

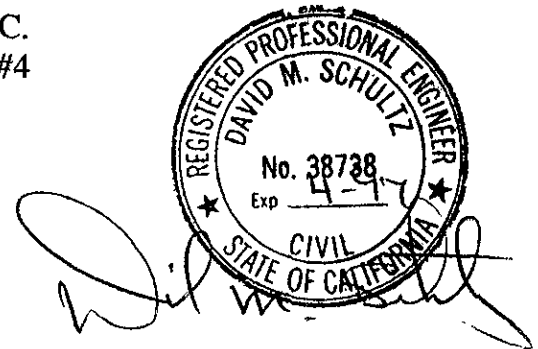


February 17, 1995

WORKPLAN
for
SOIL AND GROUNDWATER
ASSESSMENT, NO. 2807
at
Eden Hospital Medical Center
20103 Lake Chabot Road
Castro Valley, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

WE'VE MOVED TO
2411 OLD CROW CANYON RD #4
SAN RAMON, CA 94583
510-820-9391



INTRODUCTION

This submittal outlines Aqua Science Engineer's, Inc. (ASE) proposed workplan for a soil and groundwater investigation at the Eden Hospital Medical Center located at 20103 Lake Chabot Road in Castro Valley, California (Figure 1). The proposed site assessment activities were initiated by the Eden Hospital Medical Center in accordance with a letter received from the Alameda County Health Care Services Agency (ACHCSA), dated December 27, 1994 (Appendix A). Presented below are a site history summary and an outline of ASE's proposed scope of work.

SITE HISTORY

In October 1994, ASE removed three underground diesel storage tanks from the site. One area of the property contained two 10,000-gallon diesel tanks and another area contained one 3,000-gallon diesel tank. In addition, at least one other diesel tank was located adjacent to the two 10,000-gallon tanks and was previously removed by others. Upon removal of the 10,000-gallon tanks, visual staining and hydrocarbon odors were present in the excavation. Soil samples collected from this excavation contained up to 15 parts per million (ppm) total petroleum hydrocarbons as diesel (TPH-D), although only one sample could be collected from this excavation due to severe sloughing of the sidewalls. Up to 32 ppm TPH-D was detected in the soil samples collected beneath the 3,000-gallon diesel tank although no odors or staining was present during this tank removal. The residual contamination related to the 3,000-gallon tank was determined by the ACHCSA to not be a significant threat to the environment and will not be addressed in this workplan.

*Note:
UST removed
previously
was muddled
w/ holes;
heavy staining
also evident*

PROPOSED SCOPE OF WORK (SOW)

Based on the site history and requirements outlined in the ACHCSA December 27, 1994 letter, ASE's proposed SOW is as follows:

- 1) Prepare a site safety plan;
- 2) Obtain all necessary permits from the appropriate agencies including permits to install monitoring wells;
- 3) Drill three soil borings to approximately ^{50'} ~~45'~~ feet below ground surface (bgs) at the locations shown on Figure 2;

50'

- 4) Collect soil samples at least every 5-feet from the borings and analyze at least two soil samples from each boring for TPH-D and BTEX;
- 5) Complete the borings described in task 3 as 2-inch diameter groundwater monitoring wells;
- 6) Develop the groundwater monitoring wells;
- 7) Collect groundwater samples from the wells for analyses;
- 8) Analyze the groundwater samples for TPH-D and BTEX;
- 9) Survey top of casing elevation of the wells relative to a project datum;
- 10) Report the subsurface investigation results.

Each of these tasks are described in detail below.

TASK 1 - PREPARE A SITE SAFETY PLAN

Based on the site history and the analytical results of the soil samples collected during the underground storage tank removal, ASE has prepared a site-specific safety plan. The safety plan identifies potential site hazards and specifies procedures to protect site workers and the public. A copy of the site specific Health and Safety Plan is appended to this report (Appendix B)

TASK 2 - OBTAIN ALL NECESSARY PERMITS FROM THE APPROPRIATE AGENCIES FOR MONITORING WELL INSTALLATION

ASE will obtain a well construction permit from the Alameda County Flood Control and Water Conservation District (Zone 7). ASE will also send a notification card to the California Department of Water Resources (DWR). ASE will contact Underground Service Alert (USA) to mark all known utilities in the immediate site vicinity. After the wells are completed, ASE will send well completion reports to the DWR as required.

TASK 3 - DRILL THREE SOIL BORINGS

ASE will drill three soil borings at the site in the locations shown in Figure 2. The borings will be drilled with a drill rig equipped with 8-inch

diameter hollow-stem augers. The drilling will be directed by a qualified ASE geologist. Undisturbed soil samples will be collected at least every 5-feet, at lithographic changes, and from just above the water table for subsurface hydrogeologic description and possible chemical analysis. The samples will be described by the ASE geologist according to the Unified Soil Classification System. The samples will be collected in brass tubes using a split-barrel drive sampler advanced ahead of the auger tip by successive blows from a 140-lb. hammer dropped 30-inches. Each sample will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps, secured with duct tape, labeled with the site location, sample designation, date and time the sample was collected, and the initials of the person collecting the sample. The samples will be placed on ice for delivery under chain of custody to a CAL-EPA certified analytical laboratory. Soil from the remaining tubes not sealed for laboratory analysis will be removed for hydrogeologic description and will be screened for volatile compounds with an OVM. The soil will be screened by emptying soil from one of the tubes into a plastic bag. The bag will be sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole, punched in the bag. These OVM readings will be used to decide which samples will be analyzed at the analytical laboratory. Soil cuttings will be stockpiled on and covered with plastic sheeting. Soil disposal will be arranged by the client at a later date.

All sampling equipment will be cleaned in buckets with brushes and a TSP or Alconox solution, then rinsed twice with tap water. The drill rig and augers will be steam cleaned between borings and prior to departure. Rinsates will be contained on-site in sealed and labeled Department of Transportation approved 55-gallon (DOT 17H) drums for disposal by the client at a later date.

TASK 4 - ANALYZE AT LEAST TWO SOIL SAMPLES FROM EACH BORING

At least two soil samples from each boring will be analyzed at a CAL-EPA certified environmental laboratory for TPH-D by modified EPA Method 3550/8015 and BTEX by EPA Method 8020.

TASK 5 - COMPLETE THE BORINGS AS MONITORING WELLS

ASE will complete the borings described in task 3 as 2-inch diameter groundwater monitoring wells. The wells will be constructed with 2-inch diameter, flush-threaded, schedule 40, 0.020-inch slotted PVC well screen and blank casing. The well casing will be lowered through the augers and

#3 Monterey sand will be placed in the annular space between the well casing and the borehole to about 2-feet above the screened interval. Approximately 2 feet of bentonite pellets will be placed on top of the sand pack and hydrated with deionized water. This bentonite layer will prevent the cement sanitary seal from infiltrating into the sand pack. Cement mixed with 3 to 5 percent bentonite powder by volume will be used to fill the annular space between the bentonite layer and the surface to prevent surface water from infiltrating into the well. The well head will be protected by a locking well plug and an at-grade, traffic-rated well box (See Figure 3 - Typical Monitoring Well).

The well will be screened to monitor the first water-bearing zone encountered. Wells will typically be screened with 5-feet of screen above the water table and 15-feet of screen below the water table. If a confining layer is encountered below the first water bearing zone, its thickness will be confirmed by sampling with decreasing diameter split barrel samplers. The sampling hole through the underlying confining layer will be sealed with bentonite pellets. ASE will not cross-screen two or more water-bearing zones separated by confining layers.

15'
Screen
max

TASK 6 - DEVELOP THE MONITORING WELLS

The monitoring wells will be developed after waiting at least 72 hours after well construction. The wells will be developed using at least two episodes of surge block agitation and bailer evacuation. At least ten well casing volumes of water will be removed during the development, and development will continue until the water appears to be reasonably clear. The well development purge water will be stored on-site in sealed and labeled DOT 17H drums for disposal by the client at a later date.

TASK 7 - SAMPLE THE MONITORING WELLS

After waiting 72 hours after the well development, ASE will sample the monitoring wells. Prior to purging and sampling, the groundwater surface in each well will be checked for sheen or free-floating hydrocarbons. The thickness of any free-floating hydrocarbons will be measured with an acrylic bailer which will be lowered slowly to the groundwater surface and filled approximately half full for direct observation. ASE will also measure the depth to groundwater in all site wells prior to purging water from any well. Prior to sampling, each well will be purged of at least four well casing volumes of groundwater. The temperature, pH and electrical conductivity of evacuated water will be monitored during the well purging, and purging will continue beyond four well casing volumes if these

parameters have not stabilized. Groundwater samples will be collected from the well using a disposable polyethylene bailer. Groundwater will be decanted from the bailer into 40-ml glass volatile organic analysis (VOA) vials and 1-liter amber glass bottles. These samples will be preserved as necessary, labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples. The samples will be placed on ice for transport to the analytical laboratory under chain of custody. Purged groundwater will be stored on-site in sealed and labeled DOT 17H drums for disposal by the client at a later date.

TASK 8 - ANALYZE THE GROUNDWATER SAMPLES

The groundwater samples will be analyzed by a CAL-EPA certified analytical laboratory for TPH-D by modified EPA Method 3550/8015 and BTEX by EPA Method 8020.

TASK 9 - SURVEY THE TOP OF CASING ELEVATION

ASE will survey the top of casing elevation of each well casing relative to a project datum. The project elevation will be based on elevations interpreted from the USGS topographic map.

TASK 10 - PREPARE A SUBSURFACE ASSESSMENT REPORT

ASE will submit a subsurface assessment report outlining the methods and findings of this assessment. The report will be submitted under the seal of State Registered Civil Engineer, Mr. David Schultz (#38738). This report will include a summary of the results, the site background and history, the topographic and geologic setting, rationale for well placement and design, description of the well construction, development and sampling, tabulated soil and groundwater analytical results, and data collected during the well development and sampling including estimated flow rate, pH, temperature, and electrical conductivity on the initial sampling, conclusions and a remediation plan. Formal boring logs, analytical reports, and chain of custody will be included as appendices.

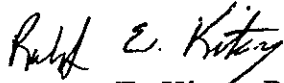
SCHEDULE

We anticipate beginning work at this site immediately upon approval of the workplan by the ACHCSA. Drilling is tentatively scheduled for February 28, 1995.

Aqua Science Engineers appreciates the opportunity to assist you with your environmental needs. Should you have any questions or comments, please feel free to call us at (510) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

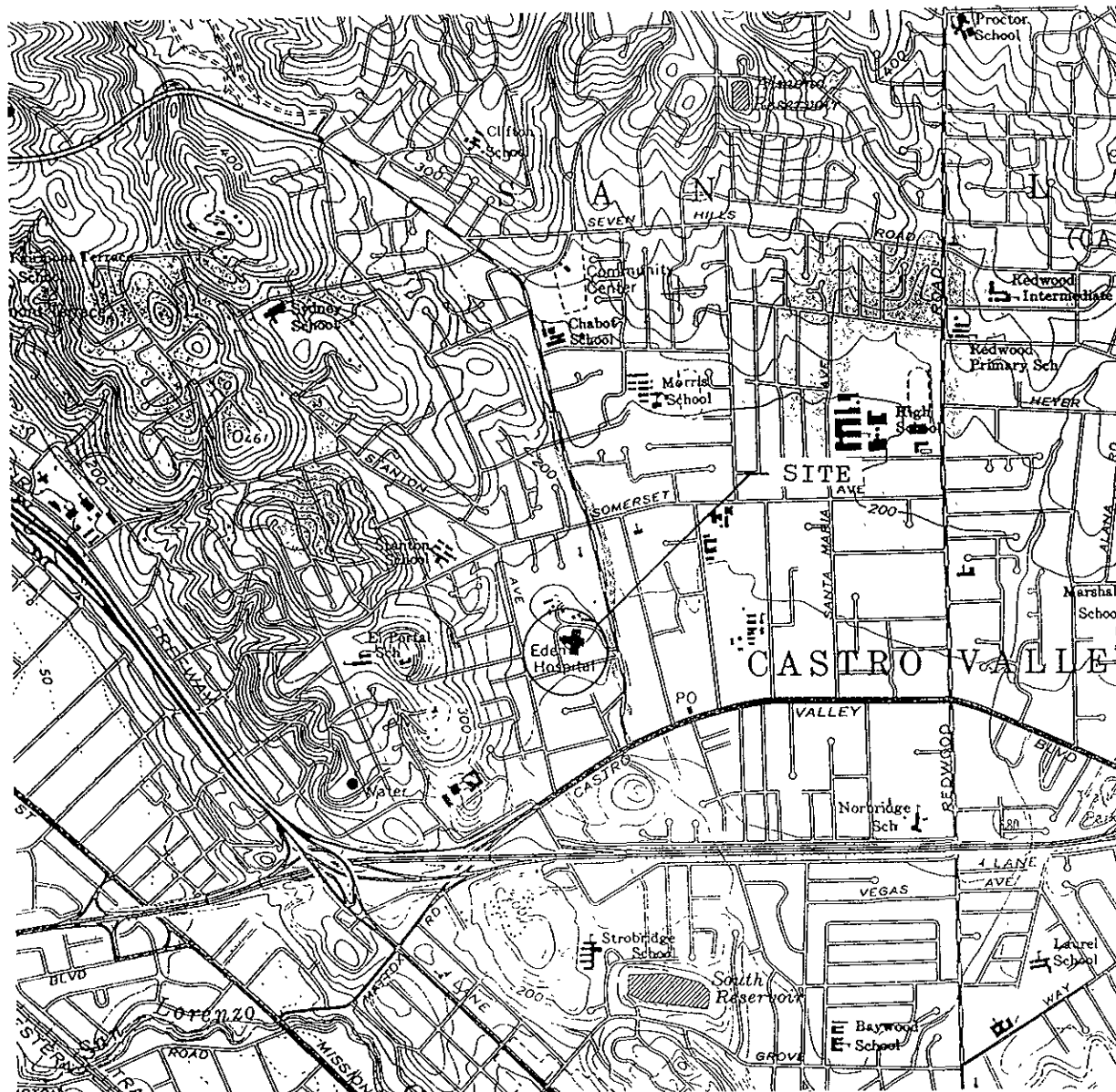


Robert E. Kitay, R.E.A.
Project Geologist



Attachments: Figures 1, 2 & 3
Appendices A & B

cc: Mr. Robert Bosold, Eden Hospital Medical Center
Mr. Scott Seery, ACHCSA
Mr. Kevin Graves, RWQCB, San Francisco Bay Region



SITE LOCATION MAP

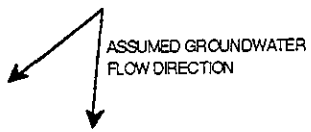
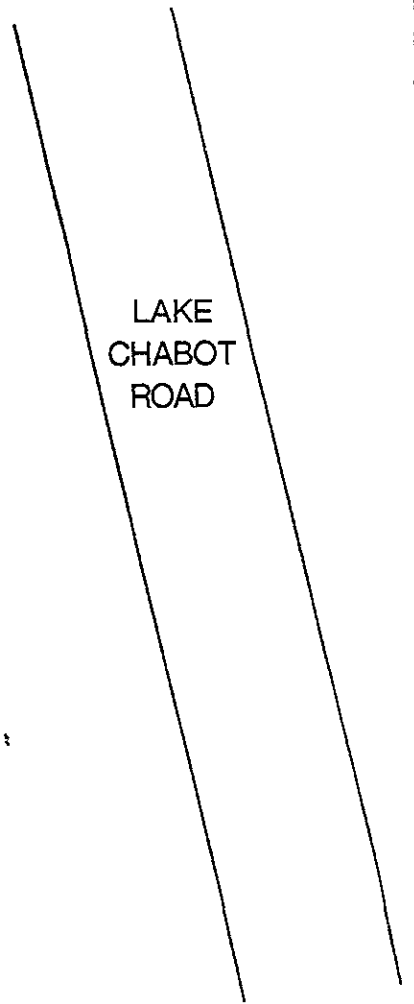
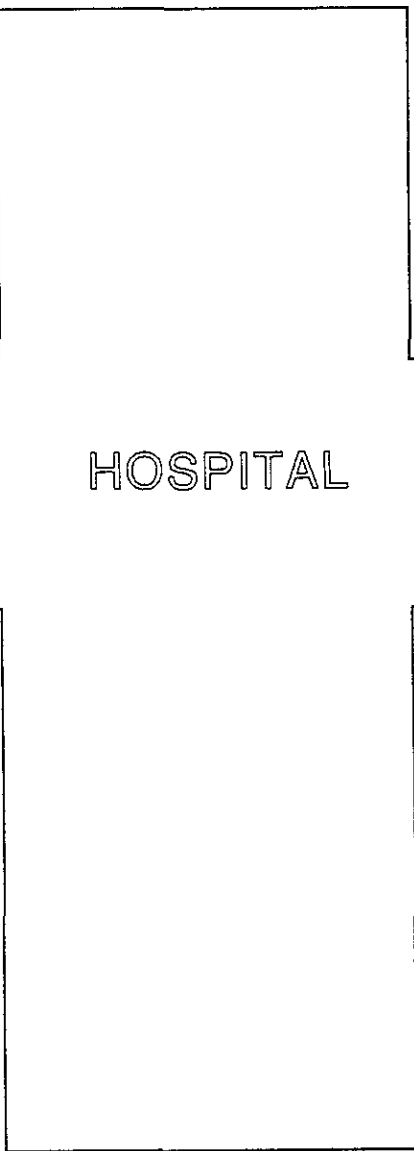
Eden Medical Center
20103 Lake Chabot Road
Castro Valley, California

Aqua Science Engineers

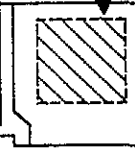
Figure 1



NOT TO SCALE



FORMER
TANK
FARM



STORAGE SHED



SIDEWALK
AND CURB



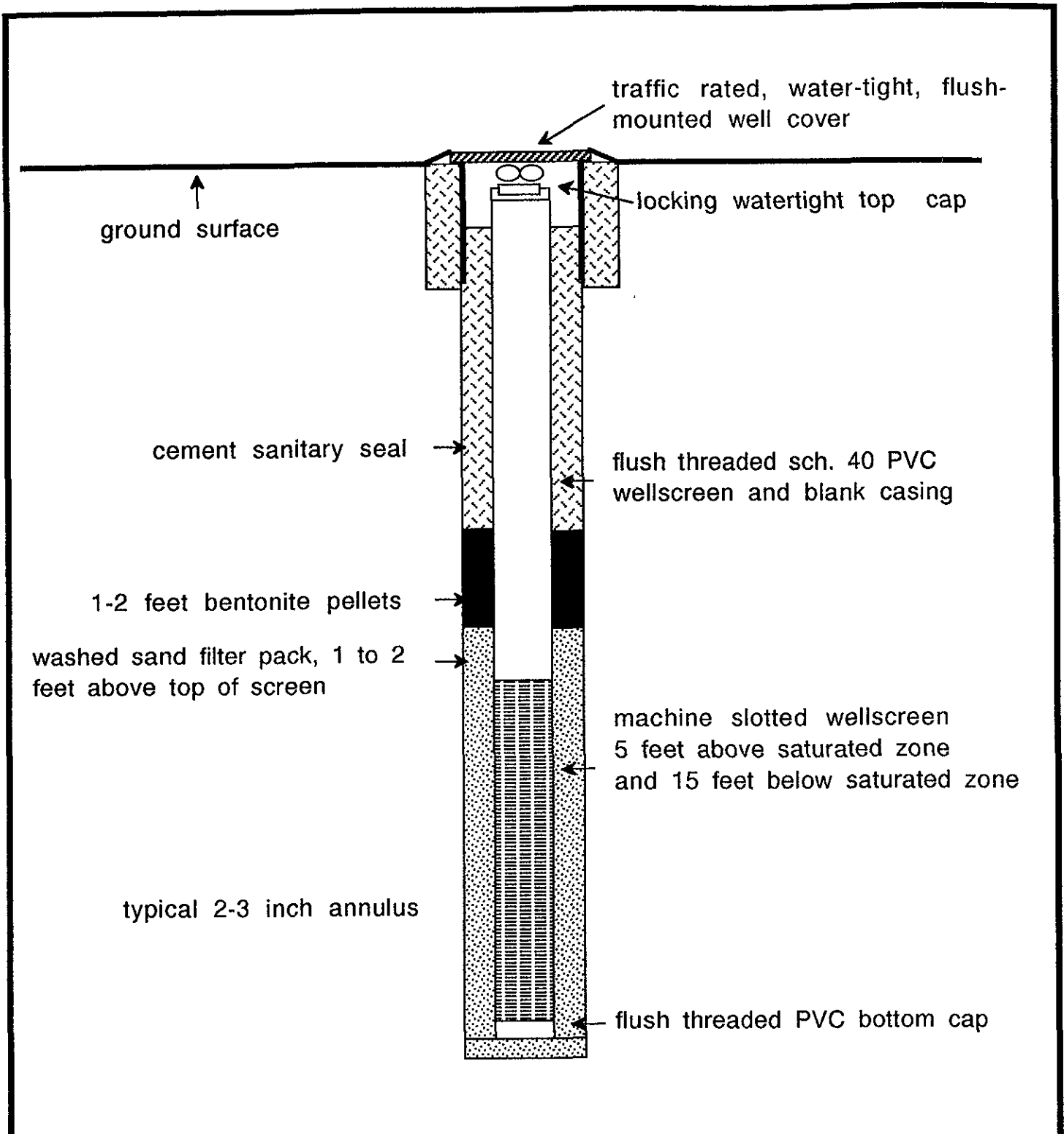
PROPOSED
MONITORING WELL (TYPICAL)



FORMER
3,000 GALLON
DIESEL UST

LEGEND	
	PROPOSED MONITORING WELL

PROPOSED MONITORING WELL LOCATION MAP	
Eden Medical Center 20103 Lake Chabot Road Castro Valley, California	
Aqua Science Engineers	Figure 2



TYPICAL
MONITORING WELL CONSTRUCTION
IN CROSS SECTION

APPENDIX A

Alameda County Health Care Services Agency
"Direction" Letter

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, Assistant Agency Director

STID 646

December 27, 1994

ALAMEDA COUNTY CC4580
DEPT. OF ENVIRONMENTAL HEALTH
ENVIRONMENTAL PROTECTION DIVISION
1131 HARBOR BAY PKWY., #250
ALAMEDA CA 94502-6577

RECEIVED BY EDEN
HOSPITAL ENGINEERING ON

JAN 04 1995

Mr. Robert Bosold
Eden Hospital Medical Center
20103 Lake Chabot Road
Castro Valley, CA 94546

RE: PRELIMINARY SITE ASSESSMENT REQUEST; 20103 LAKE CHABOT
ROAD, CASTRO VALLEY

Dear Mr. Bosold:

The results of sample analysis and observations documented during the October 1991 and October 1994 closures of a total of three (3) fuel underground ground storage tanks (UST) from a shared excavation have been evaluated. As was articulated in correspondence from this office dated March 16, 1992, provisions of Article 11, Title 23, California Code of Regulations (CCR), require the performance of a preliminary site assessment (PSA) when a confirmed release from an UST has occurred.

A confirmed release from an UST has occurred at this site. Hence, a PSA must be performed. To facilitate this task, a PSA work plan must be submitted for review. **This work plan is due within 90 days of the date of this letter.** The salient elements of a PSA work plan are summarized in the attached *Appendix A*.

A report must be submitted within 45 days of the completion of field activities associated with this phase of work at the site. Subsequent reports are to be submitted quarterly until this site qualifies for final RWQCB "sign off."

The referenced reports must describe the status of the investigation and include, among other elements, the following:

- o Details and results of all work performed during the designated reporting period: records of field observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory results for all samples collected and analyzed (including QA/QC data), tabulations of free product thicknesses and dissolved fractions, etc.
- o Status of ground water contamination and characterization

Mr. Robert Bosold
RE: 20103 Lake Chabot Road
December 27, 1994
Page 2 of 2

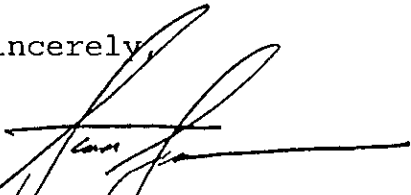
- o Interpretation of results: water level contour maps showing gradients, free and dissolved product plume definition maps for each target compound, geologic cross sections, etc.
- o Recommendations for additional work

All reports and proposals must be submitted under seal of a California-registered geologist or civil engineer with the appropriate environmental background. Please include a statement of qualifications for each lead professional involved with this project.

Please be advised that this letter constitutes a formal request for technical reports pursuant to California Water Code Section 13267(b).

Please feel free to call me at 510/567-6783, should you have any questions.

Sincerely,



Scott O. Seery, CHMM
Senior Hazardous Materials Specialist

attachment

cc: Rafat A. Shahid, Agency Director, Env. Health
Gil Jensen, Alameda County District Attorney's Office
Ed Laudani, Alameda County Fire Department
Robert Weston, ACDEH

APPENDIX B

Health and Safety Plan



HEALTH & SAFETY PLAN

for:

**EDEN MEDICAL CENTER
20103 LAKE CHABOT ROAD
CASTRO VALLEY, CALIFORNIA**

prepared by:

**Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4
San Ramon, California 94583
(510) 820-9391**

EDEN MEDICAL CENTER - February, 1995

- 1 -

AQUA SCIENCE ENGINEERS, INC.
HEALTH & SAFETY PLAN
for the
EDEN MEDICAL CENTER JOBSITE

A. GENERAL DESCRIPTION

Site: 20103 LAKE CHABOT ROAD, CASTRO VALLEY, CA

Work Scope:

Work Scope: AQUA SCIENCE ENGINEERS WILL INSTALL A TOTAL OF THREE SOIL BORINGS AND THREE GROUNDWATER MONITORING WELLS AT THE ABOVE REFERENCED SITE.

SAFETY POLICY:

This Health and Safety Plan is written specifically for the jobsite, located at 20103 Lake Chabot Road in Castro Valley, California. All persons on site will follow OSHA safe operating practices as outlined in 29 CFR 1910 and 1926, as well as established guidelines from their respective companies or organizations.

Plan Prepared by: David Allen Date: 2/9/95

Plan Approved by: David Schultz, P.E. Date: 2/10/95

Proposed Start Date: February 23, 1995

Background Review Done? Complete: 10/7/94
 Preliminary:

Overall Hazard Level: Serious: Low: XXX
 Moderate: Unknown:

Project Organization:
Site Manager for A.S.E.: David Allen
A.S.E. Safety Officer: Robert Kitay
Other A.S.E Personnel: Diane Schiell

B. SITE/WASTE CHARACTERISTICS

Waste Type(s): Solid: XXX Sludge: Liquid: XXX Gas:

Characteristics: HYDROCARBON RESIDUALS, TOXIC

Site Parameter:

A MINIMUM BOUNDARY OF THREE FEET SURROUNDING THE BORING LOCATIONS IS TO BE MAINTAINED IN AS MUCH AS IS POSSIBLE.

C. HAZARD EVALUATION

CHEMICAL HAZARDS

Potential chemical hazards include skin and eye contact or inhalation exposure to potentially toxic concentrations of hydrocarbon vapors. The potential toxic compounds that may exist at the site are listed below, with descriptions of specific health effects of each. The list includes the primary potential toxic constituents of gasoline and waste oil known to be on site. Exposure levels and symptoms are taken from the NIOSH Pocket Guide to Chemical Hazards.

1. BENZENE

- a. Colorless, clear, highly flammable liquid with characteristic odor.
- b. High exposure levels may cause acute restlessness, convulsions, depression, respiratory failure. BENZENE IS A KNOWN CARCINOGEN.
- c. Permissible exposure level (PEL) for a time weighted average (TWA) over an eight hour period is 1.0 ppm.

2. TOLUENE

- a. Colorless liquid with a benzene-like odor.
- b. High exposure levels may cause fatigue, euphoria, confusion, dizziness. TOLUENE IS LESS TOXIC THEN BENZENE.
- c. PEL for a ten hour TWA is 100 ppm.

3. XYLENE

- a. Colorless, flammable liquid with aromatic odors.
- b. high exposure levels may case dizziness, drowsiness, narcosis.
- c. PEL for a ten hour TWA is 100 ppm.

4. ETHYLBENZENE

- a. Clear, colorless, highly flammable liquid with characteristic odor.
- b. High exposure levels may cause irritation to skin, nose and throat, dizziness, constriction in chest, loss of consciousness, respiratory failure.
- c. PEL for an eight hour TWA is 100 ppm.

5. LEAD

(Lead Arsenate)

- a. Odorless, colorless solid with properties that vary depending upon specific compounds.
- b. High exposure levels may cause nausea, diarrhea, inflamed mucous membranes, abdominal pains, weakness. LEAD IS A SUSPECTED CARCINOGEN.
- c. PEL for an eight hour TWA is .05 milligrams per cubic meter (airborne).

ALL SUBSTANCES AS THEY EXIST ON SITE ARE EXPECTED TO BE STABLE.
PHYSICAL HAZARDS

Under no circumstances will anyone climb on any soil piles. Personnel shall maintain the maximum distance possible from the excavation while performing their activities. Other on-site hazards include physical injuries due to the proximity of workers to engine-driven heavy equipment and tools. Heavy equipment used during excavation may include backhoes, excavators, compressors, jackhammers, and whackers. Only trained personnel will operate machines, tools and equipment; all will be kept clean and in good repair. Minimum safety apparel required around heavy equipment will include a hardhat, steel-toed boots and hearing conservation devices. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH OSHA GUIDELINES.

Inspections of the excavation, the adjacent areas, and protective systems are to be made by a qualified person while personnel are on site. Attention will be made to note if any evidence of potential cave-in exists.

1. USE SAFETY EQUIPMENT, MASK RESPIRATORS WITH NIOSH APPROVED C-21 CARTRIDGES FOR ORGANIC VAPORS, AS NECESSARY.
2. HAVE AT LEAST ONE DRY CHEMICAL MODEL PA-200 A-B-C FIRE EXTINGUISHER PRESENT.

LEVEL OF PROTECTION

A contamination Reduction Zone (CRZ) will be maintained and adjusted as work proceeds and moves around the site. The workers on site will wear level 'D' protective clothing. (This protection level may be upgraded after on-site conclusions of data are completed). THE LEVEL OF PROTECTION FOR PERSONNEL WORKING IN THE AREA WILL BE UPGRADED IF; the organic vapor levels in the operator's breathing zone exceeds 5 ppm above background levels continuously for more than five minutes. This will be monitored by use of a hand-held Organic Vapor Meter (Gastech 1314 Oxygen/ppm Concentration Meter (PID) calibrated with Hexane). In this event, personnel protective equipment will include full face respirators with double-cartridge filters for organic vapors and particulates, in addition to hardhat, steel-toed boots and coveralls. If work proceeds in an environment where vapor concentrations exceed 200 ppm, a self contained breathing apparatus or airline respirator will be utilized by the personnel.

Levels of Protective Clothing are defined on the following pages as described in the "EPA Standard Operating Safety Guidelines":

LEVEL A PROTECTION

Components:

1. Pressure-demand, supplied air respirator that is MSHA and NIOSH approved. Respirators may be pressure demand, self contained breathing apparatus (SCBA), or pressure demand, airline respirator with an escape bottle for atmospheres with an extreme IDLH.
2. Fully encapsulating chemical resistant suit.
3. Inner, chemical resistant gloves.
4. Disposable gloves and boot covers, worn over the fully encapsulating suit.
5. 2-way radio communications is highly recommended.

LEVEL B PROTECTION

Components:

1. Pressure-demand, supplied air respirator that is MSHA and NIOSH approved. Respirators may be pressure demand, self contained breathing apparatus (SCBA), or pressure demand, airline respirator with an escape bottle for atmospheres with an extreme IDLH.
2. Chemical resistant clothing which includes overalls and long sleeved jacket or, hooded one or two piece chemical splash suit or disposable chemical resistant one piece suit..
3. Outer chemical resistant gloves.
4. Inner chemical resistant gloves.
5. Chemical resistant, steel toed and shank boots.
6. Disposable chemical resistant boot covers.
7. Hardhat.
8. 2-way radio communications is highly recommended.

LEVEL C PROTECTION

Components:

1. Air purifying respirator, full face, with twin cartridge or cannister equipped filters, that are MSHA and NIOSH approved.
2. Chemical resistant clothing which includes coveralls or, hooded one-piece or two-piece chemical splash suit or chemical resistant hood and apron; disposable chemical resistant coveralls.
3. Outer chemical resistant gloves.
4. Inner chemical resistant gloves.
5. Chemical resistant, steel toed and shank boots.
6. Disposable chemical resistant boot covers.
7. Hardhat.

LEVEL D PROTECTION

Components:

1. Coveralls.
2. Gloves.
3. Leather boots, shoes or chemical resistant, with steel toe and shank.
4. Safety glasses or chemical splash goggles.
5. Hardhat or face shield.

SITE ENTRY PROCEDURES

Any personnel entering the site will observe all conditions set forth by the owners/operators of the property, including vehicle travel speeds, restricted areas and conduct. Eating, drinking, smoking and other practices which increase the probability of hand-to-mouth transfer of contamination is prohibited in the work zone. All field personnel will be instructed to thoroughly wash their hands and face upon leaving the work area for breaks or cessation of day's activities.

DECONTAMINATION PROCEDURES

If required, equipment and personnel decontamination areas will be designated by the Project Manager at the start of the project. To prevent the transfer of contamination from the work site into clean areas, all tools will be cleaned adequately prior to final removal from the work zone. Disposable protective clothing such as Tyvek coveralls, latex gloves, boot covers, etc. will be changed on a daily basis or at the discretion of the Project Manager on site. All disposable protective clothing will be put into plastic bags and disposed of in a proper manner. All respirator cartridges will be discarded and replaced with fresh units on a daily basis, disposal will be in the same manner as the protective clothing. Soil will be stockpiled in an area designated by the Project Manager, to be handled as agreed upon in the scope of work contract with the client.

In the event of a medical emergency, the injured party will be taken through decontamination procedures, if possible. However, the procedures may be omitted when it may aggravate or cause further harm to the injured party. member of the work team will accompany the injured party to the medical facility to advise on matters concerning

chemical exposure. The injured person will not transport themselves to the medical facility!

Personnel Protection Level will be Level 'D'. Protective clothing levels may be upgraded in the event that on site conclusions determine a greater than anticipated danger to personnel.

Site Entry: BARRICADES, CONES, OR BANNER GUARD MAY BE ERECTED TO CONTROL FOOT TRAFFIC AWAY FROM THE WORK ACTIVITY.

Decontamination-

Personnel and Equipment: IF REQUIRED, PERSONNEL AND EQUIPMENT WILL BE DECONTAMINATED A PER USEPA STANDARD OPERATING SAFETY GUIDELINES. A SMALLER MODIFIED DECONTAMINATION LINE MAY BE USED DUE TO SPACE RESTRICTIONS.

Work Limitations (time, weather):

NONE ARE ANTICIPATED, HOWEVER, PERSONNEL WORKING ON SITE MAY EXPERIENCE ELEVATED TEMPERATURES DURING THE WORK DAY. IN THE EVENT THAT AMBIENT TEMPERATURES REACH OR EXCEED 80 DEGREES FAHRENHEIT, THE FOLLOWING GUIDELINES ARE RECOMMENDED.

1. Periods of work should be reduced to no less than one hour time frames and separated by breaks intended to reduce personnel stress due to reduced natural ventilation from wearing protective clothing.
2. All personnel wearing level C protective clothing or greater, will be subject to medical monitoring of body temperature after work periods, by the following guidelines;
 - a. Heart Rate (HR) should be measured by counting the radial pulse rate for 30 seconds and doubling count for the correct pulse rate. This should be done as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute.

If the HR is higher, the next work period should be shortened by 10 minutes, while the length of the rest period remains the same. If the HR is 100 beats per minute at the beginning of the next rest period, the following work period should be shortened by an additional 10 minutes.

- b. Body temperatures should be measured orally with a clinical thermometer as soon as possible in each resting period. Oral Temperatures (OT) should not exceed 99 degrees Fahrenheit. If it does, the next work period should be reduced by 10 minutes while the length of the resting period remains the same. If the OT exceeds 99 degrees Fahrenheit at the beginning of the next work period, the following work period should be reduced by an additional 10 minutes. OT should be measured at the end of each rest period to ensure that the body's temperature has dropped below 99 degrees Fahrenheit.

Body Water Loss (BWL) from sweating, could result in dehydration and further complications and stress on personnel working in protective clothing under adverse weather conditions. It is strongly recommended that plenty of stress relief beverages be available on site to replace body fluids. Commercial drink mixes that provide electrolyte balancing solutions or water are adequate for replacing body fluids.

Alternate methods of heat stress reduction can be made available such as: portable showers or hose-down facilities, shelter cover to protect against direct sunlight, rotating teams of personnel wearing protective clothing, performing extremely arduous tasks early in the workday.

EMERGENCY INFORMATION

In the event of an injury or suspected chemical exposure, the first responsibility of the Project Manager will be to prevent any further injury. This objective will normally require an immediate stop to work until the situation is remedied. The Project Manager may order the evacuation of the work party. Other primary responsibilities in the event of an accident will be the first aid and decontamination of the injured team member(s). The injured party will be moved to a designated safe area and initial first aid will be rendered.

Employees are asked to make every effort and take personnel responsibility to prevent accidents involving machinery or any other aspect of the job, either by individual action or by notifying the Project Manager immediately of any unsafe condition that may exist.

In the event of an unexpected hazardous material discovery on site, the following actions will be taken by any employee involved:

1. The person having uncovered the unexpected material will notify the Project Manager and other workers of the danger. The site will be cleared of personnel if deemed necessary by the Project Manager. If site evacuation is required, appropriate local agencies such as the Fire Department or Health Department will be notified as well.
2. Immediate action will be taken to contain the hazardous material, provided the workers involved are properly attired with adequate protective clothing to avoid exposure.
3. Proper containment procedures will be determined for the hazardous material encountered prior to cleanup commencing. All personnel involved in the containment effort will be properly protected to prevent exposure. Backup personnel will be similarly protected while monitoring the work being done for any additional dangers.
4. The container(s) will be staged on site, away from the major activity areas and in such a way that if loss of containment occurs, the material will be withheld from further spread by a secondary containment berm or vessel.
5. The owner or agent controller of the property will be notified promptly of the incident and will be apprised as to the options available for proper disposal.

EXPOSURE SYMPTOMS AND FIRST AID

<u>EXPOSURE ROUTE</u>	<u>SYMPTOMS</u>	<u>FIRST AID</u>
Skin	Dermatitis, itching redness. swelling	Wash immediately with soap and water contact ambulance if evacuation is needed.
Eyes	Irritation, watering	Flush with water, transport directly to emergency room, if necessary.
Inhalation	Vertigo, tremors	Move person to fresh air, cover source of exposure.
Ingestion	Nausea, vomiting	Call Poison Control Center, DO NOT <u>INDUCE VOMITING</u> , transport to medical facility.

Local Resources:

HEALTH AND SAFETY CONTACT FOR ASE:

David Allen
Office: (510) 820-9391
Police | : 911
Fire |

POISON CONTROL: SF (415) 476-6600
SJ (800) 798-0720

ROUTE TO NEAREST HOSPITAL:

SUBJECT SITE IS A HOSPITAL

AQUA SCIENCE ENGINEERS INC.

HAZARDOUS MATERIALS SITE SAFETY PLAN

The below signed personnel have read this plan, understand it's contents and agree to follow the guidelines set forth;

EMPLOYEE NAME (print)

SIGNATURE

DATE