

PROTECTION 24

Ms. Eva Chu
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502-6577

May 16, 1995

RE: Work plan to install three groundwater monitoring wells at 1628 Webster Street, Alameda, California.

Dear Ms. Chu;

H₂OGEOL has been retained by Mrs. Jean Ratto Larkin to prepare a work plan, and conduct the ensuing investigation, to install three groundwater monitoring wells in the vicinity of a tank removal and soil contamination remediation excavation (remedial excavation) at the property known as 1628 Webster Street in Alameda, California. This letter serves as that work plan.

The work plan provides information following the format of "Appendix A - Work plan for Initial Subsurface Investigation" of the "TRI-REGIONAL BOARD STAFF RECOMMENDATIONS FOR PRELIMINARY EVALUATION AND INVESTIGATION OF UNDERGROUND TANK SITES." Much of the information requested in "Appendix A" has previously been submitted by Exceltech to Alameda County Health Care Services Agency, or is otherwise unavailable to  $H_2OGEOL$ .

#### I. Introduction

# A. Statement of Scope of Work

The scope of work for the investigation to be conducted through implementation of this work plan is to ascertain apparent groundwater flow direction and gradient and the presence of dissolved Total Extractable Petroleum Hydrocarbons as diesel, TPH-D); Total Petroleum Hydrocarbons as gasoline, (TPH-G); and the aromatic hydrocarbons benzene (B), toluene (T), ethylbenzene (E), and total xylene isomers (X), which are collectively referred to as BTEX,; and Total oil and Grease (TOG) in groundwater as encountered in the indicated monitoring wells to be installed in the vicinity of the remedial excavation. The presence of these constituents in a single soil sample from the intermittent vadose zone in each monitoring well borehole will also be determined.

#### B. Site Location

The project site is located at 1628 Webster Street in Alameda, California. The property is located at the southeast corner of the intersection of Webster Street, also known as State Highway 61, with Pacific Avenue. The site location is shown on Figure 1. The remedial excavation was located near the northwestern corner of the property, the corner nearest to the roadway intersection. This location is shown on Figure 2.

# C. Background

Background information concerning the remedial excavation was provided by Exceltech in their May, 1990 "Summary Report for Jean R. Larkin (Pacific Properties)." and in their December, 1990 "Supplementary Summary report for Pacific Properties."

# D. Site History

The available site history was summarized by Exceltech in their May, 1990 "Summary Report for Jean R. Larkin (Pacific Properties)" and in their December, 1990 "Supplementary Summary report for Pacific Properties." Additional site history information is unavailable to H<sub>2</sub>OGEOL.

# II. Site Description

# A. Vicinity description and hydrogeologic setting

The 1628 Webster Street property lies near the center of the western third of the late Pleistocene beach ridge that forms southern Alameda island (predevelopment peninsula), at an elevation of about 15 feet above mean sea level (amsl). The ground surface slopes gently northward (Figure 1) toward a now filled predevelopment tidal flat.

The entire late Pleistocene beach ridge on which the 1628 Webster Street property is located is underlain to a depth of 20 to 50 feet by the Posey/Merritt Formations (Posey sands and Merritt sands). The regional shallow groundwater flow beneath Alameda is semiradial toward the nearby waters of San Francisco Bay and the Oakland Inner Harbor. Local preturbations caused by recharge/discharge form/to cultural features results in a complex pattern of shallow groundwater flow directions.

Groundwater was encountered in the remedial excavation at a depth of about 8 to 9 feet beneath the ground surface.

The groundwater flow direction and gradient were monitored at roughly quarterly intervals from April, 1990 to January, 1992 at the Shell Service Station at 1601 Webster Street, some 400 feet to the south-southeast of the property. The groundwater surface elevation beneath this property varied from a low of 3.15 feet amsl to a high of 6.43 feet amsl. The groundwater flow direction varied from north-northwest to north-northeast.

At 1701 Webster Street, diagonally across the Webster Street - Pacific Avenue intersection from 1628 Webster Street, and some 100 feet to the northwest, the groundwater flow direction and gradient were monitored at roughly quarterly intervals from June, 1993 to March, 1995. the groundwater surface elevation beneath this property varied from a low of 7.84 feet amsl to a high of 10.03 feet amsl. The groundwater flow direction varied from northwest to southwest.

At the two properties referenced, the groundwater flow direction information do not overlap in time, but suggest that some unknown local groundwater preturbation may be present. Seperated by a distance of 400 feet, the two monitored sites suggest that groundwater flow direction may vary from northeast to southwest, a possible variation of 180 degrees. Some phenomena may be present that results in the reversal of groundwater flow direction over a time span of a few years (i.e., not a tidal response).

B. Vicinity map (including wells located on-site or on adjoining lots, as well as any nearby streams).

Figure 1 is a topographic map of the area around 1628 Webster Street. A well inventory covering the vicinity was prepared for the Shell Service Station at 1601 Webster Street, some 400 feet to the south-southeast of the property. A copy of this well inventory is included as Attachment A.

C. Site map to include; ...

A surveyed site map is not available. Figure 2 is a site sketch showing available information.

D. Existing soil contamination and excavation results.

The available information concerning soil contamination and excavation results was summarized by Exceltech in their May, 1990 "Summary Report for Jean R. Larkin (Pacific Properties)." and in their December, 1990 "Supplementary Summary report for Pacific Properties."

III. Plan for determining extent of soil contamination on site.

Sub-items A-D address excavations. This information has been addressed by Exceltech in their May, 1990 "Summary Report for Jean R. Larkin (Pacific Properties)." and in their December, 1990 "Supplementary Summary report for Pacific Properties." According to the request for bids "(r)emediation work to date included excavation of contaminated soils to the water table." Because excavation perimeter contamination was left in place beneath the Webster Street sidewalk, the presence of TPH-D, TPH-G + BTEX, and TOG in a single soil sample from the intermittent vadose zone in each monitoring well borehole will be determined.

- IV. Plan for determining groundwater contamination.
- A. Placement and rational for location of monitoring wells, including a map to scale.

Groundwater flow is anticipated to be between northeast and southwest. Thus, it is not possible to place one monitoring well in a confirmed downgradient direction. Therefore, one monitoring well will be placed southwest of the qmeter of the remedial excavation, one northwest of the remedial excavation, and one northeast of the remedial excavation. These locations are shown on Figure 3, and correspond to one well near the center of the property line along Webster Street, one at the roadway intersection corner of the property, and one about a third of the way along the Pacific Avenue property line from Webster Street.

- B. Drilling method for construction of monitoring wells, including decontamination procedures.
- 1. Expected depth and diameter of monitoring wells,

The monitoring wells will be about 20 feet deep and will be constructed of 2-inch inside diameter material.

Date of expected drilling.

Uncertain, possibly May, 1995.

3. Method and location of soil sampling boreholes.

The monitoring well boreholes will be sampled for logging purposes and will be drilled either by hand auger or by hollow stem auger. If boreholes are drilled by hand auger the wells will be constructed under arrangement with ASE Drilling of Livermore, CA C-57 629340. If the boreholes will be drilled by

hollow stem auger, the wells constructed by V & W Drilling of Rio Vista, CA C-57 658786. The location is shown on attached Figure 3. Cross contamination prevention will be by tri-sodium phosphate wash or by steam cleaning/high pressure washing.

4. Casing type, diameter, screen interval, and pack and slot sizing technique.

Casing and screen will be made of flush threaded PVC, 2-inch inside diameter. Screen will be set from about 5 to 20 feet below ground surface. Depths will be adjusted depending on the depth at which groundwater is first encountered. Sand pack will be No. 3 Monterey Sand or No. 8 Silica Resources Sand to about one foot above the screen. Slot size will be 0.020-inch. Sizing technique will be by experience of the C.E.G. conducting borehole logging. Boreholes that encounter clay would require 0.005-inch openings by the DOHS method, however, sizes less than 0.020-inch tend to clog readily and to swell shut through adsorption of hydrocarbons, if present.

5. Depth and type of seal.

Depth of seal will be from one foot above screen to ground surface. The lowermost foot of the seal will be comprised of bentonite pellets. The remainder of the seal will be a neat cement grout.

6. Construction diagram for wells.

A well construction diagram will be provided for each well as a part of the borehole log.

7. Development method and criteria for determination of adequacy of development.

Well development will be by the surge and bail and/or surge and pump technique. A vented surge block will be used in the screened interval and the well will be bailed and/or pumped to remove groundwater and entrained fines. Well development will continue until the turbidity has lowered to a point where there will be no suspended sediment interference with the laboratory analytical procedure for TPH-D, TPH-G + BTEX, and TOG.

8. Plans for disposal of cuttings and development water.

Drilling cuttings will be placed in 55 Gallon drums and disposed by DECON Environmental Services, Inc. Well development water will be placed in 55 Gallon drums and disposed by DECON Environmental Services, Inc.

9. Surveying plans for wells (requirements include surveying to established benchmark to 0.01 foot).

The wells will be surveyed by Ron Archer (RPE, Civil No. 23721), Civil Engineer, Inc. of Pleasanton, California.

- C. Groundwater sampling plans (include plans for sampling any onsite domestic wells)
- 1. Water level measurement procedure.

Depth to water below the surveyed casing reference mark will be measured with an electric sounding line to an accuracy of 0.01 feet.

2. Methods for free product measurement, observation of sheen and odor.

Depth to top of fluid will be measured with a sounding bell. Product thickness is the difference between depth to water and depth to fluid. Product will also be checked with a clear acrylic bailer. The sample retrieved will be used to check to sheen and odor.

Well purging procedure.

The monitoring wells will be purged of no less than one casing volume by bailing or by pumping. If the wells are capable of sustaining a discharge rate of 0.5 gallons per minute, purging will continue until no less than three casing volumes have been removed. The field parameters pH, temperature, and specific conductance will be monitored.

4. Well purge water disposal plans.

Well purge water will be placed in 55 Gallon drums and disposed by DECON Environmental Services, Inc.

Sample collection procedures.

All groundwater samples will be cooled to 4°C.

A groundwater sample for TPH-G + BTEX will be pulled from the monitoring well within a teflon bailer. The TPH-G + BTEX sample will be transferred to a 40-mL VOA vial (containing HCl to pH <2 as a preservative) with a teflon septum lid through a bottom emptying device affixed to the bailer.

And GW sample for TPH-D+ to 6 -7 ! liter amber bottle

HOOGEOL A GROUND WATER CONSULTANCY

#### Sample analyses to be used 6.

For soil samples:

- U.S. EPA Method 3550/8015 for TPH-D.
- U.S. EPA Method 5030/8015M for TPH-G and 8020 for BTEX.

Standard Method 5520 e & f for TOG.

For groundwater samples:

- U.S. EPA Method 3550/8015 for TPH-D.
- U.S. EPA Method 5030/8015M for TPH-G and 8020/602 for BTEX.

Standard Method 5520 b & f for TOG.

Quality assurance plan. 270 & PNAs 7.

> Field sampling will be performed by an experienced groundwater sampler. Samples will be stored and transported in an ice chest maintained at 4° C. Samples will be delivered to the laboratory under chain-of-custody documentation. While at the laboratory the sample tracking and analysis will follow the laboratory's approved quality assurance protocol.

Chain of Custody Procedures. 8.

> Sample numbers, container types, etc., and analytical request information will be entered on the chain-of-custody form. sample collector will sign the form when transferring the sample to the laboratory personnel. The laboratory personnel will sign the form upon receipt of the sample.

Include a site safety plan. ٧.

A site safety plan is provided in Attachment B.

This concludes the work plan for a three monitoring well groundwater investigation at 1628 Webster Street, Alameda, California.

Please do not hesitate to call me at (510) 373-9211 should you have any questions.

Sincerely,

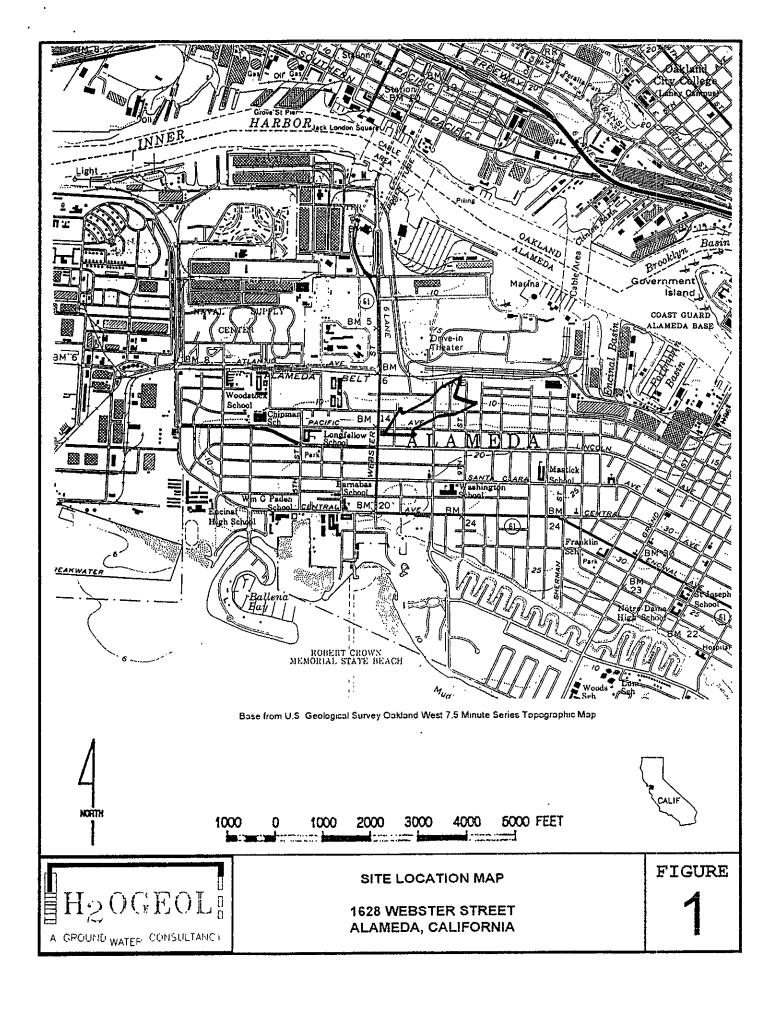
Gary D. Lowe, R.G., C.E.G. Principal, Hydrogeologist

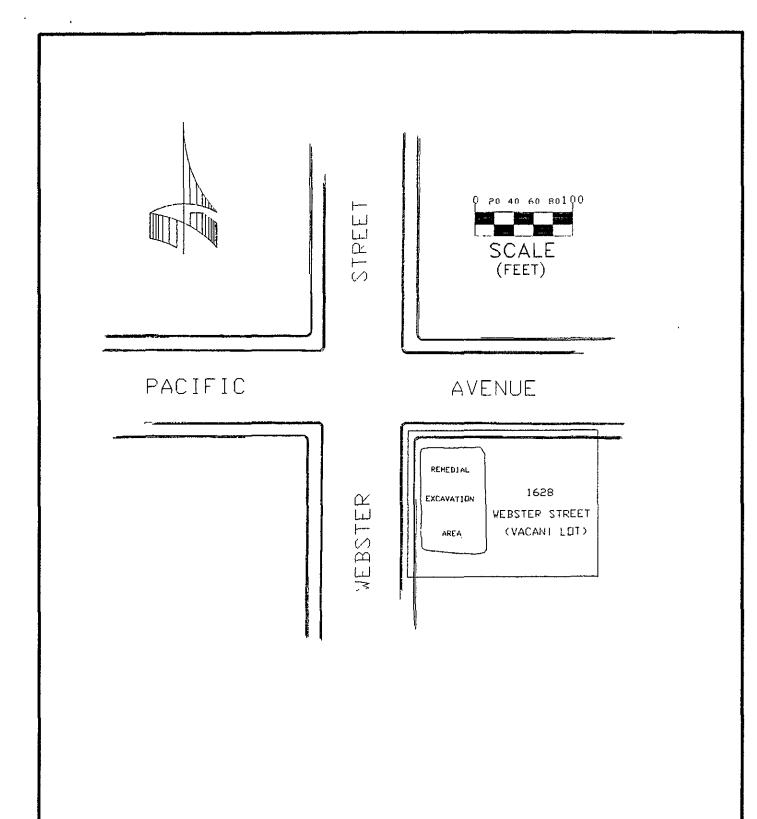
xc: Mrs. Jean Ratto Larkin, 16 Las Vegas Road, Orinda, California 94563

Mr. Robert F. Campbell, Fitzgerald, Abbott & Beardsley, 1221 Broadway, 21st Floor, Oakland, California 94612-1837.

No. 1659 CERTIFIED ENGINEERING

Mr. Tom Hargett, TEXACO Environmental Services, 10 Universal City Plaza, 7th Floor, Universal City, California 91608-7812





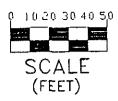


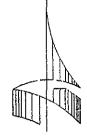
SITE AREA SKETCH

1628 WEBSTER STREET ALAMEDA, CALIFORNIA

FIGURE

2

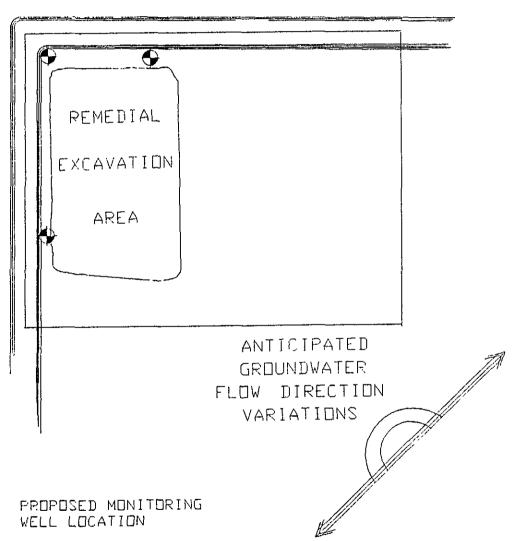




PACIFIC AVENUE

STREET

WEBSTER







PLANNED MONITORING WELL LOCATIONS

1628 WEBSTER STREET ALAMEDA, CALIFORNIA

**FIGURE** 

3



P.O.Box 2165 • Livermore California 94551 • 510-373-9211

# ATTACHMENT A

WELL INVENTORY FROM 1601 WEBSTER STREET ALAMEDA PROJECT FILE

- WEISS ASSOCIATES

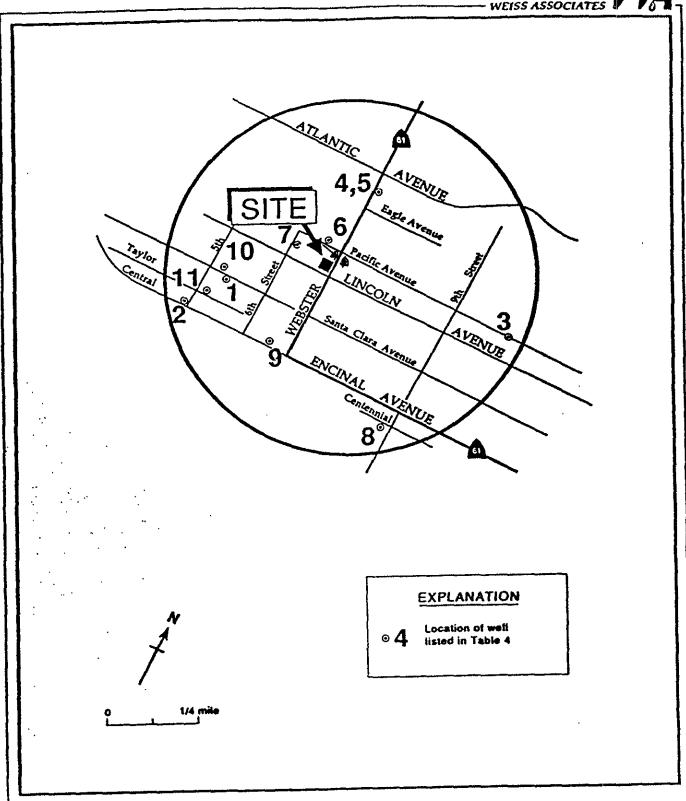


Figure 1. Site Location and Wells Within 1/2 Mile of Shell Service Station WIC #204-007-205, 1601 Webster Street, Alameda, California

Wells Within One-Half Mile of Shell Service Station WIC# 204-0072-Table 1. 0403 Alameda, California

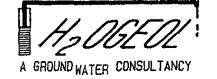
Weil ID	Well Owner	Well Location	Year Drilled	Well Use
1	PG&E	462 Santa Clara Avc.	1976	CAT
2	Richard Roth	1417 5th St.	1977	IRR
3	PG&E	Pacific Ave./Chapin St.	1976	CAT
4-5	Alameda Housing Authority	1916 Webster St.	1986	MW
6	City of Alameda	354 Pacific St.	1986	MW
7	Daniel Robsinson	1614 6th St.	1977	IRR
8	Lawrence Picetti	920 Centennial Ave.	1987	MW
9	Paul Marrett	645 Central Ave.	1977	IND
10	Richard Faucett	427 Santa Clara Ave.	1977	IRR
11	A.E. Bryant	447 Taylor Ave.	1977	IRR

# Abbreviations:

CAT = Cathodic Protection Well

IND = Industrial Well

IRR - Irrigation Well MW = Monitoring Well



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# ATTACHMENT B

SITE SAFETY PLAN FOR 1628 WEBSTER STRAAT ALAMEDA, CALIFORNIA



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SITE SAFETY PLAN FOR

1628 WEBSTER STREET ALAMEDA, CALIFORNIA

# 1.0 PURPOSE AND SCOPE

This site safety plan (SSP) establishes the basic safety guidelines and requirements for the installation of three monitoring wells at the property located at 1628 Webster Street in Alameda, California. The SSP addresses hazards that may be encountered during this project. Field activities are anticipated to occur in April/May, 1995.

The provisions set forth in this SSP shall apply to any parties contracted to Mrs. Jean Ratto Larkin, including, but not limited to  $H_2OGEOL$  and any team member yet to be selected for borehole drilling. All personnel working for Mrs. Larkin at the job site must read this SSP and sign the attached Compliance Agreement before entering the work area. All persons, or firms, working on site are responsible for their own accident reporting.

All persons performing monitoring well installation services will be properly trained and will be in compliance with 29 CFR 1910.120 for 40 hour basic training and will have had a current 8-hour refresher course.

Because they are properly trained field personnel may deviate from the safety provisions set forth in this SSP, but only to increase safety.

### 2.0 SAFETY PERSONNEL

All persons working for Mrs. Larkin are responsible for job safety. The geologist at the site, Mr. Gary D. Lowe, R.G., C.E.G. will serve as Site Safety Officer. As such, he is responsible for informing all personnel working on site of the contents of the SSP. His responsibilities include making sure everyone has adequate safety supplies and equipment. Mr. Lowe is responsible for insuring proper decontamination/contamination reduction procedures are observed.

# 3.0 SITE HAZARD ANALYSIS/CHARACTERIZATION

The expected potential hazards to personnel in the work area and at the site are:

Physical injury from equipment operated at the job site Heat stress
Fire or explosion
Exposure to chemical hazards

Preventing heat stress is particularly important, because a person who suffers from heat stress or stroke may be subject to additional heat injuries.

The proposed work does not appear to present any potential health risk to workers, the surrounding community, or the environment if the provisions of this SSP are properly implemented.

# 3.1 Physical Hazards

The potential for physical injury exists from the operation of any machinery, including the drilling rig. Use of steel-toed boots, hard hats or caps, and safety glasses will be required when in the work area.

The potential for noise hazards exist whenever the noise exceeds the CAL-OSHA permissible exposure level of 90 dB. Noise level protection shall be available to all personnel within the job site in the event noise levels exceed individual comfort levels.

The risk of physical injury can be increase due to decreased visibility, hearing, and dexterity whenever protective equipment is used.

#### 3.2 Heat Stress

Project implementation is expected to occur in April/May. The potential for heat stress exists. Signs and symptoms of heat stress are:

Heat rash from continuous exposure to heat and/or humid air.

Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms are muscle spasms, heavy sweating, dizziness, nausea, and fainting.

Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular capability or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness, nausea, and fainting.

Heat stroke is the most serious because body temperature regulation fails, and body temperature rises to critical levels. The victims body must be cooled immediately to lessen the risk of serious injury or death. Competent medical help must be obtained. Sign and symptoms include red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong rapid pulse; and coma.

### 3.3 Fire Hazards

The potential for fire or explosion exists whenever flammable liquids or vapors are present above the lower explosion limit (LEL) concentration and sufficient oxygen is present to support combustion. These condition include vehicular fuel. General drilling operations in materials suspected of containing flammable substances may pose a fire hazard. A fire extinguisher will be located in the drill rig and the site safety officer's vehicle.

# 3.4 Chemical Hazards

The hazardous chemicals that <u>may</u> be encountered at the site are petroleum hydrocarbons, including the volatile aromatic hydrocarbons benzene, toluene, ethylbenzene, and xylene isomers. A summary of the relevant chemical, physical, and toxicological properties for each potentially encountered hazardous chemical is listed below.

Trace to minor concentrations of these chemicals may be present adsorbed on soil particles or dissolved in groundwater. If a free petroleum phase is present these chemicals could be present as a part of that organic phase.

Ingestion of contaminants will be controlled by prohibiting eating, drinking, smoking, and chewing in the work area. In addition, workers will be instructed to wash their hands and face before engaging in any of the above activities after they leave the work area.

Adsorption of contaminants will be controlled by requiring workers to wear long-sleeved shirts or coveralls, rubber and/or cotton work gloves, and safety glasses.

#### BENZENE

Benzene may occur as a trace constituent is soils and groundwater. In its pure form benzene is a colorless liquid with an aromatic odor. It is a relatively volatile chemical with a vapor pressure of 75 mm Hg @ 68° F. The flash point of benzene is only 12 °F, thus classifying benzene as a flammable liquid. Benzene is recognized by the National Institute of Occupational Safety and Health (NIOSH) as a potential human carcinogen.

Benzene can enter the body through four routes of exposure: inhalation, adsorption, ingestion and injection. Target organs are the blood, central nervous system, skin, bone marrow, eyes, and respiratory system. Acute exposure effects include irritation of the eyes, nose, and respiratory system as well as headache, nausea, staggered gait, depression, and abdominal pain. The chronic effect of overexposure is the potential for cancer. The permissible exposure level (PEL) for benzene is 10.0 ppm.

#### TOLUENE

Toluene may occur as a trace constituent is soils and groundwater. In its pure form toluene is a colorless liquid with an aromatic odor. It is less volatile than benzene, with a vapor pressure of 22 mm Hg @ 68°F. Toluene is a flammable liquid with a flash point of 40°F.

Toluene can enter the body through all four routs of exposure. Target organs include the central nervous system, liver, kidneys, and skin. Acute exposure effects include fatigue, dizziness, headache, euphoria, dilated pupils, and paralysis. The PEL in 200 ppm.

#### ETHYLBENZENE

Ethylbenzene may occur as a trace constituent is soils and groundwater. In its pure form ethylbenzene is a colorless liquid with an aromatic odor. It has a low volatility with a vapor pressure of 7.1 mm Hg @ 68°F. It is a flammable liquid with a flash point of 59°F.

Ethylbenzene can enter the body through all four routs of exposure. Target organs include the central nervous system, eyes, upper respiratory system, and skin. Acute exposure effects include irritation of the eyes and mucous membranes, nose, and respiratory system, headache, nausea, staggered gait, dermatitis, narcosis, and coma. The PEL in 100 ppm.

# XYLENE ISOMERS

Xylene isomers may occur as a trace constituent is soils and groundwater. In pure form xylene isomers are a colorless liquid with an aromatic odor. It has a low volatility with a vapor pressure of 8 mm Hg @ 68°F (average). It is a flammable liquid with a flash point of 81°F.

Xylene isomers can enter the body through all four routs of exposure. Target organs include the central nervous system, eyes, gastrointestinal tract, blood, liver, kidneys, and skin. Acute exposure effects include dizziness, excitement, drowsiness, incoordination,

abdominal pain, vomiting, and irritation of the eyes nose, and throat. The PEL in 100 ppm.

#### 4.0 EXPOSURE MONITORING PLAN

The monitoring wells will be constructed in an open area with free air circulation. Visual and odoriferous concentrations would have to be present before an ambient air concentration exceeding 100 ppm for 15 minutes could be approached. Air monitoring is not necessary.

All persons working for Mrs. Larkin will be wearing standard cotton and/or synthetic work clothes. Monitoring for heat stress will consist of personnel constantly observing each other for any of the heat stress symptoms discussed in Section 3.2.

No dust monitoring will be performed because none of the tasks in this project are expected to generate large quantities of dust.

No noise monitoring will be performed, because none of the tasks in this project are expected to generate over 90 dB permissible exposure limit or the 85 dB action level. Ear noise protection shall be available to all personnel.

#### 5.0 PERSONAL PROTECTIVE EQUIPMENT

Level "D" personal protection is expected to be the highest level required to complete the monitoring well installation, development, and sampling. Modified level "C" equipment and supplies will be made available if needed.

# 6.0 SITE CONTROL

The site is in a vacant lot. Understood work zones will be used and physical demarcation will be provided. Public access will be controlled to the extent possible.

#### 7.0 DECONTAMINATION MEASURES

Field personnel shall wash their hands and face at the buildings faucets or restroom before leaving the site.

#### 8.0 EMERGENCY RESPONSE PLAN

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to Alameda Hospital's Emergency Services at 2070 Clinton Avenue, Alameda (522-3700). Transport will be by calling 911, as recommended by local police and emergency personnel. In no event shall a seriously injured person be transported to a hospital in a private automobile.

For minor injuries the hospital can be reached by leaving the site and turning right (south) onto Webster Street, State Highway 61. continue following Webster Street, State Highway 61 and turn left (west) onto Central Avenue, State Highway 61, turn right 45 degrees onto Encinal Avenue, State Highway 61. Follow Encinal Avenue, State Highway 61 and turn right onto Lafayette Street (or Chestnut Street). follow either of these for three bolcks and turn left onto Clinton Avenue. Alameda Hospital is on the right just before the intersection with Willow Street. Follow the signs to emergency admittance. 1995 Thomas Brothers Alameda County Page 11, C5.

In the event of a fire the local fire department will be notified by dialing 911.

# COMPLIANCE AGREEMENT

EACH OF THE UNDERSIGNED HAS READ THE SITE SAFETY PLAN AND FULLY UNDERSTAND THE POTENTIAL HAZARDS ASSOCIATED WITH MONITORING WELL INSTALLATION AND DEVELOPMENT AT 1628 WEBSTER STREET, ALAMEDA, CALIFORNIA.

NAME	SIGNATURE	EMPLOYER/COMPANY	DATE
			<del></del>