L & W ENVIRONMENTAL SERVICES, INC.
HEALTH AND SAFETY PLAN
TANK REMOVAL

PREPARED FOR:

DEPARTMENT OF ENVIRONMENTAL HEALTH
ENVIRONMENTAL PROTECTION DIVISION
ALAMEDA, CALIFORNIA

AUGUST 1, 1995

HEALTH AND SAFETY PLAN
TANK REMOVAL

1.0 INTRODUCTION

This Health and Safety Plan ("HSP") addresses the hazards associated with the planned field activities at 2394 Mariner Square Drive, Alameda, California("the Site"). It presents baseline health and safety requirements for establishing and maintaining a safe working environment during the course of work. The planned field activities at the site include soil excavation, tank removals, soil sample collection by L&W Environmental Services (LWES) personnel.

If work plan specifications change during or after the preparation of this HSP, or if site conditions differ as the result of more information, the LWES Health and Safety Director shall be informed immediately and appropriate changes shall be made to this HSP.

At a minimum, all contractor/subcontractor personnel working on site must:

have read and understood the specifications of this HSP

have completed all training requirements in 29 Code of Federal Regulations (CFR) 1910.120

provide their own health and safety equipment as indicated in this HSP, and comply with the minimum requirements established by this HSP. If the contractor/subcontractor has prepared his/her own HSP, it must minimally meet requirements contained herein and all applicable Federal, State, and local health and safety requirements.

This HSP shall be read and approved by the LWES Health and Safety Director, the LWES Project Manager, and a LWES Quality Assurance Reviewer.

A copy of this HSP shall be kept on site, easily accessible to all employees and government inspectors, and another in LWES files.

This HSP was prepared using the following documents:

29 CFR 1910 Occupational Safety and Health Standards, 1990.

29 CFR 1926 Safety and Health Regulations for Construction.

29 CFR 1910.1000 -- OSHA Air Contaminants - Permissible Exposure Limits, 1990.

Title 8, California Code of Regulations, Occupation Health and Safety Standards.

American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values and Biological Exposure Indices for 1990 - 1991. Cincinnati, Ohio, ACGIH.

California Department of Health Services (DHS), Toxic Substances Control Division (TSCD), Technical and Support Unit, Region 3, Los Angeles, California, August 1988. Site Safety Plan Guidance Document.

National Institute for Occupational Safety and Health (NIOSH); Occupational Safety and Health Administration (OSHA); U. S. Coast Guard (USCG); U. S. Environmental Protection Agency (EPA), October 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Washington D. C. : U.S. Governmental Printing Office.

NIOSH/OSHA, 1981. Occupational Health Guidelines for Chemical Hazards.

Sax, N. Irving, 1984, Dangerous Properties of Materials, 6th edition, Van Nostrand Reinhold Company, Inc., New York.

U. S. EPA, Office of Emergency and Remedial Response, Hazardous Response Support Division, November 1984. Standard Operating Safety Guides.

2.0 SITE CHARACTERISTICS

Site Name: Barnhill Construction Company

Site Address: 2394 Mariner Square Drive
Alameda, California 94501

2.1 Background

The site is currently occupied by the Barnhill Construction Company, using the site as a construction office and equipment storage.
It is our understanding that two UST's are located on site:

one 500 gallon tank containing diesel
one 1500 gallon tank containing gasoline.

3.0 WORK DESCRIPTION

Tasks to be performed at the site include underground tank removal and soil sampling activities.

Work activities are planned in the following order (some activities may be performed concurrently):

soil excavation

soil sampling

underground storage tank removals

4.0 KEY PERSONNEL AND RESPONSIBILITIES

4.1 Site Safety Personnel

Name:	Designation:
Sergio Salas	Project Manager
Nestor Contreras	Site Safety Officer
Jean Lindsay	Health and Safety Director

4.2 LWES Personnel and Responsibilities

The responsibilities of the LWES personnel listed in Section 4.1 are outlined below.

4.2.1 LWES Project Manager

The LWES Project Manager, Sergio Salas, has the ultimate responsibility for the health and safety of LWES personnel on site. As part of his duties, Sergio Salas shall be responsible for:

keeping the LWES Health and Safety Director informed of project developments

ensuring that on-site LWES personnel receive the proper training, and are informed of potential hazards anticipated at the Site and procedures and precautions to be implemented on the job

ensuring that contractors and subcontractors are informed of the expected hazards and appropriate protective measures at the Site. (Subcontractors should also be given a copy of LWES's HSP for review).

ensuring that resources are available to provide a safe and healthy work environment for LWES personnel.

4.2.2 LWES Health and Safety Director

The LWES Health and Safety Director, Jean Lindsay, shall be responsible for:

monitoring the health and safety impacts of this project for on-site LWES personnel

assessing the potential health and safety hazards at the site

recommending appropriate safeguards and procedures

approving changes in safeguards used or operating procedures employed at the Site

The LWES Health and Safety Director shall have the authority to:

require that additional safety precautions or procedures be implemented

order an evacuation of the Site, or portion of the Site, or shut down any operation, if he believes a health or safety hazard exists

deny unauthorized personnel access to the Site

require that any worker obtain immediate medical attention

approve or disallow any proposed modifications to safety precaution or working procedures.

4.2.3 LWES Site Safety Officer

The LWES Site Safety Officer (SSO), Nestor Contreras, has fulfilled the 40-hour health and safety training requirements pursuant to 29 CFR 1910.120.

The SSO, or a trained designated alternate, will be present at the Site during work activities. The SSO shall be notified of and approve activities in which persons may be reasonably expected to be exposed to contaminated soils and/or groundwater.

The SSO shall be responsible for:

ensuring that on-site LWES personnel comply with the requirements of the HSP

limiting access to the Site

reporting unusual or potentially hazardous conditions to the LWES Health and Safety Director and the LWES Project Manager

reporting injuries, exposures, or illnesses to the LWES Health and Safety Director and the LWES Project Manager

communicating proposed changes in work scope procedures to the LWES Health and Safety Director for approval

The SSO shall have the authority to:

order an evacuation of the Site, or portion(s) of the Site, or shut down any operation if he believes a health or safety hazard exists

deny site access to unauthorized personnel

require that any worker, including the contractor's or subcontractor's personnel, obtain immediate medical attention.

5.0 HAZARD ANALYSIS

Potential chemical, physical and general safety hazard during the excavation, tank removal and soil sampling program at the Site includes the following:

Chemical hazards:
- dermal (contact with petroleum products)

Physical hazards:
- noise
- electric shock
- heavy equipment
- heat stress

Work procedures to protect workers from chemical and physical hazards are discussed in section 6.0.

5.1 Chemical Hazards

The primary chemical hazards are due to petroleum constituents based on previous investigations and activities at the Site. Dermal exposures are the primary exposure pathway of concern. Potential inhalation exposures are also a concern.

5.1.1 Chemical Description of Petroleum Constituents

Diesel Fuel

Diesel fuel is a gas oil fraction available in various grades as required by different engines. Composition of diesel varies in ratios of predominantly aliphatic, olefinic, cycloparaffinic, aromatic hydrocarbons, and additives.

Ingestion of diesel can lead to systemic effects such as gastrointestinal irritation, vomiting, diarrhea, and in severe cases drowsiness and central nervous system depression, progressing to coma and death. Aspiration of diesel fuel can cause hemorrhaging and pulmonary edema, progressing to pneumonitis and renal involvement.

Gasoline

Gasoline is produced from the light distillates during petroleum fractionation, with its major components including paraffins, olefins, naphthenes, aromatics, and recently ethanol. Gasoline also contains various functional additives as required for different uses, such as antiknock fluids, antioxidants, metal deactivators, corrosion inhibitors, anti-icing agents, preingition preventors, upper-cylinder lubricants, dyes, and decolorizers. Lead additives in particular were widely used in gasoline until the reintroduction of vehicle catalytic converters.

Mild cases of gasoline ingestion can cause inebriation, vomiting, vertigo, drowsiness, confusion, and fever. Aspiration in the lungs and secondary pneumonia may occur unless prevented. Gasoline can cause hyperemia of the conjunctiva and other eye disturbances. Inhalation of gasoline during bulk handling operations produced no physiological effects. Gasoline is a skin irritant and a possible allergen. Repeated or chronic dermal contact can result in drying of skin, lesions, and other dermatologic conditions.

The TWA of the PEL for gasoline is 300 ppm and the STEL is 500 ppm.

Benzene

Benzene is a clear colorless liquid.

Exposure to high concentrations (3,000) may result in acute poisoning, characterized by narcotic action of benzene on the central nervous system. Chronic poisoning occurs most commonly through inhalation and dermal adsorption. Benzene is also a human carcinogen. Unleaded regular gasoline commercially available in the United Sates typically contains less than about 2 percent benzene.

The PEL for a time-weighted average (TWA) 8-hour period is 1 ppm in air (OSHA Standard 29 CFR 191 0.1 000).

Toluene

Toluene is a colorless liquid with a benzol-like odor.

Inhalation of high vapor concentrations may cause impairment of coordination and reaction time, headaches, nausea, eye irritation, loss of appetite, a bad taste in the mouth, and weariness.

The PEL for a TWA over 8-hour period is 100 ppm in air (OSHA Standard 29 CFR 191 0.1 000)

Xylene

Xylene is a clear, colorless liquid.

Exposure to high concentrations of vapor may result in eye and skin irritation. Eye irritation may occur at concentrations of about 200 ppm.

The PEL for a TWA over an 8-hour period is 1 00 ppm in air (OSHA Standard 29 CFR 191 0.1 000).

Ethylbenzene

Ethylbenzene is a clear, colorless liquid.

Exposure to high concentrations of vapor (approximately 1,000 ppm) may result in irritation to skin and mucous membranes, dizziness, irritation of nose and throat and a sense of constriction of the chest.

The PEL for a TWA over an 8-hour period is 1 00 ppm in air (OSHA Standard 29 CFR 1910.1000).

5.2 Physical Hazards

The potential physical hazard at the Site during the planned activities stem from heavy machinery use.

The potential for heat stress caused by the use of personal protective equipment and high midday temperatures, has been minimized by specifying the use of lighter personal protective equipment in this HSP. The anticipated physical hazards at the Site are listed under Section 5.0. Work procedures to protect workers from chemical and physical hazards are discussed in Section 6.0.

Noise

Noise results primarily from excavation and compacting operation of field equipment and other machinery.

Electric Shock

Electrical equipment for field activities, surface and subsurface utility lines pose the potential for electric shock.

Heavy Equipment

Excavation and compacting equipment pose a physical injury hazard to on-site personnel.

Heat Stress

Heat stress could pose a hazard to on-site personnel due to the use of personal protective equipment and the potentially high midday temperatures.

6.0 WORK REQUIREMENTS

6.1 Respiratory Protection

Field operations will be initiated in Level D. The primary route of potential exposure for chemicals is dermal contact and/or inhalation of fugitive dust.

Inhalation hazards due to volatilization will be monitored visually. If on-site dust levels impair visibility during soil sampling or removal activities, work shall be temporarily stopped to wet the area responsible for generating dust. If Dust problems continue, a temporary stop order will be observed and the LWES Corporate Health and Safety Officer shall be notified.

6.2 Dermal Protection

Unless adequate precautions are taken, chemicals may contact the skin or clothing. Potential physical contact with chemicals of concern are possible under the following circumstances:

sampling soil

6.2.1 Personal Protective Equipment

LWES and contractor/subcontractor personnel will wear the following protective clothing on site:

hard hats

steel-toed/steel-shank boots

inner and outer disposable PVC gloves for soil sampling (to be changed immediately after sampling is completed)

safety glasses

Hearing protection, if heavy equipment is in us

uncoated Tyvek coveralls (if the potential for splashing exists)

6.3 Action Levels

6.3.1 Action Levels for a Temporary Stop Work

The SSO shall impose a temporary stop work and contact the LWES Health and Safety Director immediately if the following conditions are observed, or if there is a question about site conditions:

uncontrolled dust generation

indications of heat stress

changes in general health profile of on-site personnel, including symptoms discussed in Appendix A and headaches, dizziness, breathing difficulties, irritation to eyes, nose, throat, and hands

6.4 Protection Against Physical Hazards

6.4.1 Excavation Instability

The limits of excavation and method(s) of shoring side walls proposed by the contractor shall be approved by the engineer before the excavation begins. Workers will not enter excavations deeper than 4 feet. All requirements pursuant to 29 CFR 1926.651 and 652, Excavations, Trenching and Shoring, shall be observed.

7.0 WORK ZONE AND DECONTAMINATION PROCEDURES

A site must be controlled to reduce the possibility of exposure to any contaminations present and to limit their transport from the site by personnel or equipment.

7.1 Control

A control system is required to ensure that personnel and equipment working on hazardous waste sites are subjected to appropriate health and safety surveillance and site access control.

The possibility of exposure or translocation of contaminants can be reduced or eliminated in a number of ways, including:

setting security or physical barriers at control points to regulate access to and/or exclude unnecessary personnel from the general area.

minimizing the number of personnel and equipment site consistent with effective operations

establishing work zones within the site

conducting operations in a manner which will reduce the exposure of personnel and equipment

minimizing the airborne dispersion of contaminants (utilizing dust control procedures)

implementing appropriate decontamination procedures for both equipment and personnel, when required.

7.2 Decontamination Procedures

As part of the system to prevent or reduce the physical transfer of contaminants by people and/or equipment from the site, procedures will be instituted if required for decontaminating anything leaving a contaminated work area. These procedures include the decontamination of personnel, protective equipment, monitoring equipment, cleanup equipment, etc. In general, decontamination at the site consists of rinsing equipment with detergent/water solution. Reusable decontaminated PPE will be stored for air drying.

Decontamination is addressed in two ways: the physical arrangement and control of contamination zones, and the effective use of decontamination procedures.

The decontamination process uses cleaning solutions, followed by rinse solutions. Used solutions, brushes, sponges, and containers must be properly disposed of.

Decontamination Solution

Description	Usage
3 cups Alconox 1 cup sodium carbonate 5-8 gallons water	Light contamination
Commercial Detergent Full strength or diluted	Organic contaminants

As with all alkaline cleaners, continuous or repeated contact with the skin should be avoided. If and employee's skin becomes contaminated, he/she will move to the decontamination area and remove contaminated clothing, and wash with a mild soap/detergent and water to remove any contaminant from the skin. He/she will then see a physician for possible medical treatment.

A rinse solution will be used to remove the contamination solution and neutralize any excess decontamination solution.

All personnel will follow these decontamination procedures:

1. When returning from a contaminated work area, remove heavy soil, as necessary, from boots, gloves, and clothing by using a towel or hose.

2. Remove outer gloves when required for sampling and dispose of properly

3. Remove respirator(if required) and hard hat

4. Remove inner gloves when required for sampling and dispose of properly

Decontamination procedures may be modified, if necessary with the approval of the Site Safety Officer.

7.4.1 Personal Decontamination During Medical Emergencies

In the event of personal injury, first-aid personnel must decide if the victim's injuries are potentially the type that would be aggravated by movement. If there is any doubt, or if the victim is unconscious and cannot respond, no attempt should be made to move the victim to the decontamination area. Only off-site paramedics may move such victims. If the paramedics approve, the victim's PPE will be cut off. If the decision is made not to remove the victim's protective clothing, he/she will be wrapped in a tarp or similar object to protect the ambulance and crew during

transportation. If the victim is contaminated with materials that threaten to cause additional injury or immediate health hazards, the PPE will be carefully removed and the victim washed appropriately.

8.0 EMERGENCY PROCEDURES

8.1 General Injury

Step 1:	Use first-aid kit on site, if appropriate
Step 2:	Use off-site help and/or assistance if appropriate
Step 3:	Notify SSO, Project Manager and Health and Safety Director

8.2 Specific Treatments

Eye Exposure:	Flush eye with eye wash, call ambulance
Skin Exposure:	wash immediately with soap and water; call ambulance, if necessary
Fire (localized):	use fire extinguisher and activate alarm system, if necessary.
Fire (uncontrolled):	call Fire Department
Chemical Spill:	call Fire Department and National Response Center for Toxic Chemical and oil Spills
Explosion:	call Fire Department if potential for additional explosions or fire danger exists
Inhalation:	move affected person(s) to fresh air and cover source of vapors, if appropriate
Swallowing:	call ambulance.

8.3 Emergency Phone Numbers

Medical/General Service Numbers

Police	911
Fire Department	911
Ambulance	911

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Inhalation:	move affected person(s) to fresh air and cover source of vapors, if appropriate
Swallowing:	call ambulance.

8.3 Emergency Phone Numbers

Medical/General Service Numbers

Police	911
Fire Department	911
Ambulance	911

Hospital

Alameda Hospital 2070 Clinton Avenue Alameda, California	(510) 522-3700

From the Site, proceed to Central Avenue. Continue on Central Avenue to Willow and turn right on to Willow. Proceed four blocks directly to hospital. Medical Center is located on the right side of the road.

Hazardous Materials Response/Reporting

National Emergency Response Center	(800) 424-8802
California State Office of Emergency Services	(800) 852-7550
Regional Water Quality Control Board	(510) 464-1255

8.4 Accident Reporting Procedures

In the event of an emergency, contact the following:

LWES:

Jean Lindsay (Health and Safety Director)	(415) 822-4555
Sergio Salas (Project Manager)	(415) 822-4555
Nestor Contreras (Site Safety Officer)	(415) 822-4555

If an exposure or injury occurs, work shall be temporarily halted until the SSO, in consultation with the Health and Safety Director, decides it is safe to continue work.

9.0 DOCUMENTATION

The SSO will record field observations of health and safety procedures by workers conducting the planned activities outlined in Section 3.0, including deviations from the recommended health and safety procedures.

10.0 MEDICAL MONITORING

Appropriate medical monitoring will be required of LWES personnel to:

Meet requirements of 29 CFR 1910.120 (f)

Meet requirements for respirator use.

Meet other legal requirements.

11.0 TRAINING PROGRAM

1. The LWES SSO shall have fulfilled all appropriate training requirements indicated by 29 CFR 1910.120 (e), including the 40-hour training requirement and the required refresher courses.

2. A tailgate session to discuss this HSP will be held before field activities begin. All LWES personnel and contractor/subcontractor employees shall receive, at a minimum, the following information:

   the names of personnel and alternates responsible for site safety and health

   safety, health, and other hazards at the Site

   instruction in the use of personal protective equipment

   action levels

   employee work practices to minimize risks from on-site hazards

   instruction in the safe use of engineering controls and equipment on site

   site control measures

   emergency plans

   Proposition 65 warnings

12.0 SIGNATURES

12.1 LWES Personnel

This HSP for soil sample collection and excavation of affected soil to be conducted at 2394 Mariner Square Drive, Alameda, California, is approved by the following LWES personnel:

Jean Lindsay
Health and Safety Director

3/24/95
Date

Sergio Salas
Project Manager

8/24/95
Date

Nestor Contreras
Site Safety Officer

8/24/95
Date

12.2 Contractor and Subcontractor Personnel

Contractor and Subcontractor Agreement:

1. Contractor certifies that the following personnel noted below to be employed on the soil sampling and excavation project at 2394 Mariner Square Drive, Alameda, California, have met the requirements of the OSHA Hazardous Waste Operations and Emergency Response Standard 29 CFR 1910.120 and other applicable OSHA standards.

2. Contractor certifies that in addition to meeting the OSHA requirements, it has received a copy of this HSP, and will ensure that its employees are informed and will comply with both OSHA requirements and the guidelines in this HSP.

3. Contractor further certifies that it has read, understands and will comply with all provisions of this HSP, and it will take full responsibility for the health and safety of its employees.

Contractor:	Signature:	Date:

APPENDIX A

CHEMICAL DESCRIPTIONS

Benzene

Benzene is a clear colorless liquid.

Exposure to high concentrations (3,000) may result in acute poisoning, characterized by narcotic action of benzene on the central nervous system. Chronic poisoning occurs most commonly through inhalation and dermal adsorption. Benzene is also a human carcinogen. Unleaded regular gasoline commercially available in the United Sates typically contains less than about 2 percent benzene.

The PEL for a time-weighted average (TWA) 8-hour period is 1 ppm in air (OSHA Standard 29 CFR 1910.1000).

Toluene

Toluene is a colorless liquid with a benzol-like odor.

Inhalation of high vapor concentrations may cause impairment of coordination and reaction time, headaches, nausea, eye irritation, loss of appetite, a bad taste in the mouth, and weariness.

The PEL for a TWA over 8-hour period is 100 ppm in air (OSHA Standard 29 CFR 1910.1000)

Xylene

Xylene is a clear, colorless liquid.

Exposure to high concentrations of vapor may result in eye and skin irritation. Eye irritation may occur at concentrations of about 200 ppm.

The PEL for a TWA over an 8-hour period is 100 ppm in air (OSHA Standard 29 CFR 1910.1000).

Ethylbenzene

Ethylbenzene is a clear, colorless liquid.

Exposure to high concentrations of vapor (approximately 1,000 ppm) may result in irritation to skin and mucous membranes, dizziness, irritation of nose and throat and a sense of constriction of the chest.

The PEL for a TWA over an 8-hour period is 100 ppm in air (OSHA Standard 29 CFR 1910.1000).