

*WORKPLAN FOR DRILLING AND
INSTALLATION OF ONE
GROUNDWATER
MONITORING WELL*

2/93

*LOCATED IN THE VICINITY OF
FORMER 2,000 GALLON GASOLINE
UNDERGROUND STORAGE TANKS*

*U.S. COAST GUARD
GOVERNMENT ISLAND
ALAMEDA, CALIFORNIA*

PROJECT NO. 582-34006

FEBRUARY 1993

**WORKPLAN FOR DRILLING AND INSTALLATION
OF ONE MONITORING WELL**

**LOCATED IN THE VICINITY OF FORMER 2,000 GALLON
GASOLINE UNDERGROUND STORAGE TANKS
UNITED STATES COAST GUARD
GOVERNMENT ISLAND
ALAMEDA, CALIFORNIA**

Conducted for

The United States Coast Guard
Civil Engineering Unit, Oakland
2000 Embarcadero - Suite 200
Oakland, California 94606-5000

Project Number 582-34006

February 1993

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Introduction

The concrete pad where one groundwater monitoring well is to be installed is located near the swimming pool on Government Island, Alameda, California (See Figure 1, Vicinity Map, and Figure 2, Site Plan).

This workplan for the drilling and installation of one groundwater monitoring well includes the following:

- 1) Completion of a Site Safety Plan
- 2) Installation of one groundwater monitoring well to an approximate depth of 25 feet
- 3) Purging and sampling of the proposed monitoring well
- 4) Preparation/issue of report summarizing field activities, procedures, and findings
- 5) Quarterly monitoring (four only) of the monitoring well
- 6) Preparation/issue of quarterly monitoring reports.

A report summarizing our field activities, procedures, and recommendations, will be prepared under the direct supervision of a qualified professional registered in the State of California and submitted for your review upon completion of the subsurface investigation.

All work will be completed in accordance with the Regional Water Quality Control Board (RWQCB) and "Tri-Regional Board Staff Recommendations for Initial Evaluation of Underground Tasks", revised 18 May 1989. All work will be under the direction of a California registered engineer or geologist.

Analytical testing will be performed by a laboratory certified by the California Department of Health Services under the Environmental Accreditation Program.

Site History

On December 30, 1988, two 2,000 gallon steel underground gasoline storage tanks were closed near the swimming pool at the U.S. Coast Guard Alameda Island Support Center. The tanks appeared to be old and showed some corrosion, but no holes were detected. The tanks were surrounded with sand and native material of bay mud. There was a petroleum hydrocarbon odor detected in soils surrounding the fuel tanks and therefore, approximately 30 yards of soil was removed from the tank excavation, placed on plastic, and covered. Soils samples were collected from each end of each tank and surrounding side walls to define vertical and lateral extent of any hydrocarbons. Two separate stock piles were made, one large pile being below tank grade and the other small pile above grade. Both soil stock piles emitted hydrocarbon odors and composite soil samples were collected from each soil stock pile as indicated in the previous sentence.

Soil samples were analyzed by Superior Analytical Laboratories, a state certified testing laboratory. All soil samples collected were analyzed for Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) using Environmental Protection Agency Methods 8015 and 8020, respectively. Pea-gravel was used to backfill and compact the excavations to grade. A concrete and asphalt finish was applied to the surface of the 2,000 gallon fiberglass tank excavation.

Soil samples collected under the fuel tanks showed non-detectable levels or insignificant traces of TPH and BTEX. Soil samples collected from the excavations walls and analyzed for TPH and BTEX also showed non-detectable levels. Thus, the vertical and lateral extent hydrocarbons in soil has been defined in the excavation and those soils have been removed for treatment or disposal.

According to the U.S. Coast Guard, no nearby wells are located on the island base, hence a survey of nearby wells was not available for submittal.

The following is a list of other sources of information checked in the preparation of this report.

- 1) Alameda County Health Agency, Division of Hazardous Materials on-site report by Ms. Cynthia Chapman, Hazardous Materials Specialist, on the removal of the two 8,000 gallon unleaded gasoline leaking underground storage tanks (LUST).
- 2) Tri-Regional Board Staff (RWQCB) Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites, 1990.
- 3) TRI-Regional Board Staff (RWQCB) Recommendations Internal Evaluation of Underground Tanks, Revised 18 May 1989
- 4) Appendix A-Reports. Tri-Regional Board Staff (RWQCB) Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites.

- 5) Alameda County Health Care Services Agency, Juliet Shin, Hazardous Materials Specialist.
- 6) LTJG Christopher Lutton, U.S.C.G., Project Manager for this scope of services.

Proposed Drilling and Soil Sampling Program

Subsurface conditions will be explored by drilling one groundwater monitoring well through backfilled soils atop a concrete pad near the swimming pool on the U.S. Coast Guard Base (See Figure 3, Proposed Monitoring Well Location Map). The monitoring well is to be drilled to an approximate depth of 25 feet. Soil samples will be collected on a continuous basis from 5 to 25 feet in one of the borings. Soils encountered during drilling and sampling will be described using the Unified Soil Classification System under the direction of a qualified professional geologist registered in the State of California.

The primary purpose of completing the groundwater monitoring well and sampling program is to confirm that the shallow groundwater in this area was impacted by the two 2,000 gallon gasoline UST's.

The original boring will be advanced utilizing a truck-mounted drill rig equipped with 8-inch outside diameter (O.D.) hollow stem augers. Soil samples will be collected using a modified California splitspoon sampler with brass sleeve inserts. Samples retrieved in this manner remain relatively undisturbed, thus retaining the geologic profile of the sample zone.

To prevent cross-contamination of samples, all sampling instruments will be decontaminated prior to, and between, sampling using a solution of non-phosphate soap and tap water, triple-rinsed in tap water, followed by a final rinse with distilled water. Auger flights will be decontaminated prior to commencement of drilling activities, and between each boring, using a high pressure steam cleaner. All decontamination rinsate will be stored in Department of Transportation (DOT) approved 55 gallon drums in a secured area on-site.

Soil will be collected and stored in brass sleeves. The ends of the brass sleeves will be covered with Teflon tape and plastic caps. The samples will then be labeled by identifying the depth from which the sample was collected. Samples will be placed in a cooled ice chest for storage until delivery to a California State certified laboratory for analysis. Proper chain-of-custody documentation will be maintained on all samples in accordance with Alameda County, Health Care Services Agency, Hazardous Materials Division (ACHCSA-HMD) guidelines.

Soil cuttings will be placed in DOT approved 55 gallon drums and stored in a fenced secure area on-site.

Materials stored on-site (i.e., drill cuttings, decontamination rinsate, and well development and purge water) will be sampled and analyzed for the suspect contaminants. A determination on their disposition will be made after the laboratory results have been received.

The well will be constructed with a 2-inch O.D. blank and slotted PVC pipe, with slot widths of 0.020 inches. A slotted casing will be placed in the well to extend approximately 10 feet below and 5 feet above the groundwater surface to account for expected tidal level fluctuations. A non-slotted casing will be installed between the ground surface and the top of the slotted casing. All lengths of casing will be steam cleaned to remove any existing contaminants. The joints between the lengths of casing will be threaded, and PVC cement will not be used in the well construction process. A clean slip-on PVC cap will be placed on the bottom of the casing. A water-tight locking cap will be installed on the top of the well, and a water-tight Christy box will be constructed flush with the existing ground surface.

The gravel pack placed in the annular space between the well casing and the boring wall will consist of clean No. 3 Monterey silica (or its equivalent) sand. The gravel pack will extend up from the bottom of the boring to approximately two feet above the top of the slotted casing. An approximately three to five foot thick layer of bentonite will be placed immediately above the gravel pack. The annular space above the bentonite will be filled with grout. A five foot cement surface seal will be constructed (See Figure 4, Typical Monitoring Well Construction Design).

The proposed well will be developed after installation until the water is clay or silt free. The development will establish groundwater flow through the gravel pack and into the well. The development well water will be stored in DOT-approved 55 gallon drums in a fenced secure area on-site.

After the monitoring well has been developed and recharged for at least 48 hours, groundwater depth measurements will be taken. The water levels will be determined by lowering an electronic probe into the well. When the probe comes in contact with the water surface, an indicator light is lit. The depth to groundwater is then recorded from the probe cord.

Proposed Groundwater Sampling

Prior to purging the well for collection of groundwater samples, the groundwater will be checked for free product using a clear Teflon bailer. The well will then be purged until the groundwater temperature, conductivity, and pH are stabilized. We anticipate the removal of five to seven well volumes of groundwater using a stainless steel bailer. Once the well water has stabilized and the water level recharges to at least 80 percent of its initial level, a sample will be collected and a final water level measurement will be recorded.

Samples will be collected using a stainless steel bailing device to reduce the possibility of the loss of volatile constituents from the sample. The bailer will be decontaminated prior to, and between, sampling using a solution of non-phosphate soap and tap water.

Proposed Laboratory Analysis

Soil and groundwater samples will be submitted for analysis to Sequoia Analytical, of Concord, California, a State of California Department of Health Services certified laboratory. Each soil sample will be analyzed for Total Petroleum Hydrocarbons for gasoline (TPHG) using EPA Method 8015 modified for gasoline. The sample yielding the highest TPHG concentration will be additionally analyzed for benzene, toluene, xylene, and ethyl benzene (BTXE) using EPA Method 8020. The method detection limits for TPHG and BTXE for soil analysis are 1.0 mg/kg and 0.05 mg/kg, respectively.

Groundwater samples will be analyzed for TPHG and BTXE using the above EPA test methods. The method detection limit for TPHG for water analysis is 50 mg/kg. The method detection limit for BTXE for water analysis is 0.3 mg/kg for benzene and toluene, and 0.5 mg/kg for xylene and ethyl benzene.

Sample remains will be disposed of by Sequoia Analytical.

Results of the laboratory testing, quality assurance/quality control (QA/QC) program, and chain-of-custody documentation will be provided in the final report.

Proposed Quality Assurance/Quality Control

This project will be staffed with personnel trained in hazardous waste operations and familiar with the history of the site. Drilling will be performed by a State of California licensed drilling company. All work will be performed under the supervision of a professional engineer or geologist registered in the State of California.

All sampling equipment (i.e., California splitspoon, bailer) will be properly decontaminated prior to, and between, sample collection using a solution of tap water and non-phosphate soap, triple-rinsed in tap water, and followed by a final rinse with distilled water. Auger flights will be decontaminated prior to, and between, borings using a high pressure steam cleaner.

Soil and groundwater samples will be collected in a manner which minimizes the possibility of the loss of volatile constituents. Once collected, samples will be placed in cold storage until delivery to a laboratory certified by the California Department of Health Services. Proper chain-of-custody documentation, which includes the name of the sampler, the site location, the sample collection, will be maintained on all samples.

Proposed Site Safety

All persons working on this investigation will be required to have completed an approved OSHA 40-hour hazardous waste operations course while maintaining current 8-hour refresher course status, as required.

Based on previous site investigations, it is anticipated that Level D protection will be required. Persons handling suspected gasoline contaminated soils will be further required to wear nitrile gloves.

The complete Site Safety and Health Plan is appended.

Should the scope of this workplan meet with your approval, please contact the undersigned immediately in order to expedite this project. The opportunity to present this workplan is appreciated and we look forward with working with you on this project.

Sincerely

PROFESSIONAL SERVICE INDUSTRIES, INC.



Mark Casterson
Professional Senior



Kevin B. Oliver
Project Manager

FIGURES

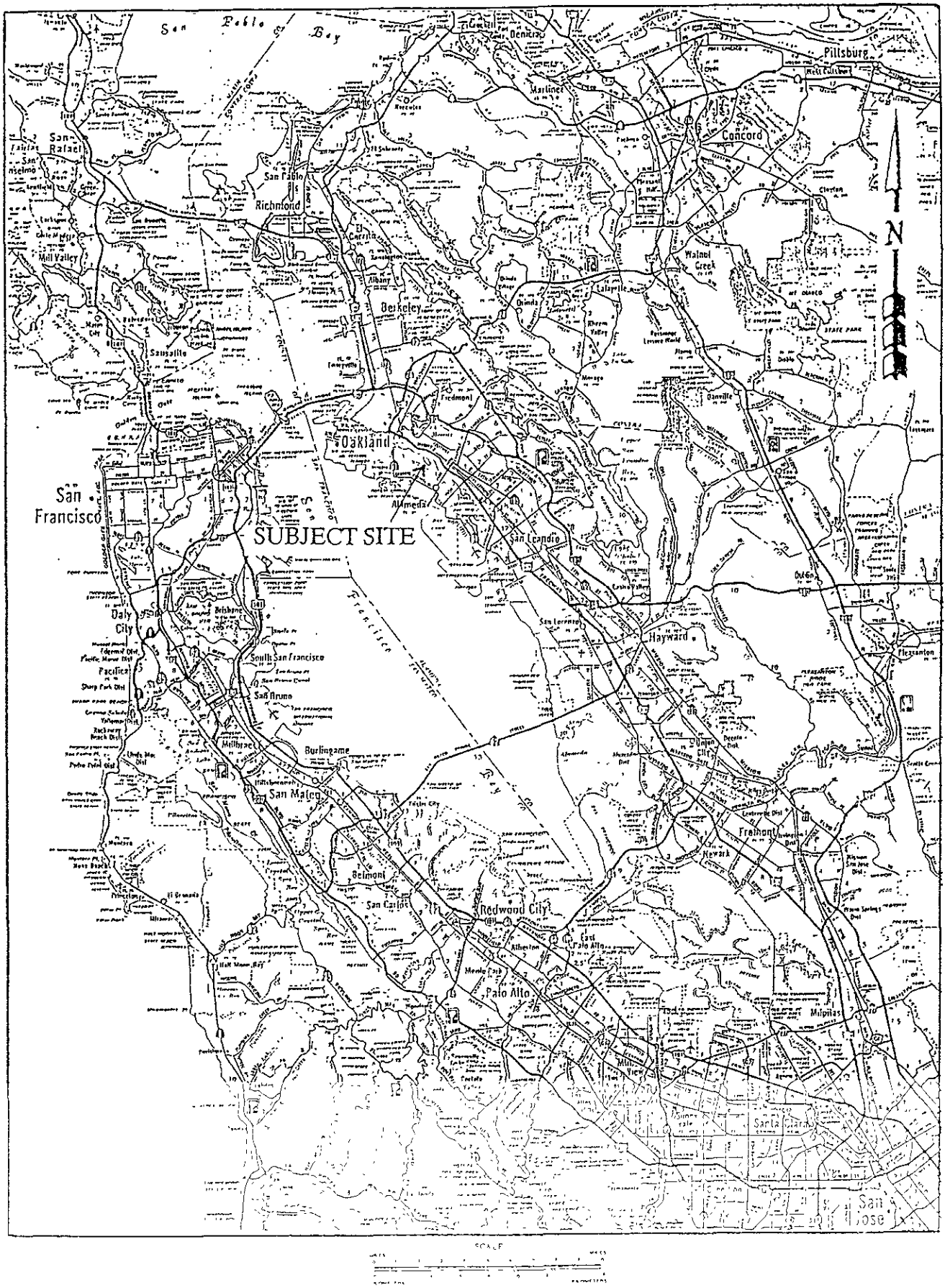


Figure 1, Vicinity Map

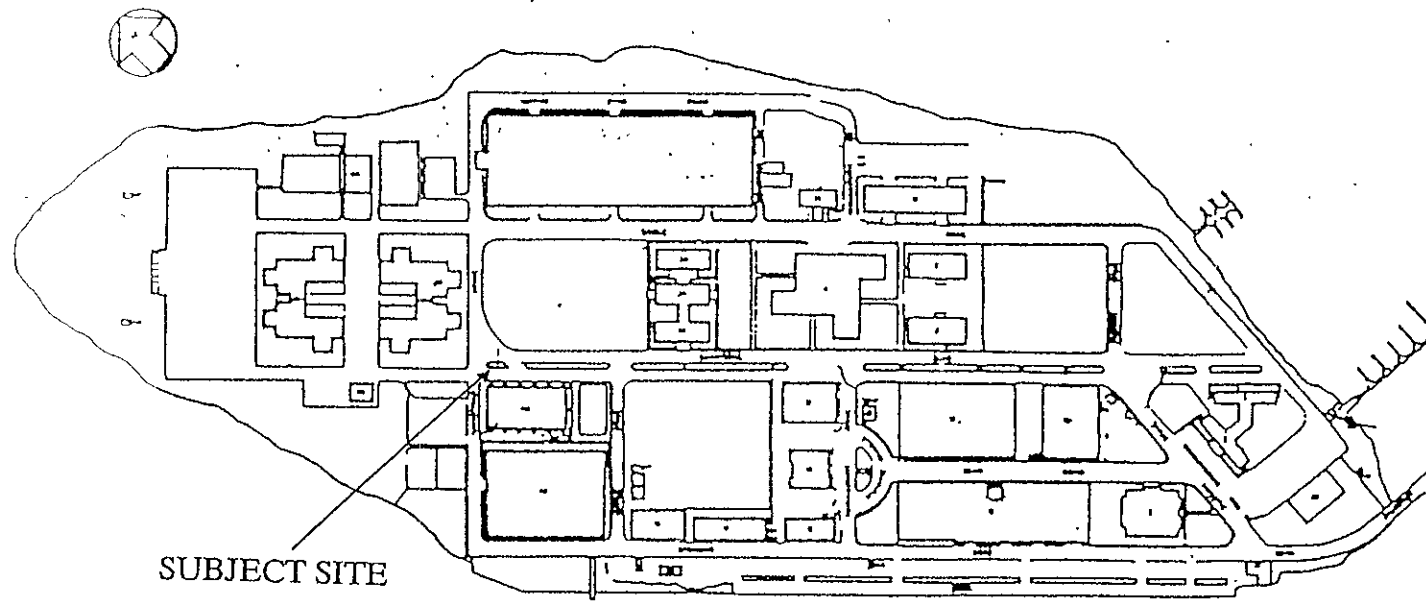
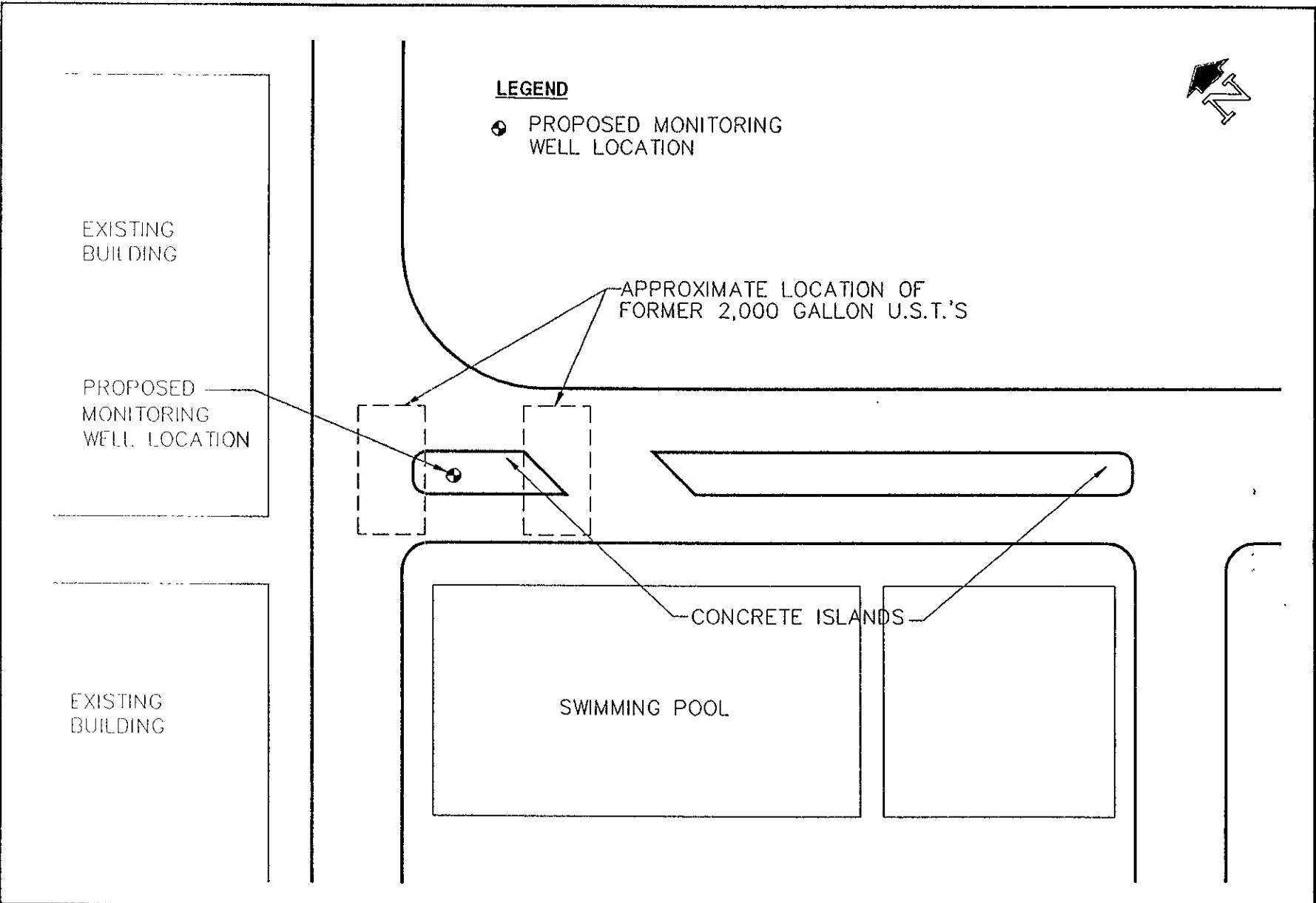


Figure 2, Site Plan



LEGEND

- PROPOSED MONITORING WELL LOCATION



EXISTING BUILDING

PROPOSED MONITORING WELL LOCATION

APPROXIMATE LOCATION OF FORMER 2,000 GALLON U.S.T.'S

EXISTING BUILDING

CONCRETE ISLANDS

SWIMMING POOL



PROFESSIONAL SERVICE INDUSTRIES, INC.
 3730 MT. DIABLO BLVD., SUITE 345 LAFAYETTE, CA 94549
 (510) 284-3070

| | | | | | | | |
|---------------|--|-----------|-----------|------------------------|----------|--------------|----------|
| PROJECT NAME: | UNITED STATES COAST GUARD ALAMEDA, CALIFORNIA | DRAWN BY: | B BRITTON | DATE: | 01/29/93 | APPROVED BY: | K OLIVER |
| TITLE: | FIGURE 3 PROPOSED MONITORING WELL LOCATION MAP | SCALE: | NONE | PROJECT NO.: 582-34006 | | DRAWING NO.: | |
| | | | | E:\CG\CG-3 | | | |

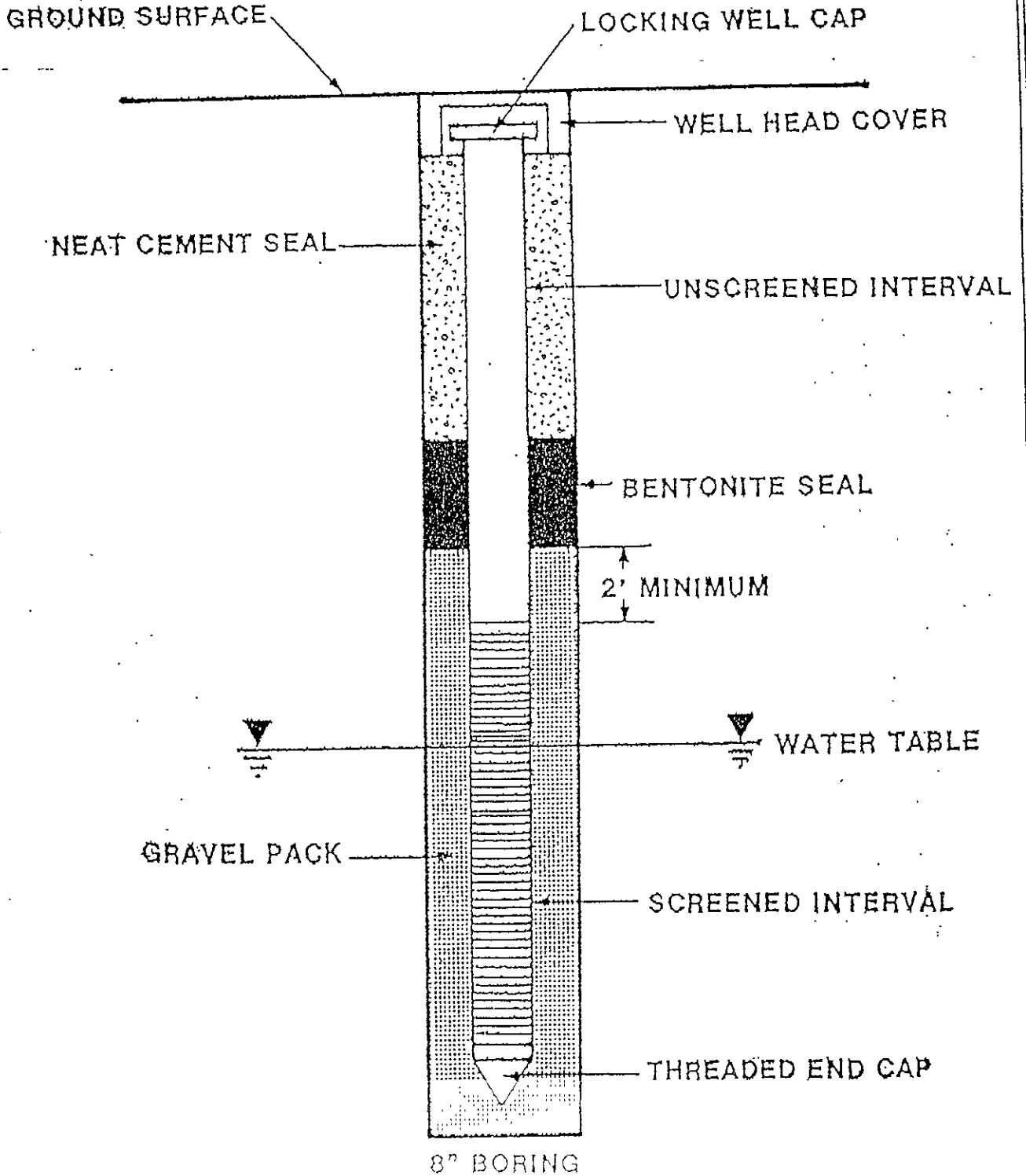


Figure 4, Typical Monitoring Well Construction Design

APPENDIX

SITE SAFETY AND HEALTH PLAN

PROFESSIONAL SERVICE INDUSTRIES, INC.
SITE SAFETY AND HEALTH PLAN

1.0 Introduction- This Safety and Health Plan (SHP) is prepared to provide information for worker safety and emergency procedures on the specific site named and described below. The SHP as prepared is not intended as a stand-alone document, but will augment the Professional Service Industries Employer's Safety and Health Plan (ESHP), and serve as Appendix D of that document. A copy of the ESHP and prepared SHP must be made available to all personnel working under the conditions of the SHP, and must be reviewed with all personnel. Following review, all personnel will sign the acknowledgement page indicating that they have read and understand therequirements of the SHP.

2.0 ORGANIZATION:

SHP Prepared By: MARK CASTERSON Date: 1/29/93

Approved By: KEVIN OLIVER Date: 1/29/93

Site Safety and Health Supervisor: MARK CASTERSON

Address 3730 MT. DIABLO BLVD., STE. 345, LAFAYETTE, CA Tel: (510) 284-3070
94549

PSI Site Supervisor: _____ Tel: _____

3.0 SITE DESCRIPTION:

Site Name: U.S. COAST GUARD EXCHANGE CENTER

Location: GOVERNMENT ISLAND, CALIFORNIA

Site Contact: LTJG CHRISTOPHER LUTTON Tel (510) 535-7267

Address: U.S. COAST GUARD, 2000 EMBARCADERO, STE. 200, OAKLAND, CA

Site Characteristics (Use, terrain, buildings, etc.) SITE LOCATED

AT THE U.S. COAST GUARD (USCG) EXCHANGE CENTER, GOVERNMENT

ISLAND SUPPORT CENTER, ALAMEDA, CALIFORNIA. FLAT TERRAIN

WITH A GAS STATION ADJACENT TO THE NEARBY EXCHANGE CENTER.

4.0 TASK ANALYSIS:

Proposed Date(s) of PSI Work: FEBRUARY 15, 1993

General Description of Work to be Accomplished: 1) COMPLETION OF 1 SOIL BORING TO AN APPROXIMATE DEPTH OF 25 FEET. 2) REAM SOIL BORING AND INSTALL MONITORING WELL. 3) PURGE 4 SAMPLES OF MONITORING WELL.

Task to Be Performed: DRILLING OF 1 MONITORING WELL.

Hazard Risk: Unknown High Moderate Low

Level of Protection: A B C D

Task to Be Performed:

Hazard Risk: Unknown High Moderate Low

Level of Protection: A B C D

Task to Be Performed:

Hazard Risk: Unknown High Moderate Low

Level of Protection: A B C D

Task to Be Performed:

Hazard Risk: Unknown High Moderate Low

Level of Protection: A B C D

Task to Be Performed:

Hazard Risk: Unknown High Moderate Low

Level of Protection: A B C D

6.0 PERSONAL PROTECTIVE EQUIPMENT:

Level D : Task(s) DRILLING AND SAMPLING OF MONITORING WELLS

- Hard Hat
- Ear Protection
- Respirator: Half-mask _____ Full-mask _____
Cartridge Type: _____
- Face Protection: Shield _____ Glasses: _____
- Inner Gloves: Material _____
- Outer Gloves: Material _____
- Coveralls: Hooded: Yes _____ No _____
Material: _____
- Steel-Toed Boots: Material _____
- Disposable Booties: Material _____
- Other (Specify): _____

Level _____ : Task(s): _____

- Hard Hat
- Ear Protection
- Respirator: Half-mask _____ Full-mask _____
Cartridge Type: _____
- Face Protection: Shield _____ Glasses: _____
- Inner Gloves: Material _____
- Outer Gloves: Material _____
- Coveralls: Hooded: Yes _____ No _____
Material: _____
- Steel-Toed Boots: Material _____
- Disposable Booties: Material _____
- Other (Specify): _____

7.0 MONITORING INSTRUMENTS:

Equipment Required:

- _____ Combustible Gas/Oxygen Meter
- _____ Hydrogen Sulfide Meter
- X Photoionization Detector (INU/TIP)
- X Organic Vapor Analyzer
- _____ Colorimetric Detector Tubes
- _____ Radiation Survey Meter
- _____ Dosimeter Badges
- _____ Other (Specify): _____

Monitoring Frequency and Levels:

Hazard: _____
Frequency: _____ Action Level _____
Response: _____

Hazard: _____
Frequency: _____ Action Level _____
Response: _____

Hazard: _____
Frequency: _____ Action Level _____
Response: _____

Hazard: _____
Frequency: _____ Action Level _____
Response: _____

8.0 DECONTAMINATION:

Level: _____ Task(s): N/A

Decontaminating Fluid(s): _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Level: _____ Task(s): _____

Decontaminating Fluid(s): _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Level: _____ Task(s): _____

Decontaminating Fluid(s): _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

9.0 EMERGENCY PROCEDURES

Emergency Signals:

Evacuate Site: U-S- COAST GUARD EXCHANGE CENTER

Leave Area Immediately: Gripping wrists or waist of another worker with both hands.

I Can't Breathe: Hand gripping throat.

Need Assistance: Hands on top of head.

I'm Okay- I Understand: Thumbs up

No- Negative: Thumbs down.

Other: _____

Emergency Telephone Numbers

Local Police Department (510) 522 - 2423

Local Fire Department (510) 522 - 2423

Local Rescue Department (510) 222 - 2423

Primary Hospital Name: ALAMEDA HOSPITAL

Telephone: (510) 522 - 3700

Secondary Hospital Name: HIGHLAND HOSPITAL

Telephone: (510) 534 - 8055

Environmental Medicine Resources

-24 Hour Telephone (404) 465-0818

-Satellite Paging (800) 869-2337 ID Ext 5125

National Poison Control Center (800) 492-2414

Chemical Mfg. Association

-Chemical Referral Center (800) 262-8200

DIRECTIONS TO EMERGENCY MEDICAL FACILITIES

Primary Hospital: ALAMEDA HOSPITAL

Address: 2070 CLINTON AVENUE, ALAMEDA

Telephone Number: (510) 522-3700

Description of route to Primary Hospital (Show Map on Following Page):

DRIVE FROM GOVERNMENT ISLAND TO EMBARCADERO ROAD. RIGHT ON
EMBARCADERO TO KENNEDY STREET. TURN RIGHT ON KENNEDY STREET
AND DRIVE TO PARK STREET. TURN RIGHT ON PARK STREET AND DRIVE
APPROXIMATELY 3/4 OF A MILE TO CLINTON AVENUE. TURN RIGHT ON
CLINTON AVENUE AND DRIVE APPROXIMATELY 1/4 MILE. HOSPITAL WILL
BE ON LEFT HAND SIDE.

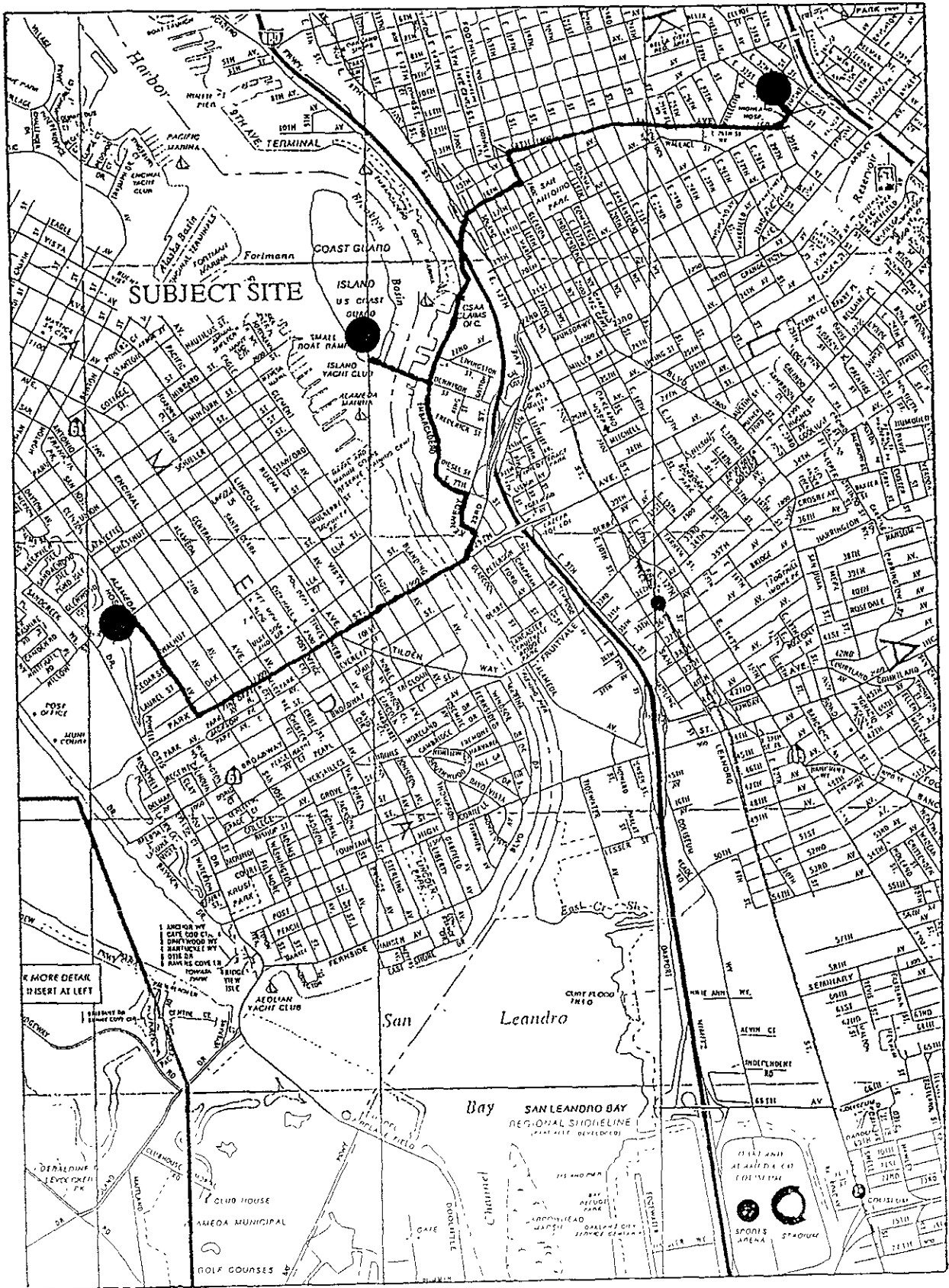
Secondary Hospital: HIGHLAND HOSPITAL

Address: 1411 EAST 31ST STREET

Telephone Number: (510) 534-8055

Description of route to Secondary Hospital (Show Map on Following Page):

DRIVE FROM GOVERNMENT ISLAND TO EMBARCADERO ROAD. TURN LEFT ON
EMBARCADERO AND VEAR RIGHT ON 16TH AVENUE. TAKE 16TH AVENUE
OVER THE 880 FREEWAY UNTIL FOOTHILL BOULEVARD. TURN LEFT ON
FOOTHILL UNTIL 14TH AVENUE. TURN RIGHT ON 14TH AVENUE UNTIL
EAST 31ST STREET. TURN LEFT ON EAST 31ST STREET, HOSPITAL IS ON
LEFT HAND SIDE.



Route to Primary and Secondary Hospitals

10.0 ACKNOWLEDGEMENT OF TRAINING

This will acknowledge that the information contained in the foregoing Site Safety and Health Plan and the PSI Employer's Safety and Health Plan has been presented and explained to me; and that I understand the information and agree to comply with the requirements and provisions contained in these documents.

Name: _____

Date: _____

Name: _____

Date: _____

Name: _____

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Date: _____

Name: _____

Date: _____

Name: _____

Date: _____

Name: _____

Date: _____

Name: _____

Date: _____

Name(s) of Presenter(s):

(NAME)

(NAME)

(SIGNATURE)

(SIGNATURE)