

IT CORPORATION - HEALTH AND SAFETY PLAN, REV 0.

PROJECT NAME: Zone 24 - Parcel 215 (Todd Shipyard)

CLIENT NAME: EFA-West

Contract # 62474-93-D-2151

D.O. 110

DCN: ITNHO-0009

CLIENT ADDRESS: 900 Commodore Drive, San Bruno, CA 94066-2402

CLIENT CONTACT: Warren Yip

PHONE (VOICE/FAX): (650) 244-2627

(650) 244-2635

PROPOSED START DATE: June 8, 1998

PROPOSED DURATION: 2 Days

LOCATION: Parcel 215, Northeastern corner of Alameda Point

APPLICABILITY: This Health and Safety Plan covers surface soil sampling, subsurface soil, and groundwater sampling.

REQUIRED REVIEW:

SIGNATURE: Dan Baden

*Dan Baden*

DATE: 6/9/98

Project Manager - Dan Baden

SIGNATURE: John M. Warren

*John M. Warren*

DATE: 6/9/98

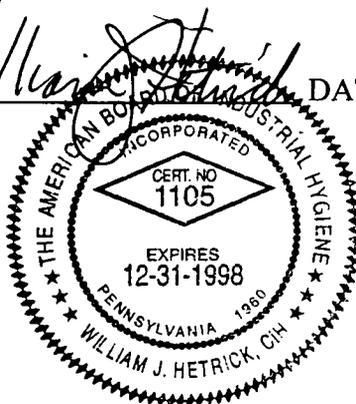
Program Manager - Valerie Crooks, P.E.

APPROVAL SIGNATURE: William Hetrick

*William Hetrick*

DATE: 6/9/98

Program CIH - William Hetrick, C.I.H.



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## ***Proposition 65 Warning and Notification***

As required under the Safe Drinking Water and Toxic Enforcement Act of 1986 (also known as Proposition 65), on February 27, 1987, the Governor published a listing of those chemicals determined by the State of California to cause cancer, birth defects, or other reproductive harm. Proposition 65 requires that businesses that handle any of the listed chemicals notify people in the affected area of that fact. IT Corporation handles some of the listed chemicals at the Parcel 215 sampling site in Alameda Point, California.

The chemicals potentially on site that have been determined to cause cancer include:

- Benzene
- Cadmium
- Carbon tetrachloride
- Chloroethane
- Chromium
- 1,1-Dichloroethane
- Diesel engine exhaust
- Furan
- Gasoline engine exhaust
- Tetrachloroethylene
- Trichloroethylene
- Vinyl chloride.

The following contaminants that are potentially on site have been determined by the State to cause reproductive harm:

- Carbon disulfide
- Lead
- Toluene.

## Jobsite Postings, Permits, and Forms

Jobsite postings, permits and forms, as listed below, are being provided to the SHSO only for use on the job site:

### Postings:

- CALOSHA Poster  
Safety & Health Protection on  
the Job
- Operating Rules for Industrial  
Trucks
- Notice - On-The-Job Injuries
- Access to Medical & Exposure  
Records
- Emergency Phone Numbers
- Workers Compensation  
Instructions
- Confirmation of Registration of  
Carcinogens

### Human Resource Postings:

- IT affirmative action program  
Handicapped Individuals and  
Veterans of the Vietnam Era
- Discrimination in Employment  
is Prohibited by Law
- Minimum Wage
- EDD Notice to Employees
- Notice: Employee Polygraph  
Protection Act
- Notice to All Employees  
Working on Federal Or  
Federally Financed  
Construction Projects
- Notice to Employees Working  
on Government Contracts
- Your Rights Under the Family  
and Medical Leave Act of 1993
- Payday Notice

### Permits:

- Trench/Excavation  
Annual Permit 1996
- Notification Form
- DOSH Address

### Forms:

- Tailgate Safety Meeting
- Safety Inspection Reports  
(5 pages)
- Supervisor's Employee  
Injury Report
- Vehicle Accident Report  
Accident Diagram
- Accident/Injury  
Investigation
- General Liability,  
Property Damage and  
Loss Report
- Accident Review Board
- Contractor Significant  
Incident Report (8 pages)
- Safety Inspection Check  
List for Construction  
Equipment (CESPD  
Form 150-R)
- Photoionization Detector  
Calibration Log
- Colorimetric Detector  
Tube Log
- Combustible Gas/Oxygen  
Meter Calibration Log
- Integrated Air Sampling  
Log
- Real Time Aerosol  
Monitoring Log
- Hot Work Permit
- Confined Space Entry  
Permit
- Underground and  
Overhead Utility  
Checklist

## **1.0 Introduction**

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### **1.1 Objective**

The objective of this Site Health and Safety Plan (SHSP) is to ensure that safe working conditions exist during this project. The safety procedures outlined have been established based on preliminary analysis of potential hazards within the site. This SHSP describes the health and safety requirements and procedures to be used while conducting field work. This document is required by IT Policies and Procedures, OSHA 29 CFR 1910 and 1926 (in California by Title 8 California Code of Regulations, T8CCR) and USACE EM 385-1-1. This document, in combination with IT's Corporate Health and Safety Policy and Procedures Manual, also serves as the company's Injury and Illness Prevention Plan (IIPP) and Code of Safe Work Practices. Safety takes precedence over expediency or shortcuts. Every reasonable step to reduce the possibility of injury, illness, or accident will be taken. Another objective of this Site Health and Safety Plan (SHSP) is to provide the means to maintain safe working conditions during the sampling of the surface soil, subsurface soil and groundwater on the sampling project, Delivery Order (D.O.) 110. This activity is to be conducted on Parcel 215 which is located at Alameda Point (formerly NAS Alameda). This mini-SHSP describes the health and safety requirements and procedures to be used during this sampling episode.

**NOTE:** This SHSP is not designed to be used for operations involving Immediately Dangerous to Life or Health (IDLH) materials or confined space entry.

## **2.0 Responsibilities**

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Each person is responsible for their own health and safety, for completing tasks in a safe manner and for reporting any unsafe acts or conditions to their supervisor and the Project Superintendent (PS). All persons on-site are responsible for continuous adherence to health and safety procedures during the performance of any project work. In no case may work be performed in a manner which conflicts with the intent of, or the inherent safety precautions expressed in this SHSP. After due warning, persons who violate procedures and work rules may be dismissed from the site, terminated, or have their contract revoked. Blatant disregard or repeated infractions of health and safety policies are grounds for disciplinary action up to and including dismissal, and /or removal from the work area. For specific staff responsibilities refer to either IT Policies and Procedures Manual or the Program/Project SHSP. All IT and subcontractor personnel are required to read and acknowledge their understanding of this abbreviated SHSP.

### **2.1 Project Staffing**

**PROJECT MANAGER:** Dan Baden

**PROJECT SUPERINTENDENT:** Eva Clark/ Tim Ault

**SITE HEALTH AND SAFETY OFFICER:** Mark Egan

### **2.2 Subcontractors**

**Company:** Sub Dynamics

**Address:** P.O. Box 28827, San Jose, CA 95159

**Phone:** 408-723-4191

**Scope of work:** Location of underground utilities

**Training Required:** 40 hour HAZWOPER/ 8 hour refresher/ current medical clearance

**Contractor Pre-qualified?**    ( X ) Yes    (   ) No

**Company:** Ronald Greenwell & Associates

**Address:** 10 South Lake Drive, Suite #1, Antioch, CA 94509    **Phone:** 510-778-0626

**Scope of work:** Surveying of site and sample locations

**Training Required:** 40 hour HAZWOPER/ 8 hour refresher/ current medical clearance

**Contractor Pre-qualified?** ( X ) Yes ( ) No

**Company:** Precision Drilling

**Address:** 47 Louise Street, San Rafael, CA 94901

**Phone:** 415-456-9875

**Scope of work:** Sampling of soil, sub-surface soil, and groundwater.

**Training Required:** 40 hour HAZWOPER/ 8 hour refresher/ current medical clearance

**Contractor Pre-qualified?** ( X ) Yes ( ) No

### 3.0 Project Hazard Analysis

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#### 3.1 Scope Of Work and Site Description

Facility Description and Scope of Work Parcel 215 is a 4.63 acre plot, 1.47 acres of which is dry land. Located on the northeastern edge of Alameda Point, this property was used by Todd Shipyard though ownership of the property was retained by the Navy. The parcel area was originally inundated by the San Francisco Bay, lying within the tidally influenced San Antonio Creek. The area was filled between 1900 and 1915 in conjunction with development of the island of Alameda and the Oakland Estuary. Final configuration was achieved in 1915 and has not changed significantly since that time. In this facility, the scope of work covers proper and safe mobilization, surface soil, subsurface soil and groundwater sampling done in a safe and professional manner followed by correct drum management and demobilization.

#### TYPE OF WORK WHICH IS INCLUDED IN THIS SCOPE OF WORK:

MOBILIZATION  
SITE PREPARATION  
UTILITY LOCATION  
SURVEYING

SAMPLING SOIL  
SAMPLING GROUNDWATER  
SITE RESTORATION  
DEMOBILIZATION

#### EMERGENCY RESPONSE

NO

YES

{If exposure is expected to be greater than 50% of the action level for the contaminants on site, this SHSP must be augmented with a more detailed chemical hazard analysis}

#### OPERATION WITHIN THE SCOPE OF HAZARDOUS WASTE OPERATIONS?

NO

YES

{If exposure is expected to be greater than 50% of the action level for the contaminants on site, this SHSP must be augmented with a more detailed chemical hazard analysis}

### **3.2 Physical Hazards**

Rocks, uneven terrain, bits of rubbish and general debris may present physical hazards due to the proximity to the public parking lot.

### **3.3 Task Specific Hazards and Controls**

**JOB TASK:** Soil sampling

#### **List All Possible Hazards And Their Control Measures (PPE, Shoring, Etc)**

1. Hazards of soil sampling may be avoided and/or controlled by proper wearing of PPE and concentration on work.
2. Vehicle movement will require awareness by all workers to prevent injury or collision
3. Underground utilities could present a hazard if not properly addressed.
4. Slip, trip, fall hazards may be present. Use proper footing at all times and maintain good housekeeping.
5. Excessive noise from equipment will require the use of hearing protection

**JOB TASK:** Water/groundwater sampling

#### **List All Possible Hazards And Their Control Measures (PPE, Shoring, Etc)**

1. Injury caused by contact with moving parts of the drill. Control this by paying attention to body positioning.
2. Slips, trips and fall hazards may be avoided by alertness, good housekeeping and attention to detail.
3. Noise damage may be prevented ear plugs.
4. Vehicle movement will require awareness by all workers to prevent injury or collision



## **4.0 Buddy System**

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During this project, all employees shall be organized into work groups so as not to have any employee out of communication with another. Each employee in a work group shall be observed by at least one other person. The purpose of this buddy system is to provide those employees with assistance when needed. Assignment of designated partners should take place during the Tailgate Safety Meeting.

The responsibilities of the buddy are to:

- Provide assistance if needed
- Maintain line of sight or verbal communication with the assigned worker.
- Observe for signs of physical or mental impairment, such as physical trauma or heat/cold stress.
- Notify the SHSO if emergency help is needed

## **5.0 Personal Protective Equipment**

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Work under this abbreviated SHSP will be conducted in levels of personal protection as defined by EPA's terminology for Personal Protective Equipment (PPE). These levels range from Level D, normal street clothes, to Level A, which requires supplied-air and a fully-encapsulating suit. For this project, work under this SHSP will be conducted in Level Modified D PPE. Any change in PPE will require the review and approval of the Program CIH.

### **5.1 Level D Protection**

Level D PPE shall be used when:

- Work functions preclude splashes, immersions inhalation or contact with harmful chemicals.
- Atmospheric concentrations of contaminants are less than one-half of the TLV/PEL.

Level D PPE shall consist of:

- Standard work uniform or coveralls
- Steel-toed work boots, ANSI approved
- Safety glasses/goggles, ANSI approved
- Hearing protection (for sound levels over 85 dBA) 25 dBA or greater protection
- Splash shield (if necessary, but not to replace safety glasses/goggles)
- Hard-hat, ANSI approved
- Leather palm gloves (if necessary)

If working in the rain/snow or other wet conditions, rubber over booties/boots or steel-toed rubber boots may be substituted for steel-toed work boots. Poly-coated tyvek or rain suits may be worn, but only to protect from the weather, not as modified Level D.

### **5.2 Modified Level D**

Modified Level D consists of level D plus:

- Steel-toed PVC\* boots - if liquids are encountered, ANSI approved
- Tyvek\* coveralls with hoods and elastic wrists and ankles
- Latex or Nitrile gloves (inner) - if liquids encountered
- Nitrile\* gloves (outer) - if liquids are encountered
- Rain gear or poly-coated tyvek\* (pressure washing activities)

- Metatarsal guards (pressure washing activities)

\* Or constructed of other materials as appropriate

Openings in the PPE (i.e. ankles, wrists, zippers, etc) will be duct taped to seal the opening.

### **5.3 Level C Protection**

Level C protection shall be used when:

- The types of air contaminants have been identified, concentrations have been measured, and an air-purifying respirator cartridge is available that can remove the contaminants.
- Oxygen is between 20% and 23% and the lower explosive limit (LEL) is less than 10%
- The substance has adequate warning properties.

Level C protection shall consist of Modified Level D PPE plus:

- Half-face or full-face air-purifying respirator with NIOSH approved cartridges listed for the contaminants expected to be encountered.

### **5.4 Level B Protection**

Level B protection is required when airborne concentrations of hazardous materials exceed or are expected to exceed twice the OSHA permissible exposure limit (PEL). The equipment listed for Level C will be used for Level B protection except a full-face, pressure demand, supplied-air respirator will be substituted for the air-purifying respirator worn in Level C.

## **6.0 Site Control**

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### **6.1 Site Control**

This project as well as all IT worksites requires that access to the site be controlled to protect both the worker and the public. This access control may require fences, barricades, traffic control devices, use of flaggers, caution tape and other methods to keep the site secure and provide a visual barrier to help keep the curious or unaware public from entering the site. For sites which include hazardous waste operations, the work area will be divided into three work zones based on the exposure to contaminated materials or anticipated hazards associated with the work; an exclusion zone (EZ), a contamination reduction zone (CRZ), and a support zone (SZ).

Only personnel who have completed the OSHA defined 40 hour health and safety training for hazardous waste operations and are current in their refresher training, may enter the EZ or CRZ. In addition, these personnel must have from an occupational medicine physician within the last 12 months, a specific medical clearance to work in hazardous waste operations.

### **6.2 Hazard Briefing**

No person will be allowed on the site during site operations without first being given a site hazard briefing. In general, the briefing will consist of a review of the tailgate safety meeting. All persons on the site, including visitors, must sign the site-specific tailgate safety meeting form. Tailgate safety meetings shall be held daily, involving all personnel on site.

### **6.3 Entry Log**

A site entry/exit log will be maintained with the names of all personnel who enter the CRZ or EZ.

### **6.4 Emergency Entry and Exit**

The site location, evacuation routes, and emergency equipment locations will be included on a site map prior to the initiation of on-site activities. During an emergency, the evacuation routes noted on the site map should be followed. If conditions such as wind direction or physical hazards do not allow access to the prescribed evacuation routes, evacuate by the safest route available.

## **7.0 Decontamination**

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In general, everything that enters an EZ or CRZ must be either be decontaminated or properly discarded upon exit from the EZ or CRZ, All personnel must enter and exit the EZ through a CRZ. Prior to movement from the EZ, contaminated equipment will be decontaminated and then inspected by the SHSO before it is moved into the SZ.

The equipment decontamination area will be used to remove soil or material from all equipment leaving the work area. Decontamination procedures will consist of washing equipment to remove soil and/or material.

Personnel decontamination facilities will be established by IT on site to ensure that personnel maintain a high degree of personal hygiene and minimize the possibility of exposure to chemical hazards. All personnel exiting the EZ will pass through the decontamination area to remove gross contamination. Personnel are required to wash hands, face, and other exposed skin areas prior to leaving the CRZ for breaks or lunch.



High noise levels are considered to be noise levels which make normal conversation difficult to understand at arm's length. This equates to a noise level of approximately 85 dBA.

Temperature shall be monitored by the SHSO. When temperatures on site exceed 85° F, heat stress monitoring shall be initiated. Heat stress monitoring shall consist of determination of Wet Bulb Globe Temperature (WBGT) and physiologic monitoring which may consist of pulse rate and/or body temperature determinations. Cold stress monitoring shall be initiated with the air temperatures drop below 45° F for an extended period of time during working hours. An extended period of time is defined for two continuous hours or more or a total of 3.5 hours during a work shift. Physiologic monitoring which shall consist of taking the body temperature will be initiated. The core body is not to drop below 96.8° F. Lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences. If the work day temperatures are below 35° F, a warmed break area (65° F or above) must be provided.

## **9.0 Employee Training**

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### **9.1 Tailgate Safety Meetings**

Prior to the start of the project, all personnel will participate in an initial tailgate safety meeting. During the initial tailgate safety meeting, this SHSP will be discussed. The PS will ensure that the anticipated site hazards are summarized and explained to all personnel, and that those personnel are aware of the precautions they must take to minimize their exposure to those hazards. Tailgate safety meetings will be held at the start of each work shift. All new employees must attend the meeting and be familiar with this SHSP. Attendance records and meeting notes shall be maintained with the project file.

### **9.2 Hazardous Waste Training**

All personnel entering the EZ or CRZ shall have completed at least 40 hours of hazardous waste operations-related training as required by 29 CFR 1910.120, or in California T8CCR-5192.

- 40 Hour Training for all personnel
- 3 days field experience
- Current 8 Hour refresher (within the last 12 months)
- 8 Hour Supervisory training for supervisors
- Trenching/Excavation competent person training
- Entry Supervisor training for confined spaces
- Confined Space entry training for workers

### **9.3 Hazard Communication**

All personnel performing field activities will receive basic hazard communication training which involves a review of the IT written hazard communication program (IT Health and Safety Procedure HS060), MSDSs, container labeling, and chemical health hazards. Personnel will be trained on the hazards of chemicals handled or used on site by reviewing the MSDSs for that chemical. MSDSs will be obtained for all materials purchased or brought on site which require an MSDS and the MSDS will be kept on site with this SHSP.

#### **9.4 Site Specific Training**

Site-specific training will be accomplished through an initial review of this SHSP by the SHSO and through the daily tailgate safety meetings. All such training shall include signatures of all attendees and shall be documented in the project files

#### **9.5 First Aid and Cardiopulmonary Resuscitation (CPR)**

At least two employees current in first aid/CPR will be assigned to the project and at least one of these will be on the site whenever operations are ongoing. First aid trained personnel shall also be trained in Blood borne pathogens hazards. Refresher training in first aid and CPR is required to maintain a current certificate. The SHSO shall be current in first aid/CPR training.

## **10.0 Medical Surveillance Program**

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IT Utilizes the services of Environmental Medicine Resources (EMR) for medical surveillance requirements for all projects. All personnel on site working within the CRZ or EZ, will have completed an occupational medical monitoring physical within the last 12 months and have in their record written clearance to work on hazardous waste sites and to wear a respirator if required by the job.

## ***11.0 Emergency Response Plan and Contingency Procedures***

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Site personnel must be prepared to respond and act quickly in the event of an emergency. Emergency preparedness and response procedures will aid in protecting site workers and the surrounding environment. Preplanning measures will include employee training, fire and explosion prevention and protection, chemical spill and discharge prevention and protection, and safe work practices to avoid personal injury or exposure.

### ***11.1 Project Superintendent***

At all times during scheduled work activities, a designated PS will be present on the site. This individual is responsible for implementing any emergency response or contingency procedures. Depending upon the circumstances and time permitting, the PS will review proposed response actions with the SHSO.

### ***11.2 Site Health and Safety Officer***

The SHSO is responsible for implementing, communicating, and enforcing health and safety policies and procedures during the course of the project. He will also assist in evaluation health and safety concerns with respect to environmental releases and emergency response actions. In the event of an injury, contact the Martinez health and Safety Administrator at 510-372-9100 for notification of the EMR medical incident reporting case manager.

### ***11.3 List of Emergency Contacts and Notification***

The PS and SHSO will be notified immediately in the event of an emergency. The PS will immediately evaluate the incident and, if necessary, notify the Alameda Fire Department. Telephone numbers for emergency contact personnel are listed in table T-4.

### ***11.4 Fire Control***

In the event of a fire or explosion, or imminent danger of fire or explosion, all activities will halt and the Alameda Fire Department will be notified immediately. If it is safe to do so, site personnel may use fire-fighting equipment available on site to remove and isolate flammable or other hazardous materials which may contribute to the fire.

The following measures will be implemented during site activities to minimize the risk of fire and/or explosion:

- Smoking is permitted on site only in a designated smoking areas.
- Good housekeeping procedures will be required on site.
- Material storage methods will be in accordance with manufacturers' recommendations.
- Flammable liquids will be stored in approved containers only.
- All storage, handling, or use of flammable and combustible materials will be conducted by trained personnel only.
- Entry and exit pathways will be kept clear of debris or obstacles.
- Work areas will be cleared of excess vegetation and obstructions.
- Hot Work watch and permits are required on site

### **11.5 Site Evacuation Procedures**

The authority to order personnel to evacuate the area rests with the PS and the SHSO. In the event that site evacuation is required, a continuous , uninterrupted air horn will be sounded for approximately ten seconds. Personnel working on the site will immediately make their way to the muster point to be located approximately 100 yards upwind for a "head count".

### **11.6 Spill or Leaks**

IT will maintain the following equipment and materials in the CRZ for use during spill response activities:

- Absorbent pads
- Granular absorbent material
- Polyethylene sheeting
- 55 Gallon drums
- Shovels and assorted hand tools

## TABLES

### HEALTH AND SAFETY PLAN, ZONE 24 - PARCEL 215, TODD SHIPYARD

DATED 09 JUNE 1998

Table T-1

FLYING INSECTS

Organism	Description	Habitat	Problem	Severity	Protection
Hornet	One inch long with some body hair. Abdomen is mostly black.	Round, paper-like nest hanging from trees, shrubs, or under eaves of buildings.	One nest may contain up to 100,000 hornets which will attack in force at the slightest provocation.	Severe pain, allergic reactions similar to bees.	Do not come near or disturb nest. If a hornet investigates you, do not move.
Mosquito	Small, dark, fragile body with transparent wings. From 1/8 to 1/4 inch long.	Where water is available for breeding.	Bites and sucks blood. Itching and swelling result.	Can transmit encephalitis and other diseases. Scratching causes secondary infections.	Use plenty of insect repellent and wear gloves.
Wasp	Very thin waist. Color can be black, yellow or orange with stripes.	Underground nest. Paper-like honeycomb nest in abandoned buildings hollow trees, etc.	Stings. Some species will attack if you get too close to the nest.	Severe pain, allergic reactions similar to bees. Can be fatal.	Avoid Nest. Do not swat at them.
Bee	Generally has yellow and black stripes and two pair of wings.	Hollow logs, underground nest, old buildings,	Stings when annoyed. Leaves venom sac in victim.	If person is allergic, nausea, shock, constriction of the airway can result. Death may result.	Be careful and watch where you walk. Cover exposed skin. Avoid areas where bees are swarming. Avoid wearing sweet fragrances and bright clothing. Move slowly or stand still when bees are swarming about you.

**Table T-2**

**Minimum Clearance from Energized Overhead Electric Lines**

Nominal System Voltage	Minimum Required Clearance
0 - 50 kV	10 feet
51 - 100 kV	12 feet
101 - 200 kV	15 feet
201 - 300 kV	20 feet
301 - 500 kV	25 feet
501 - 750 kV	35 feet
751 - 1000 kV	45 feet

**NOTE: Whenever equipment operations must be performed closer than 20 feet from overhead power lines, the Program CIH must be notified. When clearance to proceed is received from the Program CIH, the electric utility company must be contacted to turn the power off or physically insulate (protect) the lines if the operation must be performed closer to the power line than is allowed in this table.**

**Table T-3**

**Fire Extinguisher Requirements**

<b>Area</b>	<b>Rating</b>	<b>Location</b>
Flammable liquids 5 gal or more used on worksite (not integral fuel tanks of motor vehicles.	10B	Within 50 feet.
Flammable or combustible liquids 60 gal or more. Stored inside a room, building or trailer.	20B	Outside of door of storage area and within 10 feet of the door.
Flammable liquids stored outside.	20-B	At least 25 feet but not more than 75 feet from storage area.
Tank trucks or vehicles used to transport or dispensing flammable or combustible liquids.	2A-20-BC	Mounted in or on vehicle.
Fueling area.	20-BC	Within 50 feet of service or fueling area.
Other storage areas.	2A-10-BC	Near exit no more than 75 feet unobstructed travel to extinguisher from anywhere in storage area.
Vehicle and heavy equipment.	1A-5-BC	Mounted in or on vehicle/ equipment.
Trailers/offices.	2A-10-BC	Mounted near exit not more than 75 unobstructed travel from anywhere in trailer/office.
Hot work activities	2A	Within 50 feet.

Note: These extinguisher ratings are the minimum acceptable for each listed application. Extinguishers with higher ratings may be substituted. For applications not listed, contact the Program CIH for guidance.

**Table T-4**

**EMERGENCY PHONE NUMBERS**

Alameda Fire Department	
Emergency	911
Non-Emergency	(510) 864-3414
Alameda Police/Security Department	
Emergency	911
Non-Emergency	(510) 748-4508
HAZMAT Response	911
Alameda Hospital	(510) 523-4357
Regional Poison Control Center	(800) 523-2222
<b>Key IT Project Personnel</b>	
IT Program Manager:	Valerie Crooks (925) 372-9100
Program CIH	William Hetrick, CIH (925) 372-9100 (925) 988-5979 (pager)
Project Manager	Dan Baden (925) 372-9100
Site Health and Safety Officer	Mark Egan (925) 372-9100 (925) 988-5034 (pager)
Project Superintendent	Eva Clark/ Tim Ault (510) 372-9100

Occupational Physician  
Environmental Medicine Resources (EMR)

Elayne Theriault, M.D.  
(800) 229-3674

Medical Incident Reporting  
Environmental Medicine Resources (EMR)

Lea R. Bessey, RN, OHN  
(800) 229-3674  
(770) 455-0818

Navy Contact ROICC

Bob Perricone  
(925) 302-5054

**Directions to Medical Care:**

From the East Gate,  
Take Atlantic Avenue to Webster Street (Highway 61)  
Turn right,  
Continue to Central Avenue,  
turn left (Highway 61),  
Continue to Willow Street,  
Turn right to Hospital,  
Corner of Clinton and Willow

**Table T-5**

**Safety and Emergency Equipment**

- ☆ First Aid Kits
- ☆ Fire Extinguishers
- ☆ Eyewash
- ☆ Air Horn
- ☆ Traffic Control Signs
- ☆ Traffic Control Vests
- ☆ Traffic Cones
- ☆ Safety Glasses/Goggles, ANSI Approved
- ☆ Hard Hats, ANSI Approved
- ☆ Ear Plugs, 25 dBA or Greater
- ☆ Work Gloves
- ☆ Steel Toed Work Boots, ANSI Approved
- ☆ Portable Toilet
- ☆ Drinking Water and Disposable Cups
- ☆ MSDS
- ☆ Completed H&S Plan
- ☆ Sun Block
- ☆ Shade

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
 —(Continued)—

**TABLE T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
**PARCEL 215 SAMPLING AND ANALYSIS**  
**ALAMEDA POINT, CALIFORNIA**

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
Acetone	Colorless liquid with fragrant, mint-like odor.	MW: 58 BP: 133°F MP: -169°F VP: 266 mm Hg Sol: Miscible FP: 1.4°F LEL: 2.6% UEL: 12.8% IP: 9.69 eV	Acids, oxidizing materials.	Contaminated groundwater soil	Respiratory system, skin.	Eye, nose and throat irritation; dermatitis; headache, dizziness.
Arsenic	Variable	MW: Varies BP: Varies MP: Varies VP: Varies Sol: Varies FP: N/A LEL: N/A UEL: N/A IP: N/A	N/A.	Contaminated groundwater soil	Respiratory system, skin.	Eye, nose and throat irritation; dermatitis; headache, dizziness.
Benzene	Colorless liquid with aromatic odor.	MW: 78 BP: 176°F MP: 42°F VP: 75 mm Hg Sol: 0.18% FP: 12°F LEL: 1.3% UEL: 7.1% IP: 9.25 eV	Chlorine, bromine with iron; strong oxidizers.	Contaminated groundwater soil	Blood, bone marrow, eyes, skin, respiratory system, CNS.	Irritation of eyes, nose, respiratory system; headache, nausea, dizziness; fatigue, anorexia; dermatitis; abdominal pain, bone marrow depression.
1-Butanone (methyl ethyl ketone) (mek)	Colorless liquid with fragrant mint-or acetone-like odor	MW: 72.1 BP: 175°F MP: 123°F VP: 71 mm Hg Sol: 28% FP: 16°F LEL: 1.4% (200°F) UEL: 11.4% (200°F) IP: 9.54 eV	Strong oxidizers amines, ammonia, inorganic acids caustics copper isocyanates pyridines	Contaminated groundwater soil	CNS lungs	Irritation eyes, nose, headache, dizziness, vomit.

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
(Continued)

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
Cadmium dust	Metal: silver-white, blue-ingrid lustrous, odorless solid.	MW: 112.4 BP: 1409 F MP: 610 F VP: 0 mm Hg Sol: insoluble FP: N/A LEL: N/A UEL: N/A IP: N/A	Strong oxidizers, elemental sulfur, selenium and tellurium	Contaminated groundwater soil	Respiratory system, kidneys, prostate, blood	Pulmonary edema, dyspnea, cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, anosmia, emphysema, proteinuria, mild anemia, carcinogen
Carbon disulfide (carbon bisulfide)	Colorless to faint yellow liquid with a sweet Ether-like odor.	MW: 76.1 BP: -116 F MP: -169 F VP: 297 mm Hg Sol: 0.3% FP: -22 F LEL: 1.3% UEL: 50.0% IP: 10.08 eV	Strong oxidizers chemically - active metals such as sodium, potassium and zinc, azides, rust, halogens amines	Contaminated groundwater soil	CNS, pns, cvs eyes, kidneys, liver skin.	Dizziness, headache, poor sleep fatigue, nervousness, anorexia, low weight, psychosis, polyneuropathy, Parkinson like syndrome, ocular changes, coronary heart disease, gastritis, kidney and liver damage, eye and skin burn, dermatitis.
Carbon tetrachloride (Tetrachloro-methane)	Colorless liquid with a ether-like odor.	MW: 154 BP: 170 F MP: -9 F VP: 91 mm Hg Sol: 0.08% FP: N/A LEL: N/A UEL: N/A IP: N/A	Chemically active metals (magnesium sodium, potassium).	Contaminated groundwater soil	Skin, eyes, lungs, liver, CNS.	Skin irritation; nausea, vomiting; liver and kidney damage; CNS depression (weakness, fatigue, coma).
Chromium	Variable.	MW: Varies BP: Varies MP: Varies VP: Varies Sol: Varies FP: N/A LEL: N/A UEL: N/A IP: N/A	Strong oxidizers.	Contaminated groundwater soil	Respiratory system.	Fibrosis of lungs; dermatitis.

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
(Continued)

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
1,1-Dichloroethane (DCA)	Colorless liquid with a chloroform-like odor.	MW: 99 BP: 135°F MP: -142°F VP: 182 mm Hg Sol: <0.1% FP: 17°F LEL: 6% UEL: 16% IP: N/A	Strong oxidizers, caustics.	Contaminated groundwater soil	Skin, liver, kidneys.	Skin irritation; CNS depression (drowsiness, loss of consciousness); liver and kidney damage.
(trans) 1,2-Dichloroethene (1,2-Dichloro-ethylene, DCE)	Colorless liquid with an ether-like acrid odor.	MW: 97 BP: 113-140°F MP: -56--115°F VP: 180-265 mm Hg Sol: 0.35 - 0.63% FP: 36-39°F LEL: 9.7% UEL: 12.8% IP: 9.65eV	Strong oxidizers.	Contaminated groundwater soil	Eyes, respiratory system, CNS.	Irritation of eyes, respiratory system; CNS depression (fatigue, weakness, coma).
1,2-Dichloropropane (Propylene dichloride)	Colorless liquid with an odor like chloroform.	MW: 113 BP: 205°F MP: -148°F VP: 40 mm Hg Sol: 0.26% FP: 60°F LEL: 3.4% UEL: 14.5% IP: 10.87eV	Strong oxidizers and acids.	Contaminated groundwater soil	Skin, eyes, respiratory system, liver, kidneys.	Irritation of eyes, skin; drowsiness, light headedness.
Ethylbenzene	Colorless liquid with aromatic odor.	MW: 106 BP: 277°F MP: -139°F VP: 10 mm Hg Sol: 0.01% FP: 55°F LEL: 1.0% UEL: 6.7% IP: 8.76 eV	Strong oxidizers.	Contaminated groundwater soil	Eyes, skin, upper respiratory system, CNS.	Irritation of eyes, mucous membranes; dermatitis; headache, narcosis, coma.

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
(Continued)

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
Ethyl chloride (chloroethane)	Colorless gas (or liquid below 54°F) with a pungent ether-like odor.	MW: 64.5 BP: 54 F MP: -218 F VP: >1 ATM Sol: 0.6% FP: NA (gas) LEL: 3.8% UEL: 15.4% IP: 10.97 eV	Chemical active metals such as sodium, potassium, calcium, powdered aluminum, zinc and magnesium; oxidizers; water or steam.	Contaminated groundwater soil	Liver, kidneys, respiratory system, CVS	Incoordination, inebriate, abdominal cramps, cardiac arrhythmias, cardiac arrest, liver and kidney damage.
Gasoline	Clear liquid, may be yellow to red in color, with strong kerosene-like odor.	MW: Variable. BP: 74-430°F MP: N/A VP: 400 mm Hg Sol: Insoluble FP: -40°F LEL: 1.1% UEL: 7.6% IP: Not est.	Strong oxidizers.	Contaminated groundwater soil	Skin, eyes, respiratory system, CNS.	Irritation of skin, eyes, respiratory system; headache, nausea, dizziness, coma, death; pulmonary edema, bronchitis.
2-Hexanone (Methyl butyl ketone, MBK)	Colorless liquid with a characteristic odor.	MW: 100 BP: 262 F MP: -71 F VP: 3 mm Hg Sol: 1.4% FP: 77°F LEL: 1.2% UEL: 8% IP: N/A	Strong oxidizers.	Contaminated groundwater soil	Skin, respiratory system, CNS.	Irritation of eyes, nose; dermatitis; headache, drowsiness, weakness, peripheral nerve damage.
Lead	Metal: a heavy, ductile, soft gray solid	MW: 207.2 BP: 3164°F MP: 621°F VP: 0 mm Sol: insoluble FP: N/A LEL: N/A UEL: N/A IP: N/A	Strong oxidizers, hydrogen peroxide, active metals (sodium, potassium).	Contaminated groundwater soil	Kidneys, blood, gastrointestinal tract, CNS.	Pallor, blue gums, lethargy; colic, abdominal pain, constipation; anemia, weight loss.

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
(Continued)

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
Methylene chloride (Dichloro- methane)	Colorless liquid with a chloroform-like odor.	MW: 85 BP: 104 F MP: -142 F VP: 350 mm Hg Sol: 1.3% FP: Not est. LEL: 12% UEL: 19% IP: 11.35 eV	Strong oxidizers and caustics; chemically active metals (aluminum or silver powders, sodium, potassium).	Contaminated groundwater soil	Skin, eyes, cardio- vascular system, CNS.	Irritation of skin, eyes; fatigue, weakness, vertigo; numbness, tingling; angina.
Tetrachloroethene, (Perchloro- ethylene, PCE)	Colorless liquid with an odor like ether or chloroform.	MW: 166 BP: 250 F MP: -8 F VP: 14 mm Hg Sol: 0.015% FP: N/A LEL: N/A UEL: N/A IP: 9.32 eV	Strong oxidizers, chemically active metals (barium, lithium, beryllium).	Contaminated groundwater soil	Eyes, upper respiratory system, liver, kidneys, CNS.	Irritation of eyes, nose, throat; nausea, headache, vertigo; flushing of skin.
Toluene (Methyl benzene)	Colorless liquid with an aromatic odor like benzene.	MW: 92 BP: 231 F MP: -139 F VP: 22 mm Hg Sol: 0.05% FP: 40 F LEL: 1.3% UEL: 7.1% IP: 8.82 eV	Strong oxidizers.	Contaminated groundwater soil	Skin, liver, kidneys, CNS.	Dermatitis; weakness, fatigue, dizziness; euphoria; dilated pupils, photophobia.
1,1,1-Trichloro- ethane (Methyl chloroform, TCA)	Colorless liquid with a mild chloroform-like odor.	MW: 133 BP: 165 F MP: -36 F VP: 100 mm Hg Sol: 0.07% FP: None LEL: 7% UEL: 16% IP: N/A	Strong caustics, strong oxidizers, chemically active metals (aluminum, magnesium powder, sodium, potassium).	Contaminated groundwater soil	Skin, CMS, eyes, cardiovascular system	Eye irritation, dermatitis, headache, lassitude, CNS, depression, irregular heartbeat

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
(Continued)

CONTAMINANT (SYNONYM)	PHYSICAL DESCRIPTION	CHEMICAL & PHYSICAL PROPERTIES	INCOMPATIBILITIES	SOURCES & ANTICIPATED CONCENTRATION	TARGET ORGANS	SYMPTOMS OF EXPOSURE
Trichloroethylene (Trichloroethene, TCE)	Colorless liquid with a sweet odor like chloroform	MW: 131 BP: 188 F MP: -123 F VP: 50 mm Hg Sol: 0.1% FP: None LEL: 11% UEL: 41% IP: 9.47 eV	Strong caustics; when acidic, reacts with aluminum; chemically active metals (barium, lithium, sodium, magnesium, titanium)	Contaminated groundwater soil	Skin, respiratory system, heart, liver, kidneys, skin, CNS.	Irritation of eyes; dermatitis, headache, vertigo, blurred vision; nausea, vomiting, tremors; loss of feeling in extremities.
Trichlorotrifluoro-ethane (Freon 113)	Colorless to water - white liquid with an odor like carbon tetrachloride	MW: 187.4 BP: 118 F MP: -31 F VP: 285 Sol: 77°F% (0.02%) FP: ? LEL: ? UEL: ? IP: 11.9 eV	Chemically-active metals such as calcium, powdered aluminum, zinc, magnesium and beryllium	Contaminated groundwater soil	Skin, heart	Irritation of the throat, drowsiness, dermatitis, cardiac arrhythmias
Vinyl chloride (Chloroethylene)	Colorless gas.	MW: 62.5 BP: 7 F MP: -245 F VP: 2580 mm Hg Sol: Slight FP: -108 F LEL: 3.6% UEL: 33% IP: 9.995 eV	Copper oxidizing materials.	Contaminated groundwater soil	Liver, blood, respiratory system, CNS, lymphatic system.	Weakness, abdominal pain, gastrointestinal bleeding; pallor or blueness of extremities.
Xylenes	Colorless liquid with an aromatic odor.	MW: 106 BP: 281-292 F MP: -12-55 F VP: 7-9 mm Hg Sol: 0.00003% FP: 81-90 F LEL: 1-1.1% UEL: 6-7% IP: 8.44-8.56 eV	Strong oxidizers.		Eyes, skin, gastrointestinal tract, blood, liver, kidneys, CNS.	Eye, nose and throat irritation; dermatitis; corneal lesions; dizziness, poor equilibrium; anorexia, vomiting, abdominal pain.

MW: Molecular weight.  
BP: Boiling point at 1 atmosphere pressure, in degrees Fahrenheit (F).  
MP: Melting point in °F.  
VP: Vapor pressure at 1 atmosphere pressure and 68 F.

**Table T-6**  
**HAZARDOUS AND TOXIC MATERIALS**  
(Continued)

Sol:	Solubility in water at 68°F, as percentage (%) by weight.
FP:	Flash point, closed cup method, in °F.
LEL:	Lower explosive limit in air, as % by volume.
UEL:	Upper explosive limit in air, as % by volume.
IP:	Ionization potential, in electron-volts (eV).
CNS:	Central nervous system.
mm Hg:	Millimeters of mercury.
eV:	Electron volts.
°F:	Degrees Fahrenheit
°C:	Degrees Celsius
%:	Percent
ppm:	Parts per million
mg/m <sup>3</sup> :	Milligrams per cubic meter.
µl:	Micrograms per liter.
>:	Greater than.
<:	Less than.
N/A:	Not applicable.

TABLE T-7

EXPOSURE GUIDELINES

CONTAMINANT (SYNONYMS)	OSHA PEL		ACGIH TLV		IDLH	WARNING PROPERTIES
	8-HR TWA	15-MIN STEL	8-HR TWA	15-MIN STEL		
Acetone (Dimethyl Ketone)	750 ppm	1000 ppm	750 ppm	1,000 ppm	20,000 ppm	Odor Thresh: Not established Eye Irr Lvl: Not established
Arsenic	0.01 mg/m <sup>3</sup>	-	0.01 mg/m <sup>3</sup>	-	100 mg/m <sup>3</sup> Carcinogen: confirmed	Odor Thresh: N/A Eye Irr Lvl: Not established
Benzene	1 ppm	5 ppm	0.3 ppm	-	Suspected or confirmed human carcinogen	Odor Thresh: Not established Eye Irr Lvl: Not established
1 Butanone (methyl ethyl ketone) (MEK)	200 ppm	300 ppm	200 ppm	300 ppm	3,000 ppm	Odor Thresh: 16 ppm Eye Irr Lvl: 197 ppm
Cadmium dust	0.2 mg/m <sup>3</sup>	0.6 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	-	50 mg/m <sup>3</sup> CA	Odor Thresh: N/A Eye Irr Lvl: Not established
Carbon disulfide	4 ppm	12 ppm	10 ppm	-	500 ppm	Odor Thresh: None Eye Irr Lvl: Not established
Carbon Tetrachloride (Tetrachloromethane)	2 ppm	-	5 ppm	10 ppm	Suspected or confirmed human carcinogen	Odor Thresh: 50 ppm Eye Irr Lvl: Not established
Chromium	0.5 mg/m <sup>3</sup>	-	0.5 mg/m <sup>3</sup>	-	Suspected or confirmed human carcinogen	Odor Thresh: N/A Eye Irr Lvl: Not established
1,1-Dichloroethane	100 ppm <sup>1</sup>	-	100 ppm	-	4,000 ppm	Odor Thresh: 100 ppm Eye Irr Lvl: Not established
(trans) 1,2-Dichloro- ethene (1,2-Dichloro- ethylene)	200 ppm	-	200 ppm	-	4,000 ppm	Odor Thresh: 0.085 ppm Eye Irr Lvl: Not established

**TABLE 7  
EXPOSURE GUIDELINES (Continued)**

CONTAMINANT (SYNONYMS)	OSHA PEL		ACGIH TLV		IDLH	WARNING PROPERTIES
	8-HR TWA	15-MIN STEL	8-HR TWA	15-MIN STEL		
1,2-Dichloropropane (Propylene dichloride)	75 ppm	110 ppm	75 ppm	110 ppm	2,000 ppm	Odor Thresh: 50 ppm Eye Irr Lvl: Not established
Ethyl chloride	1,000 ppm	-	1,000 ppm	-	20,000 ppm	Odor Thresh: N/A Eye Irr Lvl: Not established
Ethylbenzene	100 ppm	125 ppm	100 ppm	125 ppm	2000 ppm	Odor Thresh: 2.3 ppm Eye Irr Lvl: 200 ppm
Gasoline	300 ppm	500 ppm	300 ppm	500 ppm	Not established	Odor Thresh: Not established Eye Irr Lvl: Not established
2-Hexanone (Methyl butyl ketone, MBK)	5 ppm	-	5 ppm	-	5,000 ppm	Odor Thresh: Not established Eye Irr Lvl: Not established
Lead	0.05 mg/m <sup>3</sup>	-	0.05 mg/m <sup>3</sup>	-	N/A	Odor Thresh: Not established Eye Irr Lvl: Not established
Methylene Chloride (Dichloromethane)	50 ppm	-	50 ppm	-	Suspected or confirmed human carcinogen	Odor Thresh: Not established Eye Irr Lvl: Not established
Tetrachloroethene (Perchloroethylene, PCE)	25 ppm	-	25 ppm	100 ppm	Suspected or confirmed human carcinogen	Odor Thresh: 27 ppm Eye Irr Lvl: >100 ppm
Toluene (Methyl benzene)	100 ppm	150 ppm	50 ppm	-	2,000 ppm	Odor Thresh: 2.9 ppm Eye Irr Lvl: 300-400 ppm
1,1,1-Trichloroethane (Methyl chloroform)	350 ppm	450 ppm	350 ppm	450 ppm	1,000 ppm	Odor Thresh: ≈ 100 ppm Eye Irr Lvl: ≈ 500 ppm
Trichloroethene (Trichloroethylene)	25 ppm	200 ppm	50 ppm	100 ppm	Suspected or confirmed human carcinogen	Odor Thresh: Not established Eye Irr Lvl: Not established
Trichloro-Trifluoro- ethane	1,000 ppm	1,250 ppm	1,000 ppm	1,250 ppm	4,500 ppm	Odor Thresh: 44 ppm Eye Irr Lvl: Not established

**TABLE 7  
EXPOSURE GUIDELINES (Continued)**

CONTAMINANT (SYNONYMS)	OSHA PEL		ACGIH TLV		IDLH	WARNING PROPERTIES
	8-HR TWA	15-MIN STEL	8-HR TWA	15-MIN STEL		
Vinyl chloride (Chloroethylene)	1 ppm	-	5 ppm	-	Suspected or confirmed human carcinogen	Odor Thresh: Not established Eye Irr Lvl: Not established
Xylenes	100 ppm	150 ppm	100 ppm	150 ppm	1,000 ppm	Odor Thresh: 200 ppm (OF) Eye Irr Lvl: 200 ppm

OF: Olfactory fatigue occurs quickly after initial detection of odor.  
 OSHA: Occupational Safety and Health Administration.  
 PEL: Permissible Exposure Limit.  
 ACGIH: American Conference of Government Industrial Hygienists.  
 TLV: Threshold Limit Value.  
 TWA: Time-weighted average.  
 STEL: Short-term exposure limit.  
 Hr: Hour.  
 Min: Minute.  
 f/cc: Fibers per cubic centimeter.  
 mg/m<sup>3</sup>: Milligrams per cubic meter.  
 ppm: Parts per million by volume.  
 Odor Thresh: Odor threshold.  
 Eye Irr Lvl: Eye irritant level.  
 <: Less than  
 >: Greater than  
 ≈: Approximately.

**FIGURES**

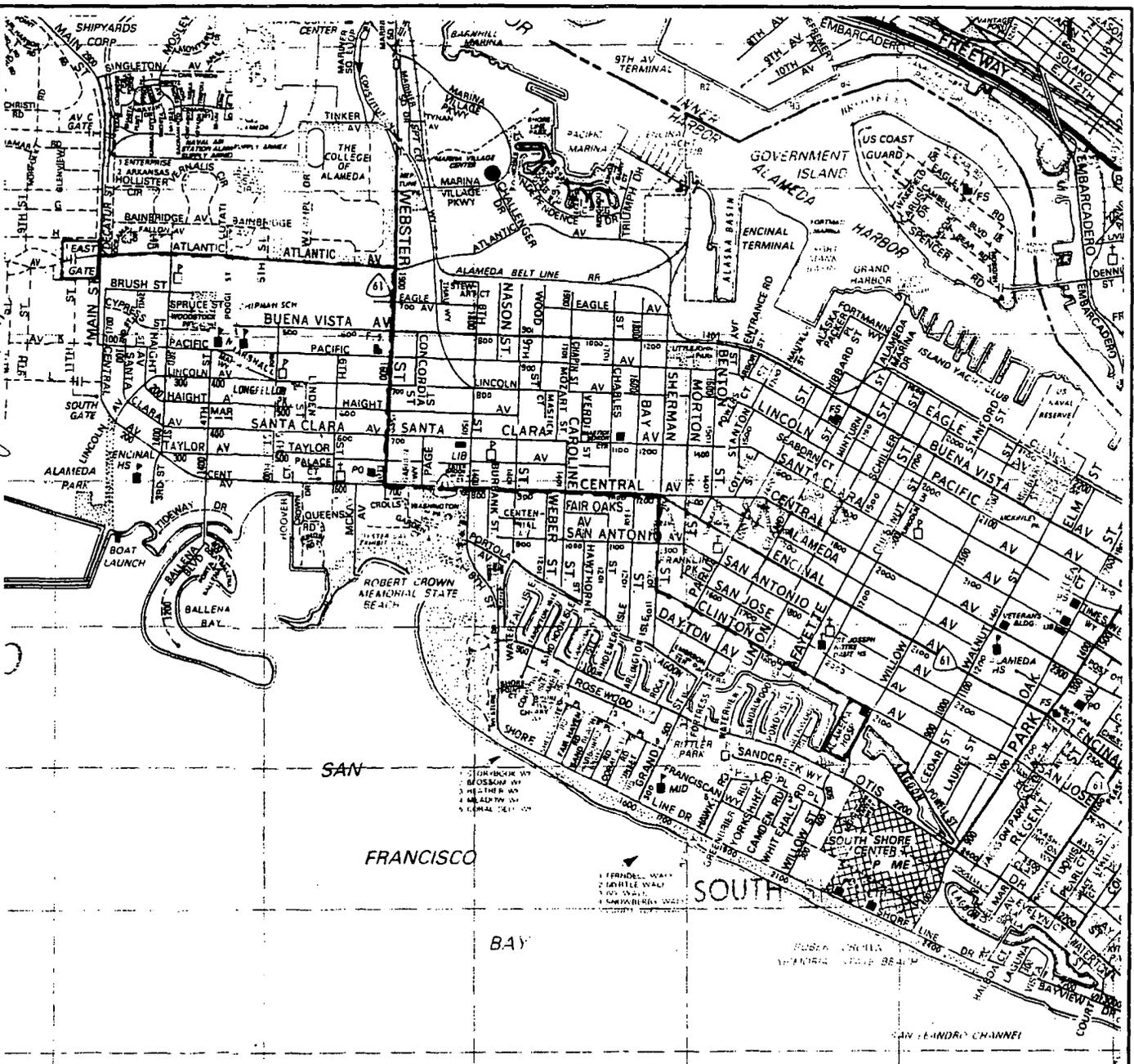
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1-5-98

SAJ

DRAWN BY



**DIRECTIONS TO ALAMEDA HOSPITAL**  
 FROM THE EAST GATE,  
 TAKE ATLANTIC AVENUE TO WEBSTER ST. (HWY 61) AND TURN RIGHT.  
 AFTER APPROXIMATELY 7 BLOCKS TURN LEFT (EAST) ON CENTRAL AVE..  
 CONTINUE ON CENTRAL AVE., TURN RIGHT ON SHERMAN ST. (SOUTH).  
 FROM SHERMAN ST., TURN LEFT ON CLINTON AVE.  
 CONTINUE TO WILLOW ST., TURN RIGHT TO HOSPITAL, CORNER OF CLINTON  
 AND WILLOW.

**ALAMEDA HOSPITAL**  
 2070 CLINTON AVE.  
 (510) 523-4357

FIGURE 12-1  
 HOSPITAL ROUTE  
 PREPARED FOR  
 ALAMEDA NAVAL AIR STATION  
 ALAMEDA, CALIFORNIA



REFERENCE:  
 THOMAS BROS. MAPS

NOT TO SCALE



## **APPENDIX A**

### **ACTIVITY HAZARD ANALYSIS**

- **Mobilization/ Demobilization**
- **Utility Clearance/ Surveying**
- **Hydropunch**
- **Soil/Water Sampling**

**ACTIVITY HAZARD ANALYSIS  
MOBILIZATION/DEMobilIZATION**

<b>Principal Steps</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Placement/unloading of equipment and materials	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Noise	Hearing protection is mandatory above 85 dBA.
	Falling objects	Hardhat, stay alert and clear of materials suspended overhead. steel-toed boots.
	Flying debris, dirt, dust, etc.	Safety glasses/eye wash.
	Pinch points	Keep hands and feet clear of moving/suspended materials and equipment.
		Stay alert at all times!
		Beware of contact points.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		Fire lanes providing access to all areas shall be established and maintained free of obstruction (the minimum space between one-story non-fire-resistant buildings shall be 20 feet). Initial survey of the suitability and effectiveness of fire prevention and protection measures and facilities at each installation shall be made by competent persons.
	High winds	Mobile/portable facilities shall be anchored to withstand high winds.
	Hot work	Refer to H&S Policy HS 314.
	Vehicle traffic	Pay attention at all times.
		Make sure that operators of vehicles know that you are near their equipment.
Installation of office and support structures	Contact with utilities	Above and underground utilities shall be located. A qualified person shall install required utilities in compliance with national, state, and local codes.
	Slip, trip, and fall hazards	Determine best access route before transporting equipment.
		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.

**ACTIVITY HAZARD ANALYSIS  
 MOBILIZATION/DEMobilIZATION  
 (Continued)**

<b>Principal Steps</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Installation of office and support structures	Slip, trip, and fall hazards	Look before you step, ensure safe and secure footing.
	Cut hazards	Wear adequate hand protection.
	Biological hazards	Inspect work area carefully and avoid placing hands or feet into concealed areas.
		Be alert for bees, spiders, ticks, and snakes.
	Hazardous plants (poison oak prevalent), insects, snakes, etc. (biological)	Remove vegetation, identify hazardous plants, insects, etc.
	Flood potentials	Check meteorology/climatology of area; history of flooding.
	Toilets (sanitary)	Chemical toilets provided in accordance with SHSP.
	Heat stress	Refer to Section 4.5 of SHSP.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		Fuel will be transported and stored in approved containers.
	Contact with moving equipment/vehicles	Work area will be barricaded/ demarcated.
	Hazard communications	Label all containers as to contents (fuel cans, etc.)
		Obtain Material Safety Data Sheets for materials brought on site.
	Cross contamination and contact with potentially contaminated materials	No Exclusion Zone activities are associated with this task.
	Strains and sprains	Use the proper tool for the job being performed.
		Get assistance if needed.
		Avoid twisting/turning while pulling on tools, materials, etc.
	Unattended worker	"Buddy system" visual contact will be maintained between personnel site activities.
Mobilization of trailers	Driving over soft ground	Make initial visual check. Level ground with loader and spread gravel.

**ACTIVITY HAZARD ANALYSIS  
MOBILIZATION/DEMobilIZATION  
(Continued)**

<b>Principal Steps</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Mobilization of trailers	Driving over soft ground	Apply gravel if needed to prevent mud of standing water. Loader (if used for spreading or grading) must meet all safety requirements.
	Level/Blocking trailer, driving stakes (stabilization) anchoring	Use caution when jacking and placing blocks or cribbing. If ground is soft, add stone to secure footing.
	Setting steps in place.	Steps must be OSHA-approved (with proper handrails, midrail, steps, with a platform in front of door; Refer to USACE (Section 21.E 02, 05, 07, 08)
		Lighting for work and means of egress; electrical hookup to trailers to be made by qualified electrician. GFCIs required on all circuits.
	Clearing hazards	If clearing is necessary, tree cutting will comply with chainsaw safety standards.
	Ventilation	Trailer ventilation shall not bring in exhaust from vehicles. etc.
<b>Equipment to be Used</b>	<b>Inspection Requirements</b>	<b>Training Requirements</b>
<ul style="list-style-type: none"> <li>•Hand tools</li> <li>•PPE</li> <li>•Heavy equipment</li> <li>•Vendor trucks</li> </ul>	<ul style="list-style-type: none"> <li>•Pre-postmaintenance</li> <li>•Visual prior to use</li> </ul>	<ul style="list-style-type: none"> <li>•Tailgate Safety Meeting</li> <li>•Site specific orientation</li> <li>•Hazard communication</li> </ul>

**ACTIVITY HAZARD ANALYSIS  
GEOPHYSICAL SURVEY**

Activity	Potential Hazards	Recommended Controls
Placement/unloading of equipment	Slip, trip, and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.
	Pinch points	Keep feet and hands clear of materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
	Strains and sprains	Use proper lifting techniques, lifts greater than 60 lbs. require assistance or mechanical equipment. Size up the lift.
	Sharp objects	Individuals must be alert to sharp objects that may be lying under brush. Metal inserts may be used inside boots to make them puncture resistant.
	Poisonous plants, snakes, and insects (poison oak prevalent)	Individuals must be aware of the potential for these hazards to be present. Precautionary measures to be taken will be addressed in daily tailgate safety meetings.
	Heavy lifting.	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size up the lift.
	Falling objects	Hardhat, stay alert and clear of materials suspended overhead; steel-toed boots.
	Flying debris, dirt, dust, etc.	Safety glasses/eye wash.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> <li>• PPE</li> <li>• Hand tools</li> <li>• Clearance Equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-postmaintenance</li> <li>• Visual prior to use</li> </ul>	<ul style="list-style-type: none"> <li>• Tailgate Safety Meeting</li> <li>• Site specific orientation</li> </ul>

**ACTIVITY HAZARD ANALYSIS  
UTILITY CLEARANCE/SURVEYING**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Surveying	Slips, trips, and falls	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work areas for slip, trip, and fall hazards
		When working on uneven surfaces, take care when stepping. Watch where you walk.
	Moving vehicles	The wearing of high visibility vests is required in areas where vehicle traffic may be encountered.
		Flaggers and traffic control devices such as cones and barricades may be needed when working in traffic.
<b>Equipment to be Used</b>	<b>Inspection Requirements</b>	<b>Training Requirements</b>
•Survey Equipment •PPE	None	•Tailgate safety meeting •Site specific orientation •Hazard communications

**ACTIVITY HAZARD ANALYSIS  
HYDROPUNCH**

Activity	Potential Hazards	Recommended Controls
Rig inspection	Faulty or damaged equipment being utilized to perform work	All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition.
		Equipment will be inspected before being put to use and at the beginning of each shift.
		Faulty/unsafe equipment will be tagged and if possible locked out.
	Hydropunch	Equipment will be equipped with easily-accessible emergency shutdown devices.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	Earth penetration equipment will not be transported with the mast up. The exceptions are: movement over level, smooth terrain; the path of travel has been inspected for stability and the absence of holes, other ground hazards, and electrical hazards; and the travel distance is limited to short, safe distances. The equipment operator will ascertain proper clearance prior to moving equipment. Clearance will be monitored by a spotter or by the use of an electrical proximity warning device.
		Machinery and mechanized equipment will be operated only by designated personnel.
		Above and below ground utilities will be located prior to staging equipment.
		Whenever the equipment is parked, the parking brake will be set. Equipment parked on inclines will have the-wheels chocked.
		Inspect brakes and tire pressure on rig.
	Overhead power lines	Distances see Table 3-5
	General	IT H&S Procedure HS316 will be adhered to.
	Inexperienced operator	Machinery and mechanized equipment will be operated only by designated personnel.
		The operator will verbally alert employees and visually ensure employees are clear from dangerous parts of equipment prior to starting or engaging equipment.

**ACTIVITY HAZARD ANALYSIS  
HYDROPUNCH**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Rig operation	Falling objects	Hard hats, remove unsecured tools and materials before raising or lowering the derrick.
		Stay alert and clear of materials suspended overhead.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Inspect for all pinch points
		Stay alert at all times!!!
	Jacks/outriggers	Outriggers will be extended per the manufacturer's specifications.
		Ensure proper footing and cribbing.
	Hoists	Hoists will be used only for their designed intent and will not be loaded beyond their rated capacity. Steps will be taken to prevent two-blocking of hoists.
		The equipment manufacturer's procedures will be followed if rope becomes caught in, or objects pulled into, a cathead.
	Fire	Keep areas adjacent to derricks reasonably free from accumulation of oil, fuel, or other materials (good housekeeping).
		Have fire extinguishers inspected and readily available.
		Real time air monitoring will take place for LEL/O <sub>2</sub> .
	Noise	Hearing protection is mandatory above 85 dbA.
		Safe lockout procedures for maintenance work.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment size-up the lift. Recommend wearing a back support if possible.
Rig operation	Slip, trip, and fall hazards	Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.

**ACTIVITY HAZARD ANALYSIS  
HYDROPUNCH**

Activity	Potential Hazards	Recommended Controls
	Contact with potentially contaminated materials	Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. Modified "D" will be the lowest level of protection due to the high potential for skin contact.
	Contact with utility lines (gas, electric, etc.) and buried drums, etc.	Use magnetometer or other metal detector devices to check for buried drums, cylinders, USTs, etc.
	Inclement weather, lightning	Weather conditions will be monitored. Operations will cease during electrical storms or when electrical storms are imminent.
	Fall hazards	Use safety full-body harness, shock absorbing lanyard with double locking hooks, and lifeline when working above 6 feet.
		Open bore holes will be capped and flagged. Open excavations will be barricaded.
	Welding	Use HS 314 procedures do not watch arc or it's reflection.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Proper personal protective clothing and equipment will be utilized.
		Good housekeeping will be stressed to safe guard against cross contamination of surrounding areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
Staging equipment	Slip, trip, and fall hazards	Determine best access route before transporting equipment.
Staging equipment		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
		Look before you step, insure safe and secure footing.

**ACTIVITY HAZARD ANALYSIS  
HYDROPUNCH**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Falling objects	Stay alert and clear of materials suspended overhead. Use steel-toed boots and hard hat.
	Flying debris, dirt, dust, etc.	Use safety glasses/goggles. Ensure that eye wash is in good working order.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Bees, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
	Fire/chemical exposure	All solvents will be transported in UL/FM approved containers and sources of ignition will be prohibited.
		Initial real time air monitoring will take place.
	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated.
		Equipment will be laid out in an area free of traffic flow.
	Hazard communication	Label all containers as to contents and dispose of properly.
Staging equipment		Obtain Material Safety Data Sheets for solvents, etc. that are being used.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Electrical shock	All electrical circuits will be deenergized and locked out.
	Bees, spiders, and snakes	Inspect work areas carefully and avoid placing hands and feet into concealed areas.

**ACTIVITY HAZARD ANALYSIS  
HYDROPUNCH**

Activity	Potential Hazards	Recommended Controls
	Cross-contamination and contact with potentially contaminated materials	Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.
		Only essential personnel will be in the work area.
		Initial real-time air monitoring will take place before and during sampling activities.
		All personnel will follow good hygiene practices.
		Proper decontamination procedures will be followed.
		All liquids and materials used for decontamination will be contained and disposed of in accordance with Federal, State and Local regulations.
	Cut hazards	Use care when handling glassware.
		Wear adequate hand protection.
Sample collection	Hazard communication	Label all containers as to contents.
	Strains/sprains	Use the proper tool for the job being performed.
		Get assistance if needed.
		Avoid twisting/turning while pulling on tools, grates, manway covers, etc.
	Spills/residual materials	Absorbent material and containers will be kept available where leaks or spills may occur.
Sample collection	Lighting	Adequate lighting will be provided to insure a safe working environment.
	Unattended worker	"Buddy System" - visual contact will be maintained with the sampling technician during sampling activities.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Appropriate PPE will be utilized.
		Good housekeeping will be stressed to safeguard against cross contamination of nearby areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene by utilizing the decon facility on site.

**ACTIVITY HAZARD ANALYSIS  
HYDROPUNCH**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		IT Policy and Procedure HS601 - "Respiratory Protective Devices" will be adhered to at all times.
		Maintain MSDS's for any preservatives such as HCl acid. Follow protection procedures.
Equipment decontamination	Chemical exposure	Maintain MSDS's for all chemicals such as methanol or hexane and follow protection procedures.
Moving and shipping collected samples	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	Label all containers as to contents and associated hazards.
Moving and shipping collected samples	Training	See section 9.0 of SHSP.
<b>Equipment to be Used</b>	<b>Inspection Requirements</b>	<b>Training Requirements</b>
<ul style="list-style-type: none"> <li>•Hand tools</li> <li>•PPE</li> <li>•Heavy equipment</li> <li>•Sampling rig</li> <li>•Sampling equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-postmaintenance</li> <li>• Visual prior to use</li> </ul>	<ul style="list-style-type: none"> <li>• Tailgate Safety Meeting</li> <li>• Site specific orientation</li> <li>• Hazardous waste operations</li> <li>• Hazard communication</li> </ul>

**ACTIVITY HAZARD ANALYSIS  
SOIL/WATER SAMPLING**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Staging equipment	Slip, trip and fall hazards	Determine best access route before transporting equipment.
		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
		Look before you step, insure safe and secure footing.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift.
	Falling objects	Stay alert and clear of materials suspended overhead. Use steel-toed boots and hard hat.
	Flying debris, dirt, dust etc.	Use safety glasses/goggles. Ensure that eye wash is in good working order.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Insects, spiders and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. See Table 3-6.
	Fire/chemical exposure	All solvents will be transported in UL/FM approved containers and sources of ignition will be prohibited.
		Initial real time air monitoring will take place.
Staging Equipment	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated.

**ACTIVITY HAZARD ANALYSIS  
SOIL/WATER SAMPLING**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Staging Equipment	Contact with moving equipment/vehicles	Equipment will be laid out in an area free of traffic flow.
	Work in excavations	IT Policy and Procedure HS 307 - "Excavation and Trenching" will be adhered to at all times
	Hazard communication	Label all containers as to contents and dispose of properly.
		Obtain Material Safety Data Sheets for solvents, etc. that are being used.
	Noise	Sound levels above 85 dBA mandates hearing protection.
Sample Collection	Working at elevated heights/falls	Ladders will be secured by top, bottom, and intermediate fastenings as required.
		Personnel working at heights of 6 feet or more must be secured with fall protection (safety belt/lanyard).
	Electrical shock	All electrical circuits will be deenergized and locked out.
	Insects, spiders and snakes	Inspect work areas carefully and avoid placing hands and feet into concealed areas.
	Cross-contamination and contact with potentially contaminated materials	Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.
		Only essential personnel will be in the work area.
		Initial real-time air monitoring will take place before and during sampling activities.
		All personnel will follow good hygiene practices.
		Proper decontamination procedures will be followed.
		All liquids and materials used for decontamination will be contained and disposed of in accordance with Federal, State and Local regulations.
	Cut hazards	Use care when handling glassware.
		Wear adequate hand protection.
Sample Collection	Hazard communication	Label all containers as to contents.

**ACTIVITY HAZARD ANALYSIS  
SOIL/WATER SAMPLING**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
	Strains/sprains	Use the proper tool for the job being performed.
Sample Collection	Strains/sprains	Get assistance if needed.
		Avoid twisting/turning while pulling on tools, grates, manway covers, etc.
	Spills/residual materials	Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	Adequate lighting will be provided to insure a safe working environment.
	Unattended worker	"Buddy System" - visual contact will be maintained with the sampling technician during sampling activities.
	Confined spaces	IT Policy and Procedure HS300 - "Confined Spaces" will be adhered to at all times.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Appropriate PPE will be utilized.
		Good housekeeping will be stressed to safeguard against cross contamination of nearby areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene by utilizing the decon facility on site.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		IT Policy and Procedure HS601 - "Respiratory Protective Devices" will be adhered to at all times.
		Maintain MSDS's for any preservatives such as HCl acid. Follow protection procedures.
Equipment decontamination	Chemical exposure	Maintain MSDS's for all chemicals such as methanol or hexane and follow protection procedures.
On-site sample analysis	Various	On-site laboratory will develop and adhere to a site specific chemical hygiene plan (CHP). The CHP will be submitted to the Program CIH for review and acceptance.

**ACTIVITY HAZARD ANALYSIS  
SOIL/WATER SAMPLING**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Moving and shipping collected samples	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	Label all containers as to contents and associated hazards.
<b>Equipment to be Used</b>	<b>Inspection Requirements</b>	<b>Training Requirements</b>
<ul style="list-style-type: none"> <li>● Hand tools</li> <li>● PPE</li> <li>● Sampling equipment</li> </ul>	<ul style="list-style-type: none"> <li>● Pre-postmaintenance</li> <li>● Visual prior to use</li> </ul>	<ul style="list-style-type: none"> <li>● Tailgate Safety Meeting</li> <li>● Site specific orientation</li> <li>● Hazardous waste operations</li> <li>● Hazard communication</li> </ul>