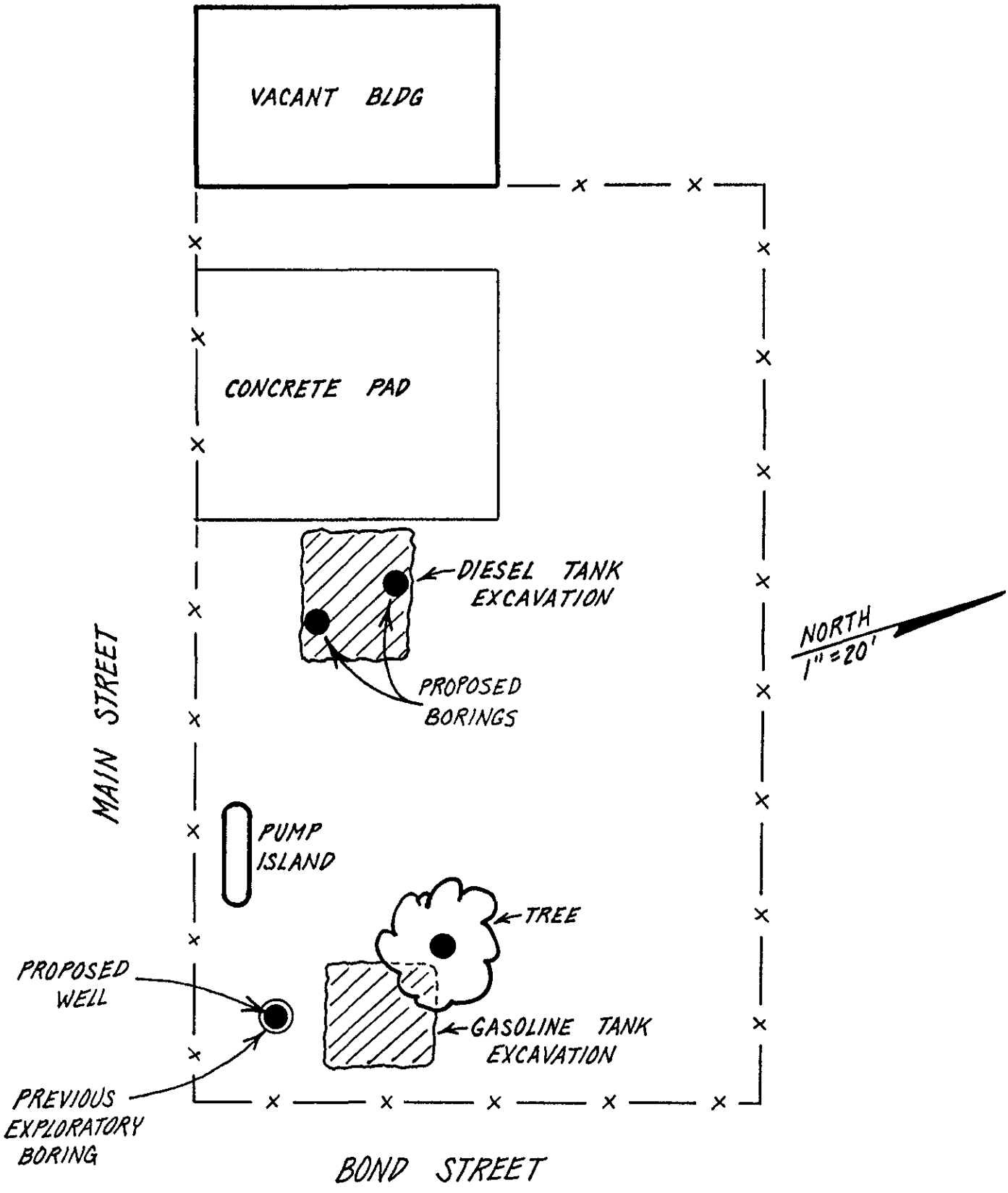


FIGURE 3.
Locations of Proposed Shallow Groundwater Monitoring Wells.

within 3 to 4 days of drilling. Although proper well development is expected to remove any residual material present in the boring, a complete chemical analysis of the material is available in the event that interferences are reported by the analytical laboratory during groundwater sample analyses.

Due to the nature of the air rotary method, it was not possible to collect undisturbed soil samples during the drilling. No hydrocarbon vapors, however, were detected in the air and cuttings emanating from the boring during the drilling operation.

The boring was backfilled with clean Monterey sand. The well installation in the boring will begin as soon as possible, following approval by the appropriate regulatory agencies. The well will be installed with a truck-mounted drill rig using 8-inch hollow-stem augers.

The well boring will extend to approximately 10 feet below the shallow water table. The well will be cased to approximately five to ten feet above the shallow water table with 2-inch PVC slotted screen pipe (0.02" slots). The annular space of the well will be packed to one foot above the slotted section with #3 Monterey Sand. At least one foot of wetted bentonite pellets will be placed upon the sand pack, followed by a neat cement/bentonite seal up to the ground surface. The well will be fitted with a locking steel traffic lid. The well installation will be logged in the field by Gary Aguiar, registered civil engineer #34262 (a statement of qualifications is included as Attachment B). A typical well construction diagram is shown in Figure 4.

Prior to the installation of the well, all drilling equipment, including augers, drill stem, and split barrel samplers, will be steam-cleaned on-site.

TYPICAL MONITORING WELL CONSTRUCTION

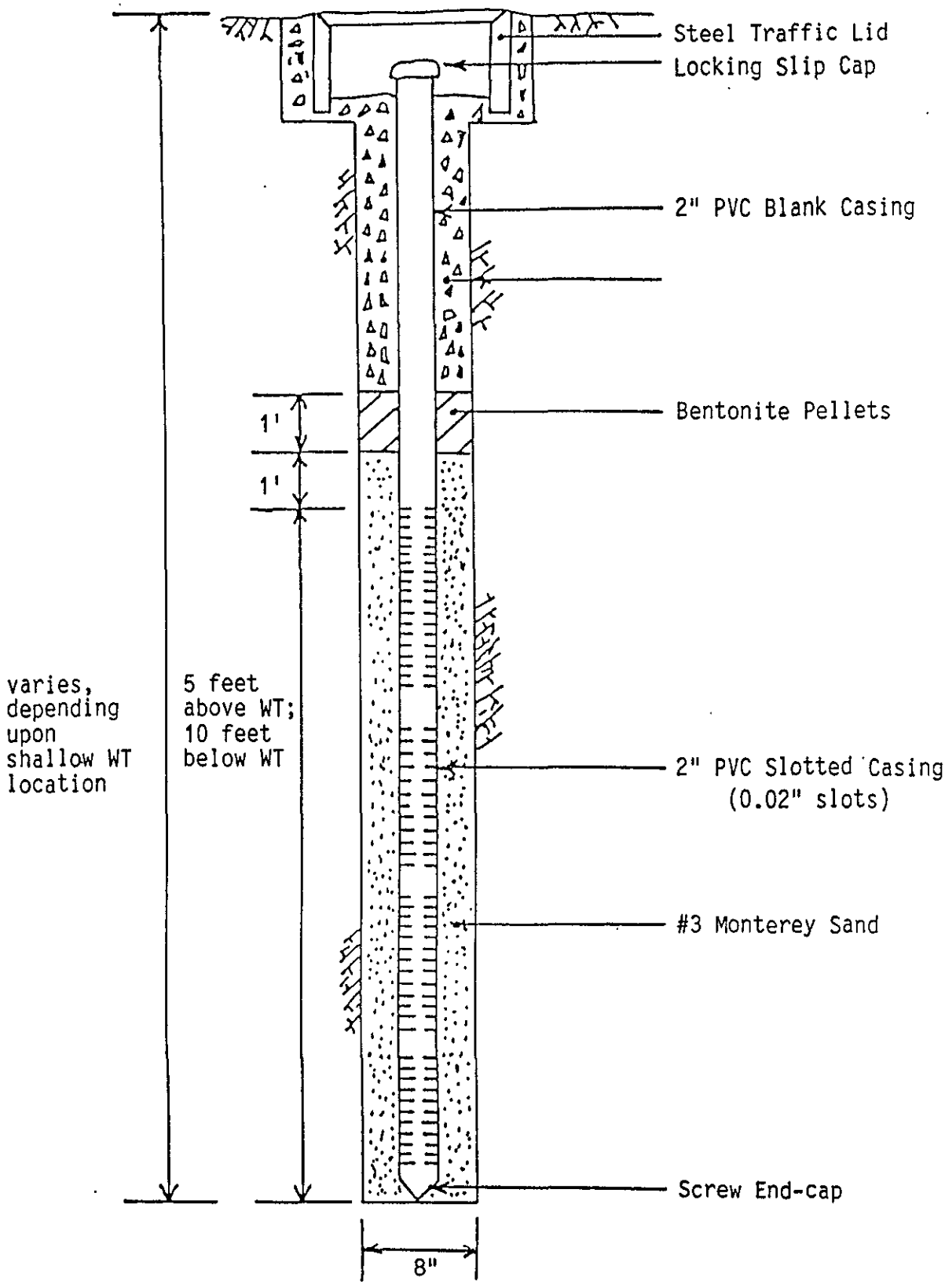


FIGURE 4.

Typical Monitoring Well Construction.

All drill cuttings from the previous boring have been stockpiled on-site, pending analysis. Future drill cuttings will also be stockpiled on-site. Contaminated soil from the gasoline tank removals are currently being aerated on-site. Should any the drill cuttings contain detectable volatile hydrocarbons, they will also be aerated on-site.

Soil Borings

In order to determine the extent of any residual hydrocarbon contamination that may be present in the native soils beneath the diesel tank excavation, two soil borings are proposed. The locations of these soil borings are shown in Figure 3.

In order to obtain undisturbed soil samples, an attempt will be made to complete the borings using 8-inch hollow-stem augers. Soil samples for chemical analyses will be collected at 5-foot intervals until it is deemed likely that two successive "non-detectable" samples have been collected, based upon field instrumentation, or until the shallow water table is encountered, which is expected at a depth of not more than 70 feet below the ground surface. Each soil sample will be collected by driving a split-barrel sampler fitted with clean brass liners. All samples will be immediately placed on ice, then transported under chain-of-custody to the laboratory by the end of the work day.

All drill cuttings from the borings will be stockpiled on-site, pending analysis. Contaminated soil from the gasoline tank removals are currently being aerated on-site. Should any the drill cuttings contain detectable volatile hydrocarbons, they will also be aerated on-site.

All soil samples will be analyzed for 1) Total Petroleum Hydrocarbons as Gasoline & Diesel and 2) Benzene, Toluene, Xylenes, and Ethylbenzene (BTXE).

The soil borings will be logged in the field by Gary Aguiar, registered civil engineer #34262.

Groundwater Sampling Plan

Within three days of installation, the well will be developed by removing water with a teflon bailer until the water is relatively clear, or until the apparent turbidity of the water being removed has stabilized. A mechanical air-lift pump will be available in the event that bailing does not appear to be providing adequate well development.

Prior to groundwater sampling, the well will be purged by bailing 3 to 5 casing volumes of water. Field conductivity, temperature, and pH meters will be present on-site during the monitoring well sampling. As the purging process proceeds, these three parameters will be monitored. Purging must continue until readings appear to have reasonably stabilized. After the water level the well has attained 80% or more of the original static water level, a groundwater sample will be collected using a clean teflon bailer. The water sample will be placed inside a 40 mL VOA vile and a 1 liter amber glass bottle free of any headspace. The sample will immediately be placed on ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time the monitoring well is sampled, the following information will be recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior

to purging, using a clear teflon bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample.

All analyses will be conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures. All groundwater samples will be analyzed for 1) Total Petroleum Hydrocarbons as Gasoline & Diesel and 2) Benzene, Toluene, Xylenes, and Ethylbenzene (BTXE).

All water removed from the well during development and purging will be drummed and stored on-site until the results of laboratory anaylses are obtained. Depending upon these results, the water will be sewered as a non-hazardous liquid waste under appropriate permit, or else it will be transported as a hazardous liquid waste under proper manifest to an appropriate TSD facility for treatment and disposal.

V. QUALITY ASSURANCE

1) Prior to the installation of each well, all drilling equipment, including augers, drill stem, and split barrel samplers, will be steam-cleaned on-site.

2) Prior to soil sampling, all split-barrel samplers and brass liners will be cleaned with trisodium phosphate (TSP).

3) Prior to introduction into a monitoring well, all equipment such as bailers and electric sounder probes will be cleaned with TSP and rinsed with distilled water.

4) Each brass liner and the soil sample it contains shall be archived by the laboratory until analytical results are obtained. In the event of anomalous or questionable results, another portion of the soil shall be made available for re-analysis.

5) At all times, duplicate groundwater samples will be collected from each monitoring well. In the event of anomalous or questionable results, the duplicate groundwater sample will be analyzed by the laboratory.

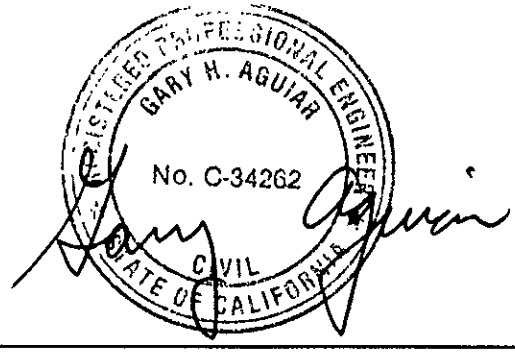
6) All laboratory certificates shall be analyzed for satisfactory QA/QC spike recoveries. In the event of unsatisfactory recoveries, the laboratory shall be compelled conduct a duplicate analysis.

7) If the site is found to contain high levels of airborne organics, a field blank (distilled water) will be collected and analyzed for one or more

specific parameters at the discretion of the field engineer.

VI. SITE SAFETY PLAN

A set of health and safety operating procedures for field investigations of underground spills of motor oil and petroleum distillate fuel is provided in Attachment C. In order to maintain a safe working environment for field personnel, a copy of these operating procedures will be kept on-site during the field operations, and will be followed in accordance with the magnitude of petroleum contamination encountered.



Gary Aguiar **RCE 34262**

Bruce Hageman

ATTACHMENT A

Data Pertaining to Previous Tank Removals

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

Project # U525214
Fee Paid $831.50
Date 12/28/83

ACCEPTED
DEPARTMENT OF ENVIRONMENTAL HEALTH
470 - 27th Street, Third Floor
Oakland, CA 94612
Telephone: (415) 874-7237
1-5-84 cas

These plans have been reviewed and found to be acceptable and essentially meet the requirements of State and local health laws. Changes to your plans indicated by this Department are to assure compliance with State and local laws. The project proposed herein is now released for issuance of any required building permits for construction.

One copy of these accepted plans must be on the job and available to all contractors and craftsmen involved with the removal.

Any change or alterations of these plans and specifications must be submitted to this Department and to the Fire and Building Inspection Department to determine if such changes meet the requirements of State and local laws. Modify this Department at least 48 hours prior to the following required inspections:

_____ Removal of Tank and Piping
_____ Sampling
_____ Final Inspection

Issuance of a permit to operate is dependant on compliance with accepted plans and all applicable laws and regulations.

THERE IS A FINANCIAL PENALTY FOR NOT OBTAINING THESE INSPECTIONS.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

1. **Business Name** SERVICE STATION WAS BURNED TO GROUND
   Business Owner _____
2. **Site Address** 11727 Main Street
   City SUNOL **Zip** 94586 **Phone** N/A
3. **Mailing Address** _____
   City _____ **Zip** _____ **Phone** _____
4. **Land Owner** MR. JIM O'LAUGHLIN P.O. Box 400
   Address 199 BOND, SUNOL **City, State** CA **Zip** 94586
5. **EPA I.D. No.** UNKNOWN CAC 0023 6873 (per Hageman-Schank 1-5-84)
6. **Contractor** MINTER FAHY/HAGEMAN SCHANK, INC.
   Address 2723 CROW CANYON ROAD STE 210
   City SAN RAMON, CA 94583 **Phone** 837-2926
   License Type A **ID#** 477315
7. **Consultant** AGUIAR ENGINEERING
   Address 5919 ARLINGTON BLVD.
   City SAN PABLO, CA 94806 **Phone** 237-3202

8. Contact Person for Investigation

Name BRUCE HAGEMAN Title PRES.

Phone 837- 2926

9. Total No. of Tanks at facility 4

10. Have permit applications for all tanks been submitted to this office? Yes [x] No [ ]

11. State Registered Hazardous Waste Transporters/Facilities

a) Product/Waste Tranporter

Name H & H SHIP SERVICE EPA I.D. No. 0334

Address 220 CHINA BASIN, P.O. BOX 77363

City SAN FRANCISCO State CA Zip 94107

b) Rinsate Transporter

Name H & H SHIP SERVICE EPA I.D. No. 0334

Address 220 CHINA BASIN P.O. BOX 77363

City SAN FRANCISCO State CA Zip 94107

c) Tank Transporter

Name H & H SHIP SERVICE EPA I.D. No. CAD004771168

Address 220 CHINA BASIN P.O. BOX 77363

City SAN FRANCISCO State CA Zip 94107

d) Tank Disposal Site

Name H & H SHIP SERVICE EPA I.D. No. CAD004771168

Address 220 CHINA BASIN

City SAN FRANCISCO State CA Zip 94107

e) Contaminated Soil Transporter

Name H & H SHIP SERVICE EPA I.D. No. CAD004771168

Address 220 CHINA BASIN

City SAN FRANCISCO State CA Zip 94107

12. Sample Collector

Name HAGEMAN-SCHANK, INC. BRUCE HAGEMAN

Company HAGEMAN-SCHANK, INC.

Address 2723 CROW CANYON ROAD STE 210

City SAN RAMON State CA Zip 94583 Phone 837-2926

13. Sampling Information for each tank or area

Tank or Area		Material sampled	Location & Depth
Capacity	Historic Contents (past 5 years)		
550 gal. 1000 gal 550 gal 1000 gal	LEADED REGULAR UNLEADED REGULAR DIESEL PREMIUMN	SOIL (AND WATER IF ENCOUNTERED)	550 GAL TANKS. MINIMUM ONE (1) SAMPLE BELOW FILL OR PUMP END OF TANK AT BACKFILL/ NATIVE SOIL INTERFACE 1000 GAL TANKS. MINIMUM TWO (2) SAMPLES, ONE FROM EAC END, AT BACKFILL/ NATIVE SOIL INTERFACE

14. Have tanks or pipes leaked in the past? Yes [ ] No [X]

If yes, describe.

15. NFPA methods used for rendering tank inert? Yes [X] No [ ]

If yes, describe. DRY ICE 15 LBS PER 1000 GALLONS, OR PER LOCAL F.D. REQUIREMENT

An explosion proof combustible gas meter shall be used to verify tank inertness.

16. Laboratories

Name CHROMALAB

Address 2239 OMEGA ROAD # 1

City SAN RAMON State CA Zip 94583

State Certification No. # 238

17. Chemical Methods to be used for Analyzing Samples

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Number
GASOLINE	SOIL: BRASS LINERS, CAPPED AND SEALED AT BOTH ENDS PLACED ON ICE.	GCFID (5030) BTX&E (8020)
	WATER: COLLECTED BY BAILER SAMPLE TRANSFERED TO VOA BOTTLE.	GCFID (5030) BTX&E (602)
DIESEL	SOIL: COLLECTED IN BRASS LINERS, CAPPED AND SEALED AND PLACED ON ICE.	GCIFD (3550) BTX&E (8020)
	WATER: COLLECTED BY BAILER TRANSFERED TO VOA AND LITER BOTTLES, PLACED ON ICE.	GCFID (3510) BTX&E (602)

8. Submit Site Safety Plan

9. Workman's Compensation: Yes [X] No [ ]

Copy of Certificate enclosed? Yes [X] No [ ]

Name of Insurer FAIRMONT INSURANCE COMPANY

). Plot Plan submitted? Yes [X] No [ ]

.. Deposit enclosed? Yes [X] No [ ]

. Please forward to this office the following information within 60 days after receipt of sample results.

a) Chain of Custody Sheets

b) Original Signed Laboratory Reports

c) TSD to Generator copies of wastes shipped and received

d) Attachment A summarizing laboratory results

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true. I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Saftey and Health Administration) requirements concerning personnel and safety.

I will notify the Department of Environmental Health at least two (2) working days (48 hours) after approval of this closure plan in advance to schedule any required inspections. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Signature of Contractor

Name (please type) BRUCE HAGEMAN

Signature Bruce Hageman

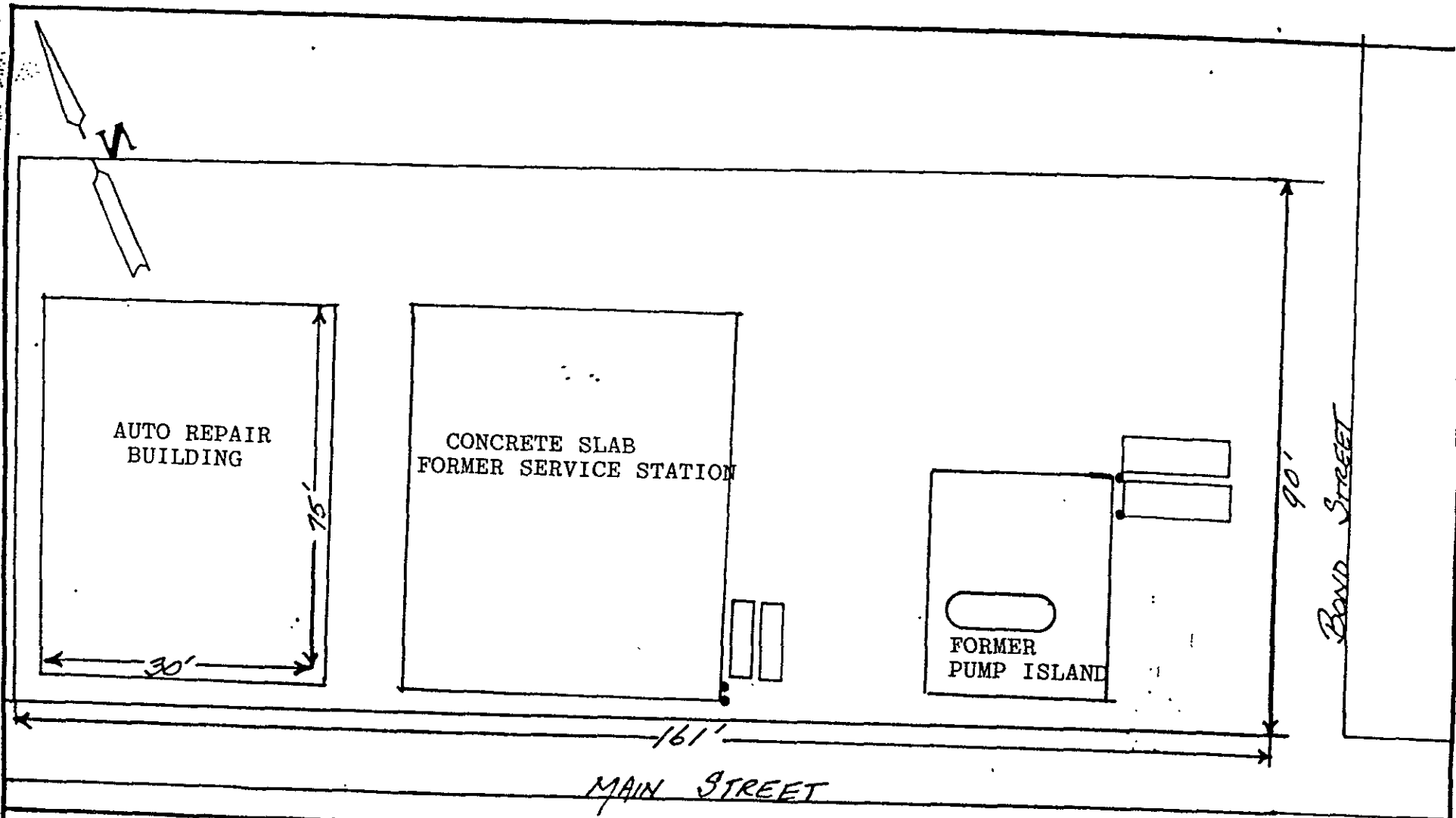
Date 12-26-89

Signature of Site Owner or Operator

Name (please type) JIM O'LAUGHLIN

Signature Jim O'Laughlin

Date 12-29-89



SAMPLE DEPTH	LEGEND	O'LAUGHLIN PROPERTY -SERVICE STATION CORNER OF MAIN STREET AND BOND SUNOL, CALIFORNIA
	1000 GAL TANK 550 GAL TANK VENT LINE PUMP ISLAND	SCALE: APPROVED BY: DRAWN BY DATE: 12-20-89 PLAN VIEW SITE PLAN FOR TANK REMOVAL PERMIT "NOT TO SCALE" HAGEMAN-SCHANK, INC DRAWING NUMBER

CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY): 7/7/89

PRODUCER

MCCRACKEN, BOEDDIKER & OTT
INSURANCE BROKERS, INC.
855 OAK GROVE AVENUE
MENLO PARK, CA 94025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

MINTER & FAHY CONSTRUCTION CO. INC
411 NORTH BUCHANAN CIRCLE, #2
PACHECO, CALIFORNIA 94553

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A: OREGON MUTUAL INSURANCE COMPANY

COMPANY LETTER B: FAIRMONT INSURANCE COMPANY

COMPANY LETTER C:

COMPANY LETTER D:

COMPANY LETTER E:

COVERAGES

THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCURRENCE [X] OWNER'S & CONTRACTORS PROTECTIVE	GLA 243647	7/9/89	7/9/90	GENERAL AGGREGATE 1000 PRODUCTS COMP/OPS AGGREGATE 1000 PERSONAL & ADVERTISING INJURY 1000 EACH OCCURRENCE 1000 FIRE DAMAGE (ANY ONE FIRE) 50 MEDICAL EXPENSE (ANY ONE PERSON) 1
	AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS [ ] GARAGE LIABILITY				CSL BODILY INJURY (PER PERSON) BODILY INJURY (PER ACCIDENT) PROPERTY DAMAGE
	EXCESS LIABILITY [ ] OTHER THAN UMBRELLA FORM				EACH OCCURRENCE / AGGREGATE
B	WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY	F 39655	4/18/89	4/18/90	STATUTORY 1000 (EACH ACCIDENT) 1000 (DISEASE-POLICY LIMIT) 1000 (DISEASE-EACH EMPLOYEE)
	OTHER				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/RESTRICTIONS/SPECIAL ITEMS

LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CERTIFICATE HOLDER

HAGEMAN SCHANK, INC.
2723 CROW CANYON ROAD, #210
SAN RAMON, CA. 94583

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C A C 0 0 0 2 3 6 8 7 3 | Manifest Document No.: 0 0 0 0 2

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
JIM O'LAUGHLIN
199 Bond Street, P.O. Box 400, Sunol, CA 94586
4. Generator's Phone (415) 862-2550

A. State Manifest Document Number: 90003701
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8
C. State Transporter's ID: 103563
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8
G. State Facility's ID: C A D 0 0 4 7 7 1 1 6 8
H. Facility's Phone: (415) 543-4835

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RESIDUE GASOLINE TANKS (CALIFORNIA ONLY REGULATED WASTE)	0 0 2	T P	0 1 0 0 0	P	State 512 / EPA/Other
b. RESIDUE DIESEL TANK (CALIFORNIA ONLY REGULATED WASTE)	0 0 1	T P	0 0 5 5 0	P	State 512 / EPA/Other
c. RESIDUE WASTE OIL TANK (CALIFORNIA ONLY REGULATED WASTE	0 0 1	T P	0 0 2 6 0	P	State 512 / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
PUMPED OUT 1,000 gallon and 550 gallon tanks last containing gasoline, diesel and waste oil. Tanks inerted with dry ice for transport.

K. Handling Codes for Wastes Listed Above
a. 01 b. 01 c. 01 d.

15. Special Handling Instructions and Additional Information
JOB SITE: 11727 Main Street
Sunol, CA
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

16.
GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: BRUCE HAGEMAN | Signature | Month Day Year: 10 2 0 7 9 0

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DEBORAH KEYES | Signature | Month Day Year: 10 2 0 7 9 0

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name | Signature | Month Day Year

GENERATOR

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

90003701

DHS 8022 A (1/88)
EPA 8700—22
(Rev 9-88) Previous editions are obsolete.

Do Not Write Below This Line

Blue: GENERATOR SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 400, Sacramento, CA 95812-0400

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C A C 0 0 0 2 3 6 8 7 3 | Manifest Document No.: 0 0 0 0 1

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
JIM O'LAUGHLIN
199 Bond Street, P.O. Box 400, Sunol, CA 94586
4. Generator's Phone (415) 862-2550

A. State Manifest Document Number: 90003700

B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8

C. State Transporter's ID: 103157
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8

G. State Facility's ID: C A D 0 0 4 7 7 1 1 6 8
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	0 0 1	T T	300	G	State 241 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01
b.
c.
d.

15. Special Handling Instructions and Additional Information
JOB SITE: 11727 Main Street
Sunol, CA
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

16
GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: BRUCE HAGEMAN
Signature: Bruce Hageman
Month Day Year: 0 2 0 7 9 0

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: STEVE MESQUITE or MARTIN J. COSTELLO
Signature: Martin J. Costello
Month Day Year: 0 2 0 7 9 0

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name:
Signature:
Month Day Year:

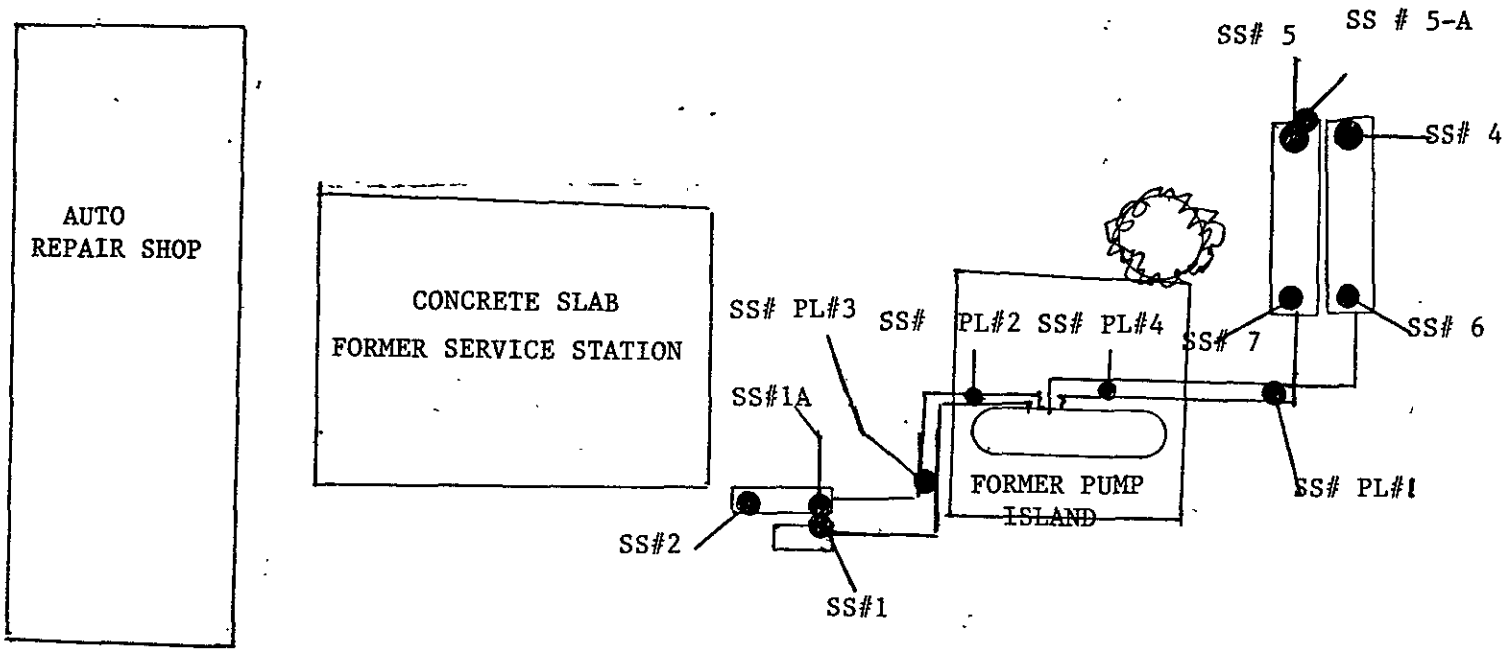
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

90003700

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Do Not Write Below This Line

Blue: GENERATOR SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 400, Sacramento, CA 95812-0400



SAMPLE DEPTH	LEGEND	JIM O'LAUGHLIN TANK REMOVAL PROJECT 11727 MAIN STREET SUNOL CALIFORNIA
SEE CLOSURE REPORT	SAMPLE LOCATIONS 1000 GAL TANKS 750 GAL TANK 260 GAL TANK PRODUCT LINES	SCALE: APPROVED BY: DRAWN BY DATE: PLAN VIEW HAGEMAN-SCHANK, INC DRAWING NUMBER

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

February 8, 1990 ChromaLab File # 0290027

Hageman-Schank, Inc.

Attn: Bruce Hageman

Re: Seven RUSH soil samples for Gasoline/BTEX and Diesel analyses

Project Name: Sunol

Duration of Analysis: Feb. 07 - 08, 1990

Results:

Sample No.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
SS#1	---	200	23	26	42	120
SS#1-A	---	N.D.	N.D.	N.D.	N.D.	9.1
SS#2	---	7.5	190	21	N.D.	N.D.
SS#4	N.D.	---	N.D.	N.D.	N.D.	N.D.
SS#5	1100	---	2400	12000	6200	18000
SS#6	26	---	9.0	41	35	290
SS#7	N.D.	---	9.6	32	10	70
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	101.5%	93.2%	98.4%	96.1%	97.8%	97.6%
DETECTION LIMIT	2.5	5	5	5	5	5
METHOD OF ANALYSIS	MOD. 8015	MOD. 8015	8020	8020	8020	8020

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

February 13, 1990 ChromaLab File No.: 0290042

HAGEMAN-SHANK, INC.

Attn: Bruce Hageman

RE: One rush soil sample for Gasoline/BTEX analysis

Project Name: N/A
Project Number: N/A
Duration of Analysis: February 12-13, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
SS #5A	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	101.5%	98.4%	96.1%	97.8%	97.6%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	MOD.8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

February 15, 1990 ChromaLab File No.: 0290060

HAGEMAN-SHANK, INC.

Attn: Bruce Hageman

RE: Four rush soil samples for Gasoline/BTEX and Diesel analyses

Project Name: N/A
Project Number: N/A
Duration of Analysis: February 14-15, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
PL #1	N.D.	----	N.D.	N.D.	N.D.	N.D.
PL #2	----	50	N.D.	N.D.	N.D.	N.D.
PL #3	----	22	N.D.	N.D.	N.D.	N.D.
PL #4	N.D.	----	N.D.	N.D.	N.D.	7.6
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	101.5%	93.2%	98.4%	96.1%	97.8%	97.6%
DETECTION LIMIT	2.5	5	5	5	5	5
METHOD OF ANALYSIS	MOD. 8015	3550/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

Chain of Custo

DATE 2-7-90 PAGE 1 OF 1

PROJ. MGR. BRUCE HAGEMAN
COMPANY HAGEMAN-SCHANK, INC.
ADDRESS 2713 CROW CANYON RD

SAMPLER'S (SIGNATURE) Bruce Hageman (PHONE NO.) 837-7926

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270)	TOTAL OIL & GREASE (EPA 5030E)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)			METALS: Cd, Cr, Pb, Zn	CAM METALS (18) w/Cr VI	PRIORITY POLLUTANT METALS (13)					
SUNOL 55 #1	2/7/90	4:00	SOIL			X	X																	
" " 1-A	2/7/90	4:15	SOIL				X	X																
SUNOL #2	2/7/90	4:20	SOIL				X	X																
SUNOL #4	2/7/90	4:25	SOIL			X																		
SUNOL #5	2/7/90	4:30	SOIL			X																		
SUNOL #6	2/7/90	4:35	SOIL			X																		
SUNOL #7	2/7/90	4:45	SOIL			X																		

ALL SAMPLES DAI
24 HOUR TURN AROUND

PROJECT INFORMATION	
PROJECT: SUNOL	
PO NO.	
SHIPPING ID. NO.	
VIA:	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	7
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY
(Signature) Bruce Hageman 5:31 PM (Time)	(Signature) (Time)	(Signature) (Tim
(Printed Name) BRUCE HAGEMAN 2-7-90 (Date)	(Printed Name) (Date)	(Printed Name) (Dat
(Company) HAGEMAN-SCHANK	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY)**
(Signature) (Time)	(Signature) (Time)	(Signature) (Tim
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) ERIC TAN 2/7 (Dat
(Company)	(Company)	(LAB) Chromalab Inc.

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

0290042 C4#

Chain of Cust

DATE 7-12-90 PAGE ____ OF ____

PROJ. MGR. BRUCE HAGEMAN
COMPANY HAGEMAN-SCHANK, INC.
ADDRESS 2223 CLAY CANYON
SAN RAMON, CA.

SAMPLERS (SIGNATURE) (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270)	TOTAL OIL & GREASE (EPA 5520&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)			METALS: Cd, Cr, Pb, Zn	CAM METALS (17) w/Cr VI	PRIORITY POLLUTANT METALS (13)						
SS# 5-A	7/12/90	10[13]	SOIL			X																		
		24 Hour TURNAROUND																						

PROJECT INFORMATION	SAMPLE RECEIPT
PROJECT:	TOTAL NO. OF CONTAINERS
PO NO.	CHAIN OF CUSTODY SEALS
SHIPPING ID. NO.	REC'D GOOD CONDITION/COLD
VIA:	CONFORMS TO RECORD
	LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)	(Company)
RECEIVED BY 1.	RECEIVED BY 2.	RECEIVED BY (LABORATORY)
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)	(Company)

BRUCE HAGEMAN 7/12/90
HAGEMAN SCHANK, INC.

DAVID DUNNE 10:10

0290060

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

Chain of Custod

DATE 2-14-90 PAGE 1 OF 1

PROJ. MGR. BRUCE HAGEMAN
COMPANY HAGEMAN & SCHANK, INC
ADDRESS 2223 CROW CANYON RD.
SAN RAMON, CA

SAMPLERS (SIGNATURE) (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 624/627, 8270)	TOTAL OIL & GREASE (EPA 5030&E)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)			METALS: Cd, Cr, Pb, Zn	CAM METALS (18) w/Cr VI	PRIORITY POLLUTANT METALS (13)							NUMBER OF CONTAINERS
PL # 1	2/14/90	10:30 AM	SOIL			X																			
PL # 2	2/14/90	10:30 AM	"				X	X																	
PL # 3	2/14/90	10:30 AM	"				X	X																	
PL # 4	2/14/90	10:30 AM	"			X																			
		ALL SAMPLES																							
		24 HOUR TURNAROUND																							

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT:	TOTAL NO. OF CONTAINERS	
PO NO.	CHAIN OF CUSTODY SEALS	
SHIPPING ID. NO.	REC'D GOOD CONDITION/COLD	
VIA:	CONFORMS TO RECORD	
	LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3
Bruce Hageman (Signature)	(Signature)	(Signature)
BRUCE HAGEMAN (Printed Name) 2/14 (Date)	(Printed Name) (Date)	(Printed Name) (Date)
HAGEMAN SCHANK (Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
CHROMALAB, INC. (Signature)	(Signature)	(Signature)
Carl Coulter (Printed Name) 11:09 (Time) (Date)	(Printed Name) (Date)	(Printed Name) (DATE)
(Company)	(Company)	(LAB)

(Encl.)

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED _____ DATE _____

REPORT DATE: 03/06/90 | CASE #:

REPORTED BY
NAME OF INDIVIDUAL FILING REPORT: BRUCE HAGEMAN | PHONE: (415) 837 2926 | SIGNATURE:
REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER _____ | COMPANY OR AGENCY NAME: HAGEMAN-SCHANK, INC.
ADDRESS: 2723 (STREET) CROW CANYON ROAD (CITY) SAN RAMON (STATE) CA (ZIP)

RESPONSIBLE PARTY
NAME: MR. JIM O'LAUGHLIN ☐ UNKNOWN | CONTACT PERSON: MR. JIM O'LAUGHLIN | PHONE: (415)862 2550
ADDRESS: 199 BOND STREET (STREET) SUNOL (CITY) CA (STATE) (ZIP)

SITE LOCATION
FACILITY NAME (IF APPLICABLE): FACILITY CLOSED - BURNED DOWN | OPERATOR: | PHONE: ( )
ADDRESS: 11727 (STREET) MAIN STREET (CITY) SUNOL (COUNTY) CA (ZIP)
CROSS STREET: BOND
TYPE OF AREA ☐ COMMERCIAL ☐ INDUSTRIAL ☐ RURAL ☐ RESIDENTIAL ☒ OTHER _____
TYPE OF BUSINESS ☒ RETAIL FUEL STATION ☐ FARM ☐ OTHER _____

IMPLEMENTING AGENCIES
LOCAL AGENCY / AGENCY NAME: ALAMEDA COUNTY HEALTH DEPARTMENT | CONTACT PERSON: MR. SCOTT SERRY | PHONE: (415)271 4320
REGIONAL BOARD: SAN FRANCISCO BAY REGION | PHONE: ( )

SUBSTANCES INVOLVED
(1) NAME: GASOLINE | QUANTITY LOST (GALLONS): _____ ☒ UNKNOWN
(2) DIESEL _____ ☒ UNKNOWN

DISCOVERY/ABATEMENT
DATE DISCOVERED: 02/07/90 | HOW DISCOVERED ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER _____
DATE DISCHARGE BEGAN: __/__/__ ☒ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE 02/07/90
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY) ☐ REMOVE CONTENTS ☐ REPLACE TANK ☒ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☐ OTHER _____

SOURCE/CAUSE
SOURCE OF DISCHARGE: ☒ TANK LEAK ☐ UNKNOWN ☒ PIPING LEAK ☐ OTHER
TANKS ONLY/CAPACITY: 2 - 1000, ~~1 - 550~~, ~~1 - 200~~ GAL. AGE _____ YRS ☒ UNKNOWN
MATERIAL: ☐ FIBERGLASS ☒ STEEL ☐ OTHER _____
CAUSE(S): ☒ OVERFILL ☐ RUPTURE/FAILURE ☒ CORROSION ☐ UNKNOWN ☐ SPILL ☐ OTHER _____

CASE TYPE
CHECK ONE ONLY: ☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS
CHECK ONE ONLY: ☒ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☐ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) ☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CO) ☐ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☒ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ TREATMENT AT HOOKUP (H-U) ☐ NO ACTION REQUIRED (NA) ☐ OTHER (OT) _____

COMMENTS
SOIL SAMPLES INDICATE POSSIBIE OVERFILLS OVER A PERIOD OF YEARS, CONTAMIATION EXISTS AT THE FILL END OF BOTH DIESEL AND GASOLINE TANKS. CONTAMINATED SOIL FROM EXCAVATION IS BEING AERATED ON SITE.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Director

Telephone Number: (415)

March 19, 1990

Mr. Jim O'Laughlin
P.O. Box 400
Sunol, CA 94586

RE: FORMER CHEVRON STATION, 11727 MAIN STREET, SUNOL: REQUEST FOR PRELIMINARY SITE ASSESSMENT

Dear Mr. O'Laughlin:

This letter confirms our telephone conversation of March 16, 1990. This conversation followed this Department's receipt and review of the March 12, 1990 Hageman-Schank, Inc. closure report documenting the removal of four (4) underground storage tanks from the referenced site on February 7, 1990.

The results of initial laboratory analyses performed upon samples of native soil collected from beneath the smallest diesel tank (SS#1) and the northern-most gasoline tank (SS#5) indicate concentrations of total petroleum hydrocarbons (TPH) of 200 and 1100 parts per million (ppm), respectively. Concentrations of TPH shown to be at or above 100 ppm in initial soil samples are indicative of a site having experienced a "confirmed release", pursuant to the San Francisco Bay Regional Water Quality Control Board (RWQCB) fuel leak criteria.

As a result of this site's "confirmed release" status, additional investigative work is required to further define the extent of both vertical and lateral impact upon soils and groundwater underlying this site. This work will involve, at a minimum, the installation and moitoring of a suitable number of groundwater wells.

In order to proceed with this site investigation, you should obtain professional services of a reputable environmental/geotechnical firm. Your responsibility is to have the consultant submit for review a proposal outlining planned activities pertinent to meeting the criteria broadly outlined in this letter. The preliminary site assessment must be conducted in accordance with the RWQCB Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks. The major elements of such an investigation are summarized in the attached Appendix A.

This preliminary site assessment proposal is due within 45 days of the date of this letter, **or by May 3, 1990.** Once this proposal has been reviewed and approved, work must commence no later than June 3, 1990. A report must be submitted within 30 days after completion of the initial phase of work at this site. Subsequent reports are to

be submitted quarterly, at a minimum, unless otherwise notified. Such quarterly reports are due the first day of the second month of each subsequent quarter (i.e., August 1, November 1, February 1, and May 1).

All reports and proposals must be signed by a California-Certified Engineering Geologist, -Registered Geologist, or -Registered Civil Engineer. Please include a statement of qualifications for each lead professional involved in this project.

All reports, proposals, and analytical results pertaining to this investigation must be sent to this office and to:

Mr. Lester Feldman
Regional Water Quality Control Board, San Francisco Bay Region
1800 Harrison Street, Suite 700
Oakland, CA 94612

Please be aware that this is a formal request for technical reports pursuant to California Water Code Section 13267 (b). Any extensions of stated deadlines, or modifications of required tasks, must be confirmed in writing by either this Department or RWQCB.

The costs incurred by this Department through the oversight of this project will initially be extracted, at a rate of $60 per hour, from the current account originally created for the oversight of tank closure activities. We will advise you when, or if, remittance of additional fees will become necessary.

Should you have any questions, please call me at 415/271-4320.

Sincerely,

Scott O. Seery
Hazardous Materials Specialist

SOS:sos

cc: Rafat A Shahid, Assistant Agency Director, Alameda County Department of Environmental Health
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Lester Feldman, RWQCB
Howard Hatayama, DHS
files

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

June 1, 1990

Mr. Jim O'Laughlin
P.O. Box 400
Sunol, CA 94586

RE: FORMER CHEVRON STATION, 11727 MAIN STREET, SUNOL; REQUEST FOR PRELIMINARY SITE ASSESSMENT

Dear Mr. O'Laughlin:

This Department has extended the due date for the submittal of a preliminary site assessment (PSA) workplan proposal for the investigation of subsurface conditions at the referenced site until June 18, 1990. This extension has been granted as a result of conversations between this author and Mr. Bruce Hageman of Hageman-Schank, Inc. during the week of May 27, 1990.

Mr. Schank has expressed concern about the ability of conventional hollow stem auger drilling equipment to advance a boring to adequate depth through the apparent cobble- and boulder-rich alluvium underlying this site, allowing such a boring to be completed as a ground water monitoring well, before suffering auger refusal. He has proposed, consequently, to advance an exploratory boring on-site using an air-rotary drilling rig to assess subsurface lithologies and determine depth to first ground water. Information gathered during this activity will then be integrated into the actual PSA proposal.

Should you have any questions, please contact me at 415/271-4320.

Sincerely,

Scott O. Seery
Hazardous Materials Specialist

cc: Rafat A. Shahid, Assistant Agency Director, Environmental Health Department
Edgar Howell, Chief, Hazardous Materials Division
Gil Jensen, Alameda County District Attorney's Office
Lester Feldman, RWQCB
Howard Hatayama, DHS
Bruce Hageman, Hageman-Schank, Inc.
files

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

19 July 1990

Hageman-Aguiar, Inc.
3732 Mt. Diablo Boulevard, Suite 372
Lafayette, CA 94549

Gentlemen:

Enclosed is Groundwater Protection Ordinance permit 90431 for a monitoring well construction project at 11727 Main Street in Sunol for Jim O'Laughlin.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or Craig Mayfield at 484-2600.

Very truly yours,

Mun J. Mar
General Manager

By
J. Killingstad, Chief
Water Resources Engineering

WH:mm
Enc.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 11727 MAIN STREET
SUNOL, CA 94586

CLIENT
Name MR. LIA O'LAUGHLIN
Address 199 BOND ST Phone
City SUNOL CA Zip 94586

APPLICANT
Name HAGEMAN-AGUIAR, INC.
Address 3732 MT. DIABLO BLVD. STE 322 Phone 284-1661
City LAFAYETTE Zip 94549

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other MONITORING
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 487000

WELL PROJECTS
Drill Hole Diameter 8" in. Maximum
Casing Diameter 2" in. Depth 20 ft.
Surface Seal Depth 5' ft. Number 1
ASPHALT

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

ESTIMATED STARTING DATE 7-13-90
ESTIMATED COMPLETION DATE 7-13-90

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 7-13-90

FOR OFFICE USE

PERMIT NUMBER 90431
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after completi of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling lo and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal a industrial wells or 20 feet for domestic an irrigation wells unless a lesser depth specially approved. Minimum seal depth f monitoring wells is the maximum depth practicab or 20 feet.

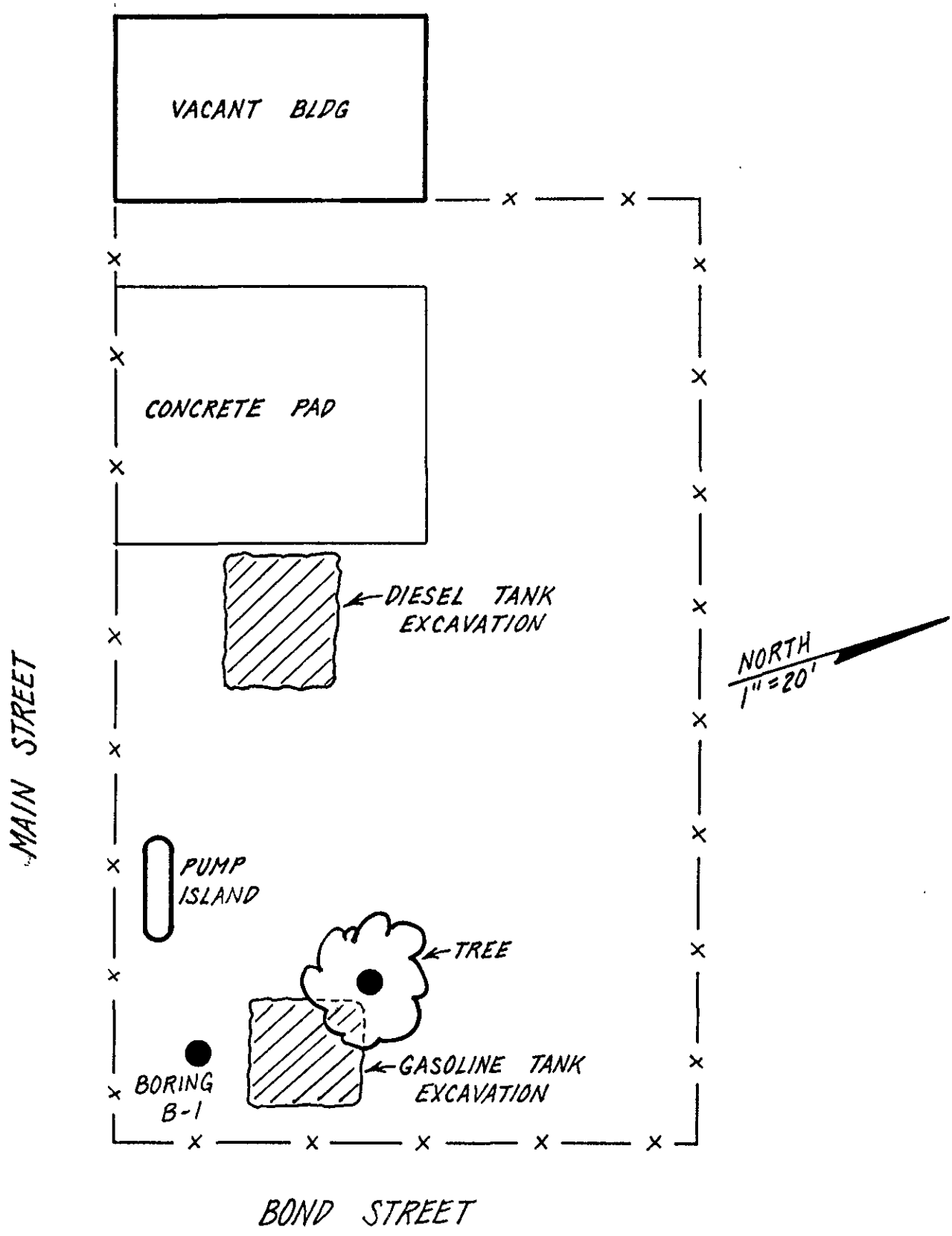
C. GEOTECHNICAL. Backfill bore hole with compacted cu tings or heavy bentonite and upper two feet with co pacted material. In areas of known or suspect contamination, tremied cement grout shall be used place of compacted cuttings.

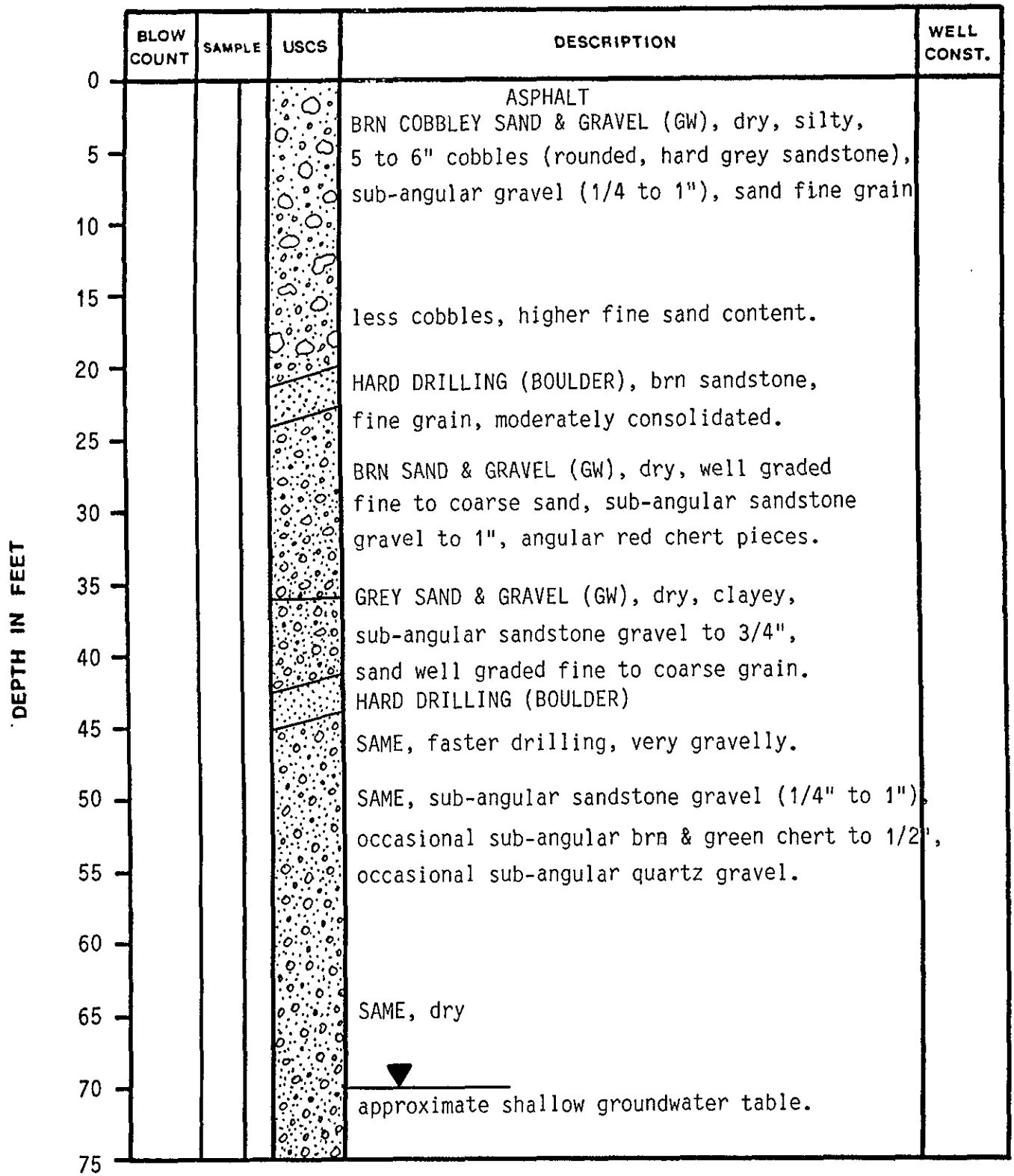
D. CATHODIC. Fill hole above anode zone with concre placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 12 Jul 9(
Wyman Hong

12198


VACANT BLDG
CONCRETE PAD
DIESEL TANK EXCAVATION
NORTH
1" = 20'
MAIN STREET
PUMP ISLAND
TREE
BORING B-1
GASOLINE TANK EXCAVATION
BOND STREET



HAGEMAN SCHANK, INC.	BORING B-1 11727 Main Street, Sunol	FIGURE 1 of 2
DATE 7/13/90	PROJECT NO.	
TOC ELEVATION	EQUIPMENT 6" AIR ROTARY	

BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
			GREY SANDY GRAVEL (GP), saturated, sub-angular 1/4" to 1/2", occasional coarse sand, grey sandstone gravel.	
			HARD DRILLING (BOULDER).	
			TOTAL DEPTH = 100 feet BLS	

DEPTH IN FEET

75
80
85
90
95
100

REGISTERED PROFESSIONAL ENGINEER
GARY H. AGUIAR
No. C-34262
CIVIL
STATE OF CALIFORNIA

HAGEMAN SCHANK, INC.	BORING B-1 11727 Main Street, Sunol	FIGURE 2 of 2
DATE 7/13/90	PROJECT NO.	
TOC ELEVATION	EQUIPMENT 6" AIR ROTARY	

ATTACHMENT B

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

Gary Aguiar:

- o B.S., Chemical Engineering, University of California, Berkeley, 1977
  M.S., Sanitary Engineering, University of California, Berkeley, 1981

- o Registered Civil Engineer, California, C.E. 34262
  Registered Civil Engineer, Oregon, C.E. 13353
  Registered Civil Engineer, Alaska, C.E. 7769

- o Over the past ten years, has participated in all aspects of hydrogeological investigations, groundwater pollution investigations, water resource studies, and hazardous waste management.

- o His extensive teaching experience includes the following:

	UNIVERSITY OF CALIFORNIA
1/82 - present	EXTENSION, Berkeley, Ca.

  Instructor: Develop and teach courses on the principles of groundwater hydrology, groundwater pollution, and hazardous waste management.

Advisory Committe member: Member of advisory committee for U.C. Berkeley Hazardous Materials Management Certificate Program.

CALIFORNIA STATE UNIVERSITY CONSORTIUM, Hayward, Ca.

9/83 - 12/83

Assistant Professor: Developed and taught a course on the engineering aspects of environmental planning.

RESOURCE SEMINARS, Berkeley, Ca.

1/81 - 9/83

Lecturer: Lectured on the principles of groundwater hydrology at seminars given in various U.S. cities.

o Other Qualifications:

Water Treatment Plant Operator Grade III Certificate, California State Department of Health.

Basic Qualified Earth Shorer Certificate, American Society of Safety Engineers.

Radiation Safety / Nuclear Soils Gauge Operator Certificate, Campbell Pacific Nuclear Corp.

o Professional Affiliations:

Member, American Chemical Society
Member, American Water Works Association
Member, National Water Well Association

Gary Aguiar began a private consulting practice in 1984. The first project was the installation of three deep monitoring wells within the drinking water aquifer beneath McKesson Chemical Company's Union City chemical packaging facility. This project involved casing a highly contaminated upper zone prior to drilling through the Newark aquitard. After supervising the drilling operations, properly disposing of the drilling spoils, and sampling the wells, a detailed report was prepared that presented an analysis of the data, as well as an assessment of the impact that shallow groundwater contamination has had upon the quality of the drinking water in the area.

To date, Gary Aguiar has provided services for a total of fifteen clients. Typical work has included:

- Assessment of local hydrogeology around solvent recycling sites located in Denver, Co. and Azusa, Ca., prior to purchase by a national chemical recycler.

- Consultation to a local geologic firm concerning the design of a dewatering and contaminant removal system in tight clays at an electronics factory site located in Santa Clara County.

- Design of a pump test to determine aquifer characteristics prior to design of an extraction system for the removal of gasoline from an underground tank site in Morgan Hill, Ca.

- Hydrogeologic analysis and design of a recovery system for the remediation of gasoline contamination that threatened a drinking water supply in Woodside, Ca.

- Data analysis and professional representation in negotiations with the Regional Water Quality Control Board for a commercial property owner in Santa Clara County. Solvent contamination had been discovered beneath the site.

- In association with a local hydrogeologic consulting firm, a site assessment of a laser manufacturing plant in Palo Alto, Ca. is currently in progress. This project involved assessing the local hydrogeology, sampling surface and groudwaters, formulating a risk assessment in terms of contaminants that may enter the groundwater due to factory processes, and removing hazardous wastes that have been left from past operations.

- Consultation to a local geologic firm concerning the results of soil and groundwater sampling at a large oil refinery in Hanford, Ca. This project has involved assessing the local hydrogeology, relating the presence of subsurface contaminants to specific above-ground refinery processes, and recommending specific chemical analyses to be performed. An assessment of the impact of subsurface contamination was made in terms of the potential for deep migration. In addition, an assessment of the legal impact was made in terms of applicable hazardous waste laws (Title 22 and 40CFR).

- Analysis of hydrogeologic/groundwater quality data for a chemical facility in Freeport, Grand Bahama Island. This project currently involves an assessment of potential contaminant migration, as well as remedial action plan development. The assessment is complicated by karst geology, a strong tidal influence and the occurence of groundwater in a freshwater lens.

- Project management of a soil and groundwater study in and around the chrome plating shop at Mare Island Naval Base, Vallejo, CA. This project has included the installation of a number of monitoring wells, collection of soil samples, and determining the influence of nearby tidal action. The study is complicated by hard-rock geology, a significant tidal influence, the occurence of groundwater in confined gravel lenses, and the heterogeneity of soils within fill areas.

- Analysis of hydrogeologic/groundwater quality data for production facilities in Clarecastle, Ireland, and in Cuernavaca, Mexico. The work is part of an in-house program of environmental auditing and regulatory compliance being conducted by a large pharmaceuticals company at all of their facilities.

By providing education for the professional community, Gary Aguiar has maintained close contact with the University of California. Through this contact, experts in particular fields can be easily networked, while maintaining low operating overhead costs. In addition, the latest technologies in sampling and contamination remediation are continually evaluated and made available to the client.

DEPARTMENT OF CONSUMER AFFAIRS

BOARD OF REGISTRATION FOR
PROFESSIONAL ENGINEERS
AND LAND SURVEYORS

CIVIL ENGINEER
LICENSE NO. C 034262
AGUIAR GARY HENRY
280 HOWLAND ST #308
REDWOOD CITY CA 94063

Expiration Date

REFERENCE #
N 097297

09/30/91

ATTACHMENT C

SITE SAFETY PLAN

HEALTH AND SAFETY PROCEDURES
FOR
FIELD INVESTIGATION OF UNDERGROUND SPILLS OF
MOTOR OIL AND PETROLEUM DISTILLATE FUEL

1.0 PURPOSE

This operating procedure established minimum procedures for protecting personnel against the hazardous properties of motor oil and petroleum distillate fuels during the performance of field investigations of known and suspected underground releases of such materials. The procedure was developed to enable health and safety personnel and project managers to quickly prepare and issue site safety plans for investigations of such releases.

2.0 APPLICABILITY

This procedure is applicable to field investigations of underground releases of the substances listed below and involving one or more of the activities listed below.

Substances

Motor oil (used and unused)
Leaded and unleaded gasoline
No. 1 Fuel oil (kerosene, JP-1)
No. 1-D Fuel oil (light diesel)
No. 2 Fuel oil (home heating oil)
No. 2-D Fuel oil (medium diesel)
No. 4 Fuel oil (residual fuel oil)
No. 5 Fuel oil (residual fuel oil)
No. 6 Fuel oil (Bunker C fuel oil)
JP-3, 4 & 5 (jet fuels)
Gasahol

Activities

Collection of samples of subsurface soil with aid of truck-mounted drill rig, hand-held power auger or hand auger.

Construction, completion and testing of groundwater monitoring wells.

Collection of groundwater samples from new and existing wells.

Observing removal of underground fuel pipes and storage tanks.

This procedure must not be used for confined space entry (including trench entry) or for installing or operating pilot and full-scale fuel recovery systems.

No safety plans needed for non-intrusive geophysical surveys, reconnaissance surveys and collection of surface soil, surface water and biota.

3.0 RESPONSIBILITY AND AUTHORITY

Personnel responsible for project safety are the Business Unit Health and Safety Officer (HSO), the Project Manager (PM) and the Site Safety Officer (SSO).

The HSO is responsible for reviewing and approving site safety plans and any addenda and for advising both PM and SSO on health and safety matters. The HSO has the authority to audit compliance with the provisions of site safety plans. suspend work or modify work practices for safety reasons, and to dismiss from the site any individual whose conduct on site endangers the health and safety of others.

The PM is responsible for having site safety plans prepared and distributing them to all field personnel and to an authorized representative of each firm contracted to assist with on-site work. The PM is also responsible for ensuring that the provisions of safety plans and their addenda are carried out.

The SSO is responsible for assisting the PM with on site implementation of site safety plans. Responsibilities include:

1. Maintaining safety equipment supplies.

2. Performing or supervising air quality measurements.

3. Directing decontamination operations and emergency response operations.

4. Setting up work zone markers and signs if such zones are specified in the site safety plan.

5. Reporting all accidents, incidents and infractions of safety rules and requirements.

6. Directing other personnel to wear protective equipment when use conditions described in Section 5.0 are met.

The SSO may suspend work anytime he/she determines that the provisions of the site safety plan are inadequate to ensure worker safety and inform the PM and HSO of individuals who on-site behavior jeopardizes their health and safety or the health and safety of others.

4.0 HAZARD EVALUATION

Motor oil and petroleum distillate fuels are mixtures of aliphatic and aromatic hydrocarbons. The predominant classes of compounds in motor oil, gasoline, kerosene and jet fuels are the paraffins (e.g., benzene, toluene). Gasoline contains about 80 percent paraffins, 6 percent naphthenes, and 14 percent aromatic. Kerosene and jet fuels contain 42-48 percent paraffins, 36-38 percent naphthenes, and 16-20 percent aromatic. Diesel fuels and heating oils contain less than 10 percent paraffins, 14-23 percent naphthenes, and 68-78 percent non-volatile aromatic. These heavier fuels contain almost no volatile aromatic compounds. Chemicals are usually added to automotive and aviation fuels to improve their burning properties. Examples are tetraethyl-lead and ethylene dibromide. Most additives are proprietary materials.

Flammability

Crude oil and petroleum distillate fuels possess two intrinsic hazardous properties, namely, flammability and toxicity. The flammable property of the oil and fuels presents a far greater hazard to field personnel than toxicity because it is difficult to protect against and can result in catastrophic consequences. Being

flammable, the vapors of volatile components of crude oil and the fuels can be explosive when confined.

The lower flammable or explosive limits (LFL or LEL) of the fuels listed in SEction 508.2 range from 0.6 percent for JP-5 to 1.4 percent for gasolines. LFL and LEL are synonyms. Flash points range from -36°F for gasoline to greater than 150°F for No. 6 fuel oil. JP-5 has a flash point of 140°F. Although it has a lower LEL than gasoline, it can be considered less hazardous because its vapors must be heated to a higher temperature to ignite.

Crude oil and petroleum distillate fuels will not burn in the liquid form; only the vapors will burn and only if the vapor concentration is between the upper and lower flammable limits, sufficient oxygen is present, and an ignition source is present. If these conditions occur in a confined area an explosion may result.

The probability of fire and explosion can be minimized by eliminating any one of the three factors needed to produce combustion. Two of the factors -- ignition source and vapor concentration -- can be controlled in many cases. Ignition can be controlled by prohibiting open fires and smoking on site, installing spark arrestors on drill rig engines, and turning the engines off when LELs are approached. Vapor concentrations can be reduced by using fans. In fuel tanks, vapor concentrations in the head space can be reduced by introducing dry ice (solid carbon dioxide) into the tank; the carbon dioxide gas will displace the combustible vapors.

Toxicity

Crude oil and petroleum distillate fuels exhibit relatively low acute inhalation and dermal toxicity. Concentrations of 160 to 270 ppm gasoline vapor have been reported to cause eye, nose and throat irritation after several hours of exposure. Levels of 500 to 900 ppm can cause irritation and dizziness in one hour, and 2000 ppm produces mile anesthesia in 30 minutes. Headaches have been reported with exposure to 25 ppm or more of gasoline vapors measured with a photoionization meter. Most fuels, particularly gasoline, kerosene and jet fuels are capable of causing skin irritation after several hours contact with the skin.

Petroleum fuels exhibit moderate oral toxicity. The lethal dose of gasoline in children has been reported to be as low as 10-15 grams (2-3 teaspoons). In adults, ingestion of 20-50 grams of gasoline may produce severe symptoms of poisoning. If liquid fuel aspirated (passed in to the lungs) gasoline and other petroleum distillate fuels may cause secondary pneumonia.

Some of the additives to gasoline, such as ethylene dichloride, ethylene dibromide, and tetraethyl and tetramethyl lead, are highly toxic; however, they are present in such low concentrations that their contribution to the overall toxicity of gasoline and other fuels is negligible in most instances.

OSHA has not developed permissible workplace exposure limits for crude oil and petroleum distillate fuels. It recommends using permissible exposure limits for individual components, such as benzene. ACGIH has established a permissible exposure limit of 300 ppm for gasoline. The limit took into consideration the average concentration of benzene in gasoline (one percent) as well as its common additives. Exposure limits established by other countries range from 250 to 500 ppm. Chemical data sheets, prepared for the U.S. Coast Guard's Chemical Hazard Information System (CHRIS), list 200 ppm as the permissible exposure limit for kerosene and jet fuels. This limit was not developed by NIOSH/OSHA or ACGIH.

5.0 HEALTH AND SAFETY DIRECTIVES

5.1 Site-Specific Safety Briefing

Before field work beings, all field personnel, including subcontractor employees, must be briefed on their work assignments and safety procedures contained in this document.

5.2 Personal Protective Equipment

The following equipment should be available on-site to each member of the field team:

- NIOSH-approved full or half-face respirator with organic vapor cartridges (color coded black)
- Saranex or polyethylene-coated Tyvek coveralls
- Splash-proof safety goggles
- Nitrile or neoprene gloves
- Neoprene or butyl boots, calf-length with steel toe and shank
- Hardhat

Equipment Usage

Chemical-resistant safety boots must be worn during the performance of work where surface soil is obviously contaminated with oil or fuel, when product quantities of oil or fuel are likely to be encountered, and within 10 feet of operating heavy equipment.

Respirators must be worn whenever total airborne hydrocarbons levels in the breathing zone of field personnel reach or exceed a 15-minute average of 25 ppm. If total airborne hydrocarbons in the breathing zone exceeds 100 ppm, work must be suspended, personnel directed to move a safe distance from the source, and the HSO or designee consulted.

Chemical resistant gloves must be worn whenever soil or water known or suspected of containing petroleum hydrocarbons is collected or otherwise handled.

Chemical resistant coveralls must be worn whenever product quantities of fuel are actually encountered and when oil or fuel-saturated soil is handled.

Safety goggles must be worn when working within 10 feet of any operating heavy equipment (e.g., drill rig, backhoe). Splash-proof goggles or face shields must be worn whenever product quantities of oil or fuel are encountered.

Hardhats must be worn when working within 10 feet of an operating drill rig, backhoe or other heavy equipment.

Operators of some facilities, such as refineries, often require all personnel working within facility boundaries to wear certain specified safety equipment. Such requirements shall be strictly observed

5.3 Vapor Monitoring

Required Equipment

--- Organic vapor meter with flame or photoionization detector
--- Combustible gas meter

Monitoring Requirements and Guidelines

Vapor monitoring shall be performed as often as necessary and whenever necessary to protect field personnel from hazardous vapors. Monitoring must be performed by individuals trained in the use and care of the monitoring equipment.

During drilling operations, vapor emissions from boreholes must be measured whenever the auger is removed from the boring and whenever flights are added or removed from hollow-stem augers. This requirement does not apply to borings less than five feet deep and borings of any depth made to install monitoring wells in uncontaminated soils. Measurements should be made initially with an organic vapor meter, followed with a combustible gas meter if vapor levels exceed the highest concentration measurable with the organic vapor meter.

Initially measurements shall be made about 12 inches from the bore hole, both upwind and downwind positions. If the total hydrocarbon concentrations exceed the respirator use action level (See Section 508.5.2), measurements must be made in the breathing zone of the individual(s) working closest to the borehole. Decisions regarding respiratory protection should be made using vapor concentrations in the breathing zone.

Organic vapor meters capable of being operated continuously without attention may be operated in that fashion if desired. However, the instrument must be equipped with an alarm set to sound when vapor concentrations reach 25 ppm and must be protected against physical damage and soilage.

If total organic vapor concentrations within 12 inches of the borehole exceed the capacity of the organic vapor meter, a combustible gas meter (CGM) must be used to determine if explosive conditions exist. Operations must be suspended, the drill rig motor shut down, and corrective action taken if combustible gas concentrations reach 40 percent of LEL within a 12-inch radius of

the borehole or 10 percent of LEL at a distance greater than 24 inches from the borehole. This procedure must also be followed whenever the organic vapor meter goes offscale at its highest range and no CGM is available. If corrective action cannot be taken, field personnel and all other individuals in the vicinity of the borehole must be directed to move to a safe are and the local fire department and facility management must be alerted.

Organic vapor meters with flame ionization detectors (FID) are much more sensitive to paraffins, with the major component of gasoline, kerosene, and jet fuels, then are meters with 10.0 or 10.2 eV photoionization detectors. As the data in Table 1 show, an FID instrument, such as the Century Systems OVA (Foxboro Analytical), will detect 70-90 percent of actual paraffin concentrations, whereas PID instruments, such as the HNU Model PI-101, AID Model 580, and Photovac TIP with 10.0 to 10.2 eV lamp will detect only 17-25 percent of actual paraffin concentrations when calibrated with benzene and only 24-35 percent when calibrated with isobutylene. Both types of meters are equally sensitive to most aromatic, including benzene, toluene, xylene and ethylbenzene. For these compounds, meter readings equal or exceed 100 percent of actual concentrations. PIDs with 11.7 eV lamps are extremely sensitive to paraffins and aromatic. When calibrated to isobutylene, an 11.7 eV PID will register about twice actual paraffin concentrations and 100 percent or more of actual concentrations of benzene, toluene, and xylene.

An FID meter, recently calibrated with methane and in good working condition, can be expected to provide readings close enough to actual petroleum hydrocarbon concentrations to make corrections unnecessary. Value obtained with a PID must be corrected when measuring for paraffins. For 10.0 and 10.2 eV PIDs, the meter reading should be multiplied by 5 if the instrument is calibrated with benzene. If the instrument is calibrated with isobutylene, the meter readings should be multiplied by 3. If the instrument is equipped with an 11.7 eV probe and is calibrated with isobutylene, the meter reading should be divided by 2.

5.4 Area Control

Access to hazardous and potential hazardous areas of spill sites must be controlled to reduce the probability of occurrence of physical injury and chemical exposure of field personnel, visitors and the public. A hazardous or potentially hazardous area includes any area where

1. Field personnel are required to wear respirators.

2. Borings are being drilled with powered augers.

3. Excavating operations with heavy equipment are being performed.

The boundaries of hazardous and potentially hazardous areas must be identified by cordons, barricades, or emergency traffic cones or posts, depending on conditions. If such areas are left unattended, signs warning of the danger and forbidding entry must be placed around the perimeter if the areas are accessible to the public. Trenches and other large holes must be guarded with wooded or metal barricades spaced no further than 20 feet apart and connected with yellow or yellow and black nylon tape not less and 3/4-inches wide. The barricades must be placed no less than two feet from the edge of the excavation or hole.

Entry to hazardous areas shall be limited to individuals who must work in those areas. Unofficial visitors must not be permitted to enter hazardous areas while work in those areas is in progress. Official visitors should be discouraged from entering hazardous areas, but may be allowed to enter only if they agree to abide by the provisions of this document, follow orders issued by the site safety officer and are informed of the potential dangers that could be encountered in the areas.

5.5 Decontamination

Field decontamination of personnel and equipment is not required except when contamination is obvious (visually or by odor). Recommended decontamination procedures follow:

Personnel

Gasoline, kerosene, jet fuel, heating oil, gasahol and diesel oil should be removed from skin using a mild detergent and water. Hot water is more effective than cold. Liquid dishwashing detergent is more effective than hand soap. Motor oil and the heavier fuel oils (No. 4-6) can be removed with dishwashing detergent and hot ware also; however, if weathered to an asphaltic condition, mechanic's waterless hand cleaner is recommended for initial cleaning followed by detergent and water.

Equipment

Gloves, respirators, hardhats, boots and goggles should be cleaned as described under personnel; however, if boots do not become clean after washing with detergent and water, wash them with a strong solution of trisodium phosphate and hot water and, if this fails, clean them with diesel oil followed by detergent and water to remove diesel oil.

Sampling equipment, augers, vehicle undercarriages and tires should be steam cleaned. The steam cleaner is a convenient source of hot water for personnel and protective equipment cleaning.

5.6 Smoking

Smoking and open flames are strictly prohibited at sites under investigation.

TABLE 1
RELATIVE SENSITIVITIES OF FID AND PID INSTRUMENTS TO SELECTED COMPONENTS OF OILS AND PETROLEUM DISTILLATE FUELS

Component	Sensitivity in Percent of Standard		
	FID	PID	
		10.2 eV[a]	11.7 eV[b]
Paraffins			
Pentane	65	--	141
Hexane	70	22 (31)	189
Heptane	75	17 (24)	221
Octane	80	25 (35)	--
Nonane	90		--
Decane	75	--	--
Napthenes			
Cyclopentane	--	--	--
Methylcyclopentane	80	--	--
Cyclohexane	85	34 (40)	--
Methylcyclohexane	100	--	--
Aromatic			
Benzene	150	100 (143)	122
Toluene	110	100 (143)	100
Ethylbenzene	100	--	--
p-Xylene	116	114 (60)	--
Cumene	100	--	--
n-Propylbenzene	--	--	--
Napthaeine	--	--	--

[a] Values are relative to benzene standard. Values in parentheses are relative to isobutylene standard and were calculated.

[b] Values are relative to isobutylene standard.