Main Fosance Yard

**Harding Lawson Associates**

August 8, 1991

3457,008.04

Hetch Hetchy Bureau of Water and Power
City and County of San Francisco
P. O. Box 160
Moccasin, California 95347

Attention: Mr. Larry James

Gentlemen:

**Addendum to Preliminary Report**
**Soil and Groundwater Investigation**
**San Francisco Water District Sunol Yard**
**505 Paloma Way**
**Sunol, California**

This letter presents Harding Lawson Associates' (HLA's) addendum to our November 5, 1990 Preliminary Report for the San Francisco Water District (SFWD) Sunol Yard at 505 Paloma Way, Sunol, California. The purpose of this addendum is to address the March 1, 1991 comments of Mr. Scott Seery of the Alameda County Department of Environmental Health (ACDEH) regarding our proposed work plan for the soil and groundwater investigation at the Sunol Yard presented in the Preliminary Report.

HLA's response to the ACDEH comments are in the order presented in their March 1, 1991 letter.

1. Soil and groundwater samples collected for a total oil and grease (TOG) analysis will be analyzed using EPA Methods 5520D and F/C and F.

2. During the drilling of the soil borings, soil samples will be collected at approximate 5-foot intervals. Additional samples will be collected at the depth of an observed change in soil type or observed soil contamination.

3. The following quality assurance/quality control samples will be collected and submitted as part of the groundwater sample analytical program:

    - One blind duplicate groundwater sample will be collected from one of the groundwater monitoring wells.

    - One trip blank of distilled water will be collected.

An overall standard QA/QC program implemented by HLA also will be applied to sample collection and analysis. This will include QC programs for sampling procedures, chain-of-custody, and laboratory analysis. A copy of our protocols can be provided upon request.

4. One soil sample from each interval that is collected from the boring drilled next to the oil spill area will be analyzed for TOG using EPA Method 5520 D and F/C and F and volatile organic compounds (VOCs) using EPA Method 8240. One soil sample from each interval from the boring drilled next to the former UST area will be analyzed for total petroleum hydrocarbons (TPH) as gasoline and diesel using EPA Method 8015 and for benzene, toluene, ethylbenzene, and xylene (BTEX) using EPA Method 8020. At least one soil sample from the boring drilled downgradient of the two source areas will be analyzed for TOG, TPH as gasoline and diesel, and VOCs. This sample will be collected from a depth at which field photoionization detector (PID) readings are measured and/or within the groundwater table fluctuation. Additional samples will be analyzed from this boring at depths where positive PID readings are recorded.

   HLA proposes that the soil and groundwater samples collected from the boring/well estimated to be downgradient from the former USTs and oil spill area be submitted to the analytical laboratory and held for potential analysis. Within three days, the groundwater gradient will be calculated. If that boring/well was not installed downgradient from the former source areas, the samples will not be analyzed. If the boring/well was downgradient from the source areas, the samples will be analyzed for the previously stated compounds within five days of collection.

5. All soil and groundwater samples collected for chemical analysis will be submitted to Eureka Analytical Laboratories in Sacramento, California under chain-of-custody procedures. The samples will be labeled, stored, and transported in an iced cooler. In addition, they will be logged on the chain-of-custody form, with the time of day and date collected and the appropriate chemical analysis procedure recorded for each sample. Upon sample submittal at Eureka Laboratories, the chain-of-custody form will be signed by the carrier and recipient, with the time and date recorded. One copy of the chain-of-custody form will remain with the samples at the laboratory and the other copies will remain with HLA.

6. Before the groundwater monitoring wells are developed or sampled, they will be measured for floating petroleum-hydrocarbon product using a clear Lucite plastic bailer. The bailer will be lowered down each groundwater monitoring well, and a sample will be collected at the groundwater table. This sample will be observed in the bailer for floating petroleum-hydrocarbon product, sheen, and odor.

7. The elevation of the north edge of the top of the groundwater monitoring well casing will be surveyed to mean sea level with an accuracy of 0.01 foot. The groundwater table depth will be measured from this part of the casing using a chalked steel measuring tape to an accuracy of 0.01 foot. These elevations will be used to calculate the groundwater table elevation.

8. The elevation of the top of the Alameda County Water District (ACWD) well on the site and the groundwater table depth at this location will be measured. This information will be used in the groundwater gradient calculation, with the data from the proposed monitoring wells, if the potentiometric surface of the groundwater table measured in this well is assessed to be the same as in the proposed wells. A copy of the boring log for the ACWD well is attached.

9. A schematic well construction diagram for the proposed groundwater monitoring wells is included as Plate 1.

10. A non-phosphate detergent will be used when decontaminating the sampling and purging equipment.

11. A site safety plan, prepared in accordance with 29 CFR 1910.120, is attached.

12. Well drilling permits will be acquired from the Alameda County Water Conservation and Flood Control District Zone 7 before the proposed groundwater monitoring wells are installed.

HLA will perform the soil and groundwater investigation in accordance with the attached proposed schedule.

If you have any questions or comments regarding these responses or the proposed schedule, please contact either of the undersigned.

Yours very truly,

HARDING LAWSON ASSOCIATES

Jeffrey F. Ludlow
Project Geologist

Mark G. Filippini
Engineering Geologist

REGISTERED GEOLOGIST
MARK G. FILIPPINI
1312
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

JFL/MGF/mfb/A11672-CT51

Attachments: Typical Chain-of-Custody Form
Log of ACWD Well
Plate 1 - Typical Groundwater Monitoring Well Construction Diagram
Site Safety Plan
Proposed Project Schedule

cc: San Francisco Water Department
Attention: Mr. Robert Vasconcellos

San Francisco Utilities Engineering Bureau
Attention: Mr. Suresh Patel

San Francisco Department of Public Health
Attention: Mr. David Wells

San Francisco City Attorney's Office
Attention: Ms. Elaine Warren

Alameda County Department of Environmental Health
Attention: Mr. Scott Seery

**Harding Lawson Associates**
Marathon Plaza
303 Second Street, Suite 630 North
San Francisco, CA 94107
(415) 543-8422 • (415) 777-9706 Telecopy

# CHAIN OF CUSTODY FORM

Lab: _____

Samplers: _____

Job Number: _____

Name/Location: _____

Project Manager: _____

Recorder: _____
*(Signature Required)*

| SOURCE CODE | MATRIX: Water | Sediment | Soil | Oil | #CONTAINERS & PRESERV.: Unpres. | $H_2SO_4$ | $HNO_3$ | | | | SAMPLE NUMBER OR LAB NUMBER: Yr | Wk | Seq | DATE: Yr | Mo | Dy | Time | STATION DESCRIPTION/ NOTES | ANALYSIS REQUESTED: EPA 601/8010 | EPA 602/8020 | EPA 624/8240 | EPA 625/8270 | ICP METALS | EPA 8015M/TPH | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| LAB NUMBER: Yr | Wk | Seq | DEPTH IN FEET | COL MTD CD | QA CODE | MISCELLANEOUS |
|---|---|---|---|---|---|---|
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## CHAIN OF CUSTODY RECORD

| | | |
|---|---|---|
| RELINQUISHED BY: *(Signature)* | RECEIVED BY: *(Signature)* | DATE/TIME |
| RELINQUISHED BY: *(Signature)* | RECEIVED BY: *(Signature)* | DATE/TIME |
| RELINQUISHED BY: *(Signature)* | RECEIVED BY: *(Signature)* | DATE/TIME |
| RELINQUISHED BY: *(Signature)* | RECEIVED BY: *(Signature)* | DATE/TIME |
| DISPATCHED BY: *(Signature)* DATE/TIME | RECEIVED FOR LAB BY: *(Signature)* | DATE/TIME |
| METHOD OF SHIPMENT | | |

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

6533

# LOG OF BORING NO. EB-1

DATE DRILLED: 7/21-7/22/86

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH ft. | SAMPLES SYMBOL | ELEVATION: | EQUIPMENT: 8 1/2 in dia Rotary Wash | WELL CONSTR. | WATER LEVEL

B-1

0 -10' SILT: Dark yellowish brown (10YR 4/2), with 1/4" - 1" dia subrounded gravel; medium dense, moist

5

B-2

10

10'-23' SANDY SILTY GRAVEL: Light olive brown (5 Y 5/6) sandy silt matrix (varies 10-20%) subangular clasts of olive brown sandstone, quartz, blue-gray sandstone and shale; dense.

15

B-3

20

gravels 1/2" - 3/4" dia

B-4

23' - 40' SANDY CLAYEY GRAVEL: Dark greenish gray (5G 4/1) sandy clay matrix (30-40%) with dusky blue (5PB 3/2) and light olive brown (5 Y 5/6) subrounded / subangular sandstone clasts; dense

25

30

↓ increasing clay in matrix

35

B-5

40

B-6

40' - 80' SANDY GRAVELLY CLAY: Medium bluish gray (5 B 5/1) sandy clay matrix (50-60%) with fragments of bluish gray sandstone and granite clasts; very dense

45

decrease in clay

50

SUNOL VALLEY GROUNDWATER STUDY
PHASE II: EXPLORATORY BORINGS
for ALAMEDA COUNTY WATER DISTRICT

Project No. 86-34-112-01

Drawing No. A-2

Converse Consultants Northern California
Consulting Engineers and Geologists

# LOG OF BORING NO. EB-1

DATE DRILLED: 7/21-7/22/86

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

WELL CONSTR. | WATER LEVEL

DEPTH ft. | SAMPLES SYMBOL | ELEVATION | EQUIPMENT: 8½ in. Dia Rotary Wash

50

40'-80' SANDY GRAVELLY CLAY: Medium bluish gray (5B 5/1) sandy clay matrix (% varies); with fragments of bluish gray sandstone and quartz clasts; very dense,

55 B-7

↓ increasing gravel - subrounded, ½" dia
- calcareous material in clay matrix

60

65

70

↓ increasing clay matrix to 60% clay stiff

75

B-8

↓ decreasing clay matrix (20-40%) increasing gravel fragments

80 B-9

80'-100' SANDY CLAYEY GRAVEL: Medium bluish gray (5B 5/1) sandy clay matrix with fragments of greenish black (5G 2/1) sandstone, shale and quartz clasts; % matrix varies; very dense

85

90

- clay matrix 30-40%

B-10

95

↓ increasing sand

100

Bottom of hole 100 ft.

Project No.

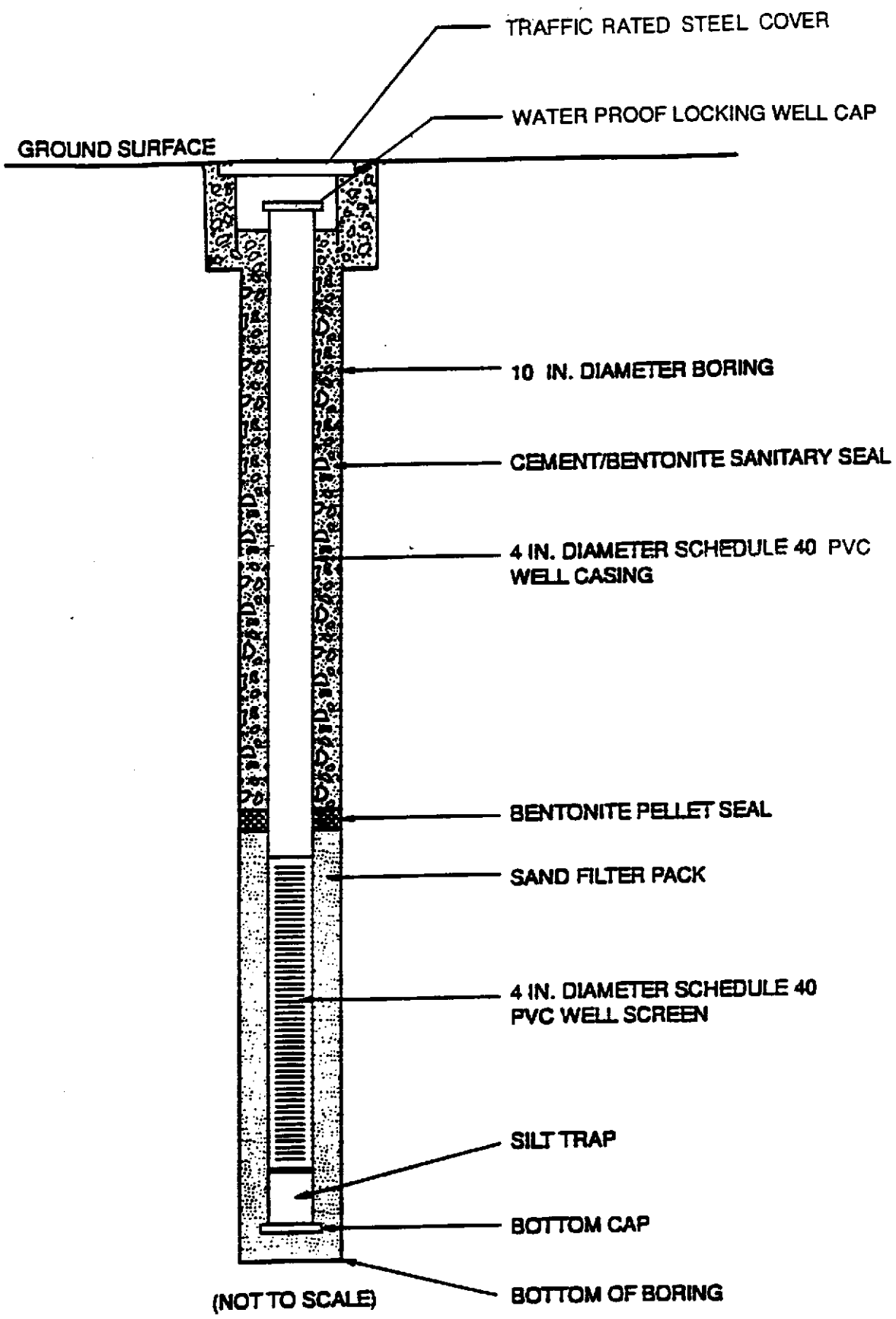
SUNOL VALLEY GROUNDWATER STUDY
PHASE II: EXPLORATORY BORINGS
for ALAMEDA COUNTY WATER DISTRICT

86-34-112-01

Drawing No.

Converse Consultants Consulting Engineers

A-2




Harding Lawson Associates
Engineering and Environmental Services

**Typical Monitoring Well Construction Diagram**
SFWD Sunol Yard
505 Paloma Way

PLATE **1**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| JL | 3457,008.04 | STR | 8/91 | |

**Harding Lawson Associates (HLA)**
**SITE SAFETY PLAN**

This Site Safety Plan is specifically prepared for:

Project Location SAN FRANCISCO WATER District Sunol Yard 505 Paloma Way

Job Number 3457, 008-04 Sunol, CA

ALL PERSONNEL PARTICIPATING IN THE FIELD MUST BE TRAINED IN THE GENERAL AND SPECIFIC HAZARDS UNIQUE TO THE JOB AND, IF APPLICABLE, MEET RECOMMENDED MEDICAL EXAMINATION REQUIREMENTS. ALL SITE PERSONNEL AND VISITORS SHALL FOLLOW THE GUIDELINES, RULES, AND PROCEDURES CONTAINED IN THIS SAFETY PLAN. THE PROJECT MANAGER OR SITE SAFETY OFFICER MAY IMPOSE ANY OTHER PROCEDURES OR PROHIBITIONS THAT THEY BELIEVE ARE NECESSARY FOR SAFE OPERATIONS.

THIS PLAN IS PREPARED TO INFORM ALL FIELD PERSONNEL, INCLUDING HLA CONTRACTORS AND HLA SUBCONTRACTORS, OF THE POTENTIAL HAZARDS ON THE SITE. HOWEVER, EACH CONTRACTOR OR SUBCONTRACTOR MUST ASSUME DIRECT RESPONSIBILITY FOR HIS OWN EMPLOYEES' HEALTH AND SAFETY.

## TABLE OF CONTENTS

## I. INTRODUCTION

A. SITE LOCATION: SFWD Sunol Yard 505 Paloma Way Sunol, CA

B. PLAN PREPARED: Jeff Ludlow (Name) 8/6/91 (Date)

C. PLAN APPROVED: Jeff Ludlow (Project Manager) 8/6/91 (Date)

Russell C. Lipsett (DHSO) 8/6/91 (Date)

D. PLAN REVISED: _____ (Name) _____ (Date)

E. REVISION APPROVED: _____ (Project Manager) _____ (Date)

_____ (DHSO) _____ (Date)

F. THE POSSIBLE HAZARDS ON THIS JOB ARE EXPECTED TO BE: Heavy equipment; i.e. drilling and petroleum hydrocarbons ie oil, gasoline and solvents.

G. REQUIRED PERSONAL PROTECTIVE ITEMS AND EQUIPMENT FOR THIS PROJECT: Level D proper work clothing, hard hat, steel toe boots, & eye protection.

## II. PERSONS RESPONSIBLE AND INVOLVED

A. PROJECT MANAGER Jeff Ludlow

Health and Safety Responsibilities Make sure that field personnel understand the project health and safety program

B. SITE SUPERVISOR Ron Reindel

Health and Safety Responsibilities Implement and supervise the field health and safety program.

C. SITE SAFETY OFFICER Ron Reindel

Health and Safety Responsibilities

D. OTHERS

Health and Safety Responsibilities

E. SUBCONTRACTORS HEW Drilling

Health and Safety Responsibilities Work within the health and safety program under direction of Ron Reindel

## III. FACILITY BACKGROUND

A. FACILITY BACKGROUND AND DESCRIPTION: Active maintenance facility for SFWD; closed UST with gasoline and diesel, oil, and degreasing solvents

B. SITE HISTORY (USE OF SITE, ORIGIN OF CONTAMINATION): 3 Former USTs 2 - gasoline 1 - diesel; handling of used motor oil and degreasing solvents

C. HAZARDOUS INCIDENCE HISTORY (HISTORY OF INJURIES, EXPOSURE, CHEMICAL SPILLS, COMPLAINTS, ETC.): USTs overfilled or leaked now removed; waste oil and solvents disposed on ground next to work shed (soil was excavated).

D. PURPOSE OF ACTIVITY/OBJECTIVE OF HLA's WORK (CHARACTERIZATION, REMEDIAL ACTIONS, EXCAVATION, TRENCHING; INCLUDE LOCATION WITH RESPECT TO AREAS OF KNOWN OR SUSPECTED CONTAMINATION): Characterize groundwater at source areas and down gw gradient; calculate gw gradient direction.

E. SITE STATUS (ACTIVE, INACTIVE, UNKNOWN): Active site

F. SURROUNDINGS (LOCATION WITH RESPECT TO CITY, ROADS, RESIDENCES, BUSINESSES, NATURAL FEATURES, GRADIENTS, TANKS, ETC.): Surrounding area is agriculture and municipal watershed.

G. SITE MAP (ATTACHED MAP AT END OF THIS PLAN SHOWING SALIENT FEATURES, INCLUDING LOCATION OF HLA'S WORK AND LOCATION OF CONTAMINATED AREAS).

H. CLIMATE

AVERAGE WIND SPEED AND DIRECTION: 0-5 mph from West

| | July | October | January | April |
|---|---|---|---|---|
| MEAN HIGH TEMPERATURE | 80°F | | | |
| MEAN LOW TEMPERATURE | 60°F | | | |

## IV. IDENTIFIED CHEMICAL CONTAMINANTS

### A. IDENTIFIED CHEMICAL CONTAMINANTS KNOWN TO BE PRESENT

List chemical contaminants that have been identified, their concentration, and the environmental media in which they are present. Hazardous property information for selected chemicals appears in the appendix. Review this information for all chemicals listed below. If chemicals are not listed in the appendix, you must enter the hazardous property information in the appendix in the spaces provided.

| Chemical | Environmental Media (Enter Code) | Measured Concentration Minimum | Measured Concentration Maximum |
|---|---|---|---|
| Soil was excavated Oil & Grease | So | ND | 12,000 ppm |
| TPH - Gasoline | So | ND | 7.6 ppm |
| TPH - Diesel | So | ND | 7.4 ppm |
| 1,1 - Dichloroethane | So | ND | 400 ppb |
| 1,1,1 - Trichloroethane | So | ND | ~~3,200 ppb~~ 740 ppb |
| Tetrachloroethane | So | ND | 3,200 ppb |
| Toluene | So | ND | 910 ppb |
| Ethyl Benzene | So | ND | 320 ppb |
| Xylenes | So | ND | 2300 ppb |

### B. SUSPECTED CHEMICAL CONTAMINANTS ON SITE

List chemical contaminants that are suspected to be present.

| Chemical | Environmental Media |
|---|---|
| Same as above but at very low concentrations to ND | |
| in Soil and GW. | |

Code for environmental media:

| | |
|---|---|
| Sl | Sludge |
| GW | Groundwater |
| SW | Surface water |
| LW | Liquid waste |
| So | Soil |
| A | Air |
| Other - | Specify |

C. CHEMICAL CONTAMINANTS CHARACTERIZATION

Has the site been adequately characterized to the best of your knowledge?

Yes X No

If yes, list applicable references or previous reports/studies.

Soil yes in HLA Preliminary Report dated November 5, 1990.

## V. GENERAL WORK PRACTICES

- No one will be permitted to engage in work operations alone.

- Smoking, eating, drinking, chewing gum or tobacco will not be permitted within the work zones.

- Personnel should keep track of weather conditions and wind direction to the extent they could affect potential exposure.

- Personnel should be alert to any abnormal behavior on the part of other workers that might indicate distress, disorientation, or other ill effects.

- Personnel should never ignore symptoms which could indicate potential exposure to chemical contaminants. These should be immediately reported to their supervisor or the Site Safety Officer.

- Others (specific to tasks, i.e., trenching safety, drill rig safety, site entry, etc.)

## VI. SITE CONTROL/WORK ZONES

A. DESCRIBE LOCATION OF EXCLUSION ZONE, HOT LINE, CONTAMINATION REDUCTION ZONE, AND DECONTAMINATION AREA AND SUPPORT ZONE. SHOW LOCATIONS ON SITE PLAN.

Exclusion Zone will be within 10 FT of boring;
Contamination Reduction Zone will be with 10 FT of the exclusion zone
Decontamination area will be within 10 FT of the reduction zone

B. DEFINE THE SITE CONTROL/SECURITY MEASURES (I.E., FENCING, LOCKED GATES, KEYS, SECURITY GUARDS, FLAGGING, ETC.

Cones or barricades will be used to designate the work zones and direct traffic.

C. DESCRIBE SAFETY PLAN LOCATIONS.

Dashboard of HSA truck

## VII. SITE RESOURCES

SITE RESOURCES LOCATIONS

Toilet facilities: at site

Drinking water supply: at site

Telephone: at site

Radio: NA

Other: _____

## VIII. HAZARD ANALYSES

List all activities in the Job Activity Column and assign a number to each activity (example: 1. Ground Water Sampling)

Identify how each category of hazard exists at each activity. See example hazard analyses in Appendix 2.

| Activity Number | Job Task | Mechanical | Electrical | Chemical | Temperature | Acoustical | Radioactive | 02 Deficiency-Confined Space | Biohazard |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Drilling & soil sampling MW installation | rig & material | underground utilities | in soil & GW | heat stress | rig noise | NE | NE | NE |
| 2. | Well Development | pump equip. | generator | GW | heat stress | NE | NE | NE | NE |
| 3. | Well Sampling | pump equip. | generator | GW | heat stress | NE | NE | NE | NE |

NE = Not Expected

## IX. HAZARD MITIGATION

Identify procedures to mitigate all hazards listed in Section VI by placing the task number next to the appropriate mitigating measure. Listing of standard procedures is not inclusive. A specific procedure must be entered to mitigate each hazard identified in Section VI.

| Activity List Number | A. Mechanical Hazards |
|---|---|
| 1 | Do not stand near backhoe buckets and earthmoving equipment. |
| 1, 2, 3 | Verify that all equipment is in good condition. |
| 1 | Do not stand or walk under elevated loads or ladders. |
| | Do not stand near unguarded excavation and trenches. |
| | Do not enter excavation or trenches over 5 feet deep that are not properly guarded, shored, or sloped. |
| | Consult DHSO if other mechanical hazards exist. |
| | |
| | |

B. Electrical Hazards

— USA will be notified at least 72 hrs. prior to drilling to locate underground utilities at the site; HLA will hire private co. to clear each well location for underground utilities on prior to drilling; private co. prior to drilling

| | |
|---|---|
| 1 | Locate and mark buried utilities before drilling. |
| 1 | Utilities located by: USA |
| 1 | Maintain at least 10-foot clearance from overhead power lines. |
| | Contact utility company for minimum clearance from high voltage power lines. |
| | If unavoidably close to buried or overhead power lines, have power turned off, with circuit breaker locked and tagged. |
| 1, 2, 3 | Properly ground all electrical equipment. |
| 1, 2, 3 | Avoid standing in water when operating electrical equipment. |
| 1, 2, 3 | If equipment must be connected by splicing wires, make sure all connections are properly taped. |
| 1, 2, 3 | Be familiar with specific operating instructions for each piece of equipment. |
| | |
| | |

C. Chemical Hazards

| | |
|---|---|
| 1, 2, 3 | Use personal protective equipment indicated in Section 18. |
| 1 | Conduct direct reading air monitoring to evaluate respiratory and explosion hazards (list instrument, action level, monitoring location, and action to be taken in Section 19). |
| | Consult DHSO for personal air monitoring. |
| | |
| | |

NE = NOT EXPECTED

D. Temperature Hazards

1. Heat Stress

1, 2, 3 When temperature exceeds 70°F, take frequent breaks in shaded area. Unzip or remove coveralls during breaks. Have cool water or electrolyte replenishment solution available. Drink small amounts frequently to avoid dehydration. Count the pulse rate for 30 seconds as early as possible in the rest period. If the pulse rate exceeds 110 beats per minute at the beginning of the rest period, shorten the work cycle by one-third.

2. Cold Stress

Wear multilayer cold weather outfits. The outer layer should be of wind resistant fabric.

0° to -30°F total work time is 4 hours. Alternate 1 hour in and 1 hour out of the low-temperature area. Below -30°F, consult industrial hygienist.

Drink warm fluid. Provide warm shelter for resting. Use buddy system. Avoid heavy sweating.

E. Acoustical Hazards

1, 2, 3 Use earplugs or earmuffs when noise level prevents conversation in normal voice at distance of 3 feet.

F. $O_2$ Deficiency - Confined Space Hazards

Confined spaces include trenches, pits, sumps, elevator shafts, tunnels, or any other area where circulation of fresh air is restricted or ability to readily escape from the area is restricted. Consult DHSO and Corporate Health and Safety Policy prior to entering confined space.

Obtain permit for confined space entry

Monitor $O_2$ and organic vapors before entering. If following values are exceeded, do not enter:

- $O_2$ less than 19.5 percent or greater than 25%.
- Total hydrocarbons greater than 5 ppm above background, if all air contaminants have not been identified.
- Concentrations of specific contaminants exceeding action level in Section 19 if all air contaminants are identified.

NE = NOT EXPECTED

_____ Monitor $O_2$ and organic vapors continuously while inside confined space. If values cited in Item 1 are exceeded, evacuate immediately. Record instrument readings.

_____ At least one person must be on standby outside the confined space who is capable of pulling workers from confined space in an emergency.

_____ Use portable fans or blowers to introduce fresh air to confined spaces whenever use of respirator is required.

_____ Work involving the use of flame, arc, spark, or other source of ignition is prohibited within a confined space.

G. Radiation Hazards

_____ If radiation meter indicates 2 mR/hr or more, leave the area and consult DHSO.

_____ _____

_____ _____

H. Biohazards

_____ Poison oak, poison ivy.

_____ Infectious waste.

_____ Rabid animals.

_____ Ticks, mosquitoes, and other insects (disease carriers or poisonous). Avoid breathing dust in dry desert or central valley areas (valley fever).

_____ Biological or animal laboratories.

_____ _____

_____ _____

_____ _____

NE = NOT EXPECTED

## X. AIR MONITORING

Air monitoring should be conducted with instruments selected to measure contaminants that employees may be exposed to. Measurements should be taken within the breathing zones of workers. If action levels are reached for a 1-minute reading, appropriate action must occur.

A. GASES AND VAPORS

| Instrument & Date of Calibration | Calibration Gas Standard | Frequency/ Duration of Air Monitoring | Action Level (a)(b) Above Background (Breathing Zone) | Action |
|---|---|---|---|---|
| 1 hr. prior to field work start | Isobutylene 100 ppm HNU | change of work condition or exposure | background | Introduce engineering controls (i.e., blower fans) (Level D) |
| | | | 5 ppm | Don respirator (Level C) |
| | | | | Leave area (Level C) |
| | | | | Upgrade to Level B |
| | | | | Upgrade to Level A |

(a) Action Levels for "known contaminants" should be based upon the contaminants Permissible Exposure Level (PEL) or Threshold Limit Values (TLVs).

(b) Action levels for unknown contaminants are based upon the following:

HNu or OVA Measurements in Breathing Zone
Reading for 1 minute

| | |
|---|---|
| Background | Level D |
| >0-5 ppm above background | Level C |
| 5-500 ppm above background | Level B |
| 500-1000 ppm above background | Level A |

Comments: Level C protection is not expected.

B. EXPLOSION HAZARD NE

| Instrument & Date of Calibration | Action Level Above Background (Ambient Air) | Frequency/Duration of Air Monitoring | Action |
|---|---|---|---|
| Combustible gas indicator | Greater than 20% LEL | | Leave area |
| | | | |
| | | | |

C. OXYGEN DEFICIENCY NE

| Instrument & Date of Calibration | Action Level (Ambient Air) | Frequency/Duration of Air Monitoring | Action |
|---|---|---|---|
| $O_2$ meter | Less than 19.5% $O_2$<br>More than 23% $O_2$ | | Do not enter |
| | | | |
| | | | |

D. OTHER INSTRUMENTS NA

| Instrument & Date of Calibration | Action Level (Breathing Zone/ Ambient Air) | Duration/Frequency of Air Monitoring | Action |
|---|---|---|---|
| Date | | | |
| Draeger pump/tubes | | | |
| Radiation monitor | | | |
| Heat stress meter | | | |
| Noise meter | | | |
| $H_2S$ meter | | | |
| pH analyzer | | | |
| Others | | | |
| | | | |

## XI. REQUIRED PERSONAL PROTECTIVE AND RELATED SAFETY EQUIPMENT

Place the activity number from Section VI next to each item of personal protective equipment required for that task. All personal safety equipment must meet ANSI standards or equivalent.

LEVEL: ____ A ____ B ____ C X D

Comments: _____

**Head**

X Hardhat

**Eye/Face**

X Safety Glasses
____ Chemical Goggles
____ Faceshield

**Hand**

X Neoprene
____ Nitrile
____ PVC
____ Viton
X Underglove
____ Other = _____

**Body**

____ Full Encapsulating Suit: _____
____ Two Piece Rainsuit, Material = _____
____ One Piece Splash Suit, Material = _____
____ Hooded Tyvek Suit
____ Hooded Tyvek/Saranax Suit
____ Hooded Tyvek/Polyethylene Suit
____ Cloth Coveralls
____ High Visibility Vest
X Other work clothing no loose ends.

**Lung**

____ SCBA (open circuit, pressure demand): _____
____ Full Face Respirator, cartridge = _____
____ Supplied Air, Airline
X Half Mask Respirator, cartridge = organic (if needed)
____ Other _____

**Ear**

X Earplug, type = if needed.
____ Earmuff, type = _____

**Foot**

X Steel-toed Boots, type = _____
____ Disposable Overboots, type = _____

Other Safety Equipment

| | | | |
|---|---|---|---|
| _____ | Ventilation blower/fan | | |
| ___X___ | Traffic cones | _____ | Lifeline harness |
| _____ | Barrier tape | _____ | Radiation Dosimeter |
| _____ | Blast alarm | | |
| _____ | Ground fault circuit interrupter | | |

Comments: _____

## XII. DECONTAMINATION PROCEDURES

A. EQUIPMENT (SAMPLING, CONSTRUCTION, ETC.) DECONTAMINATION (SOLVENTS USED, EQUIPMENT USED, METHOD OF DISPOSAL). ATTACH SITE DECONTAMINATION MAP AS NECESSARY.

Drilling & sampling equipment steam cleaned and/or Alconox wash with DI rinse. Rinsate stored in 55 gal. drums

B. PERSONNEL DECONTAMINATION (SOLVENTS USED, METHOD OF SOLVENT DISPOSAL; INCLUDE DECONTAMINATION METHOD OF PPE AND DISPOSAL OF PPE). ATTACH DECONTAMINATION MAP AS NECESSARY.

Wash hands & face w/ soap & water

PPE garbage container

C. INVESTIGATION-DERIVED MATERIAL DISPOSAL

1. Drill cuttings/well water: 55 gal. drums

2. Decontamination solutions: 55 gal. drums

3. Other: PPE garbage container.

## XIII. DOCUMENTATION

**HLA PERSONNEL TRAINING AND MEDICAL RECORDS ARE AT** HLA SF office
**RECORDS WILL BE MAINTAINED ON SITE AS NECESSARY.**

A. PROJECT PERSONNEL LIST AND SAFETY PLAN DISTRIBUTION RECORD

1. HLA Employees

All project staff must sign, indicating they have read and understand the Site Safety Plan. A copy of this Site Safety Plan must be made available for their review and readily available at the job site.

| Employee Name/Job Title | Date Distributed | Signature |
|---|---|---|
| Jeff Ludlow | 8/6/91 | Jeff |
| Ron Reindel | on site | |
| | | |
| | | |
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2. Contractors, Subcontractors

A copy of this safety plan shall be provided to contractors and subcontractors who may be affected by activities covered under the scope of this Site Safety Plan. All contractors and subcontractors must comply with applicable OSHA, EPA, and local government rules and regulations.

| Firm Name | Contact Person | Date Distributed |
|---|---|---|
| HEW Drilling | | on site |
| | | |
| | | |
| | | |
| | | |

B. HEALTH AND SAFETY MEETING - ALL PERSONNEL PARTICIPATING IN THE PROJECT MUST RECEIVE INITIAL HEALTH AND SAFETY ORIENTATION. THEREAFTER, A BRIEF TAILGATE SAFETY MEETING IS REQUIRED AS DEEMED NECESSARY BY THE SITE SAFETY OFFICER (OR AT LEAST ONCE EVERY 10 WORKING DAYS).

| Date | Topics | Name of Attendee | Firm Name | Employee Initials |
|---|---|---|---|---|
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C. VISITOR - IT IS HLA's POLICY THAT VISITORS MUST FURNISH HIS/HER OWN PERSONAL PROTECTIVE EQUIPMENT. ALL VISITORS ARE REQUIRED TO SIGN THE VISITOR LOG AND COMPLY WITH THE SAFETY PLAN REQUIREMENTS. IF THE VISITOR REPRESENTS A REGULATORY AGENCY CONCERNED WITH SITE HEALTH AND SAFETY ISSUES, THE SITE SAFETY OFFICER SHALL ALSO IMMEDIATELY NOTIFY DHSO.

VISITOR LOG

| Name of Visitor | Firm Name | Date of Visit | Signature |
|---|---|---|---|
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## XIV. CONTINGENCY/EMERGENCY INFORMATION

A. REQUIRED EMERGENCY EQUIPMENT LOCATION

Safety shower/eyewash: in truck and at site
First aid kit: in truck
Fire extinguisher: in truck
Other: _____

B. EMERGENCY TELEPHONE NUMBERS

| | | |
|---|---|---|
| Ambulance: | 911 | |
| Police: | 911 | |
| Fire department: | 911 | |
| Hospital: | Washington Hospital Fremont 797-1111 | |
| Client contact: | Suresh Patel SF Utilities Eng. Bureau 554-1807 | |
| Poison Control Center: | (800) 233-3360 | |
| in San Francisco: | (415) 821-8324 | |
| CHEMTREC: | (800) 424-9300 | |
| Project Manager | Office Jeff L. 543-8422 | Home 681-5336 |
| DHSO | Office Russ T. 543-8422 | Home (707) 762-3324 |

C. * STANDARD PROCEDURES FOR REPORTING EMERGENCIES:

When calling for assistance in an emergency situation, the following information should be provided:

1. Name of person making call
2. Telephone number at location of person making call
3. Name of person(s) exposed or injured
4. Nature of emergency
5. Actions already taken

Recipient of call should hang up first--not the caller.

D. EMERGENCY ROUTES: ATTACH MAP SHOWING ROUTE TO NEAREST HOSPITAL. DESCRIBE NARRATIVELY THE ROUTE TO THE HOSPITAL. HAS HOSPITAL BEEN CONTACTED TO DETERMINE IF THEY WILL HANDLE A CHEMICAL EXPOSURE?

To Washington Hosp. W on 84 to Fremont
lt on Mowry Ave to Hosp. on rt.

E. CONTINGENCY PLANS AS APPROPRIATE: DESCRIBE CONTINGENCY PLANS FOR EMERGENCIES SUCH AS: FIRES, EMERGENCY CARE, INJURY, PPE, OR OTHER EQUIPMENT FAILURE. INCLUDE EMERGENCY SIGNALS AND EVACUATION ROUTES. IF FORMAL CONTINGENCY PLAN DOCUMENT HAS BEEN PREPARED, ATTACH A COPY.

If accident Stop work ; Stabalize victim ; if major call 911 ; if minor transport victim to hospital. or treat on site.

**POST AT JOB SITE (AS APPROPRIATE)**

**Appendix A**

## HAZARDOUS PROPERTY INFORMATION

This appendix contains hazardous property information for selected compounds. Place a check mark next to each compound identified in Section __, and review the hazardous property information for those compounds. If you have identified compounds in Section __ that are not listed in the appendix, you must list the compounds and enter the appropriate information.

**(INCLUDE COPIES OF MATERIAL SAFETY DATA SHEETS FOR SELECTED COMPOUNDS IN ADDITION TO COMPLETION OF APPENDIX 1.)**

## HAZARDOUS PROPERTY INFORMATION

| Check if present | Material | Water Solubility[a] | Specific Gravity | Vapor Density | Flash Point °F | Vapor Pressure[e] | LEL UEL | $LD_{50}$ mg/kg | TLV-TWA[g] | IDLH Level | Odor Threshold or Warning Concentration | Hazard[j] Property | Dermal[k] Toxicity | Acute[l] Exposure Symptoms |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **VOLATILE ORGANIC PRIORITY POLLUTANTS** | | | | | | | | | | | | | |
| | Acrolein | 22% | 0.8410 | 1.9 | -15 | 214 mm | 2.8% 31% | 46 | 0.1 ppm | 5 ppm | 0.1-16.6 (0.21-0.5) | BCED | BJ | ABDFGHIKLMNO PQR |
| | Acrylyenitrile | 7.1% | 0.8060 | 1.8 | 30 | 83 mm | 3% 17% | 82 | 2 ppm | 4,000 ppm | 19-100 | BCEGO | DIG | FGIKLMNOR |
| ✓ | Benzene | 820 ppm | 0.8765 | 2.8 | 12 | 75 mm | 0.339% 7/1% | 3800 | 11 ppm | 2,000 ppm | 4.68 | BCGO | CIG | BCDFHIKLMNOQ R |
| | Bromomethane | 0.1 g | 1.732 | 3.3 | none | 1.88 atm | 13.5%c 14.5% | | 5 ppmh | 2,000 ppm | no odor | CD | | BCDEIJKLMNOQ R |
| | Bromodichloromethane | Insoluble | 1.980 | – | none | n/a | non flam | 916 | none established | none specified | | CGO | | BIMN |
| | Bromoform | 0.01g | 2.887 | – | none | 5 mm | non flam | 1147 | 0.5 ppm | n/a | 530 | CED | | BCDKLM |
| | Carbon Tetrachloride | 0.08% | 1.5967 | 5.3 | none | 91 mm | non flam | 2800 | 5 ppmh | 300 ppm | 21.4-200 | CD | JGH | ABCFGHKMO |
| | Chlorobenzene | 0.01 g | 1.1058 | 3.9 | 84 | 8.8 mm | 1.3% 9.6% | 2910 | 75 ppm | 2,400 ppm | 0.21-60 | BCD | CIF | BCFIKLMNOPQR |
| | Chloroethane | 0.6 g | 0.8978 | 2.2 | -58 | 1.36 atm | 3.8% 15.4% | | 1000 ppm | 20,000 ppm | | BCD | | BFIIIKMNP |
| | 2-Chloroethylvinyl Ether | Insoluble | 1.0475 | 3.7 | 80 | 30 mm | – | 250 | none established | none specified | | BCD | | NIM |
| | Chloroform | 0.8 g | 1.4832 | 4.12 | none | 160 mm | non flam | 800 | 10 ppmh | 1,000 ppm | 50-307 fatigue (>4096) | CD | | BCDGIKLMN |
| | Chloromethane | 0.74% | 0.9159 | 1.8 | 32 | 50 atm | 7.6% 19% | | 50 ppmh | 10,000 ppm | 10-100 no odor (500-1000) | BCD | DIIF | ABCDEFGIJKLO QR |
| | Dibromochloromethane | Insoluble | 2.451 | – | – | – | – | 848 | none established | none specified | | BCD | | BFIIIMNPQ |
| ✓ | 1,1-Dichloroethane (DCA) | 0.1 g | 1.1757 | 8.4 | 22 | 182 mm | 6% 16% | 725 | 100 ppm | 4,000 ppm | 5 ppm | BCD | | AGHIMNO |

## HAZARDOUS PROPERTY INFORMATION

| Check if present | Material | Water Solubility[a] | Specific Gravity | Vapor Density | Flash Point °F | Vapor Pressure[c] | LEL UEL | $LD_{50}$ mg/kg | TLV-TWA[g] | IDLN Level | Odor Threshold or Warning Concentration | Hazard[j] Property | Dermal[k] Toxicity | Acute[l] Exposure Symptoms |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1,2-Dichloroethane | 0.8% | 1.2554 | 3.4 | 55 | 87 mm | 6.2% 16% | 670 | 10 ppmh | 1,000 ppm | 6 ppm | BCDG | | BCFGOLMNQ |
| | 1,1-Dichloroethylene (DCE) | 2250 mg/l @77of | -- | 3.4 | 3 | 591 mm | 7.3% 16.0% | 200 | 5 ppmh | none specified | | BCD | | BIMN |
| | Trans-1,2-Dichloroethylene | Slightly soluble | 1.2565 | -- | 36 | 400 mm | 9.7% 12.8% | | none established | none specified | .0043 mg/l | BCD | | ABFILOQ |
| | 1,2 Dichloropropane | 0.26% | 1.583 | 3.9 | 60 | 40 mm | 3.4% 14.5% | 1900 | 75 ppm | 2,000 ppm | 50 | BCD | | ABGHIKMNO |
| | Cis-1,3-Dichloropropane | Insoluble | 1.2 | 3.8 | 83 | 28 mm | 5% 14.5% | | 1 ppmh | none specified | | BCD | | ABGIKLMNP |
| | Trans-1,3-Dichloropropane | Insoluble | 1.2 | 3.8 | 83 | 28 mm | 5% 14.5% | | 1 ppmh | none specified | | BCD | | ABGIKLMNP |
| ✓ | Ethylbenzene | 0.015 g | 0.867 | 3.7 | 59 | 7.1 mm | 1.0% 6.7% | 3500 | 100 ppm | 2,000 ppm | | BCD | CIF | ABFHIKLMNPQR |
| | Methylene Chloride | Slightly soluble | 1.335 | 2.9 | none | 350 mm | 12%c unavailable | 167 | 100 ppmh | 5,000 ppm | 25-320 (200) | CED | CIF | BCIKLMNPR |
| | 1,1,2,2-Tetrachloroethane | 0.19% | 1.5953 | 5.8 | none | 5 mm | non flam | | 1 ppmh | 150 ppm | 3-5 | CD | | ABCFHIKLMNOQ |
| | Tetrachloroethylene | 0.15 g/ml | 1.6227 | 5.8 | none | 15.8 mm | non flam | 8850 | 50 ppmh | 500 ppm | 4.68%-50 (160-690) | CD | | ACFHIKLMNP |
| ✓ | 1,1,1-Trichloroethane (TCA) | 0.7 g | 1.3390 | 4.6 | none | 100 mm | 8.0%c 10.5% | 10300 | 350 ppm | 1,000 ppm | 20-400 (500-1000) | BCED | | ABEFHIKLNOP |
| ✓ | 1,1,2-Trichloroethane | 0.45 | 1.4397 | 4.6 | none | 19 mm | 6%c 15.5% | 1140 | 10 ppm | 500 ppm | -0- | C | | DEFGHIKMNOP Q |
| | Trichloroethylene (TCE) | 0.1% | 1.4642 | 4.5 | 90d | 58 mm | 12.5% 90% | 4920 | 50 ppmh | 1,000 ppm | 21.4-400 | BC | | BFKLNOPQ |
| | Trichlorofluoromethane | 0.11 g | 1.494 | -- | none | 0.91 atm | non flam | | 1000 ppm | 10,000 ppm | 135-209 | CD | | BFHKLQ |

## HAZARDOUS PROPERTY INFORMATION

| Check if present | Material | Water Solubility[a] | Specific Gravity | Vapor Density | Flash Point °F | Vapor Pressure[c] | LEL UEL | $LD_{50}$ mg/kg | TLV-TWA[g] | IDLN Level | Odor Threshold or Warning Concentration | Hazard[j] Property | Dermal[k] Toxicity | Acute[l] Exposure Symptoms |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| √ | Toluene | 0.05 g | 0.866 | 3.2 | 40 | 22 mm | 1.3% 7.1% | 5000 | 100 ppm | 2,000 ppm | 0.17-40 fatigue (300-400) | BC | BHE | DEFHIKLMNOPQ |
| | Vinyl Chloride | negligible | 0.9100 | 2.24 | -108 | 3.31 atm | 3.6% 33% | 500 | 1 ppm | none specified | 260 | BCEG | DJG | ABFHIKLMN |
| METALS | | | | | | | | | | | | | | |
| | Arsenic | b | 5.727 | n/a | none | n/a | f | | 10 $\mu g/m^3$ | none specified | | CEG | CJG | ACDGJMOQR |
| | Beryllium | b | 1.85 | n/a | none | n/a | f | | 2 $\mu g/m^3$ | none specified | | C | | IJMNR |
| | Cadmium | b | 8.642 | n/a | none | n/a | f | 225 | 0.5 $mg/m^3$ | 40/$mg^3$ | | C | | ABGHIKLMNQR |
| | Chromium | b | 7.20 | n/a | none | n/a | f | | 0.5 $mg/m^3$h | 500/$mg^3$ | | C | | FMNQ |
| | Copper | b | 8.92 | n/a | none | n/a | f | | 0.1 $mg/m^3$ | none specified | | C | | FGIJMOQR |
| | Lead | b | 11.3437 | n/a | none | n/a | f | | 50 $\mu g/m^3$ | none specified | | C | | ACDFGKOQR |
| | Mercury | b | 13.5939 | 7.0 | none | 0.0012 mm | f | | 50 $\mu g/m^3$h | 28 $mg/m^3$ | | C | | AGLMNQ |
| | Nickel | b | 8.9 | n/a | none | n/a | f | | 1 $mg/m^3$ | none specified | | C | | DGHLMNQ |
| | Silver | b | 10.5 | n/a | none | n/a | f | | 0.01$mg/m^3$ | none specified | | C | | IN |
| | Thallium | b | 11.85 | n/a | none | n/a | f | | 0.01$mg/m^3$ | 20 $mg/m^3$ | | C | BG | ABGLNOQ |
| | Zinc | b | 7.14 | n/a | none | n/a | f | | none established | none specified | | C | | DF |

## HAZARDOUS PROPERTY INFORMATION

| Check if present | Material | Water Solubility[a] | Specific Gravity | Vapor Density | Flash Point °F | Vapor Pressure[c] | LEL UEL | $LD_{50}$ mg/kg | TLV-TWA[g] | IDLH Level | Odor Threshold or Warning Concentration | Hazard[j] Property | Dermal[k] Toxicity | Acute[l] Exposure Symptoms |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MISCELLANEOUS | | | | | | | | | | | | | | |
| | Asbestos | Insoluble | 2.5 | n/a | none | n/a | non flam | | 0.2-2 fibers/cc | none specified | | CG | | MN |
| | Cyanides | 58-72% | | n/a | none | n/a | non flam | | 5 $mg/m^3$ | | | CE | | FKLMPQ |
| | PCB (generic) | slightly | -- | n/a | none | n/a | non flam | | 1.0 $\mu g/m^3$[i] | none specified | | CG | | CHLPQ |
| | Phenol | 8.4% | 1.0576 | 3.2 | 175 | 0.36 mm | 1.8% 8.6% | 414 | 5 ppm | 100 ppm | 0.47-5 (48) | C | | ABCDGIKMNOQR |
| ✓ | Xylene | 0.00003% | 0.8642 | 3.7 | 84 | 9 mm | 1.1% 7% | 5000 | 100 ppm | 10,000 ppm | 0.5-200 (200) | BCD | | ABFHIKLMNPQ |
| | Acetone | soluble | 0.8 | 2.0 | -4 | 400 mm | 2.6% 12.8% | 9750 | 750 ppm | 10,000 ppm | 100 | BCD | DI | H |
| | Chromic Acid | soluble | 1.67-2.82 | n/a | none | n/a | non flam | | none established | none specified | | ACEG | | GIH |
| ✓ | Diesel Fuel | insoluble | 0.81-0.90 | -- | 130 | -- | 0.6-1.3 6-7.5 | | none established | none specified | 0.08 | BC | ABC | IN |
| ✓ | Gasoline | insoluble | 0.72-0.76 | 3.4 | -45 | variable | 1.4% 7.6% | | 300 ppm | none specified | 0.005-10 x 0.25 | CD | AB | IN |
| | Kerosene | insoluble | 0.83-1.0 | -- | 100-165 | 5 | 0.7% 5.0% | | none established | none specified | 1.0 | BCD | AB | IN |

## HAZARDOUS PROPERTY INFORMATION
## EXPLANATIONS AND FOOTNOTES

Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per million or part per billion level. Gasoline, for example, is insoluble in the gross sense, and will be found as a discreet layer on top of the groundwater. But certain gasoline constituents, such as benzene, toluene, and xylene will also be found in solution in the groundwater at the part per million of part per billion level.

a. Water solubility expressed as 0.2 g means 0.2 grams per 100 grams water at 20°C.

b. Solubility of metals depends on the compound in which they are present.

c. Several chlorinated hydrocarbons exhibit no flash point in conventional sense, but will burn in presence of high energy ignition source or will form explosive mixtures at temperatures above 200°F.

d. Practically non-flammable under standard conditions.

e. Expressed as mm Hg under standard conditions.

f. Explosive concentrations of airborne dust can occur in confined areas.

g. Values for Threshold Limit Value-Time Weighted Average (TLV-TWA) are OSHA Permissible Exposure Limits except where noted in h and i.

h. TLV-TWA adopted by the American Conference of Governmental Industrial Hygienists, which is lower than the OSHA PEL.

i. TLV-TWA recommended by the national Institute for Occupational Safety and Health (NIOSH). A TLV or PEL has not been adopted by ACGIH or OSHA.

j.

| | | |
|---|---|---|
| A | - | corrosive |
| B | - | flammable |
| C | - | toxic |
| D | - | volatile |
| E | - | reactive |
| F | - | radioactive |
| G | - | carcinogen |
| H | - | infectious |

k. Dermal Toxicity data is summarized in the following three categories:

Skin Penetration

| | | | |
|---|---|---|---|
| - | A | - | negligible penetration (solid-polar) |
| + | B | - | slight penetration (solid-nonpolar) |
| ++ | C | - | moderate penetration (liquid/solid-nonpolar) |
| +++ | D | - | high penetration (gas/liquid-nonpolar) |

Systemic Potency

| | | |
|---|---|---|
| E | - | slight hazard - $LD_{50}$ = 500-15,000 mg/kg<br>lethal dose for 70 kg man = 1 pint-1 quart |
| F | - | moderate hazard - $LD_{50}$ = 50-500 mg/kg<br>lethal dose for 70 kg man = 1 ounce-1 pint |
| G | - | extreme hazard - $LD_{50}$ = 10-50 mg/kg<br>lethal dose for 70 kg/man = drops to 20 ml |

Local Potency

| | | |
|---|---|---|
| H | - | slight - reddening of skin |
| I | - | moderate - irritation/inflamation of skin |
| J | - | extreme - tissue destruction/necrosis |

l. Acute Exposure Symptoms

| | | |
|---|---|---|
| A | - | abdominal pain |
| B | - | central nervous system depression |
| C | - | comatose |
| D | - | convulsions |
| E | - | confusion |
| F | - | dizziness |
| G | - | diarrhea |
| H | - | drowsiness |
| I | - | eye irritation |
| J | - | fever |
| K | - | headache |
| L | - | nausea |
| M | - | respiratory system irritation |
| N | - | skin irritation |
| O | - | tremors |
| P | - | unconsciousness |
| Q | - | vomiting |
| R | - | weakness |

## Appendix 2
## Hazard Analysis Examples

**Hazard Analyses**

List all activities in the Job Activity Column and assign a number to each activity (example: 1. Drilling, Soil Sampling and Well Installation)

Identify how each category of hazard exists at each activity.

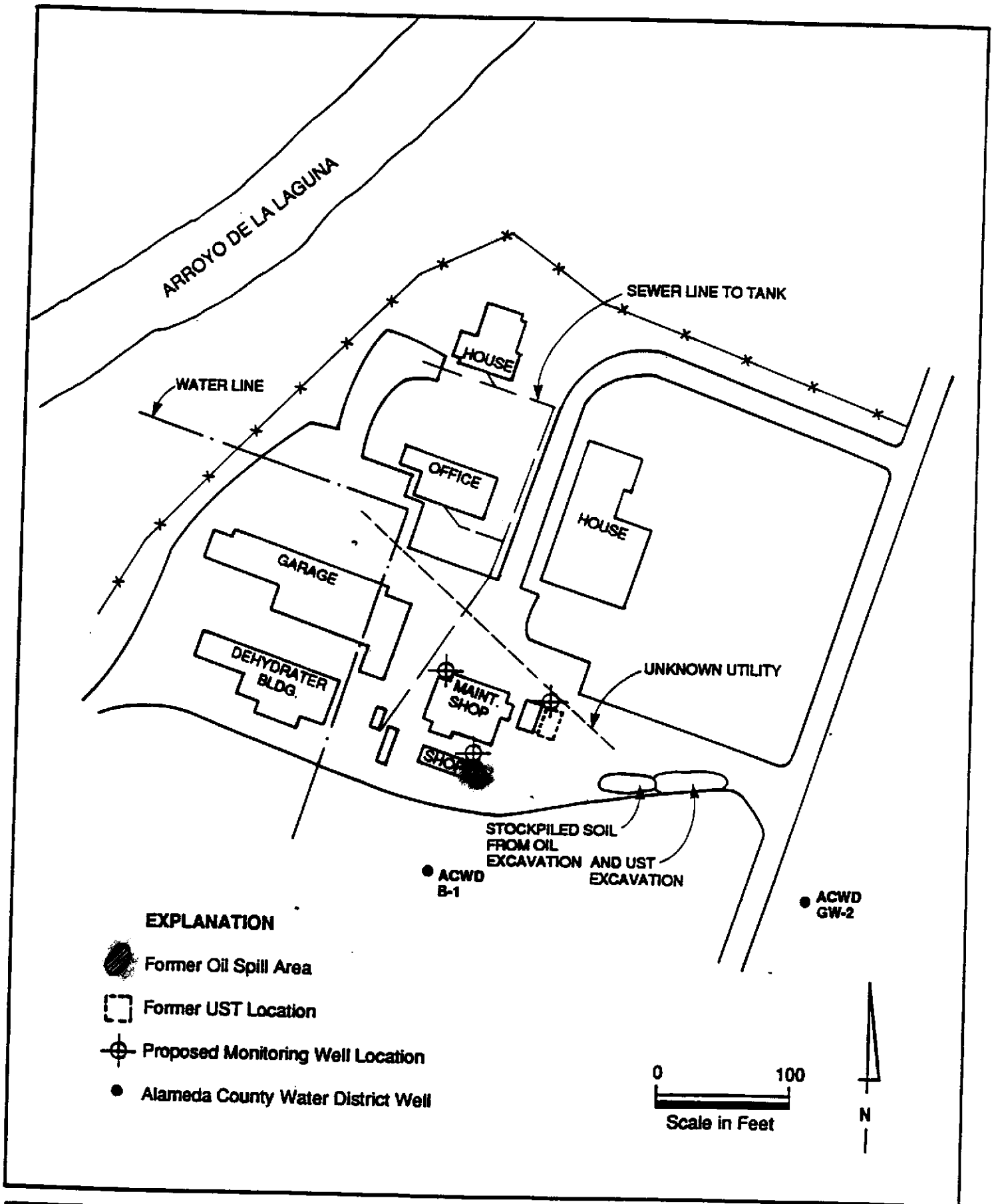
| Activity Number | Job Task | Mechanical | Electrical | Chemical | Temperature | Acoustical | Radioactive | 02 Deficiency-Confined Space | Biohazard |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Drilling, Soil Sampling, and Well Installation | Rig Equipment, materials handling | Overhead/buried power lines at two locations | Potentially in soils and ground water | Heat stress | Rig noise | NE | NE | NE |
| 2 | Well Development | Pumping equipment | Generator | Potentially in soils and ground water | Heat stress | Pumping equipment | NE | NE | NE |
| 3 | Ground-Water Sampling from Monitoring Wells | NE, potentially pumping equipment | NE | | Heat stress | NE | NE | NE | NE |
| 4 | Geophysical Survey | Portable equipment weight & bulkiness | Portable equipment | NE | NE | NE | nuclear gauges | NE | Mosquitos, snakes |
| 5 | Excavation of Contaminated Soil, Gasoline Station | Excavation stability, mechanical equip. | Utilities | Same as 1, free and dilute product | Heat stress | Excavation equipment | NE | Excavation can be a confined space | NE |
| 6 | Inspect Excavation of Landfill (Domestic Non-hazardous Waste) | Exavation stability shoring stability | NE | Same as 1, broad range organic/ inorganic | Heat stress | NE | Pot. from hospital and other wastes | Excavation can be a confined space | Microbes, insects, rodents, bird: |

NE = Not expected

**Plate 1**

**SITE MAP**

(INDICATE SALIENT FEATURES, LOCATION OF WORK, CONTAMINATED AREAS, EXCLUSION ZONE, HOT LINE, CONTAMINATION REDUCTION ZONE, DECONTAMINATION AREA, AND SUPPORT ZONE)




**Harding Lawson Associates**
Engineering and Environmental Services

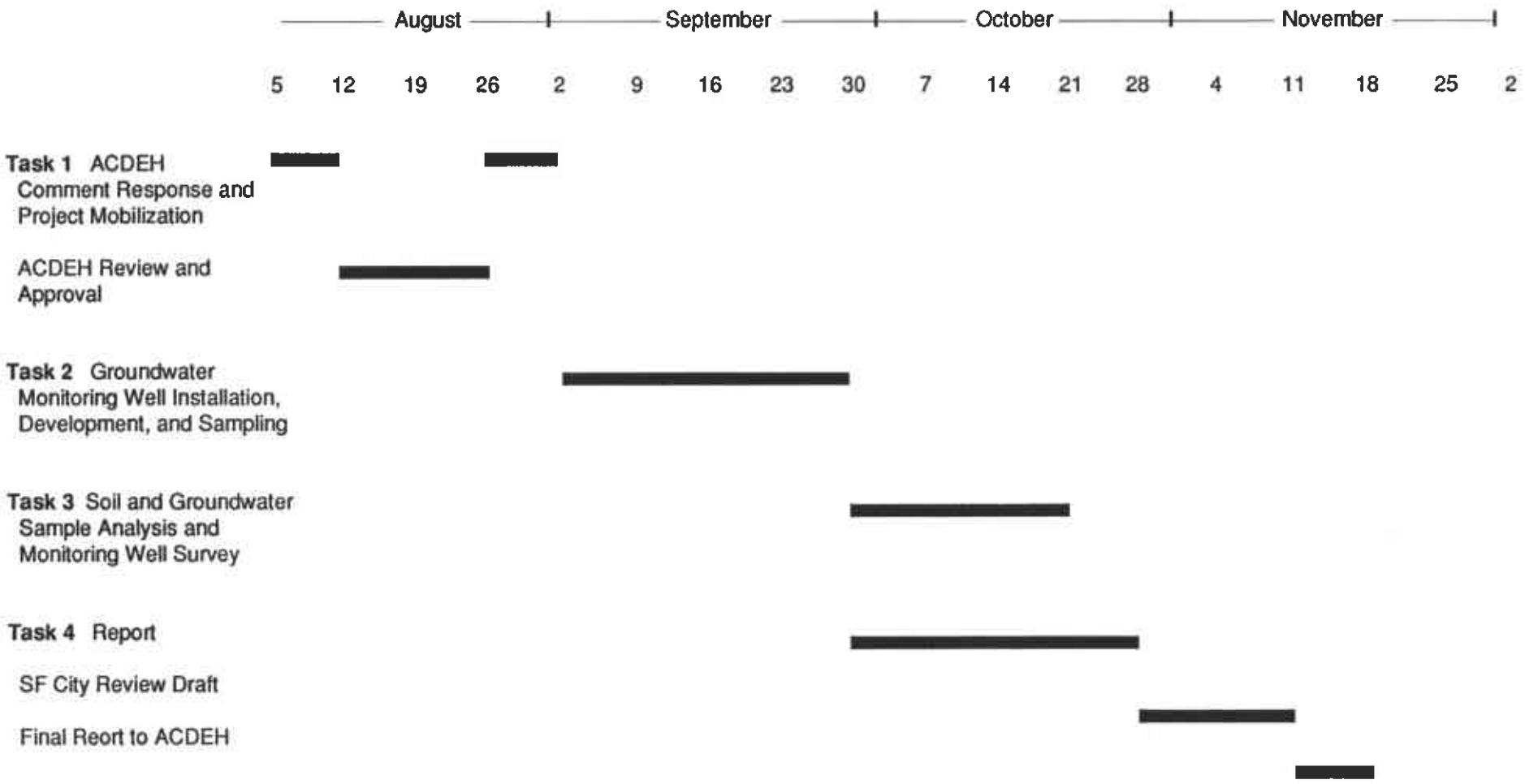
**Site Plan**
PUC Sunol
Sunol, California

PLATE **3**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| AM | 3457,008.04 | | 10/90 | |


NILES DISTRICT
SUNOL
SCOTTS CORNER
SITE
WATER TEMPLE
FREMONT
TO LIVERMORE
680
84
A
B
C
D
E

**Proposed Schedule**
**Phase I Soil and Groundwater Investigation**
**San Francisco Water District Sunol Yard**
**505 Paloma Way**
**Sunol, California**




HLA assumes that ACDEH approval to proceed with Task 2 will be by August 26, 1991; and SF City comments on the draft report will be received by November 11, 1991.