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HEALTH AND SAFETY PLAN

CHIRON INTERIM TEMPORARY PARKING FACILITY
EMERYVILLE, CALIFORNIA

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EMERYVILLE, CALIFORNIA

Eric Rothwell, CIH
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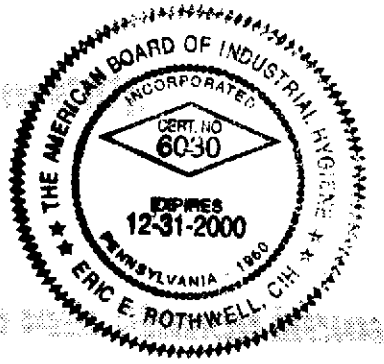

Table of Contents

1.0 Introduction

This Health and Safety Plan (HASP) was developed for RGW Construction, Inc. by Rothwell Consulting Group (RCG) specifically for work operations in contaminated areas of the City of Emeryville/PG&E site. This project includes construction of a temporary parking facility for Chiron Corporation.

This HASP establishes the policies and procedures that protect the workers and the general public from potential health and safety hazards posed at this site. All activities will be conducted in a manner that minimizes the probability of injury, illness, property damage, or damage to the environment and will be performed in accordance with RGW Construction's Injury and Illness Prevention Program.

This HASP is prepared in accordance with and in reference to the following regulations and guidelines:

- United States Department of Labor, OSHA standards, specifically:
  - Title 29 CFR Part 1910.120 - Hazardous Waste Site Operations and Emergency.
  - Title 29 CFR Part 1926 - Health and Safety Regulations for Construction
- California Occupational Health and Safety Regulations, specifically:
  - Title 8 CCR §5192 - Hazardous Waste Site Operations and Emergency Response
  - Title 8 CCR §5094 - Hazard Communication
  - Title 8 CCR §5095-5100 - Hearing Conservation
  - Title 8 CCR Chapter 4, Subchapter 4 - Construction Safety Orders
  - Title 8 CCR §3203 - Injury and Illness Prevention Program
- United States Environmental Protection Agency's Standard Operating Safety Guides, July 1988.
- NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidance Manual for Hazardous Waste Activities, October 1985.
- RGW Construction's Injury and Illness Prevention Program

1.1 Description of Site

The proposed parking facility is situated on a 4.5 acre parcel located at the northwest corner of the intersection of Hollis Street and 53rd Street in Emeryville, California. The site is adjacent to moderate street traffic and pedestrian walkways.

1.2 Site Conditions

Polychlorinated biphenyls (PCBs) were discovered in the soil during previous site investigations in two areas of the site. In the late 1980s, PG&E excavated these areas to remove PCB-contaminated soil that exceeded the DTSC-approved clean-up level of 25 mg/kg. Confirmation samples found no detectable levels of PCBs in the southern excavation area and minor concentrations (10.9 mg/kg) in the northern excavation area.

Additional soil samples collected in areas of the site not included in the excavation areas detected PCBs at a maximum concentration of 2.1 mg/kg. The average of PCB concentrations detected were 0.26 mg/kg.

The maximum concentration of total extractable petroleum hydrocarbons (TEPH) found was 260 mg/kg, with an average of 44 mg/kg.

Oil and grease was found in the soil at a maximum concentration of 4,000 mg/kg, with an average of 2,175 mg/kg.

Sampling for aromatic hydrocarbons-benzene, toluene, ethyl benzene, and xylenes (BTEX)-found toluene and xylenes at a maximum concentration of 0.39 mg/kg.

The maximum arsenic concentration detected in soil was 340 mg/kg, with a site average concentration of 41 mg/kg. The maximum concentration detected from the Waste Extraction Test was 7.7 mg/l.

The maximum total chromium concentration detected in soil was 54 mg/kg, with a site average concentration of 33 mg/kg. The maximum concentration detected from the Waste Extraction Test was 0.4 mg/l.

The maximum cadmium concentration detected in soil was 4.8 mg/kg, with a site average concentration of 1.5 mg/kg.

The maximum total lead concentration detected in soil was 190 mg/kg, with a site average concentration of 39 mg/kg. The maximum concentration detected from the Waste Extraction Test was 4.2 mg/l.

The maximum mercury concentration detected in soil was 0.82 mg/kg, with a site average concentration of 0.14 mg/kg.

1.3 Risk Assessment

Aerosol contaminants pose the greatest potential health threat to employees working on the site during construction activities. Theoretical airborne concentrations of total dust which could generate levels of metals exceeding their respective permissible exposure limits (and action levels) are shown below in Table 1.

Table 1 - Total Dust Concentrations At Which PELs Would Be Exceeded

Contaminant	Maximum Concentration Found in the Soil	PEL-TWA (Action Level) [Ceiling Limit]	Total Dust Concentration Above Which PEL Would Be Exceeded
Arsenic	340 mg/kg	0.01 mg/m^3 (0.005 mg/m^3)	29.4 mg/m^3 14.7 mg/m^3
Chromium (VI)	54 mg/kg	[0.01 mg/m^3]	185.2 mg/m^3
Cadmium	4.8 mg/kg	0.005 mg/m^3 (0.0025 mg/m^3)	1041 mg/m^3 5208 mg/m^3
Lead	190 mg/kg	0.05 mg/m^3 (0.03 mg/m^3)	263.2 mg/m^3 157.9 mg/m^3
Mercury (as Hg)	0.82 mg/kg	0.01 mg/m^3 [0.04 mg/m^3]	12500 mg/m^3 50000 mg/m^3

By calculating the predictive values using the available soil sampling data, it appears that no metals, as found during the investigations, pose a potential airborne exposure hazards since total airborne dust levels above 5 mg/m^3 are rarely seen during construction activities. This is especially true when airborne dust is controlled through the use of dust control measures (i.e. wetting of soil). In areas where wetting may not be possible due to unforeseen circumstances, employee exposures by inhalation can be controlled through the use of respiratory protection. Note that this risk assessment does not take into account petroleum hydrocarbon or PCBs contamination. It is possible that detectable levels of airborne petroleum hydrocarbon vapors will be seen in open excavations as a result of soil contamination. It is unlikely that hazardous levels of petroleum hydrocarbons or Aroclor will be seen. Groundwater could also pose a health concern to employees through direct skin contact. Therefore, direct skin contact with potentially-contaminated groundwater will be avoided.

Since site conditions are subject to change and unforeseen conditions may arise, amendments or additions may need to be made to this HASP during the course of work. Modifications to this plan can only be made by the Contractor with the assistance of the RGW Construction's CIH.

1.4 Pathways for Hazardous Substance Dispersion

Hazardous substances may have been and could possibly be dispersed from the source by air or groundwater. Further dispersion by air shall be controlled using dust control measures, work zones, and perimeter fencing.

1.5 Health and Safety Plan Availability

This written Health and Safety Plan shall be made available to any contractor or subcontractor or their representative who will be involved with the hazardous waste

operation; to employees; to employee designated representatives; to Division representatives, and to personnel of other federal, state, or local agencies with regulatory authority over the site.

2.0 Organizational Structure

The organizational structure part of this Health and Safety Plan establishes the specific chain of command and specifies the overall responsibilities of supervisors and employees. The organizational structure shall be reviewed and updated as necessary to reflect the current status of site operations. The following are the key supervisory personnel:

2.1 Certified Supervisor

_____ is named as the general supervisor (or certified supervisor for hazardous substance removal work). He has the responsibility and authority to direct all operations involving hazardous waste and substances.

2.2 Site Safety Officer

_____ or an alternate is named as the Site Safety Officer. He has the responsibility and authority to develop and implement the site health and safety plan and verify compliance.

2.3 Qualified Person

_____ is named as the Qualified Person and CIH. He has the responsibility and authority to develop and implement the site health and safety plan and verify compliance. He is also responsible for operations defined as hazardous substance removal work. He is responsible for scheduling and overseeing any air sampling, laboratory calibration of sampling equipment, and for evaluation of soil or other contaminated materials sampling results.

2.4 Miscellaneous Personnel

All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities shall be determined and named on as as-needed basis. These personnel shall be briefed on the special hazards of the site and shall sign the Signature Page of this plan.

2.5 Employee Safety Responsibility

Although the employer is responsible for providing a safe and healthful workplace, each employee is responsible for his/her own safety, as well as the safety of those around him/her. The employee shall use all equipment in a safe and responsible manner, and as directed by supervisory personnel.

2.6 Logs, Reports, and Recordkeeping

Recordkeeping is a crucial component of any effective health and safety program. Site safety records shall therefore be updated daily. The following logs, reports, and records shall be maintained on site:

- Site safety meetings
- Employee training records - site specific and visitors;
- Daily safety inspection logs
- Weekly safety reports
- Health and safety plan signature page
- Employee and visitor sign-in sheets
- Ambient and personal air monitoring results
- OSHA 200 log

3.0 Comprehensive Workplan

The comprehensive workplan part of this plan addresses the tasks and objectives of the site operations and the logistics and resources required to reach those tasks and objectives.

The comprehensive workplan also addresses anticipated cleanup activities, as well as normal operating procedures. Operating procedures not addressed in this plan are available in RGW Construction's Injury and Illness Prevention Program, that is available for review in the RGW office trailer.

3.1 Tasks, Objectives, and Methods

The objective of the project to make improvements to and contruct a temporary parking faciltiy for Chiron Corporation.

3.2 Code of Safe Practices

See Appendix F.

3.3 Personnel Requirements

Personnel required to conduct the work activities for the site shall be selected based upon their individual capabilities, training, and experience in the job functions to which they are assigned. The required personnel will be determined prior to the start of work and is subject to change as work progresses.

3.4 Personnel Training Requirements

All employees working on site exposed to hazardous substances, health hazards, or safety hazards, and their supervisors and management responsible for the site shall

receive training meeting the requirements of this section before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this subsection. Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

3.4.1 Initial Training Elements To Be Covered

The training shall thoroughly cover the following:

- Names of personnel and alternates responsible for site health and safety
- Engineering controls and work practices by which the employee can minimize risks for hazards
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards
- The biological, chemical, radiological and physical hazards present on the site and their respective properties
- The potential routes of exposure to chemicals, the possible toxic effects, the IDLH and PEL values of chemical hazards, and the level of personal exposure which can be anticipated, acute and chronic effects of toxic chemicals
- Heat and/or cold stress prevention, treatment, and monitoring
- Personal cleanliness and restrictions on eating, drinking, and smoking on the job
- The availability of on-site potable water and toilet facilities
- Applicable provisions of the OSHA standards and the Injury and Illness Prevention Program
- Permit-required confined space entry procedures
- Spill containment program
- The functions, capabilities, limitations, use, and maintenance of monitoring equipment
- The HASP shall be reviewed and made available to employees
- The use, care, and disposal of the specific PPE selected for this work. The PPE shall be available for hands-on familiarity and practice donning, as needed.
- Handling of medical emergencies including the locations of telephones and numbers for ambulance service, and hospital locations.
- The decontamination procedures
- The emergency contingency procedures
- The fire and accident response procedures
- Basic operational safety, emphasizing the hazards expected on the site
- Employee rights and responsibilities under OSHA
- Site-specific, task-specific activity hazard analysis.

3.4.3 Qualifications for Trainers

Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the

academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

4.0 Medical Surveillance Program

The medical surveillance program shall be instituted by RGW Construction for the following employees:

- Any employee who is or may be exposed to hazardous substances or health hazards at or above the PELs or, if there is no PEL above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year.
- Any employee who wears a respirator during any part of a day for a period of 30 days or more in a year, or as required by 8 CCR 5144.
- Symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; and
- Members of HAZMAT teams.

4.1 Frequency of Medical Examinations and Consultations

Medical examinations and consultations shall also be made available by the employer to each employee covered under Section 3.6 on the following schedules:

- Prior to assignment.
- At least once every twelve months for each employee covered, unless the attending physician believes a longer interval (not greater than biennially) is appropriate.
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months.
- As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards or that the employee has been injured or exposed above the PELs or published exposure levels in an emergency situation.
- At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.

For employees who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or who have been exposed during an emergency incident to hazardous substances at concentrations above the PELs or the published exposure levels without the necessary personal protective equipment being used shall undergo a medical examination:

- As soon as possible following the emergency incident or development of signs or symptoms;

- At additional times, if the examining physician determines that follow-up examinations or consultations are medically necessary.

4.2 Content of Medical Examinations or Consultations

The content of initial medical examinations shall be as follows:

1. Complete medical and occupational history;
2. General physical examination including an evaluation of all major organ systems;
3. Pulmonary function testing including FVC and FEV_1;
4. CBC with differential;
5. Biological blood profile (SMAC 20/25 or equivalent);
6. Urinalysis with microscopic examination;
7. Audiometric testing (as required by the hearing conservation program)
8. Visual acuity;
9. Chest x-ray;
10. Electrocardiogram;
11. Urinalysis for heavy metals;
12. Serum lead; and
13. Serum ZPP.

4.3 Examination by a Physician and Costs

All medical examinations and procedures shall be performed by or under the supervision of a licensed physician certified in occupational medicine by the American Board of Preventative Medicine, and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

4.4 Information Provided to the Physician

The employer shall provide one copy of this standard and its appendices to the attending physician, and in addition, the following for each employee:

- A description of each employee's duties as they relate to the employee's exposures.
- Each employee's exposure levels or anticipated exposure levels.
- A description of any PPE used or to be used by each employee.
- Information from previous medical examinations of each employee which is not readily available to the examining physician.
- Information required by 8 CCR 5144 for each employee.

4.5 Physician's Written Opinion

The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures. The physician shall provide the results of the medical examination and tests to the employee if requested. The employer shall

obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:

- The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response, or from respirator use.
- The physician's recommended limitations upon the employee's assigned work.
- A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

4.6 Medical Surveillance Recordkeeping

An accurate record of the medical surveillance shall be retained. This record shall be retained for the period specified and meet the criteria of 8 CCR 3204. The record shall include at least the following information:

- The name and social security number of the employee.
- Physician's written opinions, recommended limitations, and results of examinations and tests.
- Any employee medical complaints related to exposure to hazardous substances.
- A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices.

5.0 Site Safety Meetings

Tailgate safety meetings shall be held prior to the start of work and weekly thereafter. Topics to be discussed shall include health and safety hazards associated with the day's activities and any safety-related issues from the previous week's work.

Pre-entry briefings shall be held prior to initiating any site activity in contaminated areas, and at such other times as necessary to ensure that employees are apprised of the site health and safety plan and that this plan is being followed. For operations defined as hazardous substance removal work, a pre-job health and safety conference shall be held before the start of actual work. The conference shall include representatives of the owner or contracting agency, the contractor, the employer, employees, and employee representatives; and shall include a discussion of the employer's health and safety program and the means, methods, devices, processes, practices, conditions, or operations which the employer intends to use in providing a safe and healthy place of employment.

Visitors who are find it necessary to enter the EZ or the CRZ must receive a short orientation covering the relevant safety information contained in this plan.

5.1 Documentation of Site Safety Meetings

A detailed record of each safety meeting and health and safety conference shall be made on the Safety Meeting Form in Appendix G. Visitor training shall also be recorded on this form.

6.0 Site Characterization and Hazard Evaluation

The site has been characterized by Erler & Kalinowski, Inc., PG&E, and Harding Lawson Associates to identify any environmental contaminant. This information has been evaluated by Rothwell Consulting Group to determine the appropriate health and safety control procedures needed to protect employees from the identified hazards.

6.1 Preliminary Evaluation and Hazard Identification

A preliminary evaluation of a site's characteristics has been performed by a Certified Industrial Hygienist to aid in the selection of appropriate employee protection methods prior to site entry. After the start of work, a more detailed evaluation of the site's specific characteristics shall be performed by the qualified person, under the direct supervision of a Certified Industrial Hygienist, to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH) or other conditions that may cause death or serious harm have been identified during the preliminary site investigation and evaluated during the contamination investigation.

6.2 Chemical Hazards

The chemical listed in Table 2 have been identified in detectable concentrations in the soil in the vicinity of the construction area.

Table 2 - Summary of Contaminants

Compound	Cal/OSHA PEL†	Route of Exposure††	Characteristics and Signs and Symptoms of Overexposure.
Arsenic	0.01 mg/m^3 (PEL) 0.005 mg/m^3 (AL)	Inhalation	Gray solid or powder that irritates the skin and mucous membranes. May cause hoarse voice. Type A1 carcinogen.
Cadmium	0.04 mg/m^3 (PEL)	Inhalation Skin contact	Grayish-white powder. Can cause respiratory tract irritation, a metallic taste, cough, flu-like symptoms following exposures to high concentrations.

Chromium	0.001 mg/m^3 (PEL)	Inhalation Skin contact	Silver-white to dark brown solid or powder that irritates the skin and mucous membranes. Breathing chromium fumes can cause lung cancer.
Lead	0.05 mg/m^3 (PEL) 0.03 mg/m^3 (AL)	Inhalation	Gray solid or powder that causes fatigue, constipation, insomnia, weight loss. Damages central and peripheral nervous system. Causes learning disabilities in children and fetal injury.
Toluene	100 ppm (PEL) 150 ppm (STEL) 500 ppm (C)	Inhalation Absorption Skin contact	Colorless liquid with an aromatic odor. Irritates eyes, nose. Causes fatigue, headaches, dermatitis.
Xylenes	100 ppm (PEL) 150 ppm (STEL) 300 ppm (C)	Inhalation Absorption Skin contact	Colorless liquid with an aromatic odor. Irritates eyes, nose. Causes fatigue, headaches, dermatitis.
Lead	0.05 mg/m^3 (PEL) 0.03 mg/m^3 (AL)	Inhalation	Gray solid or powder that causes fatigue, constipation, insomnia, weight loss. Damages central and peripheral nervous system. Causes learning disabilities in children and fetal injury.
Mercury (aryl and inorganic compounds)	0.1 mg/m^3 (C)	Inhalation Absorption	Seen in many forms. High doses can cause hand tremors, irritation of the mucous membranes, excessive saliva flow, personality changes.
Chlorodiphenyl s PCBs (54% Cl)	0.5 mg/m^3 (PEL)	Inhalation Absorption	Dark waxy solid with low volatility. Can cause skin chloracne by contact or liver injury if inhaled. Type A1 carcinogen.

† PEL = Permissible Exposure Limit as an 8-hour time-weighted average.
STEL = Short-Term Exposure Limit as a 15-minute time-weighted average.
C = Ceiling Limit which shall never be exceeded at any time.

†† This indicates the most likely route of occupational exposure. While ingestion can be a route of exposure in nearly every instance, it is unlikely in the occupational setting when using effective decontamination procedures and good work practices.

6.3 Physical Hazards

RGW Construction has developed standard operating procedures to minimize physical hazards. Failure to follow safety procedures, plans, and protocols could result in expulsion from the site or termination of employment.

All RGW Construction personnel, contractors, and subcontractors shall become familiar with the field activities. Hard hats and safety shoes are required in all areas of the site.

The following are physical hazards which may be present at the site:

6.3.1 Tripping, Slipping, and Falling Hazards

RGW personnel will be reminded daily to maintain sure footing on all surfaces. Use of safety harnesses will be required for any personnel working six or more feet above any surface, including on manlifts. Use of hand rails when climbing stairs will be enforced, and handrails will remain secure until the support structure itself is removed and lowered to ground level.

Work surfaces of unknown or suspect integrity will be strengthened or overlain with a work platform capable of supporting all personnel and equipment in use in that area.

In order to minimize tripping hazards caused by construction debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. This "house cleaning" effort will be enforced by the Site Safety Officer at the end of each day.

6.3.2 Head, Eye, and Back Injuries

As minimum requirements, hard hats and safety glasses will be donned prior to performing any site activities. This will prevent minor injuries caused by bumping one's head while working around and under construction equipment. Personnel will be trained in and required to use proper lifting techniques when lifting heavy objects.

6.3.3 Falling Objects

RGW believes that all tasks can be accomplished without any object free-falling to the ground. All equipment and material will be slowly lowered to the ground using a crane or skip bucket. No personnel shall work under this equipment at any time. Also, the RGW Site Safety Officer will ensure that an adequate area is clear of personnel while the equipment is in operation.

6.3.4 Heavy Equipment and Traffic

The use of heavy equipment on site presents the greatest potential for injury to personnel. In order to minimize these hazards, designated routes will be established for mobilization through the facility and specific traffic patterns will be established. All trucks will use spotters for backing procedures. All personnel working along roadsides are required to wear orange safety vests.

Personnel needing to approach heavy equipment during operation will observe the following protocols:

1. Make eye contact with the operator.
2. Signal the operator to cease heavy equipment activity.
3. Approach the equipment and inform the operator of intentions.

Only qualified personnel, as determined by the Site Superintendent, will operate heavy equipment. Those crew members directly involved with spotting for the operator will be the only personnel allowed within the operating radius of the heavy equipment. All other personnel will remain a safe distance away from these operations. Vehicles will yield to all bikes, pedestrians, and railroad crossings.

RGW will only use equipment that is in safe working order. To maintain this policy, all equipment brought onto the project site will be inspected for structural integrity, smooth operational performance, and proper functioning of all critical safety devices in accordance with the manufacturer's specifications. This inspection will be performed by a qualified equipment operator and Site Safety Officer. Equipment not conforming to the operational and safety requirements during this inspection will not be put into service until all necessary repairs are made to the satisfaction of the inspection group. Only qualified operators familiar with the equipment will be permitted to operate equipment.

6.3.5 Electrical Hazards

In order to prevent accidents caused by electric shock, the RGW Site Safety Officer will inspect all electrical connections on a daily basis. He will shut down and lock out any equipment which is found to have frayed wiring or loose connections until a qualified electrician can be contacted and repairs effected. Electrical equipment will be de-energized and tested by an electrician before any electrical work is done. All equipment will be properly grounded prior to and during all work.

In addition, ground fault circuit interrupters (GFCIs) will be installed whenever possible in each circuit between the power source and tool, unless the presence of a potentially explosive atmosphere precludes this procedure. In the event that generators are used to supply power, these generators will be equipped with GFCIs.

6.3.6 Welding Hazards

Personnel who will be performing or observing welding operations are required to use approved welding shields or glasses. Welding shields and glasses are to be inspected prior to each use for scratches and pits which would inhibit their ability to shield harmful ultraviolet light.

Personnel will be required to wear protective clothing to shield the skin from the harmful ultraviolet light produced by welding operations. Personnel working near welding operations which could ignite chemical protective clothing must wear flame retardant outer apparel (Nomex or equivalent).

6.3.7 Clearing and Grubbing

Only personnel experienced with the use of powered brush clearing equipment will be permitted to perform grubbing and clearing. Such equipment may include weed eaters and chain saws. Powered equipment should have an effective spark arrestor on the exhaust and mufflers should be in place. Eye and hearing protection is required during all clearing and grubbing operations with and around powered brush clearing equipment. All equipment must be inspected prior to each use.

6.3.8 Noise

When noise levels may exceed a time weighted average (TWA) of 85 dBA (decibels, A-weighted scale), hearing protection will be required by all exposed employees. Additionally, sound level monitoring will be conducted on-site. All RGW personnel undergo annual audiograms and will be restricted from high noise exposure should a standard threshold shift be detected. RGW's Hearing Conservation Program is in compliance with both the California and Federal Hearing Conservation Standards.

6.3.9 Weather and Heat Stress

With the possible combination of ambient factors such as high air temperature, high relative humidity, low air movement, high radiant heat, and protective clothing, the potential for heat stress is a concern. The potential exists for heat rash, heat cramps, heat exhaustion, and heat stroke.

RGW's action level for heat stress observation is set at 75° F. Whenever the ambient temperature is greater than or equal to this action level, the RGW Site Safety Officer will alert his crew to be vigilant for symptoms of heat stress. The RGW Site Safety Officer will also advise the crew to increase the amount of water intake.

Heat stroke, heat cramps, and heat exhaustion are covered in detail during our 40-hour hazardous waste training program. In addition, this information is discussed during "tailgate" safety meetings. Workers will be encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade during warm weather. Water and electrolyte-containing beverages will be provided on-site and will be available for consumption during work breaks. Fluids should be consumed not only when thirsty but at regular intervals. Workers will also be encouraged to take rests whenever they feel any adverse effects, especially those effects that may be heat-related.

RGW personnel are professionals and, through their extensive field experience, have become acclimated to heat and protective equipment requirements and are able to recognize when heat stress presents a health concern. In addition, they have been trained to recognize the symptoms of heat stress. Even with this experience, RGW still emphasizes heat stress awareness. During the safety "tailgate" meetings, the Site Safety

Officer will talk about heat stress, its symptoms, and the factors which affect a person's ability to handle heat stress.

6.3.10 Poisonous Flora

Employees may come into contact with poisonous plants, namely poison oak, during clearing operations. Personnel will be informed of the appearance of poison oak so that it can be avoided whenever possible. When contact with poison oak is inevitable, personnel should don PPE which will prevent direct skin contact with the plants and their resin.

6.3.11 Biting, Stinging Insects

Employees may be affected by biting and stinging insects. If mosquitoes prove to be a problem, insect repellent may be worn. Personnel who are allergic to bee, wasp, or hornet stings and who require epinephrine injections must notify the Site Safety Officer and all co-workers of this condition.

6.4 Site Topography and Accessibility by Air and Roads

The site is located in an urban, semi-industrial area. Topography consists of relatively flat terrain covered with some vegetation. The sites are readily accessible by adjacent city streets.

7.0 Site Control Program

Appropriate site control procedures shall be implemented to control employee exposure to hazardous substances before clean-up work begins. The site control program may be modified as necessary as new information becomes available.

7.1 Site Map

See Appendix B.

7.2 Site Work Zones

To prevent migration of contamination caused by personnel or equipment, work areas and personal protective equipment are clearly specified prior to beginning operations. Designated work areas or zones shall be established and delineated, as suggested by the Occupational Health and Safety Guidance Manual for Hazardous Waste Site Activities. Each contaminated work area will be divided into three zones: an Exclusion Zone (EZ), a Contamination Reduction Zone (CRZ), and a Support Zone (SZ).

7.2.1 Exclusion Zone

The Exclusion Zone will consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. It is anticipated that the EZ will encompass the immediate confines of the construction area. The size and configuration of this area will vary with wind direction, type of operations being conducted, and perimeter air monitoring results. The exclusion zone boundary will be clearly and conspicuously marked. A single entry and exit point will be established through the contamination reduction zone. Entry shall be limited to essential personnel or pre-approved visitors.

7.2.2 Contamination Reduction Zone

The Contamination Reduction Zone will be established between the exclusion zone and support zone. In this area, personnel will begin the sequential decontamination process required to exit the exclusion zone. To prevent off-site migration of contamination and to facilitate personnel accountability, all personnel will enter and exit the exclusion zone through the CRZ.

All waste materials generated in the CRZ shall be collected and effectively contained through the use of drums, bags, plastic sheeting, and/or tanks. All waste materials shall be labeled as such and properly disposed of according to their hazard classifications.

7.2.3 Support Zone

The Support Zone will consist of a clearly marked area where the office, break areas, and changing facilities are located. Smoking, drinking, and eating will be allowed only in designated areas. Sanitation facilities (toilets, drinking and washing water) are provided in the support zone.

7.3 Access Controls

Physical boundaries shall be established each zone and shall instruct all workers and visitors on the limits of the restricted areas. No one shall be allowed to enter a restricted area without the required protective equipment for that area. The Site Safety Officer shall ensure compliance with all restricted area entry and exit procedures.

A decontamination point shall be designated for personnel to exit from the contaminated area and enter into the clean area where they may rest and drink fluids.

Visitors should check in immediately upon arrival. Only authorized visitors will be allowed access to the contaminated areas. Each visitor will be required to provide and wear the necessary protective equipment during visits and shall be escorted by supervisory personnel while on site. All visitors, subcontractors and other personnel

will be required to sign a safety plan acknowledgment sheet to certify that they have read and will comply with the site Health and Safety Plan. Failure to comply with this site entry procedure will result in expulsion from the site.

7.4 Buddy System

The buddy system shall be used at all times at the site. Employees shall be organized into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide quick assistance to employees in the event of an emergency.

8.0 Personal Protective Equipment

Personal protective equipment (PPE) has been selected which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization and analysis.

Personal protective equipment selection is based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

The level of protection provided by PPE selection shall be increased when additional information on site conditions shows that increased protection is necessary to reduce employee exposures below established PELs and published exposure levels for hazardous substances and health hazards.

8.1 PPE Selection and Action Levels

Hard hats and steel-toed safety shoes are required at all times at the site. Personnel working near road traffic are also required to wear orange safety vests.

In areas of contamination, initial PPE requirements outlined in Table 3 must be used.

Table 3 - Initial PPE Requirements

Location	Tasks	EPA Level	Equipment Required
Exclusion Zones	All tasks.	D	• Hard hat • Steel-toed shoes • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves
Contamination Reduction Zone	All tasks.	D	• Hard hat • Steel-toed shoes • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves
Support Zone	All tasks.	D	• Hard hat • Steel-toed shoes

If air monitoring indicates levels exceeding the Action Level or PEL for all other known contaminants, or if PID levels exceed 5 ppm, PPE shall be upgraded to the level shown in Table 4. PPE may be downgraded whenever air monitoring indicates that airborne exposures are below the applicable Action Levels or PELs, and only at the consent of the CIH.

Table 4 - PPE Requirements Should Conditions Warrant Upgrade

Location	Tasks	EPA Level	Equipment Required
Exclusion Zones	All tasks involving contact with contaminated groundwater.	C	• Half-mask air purifying respirator equipped with HEPA/organic vapor combination cartridges • Hard hat • Safety glasses. • Steel-toed shoes • Tyvek coveralls • Rubber overboots, • Nitrile gloves • Cotton inner gloves
Contamination Reduction Zone	All tasks.	D	• Hard hat • Safety glasses. • Steel-toed shoes • Tyvek coveralls • Rubber overboots, • Nitrile gloves • Cotton inner gloves
Support Zone	All tasks.	D	• Hard hat • Safety glasses. • Steel-toed shoes

8.2 PPE Limitations

The PPE selected for use at the site provides limited protection against chemical contaminants. Tyvek protective clothing must not be worn in areas where splashing of hazardous liquids on the skin is possible. In addition, Tyvek clothing must not be worn by persons performing hot work such as welding, brazing, and metal cutting.

Half mask air-purifying respirators, as specified in the Table 4, must not be worn in an oxygen deficient atmosphere or where concentrations exceed the capabilities of the respirator cartridge. Also, respirator cartridges must conform to the chemical hazards present at the site. Always read the respirator cartridge prior to use to ensure that it is the correct type.

8.3 PPE Work Mission Duration

Disposable protective clothing is to be disposed of after each use. Disposable protective clothing must be replaced upon re-entry into the Exclusion Zone, or if the suit becomes

damaged or saturated during use. Repairs to small rips may be made to protective clothing using duct tape.

8.4 PPE Maintenance and Storage

All PPE, including overboots and gloves, shall be maintained in good condition. Any PPE found to be torn, cut, punctures, or otherwise damaged shall dispose of the PPE immediately. After use and decontamination, they shall be stored overnight in a closed container. The following day, the closed container shall be transported to the PPE donning area for reuse.

8.5 PPE Training and Proper Fitting

All personnel shall be thoroughly trained in the proper use and limitations of the equipment they are assigned to wear. Annual qualitative respirator fit tests are required of all personnel wearing negative pressure respirators. Qualitative fit tests will utilize isoamyl acetate or irritant smoke. Fit tests must incorporate the style and size of respirator to be used. Additionally, a positive and negative fit test shall be conducted each time a respirator is donned.

8.6 PPE Donning and Doffing Procedures

All PPE shall be donned prior to entering the CRZ. PPE shall be donned with the assistance of a "buddy" to verify that equipment is worn properly. All PPE shall be worn in accordance with the manufacturer's recommendations. At no time shall a person remove the designated PPE while in the work areas. Disposable PPE shall only be removed in the Contamination Reduction Zone upon exiting the Exclusion Zone. Personnel shall utilize seating in the CRZ to prevent tripping and falling during decontamination and doffing procedures.

8.7 PPE Inspection Procedures

PPE shall be inspected by employees prior to donning. Boots, gloves, and disposable clothing found to be defective shall not be worn and shall be disposed of. Defective respirators, safety glasses, and hard hats shall be reported to the Site Safety Officer.

8.8 Evaluation of the Effectiveness of the PPE Program

Periodic inspections and observations of personnel using PPE shall be made by the Site Safety Officer to ensure that the PPE Program elements are being followed.

9.0 Respiratory Protection Program

9.1 Respirator Cartridges

The crew members working in an EPA Level C ensemble shall wear half-mask air purifying respirators equipped with HEPA/organic vapor cartridges, depending on site conditions. HEPA/organic vapor cartridges hold approval for dust, mists, fumes, asbestos, and radionuclides, as well as organic vapors at concentrations less that 1,000 ppm.

9.2 Cartridge Changes

All cartridges will be changed a minimum of once daily. However, increased airborne concentrations and breathing rates may necessitate more frequent changes. Changes will occur when personnel begin to experience increased breathing resistance, notice any unusual odor inside the respirator, or experience excessive heat generation in the cartridges. All cartridge changes will take place in the CRZ after decontamination of the exterior part of the PPE ensemble.

9.3 Respirator Inspection, Cleaning and Storage

Respirators shall be maintained by the employee to whom they are assigned. All respirators and associated equipment shall be inspected and cleaned, as necessary, prior to use. Respirators shall be decontaminated, cleaned, and disinfected by the user during each decontamination episode. Harsh detergents or solvents must not be used to clean respirators. Cleaned respirators must be thoroughly dried before storing. Respirators will be checked periodically by the Site Safety Officer. Respirators shall be stored in a clean, dry container and out of direct sunlight. Respirators must also be stored in such a way that the facepiece is not misshapen.

9.4 Respirator Use with Facial Hair

No personnel with facial hair which interferes with the respirator's sealing surface shall be permitted to wear a respirator.

9.5 Respirator Use With Corrective Lenses

Full-face respirator use is not anticipated at the site. However, normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses who also must don full-face respiratory protection, special spectacles designed for use with respirators will be provided.

9.6 Respirator Use With Contact Lenses

Contact lenses shall not be worn with any type of respirator. Moreover, contact lenses are not allowed on the site.

9.7 Medical Certification for Respirator Use

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator.

9.8 Respirator Limitations

The respirators specified for this site have their limitations. Respiratory protection specified in Table 4 may not be worn in atmospheres immediately dangerous to life or health (IDLH), or in oxygen deficient atmospheres. They may not be worn in concentrations which exceed ten times the PEL of any airborne contaminant. HEPA/organic vapor cartridges may not be worn in concentrations which exceed 1000 ppm.

10.0 Air Monitoring

After the actual operation commences; for example, when soil is moved or disturbed, RGW will monitor those employees likely to have the highest exposures to hazardous substances and health hazards. Perimeter monitoring shall also be conducted upwind and downwind of each construction area during operations involving the most heavily contaminated soils.

Monitoring shall be performed where airborne concentrations of hazardous substances are anticipated to be the highest, as determined by the Certified Industrial Hygienist, . Air monitoring results will be used to determine and evaluate engineering controls, work practices, and PPE so that employees are not exposed to levels which exceed PELs.

10.1 Employee Air Monitoring

Upon initial entry into the most heavily contaminated work areas, representative air monitoring shall be performed on employees of each job task and at the perimeter of the site. Samples shall be collected using portable air sampling pumps equipped with the proper sampling media. Air samples shall be analyzed at an AIHA-accredited laboratory. Also, the Exclusions Zone shall be monitored using a calibrated photoionization detector.

If the employees likely to have the highest exposure are over PELs or published exposure levels, then monitoring shall continue in order to identify all employees likely to be above those limits.

10.2 Environmental Air Monitoring

Because of the potential for off-site migration of contaminants to downwind residents, environmental air monitoring stations shall be set up at locations upwind and

downwind of the site using portable air sampling pumps equipped with the proper sampling media.

If monitoring indicates that downwind contamination concentrations are greater than upwind levels on any given day, engineering controls and work practices shall be changed to further minimize the off-site migration of dust. If monitoring shows downwind levels exceeding 125% of the upwind levels or net downwind lead levels exceeding regulatory limits, work in the area shall cease until additional control measures can be implemented. If contaminant concentrations are found below these specified limits, environmental monitoring shall be suspended.

10.3 Types of Monitoring Equipment, Frequency, and Calibration Schedules

Table 5 summarizes the monitoring equipment needed, the monitoring schedule and the calibration required.

Table 5 - Monitoring Schedule

Type	Frequency and Location	Calibration Schedule
Arsenic Air sampling pump equipped with 37 mm MCE filter cassettes.	One sample per job task and upwind/downwind for an 8-hour period.	Twice daily using primary standard calibration device.
PCBs Air sampling pump equipped with OSHA variable sampler.	One sample per job task and upwind/downwind for an 8-hour period.	Twice daily using primary standard calibration device.
Petroleum Hydrocarbons Photoionization detector.	Continuously in the EZs during excavation.	Once per day.

10.4 Training Requirements of Monitoring Personnel

Personnel conducting air monitoring shall have the training and experience necessary to properly perform the air monitoring and equipment calibration. The air monitoring shall be performed under direct supervision of a Certified Industrial Hygienist.

10.5 Documentation of Monitoring

Records of monitoring results shall be maintained at the site. Records shall include the date, time, contaminants or hazards monitored, person conducting monitoring, calibration date and method, operations and location of monitoring, and results. An air

monitoring data sheet shall be completed for each sample. Sample data sheets for direct reading and integrated sampling devices are available in Appendix C.

If monitoring is being conducted for confined space entry purposes, the monitoring results shall be recorded on the Confined Space Entry Permit available in Appendix D.

11.0 Informational Programs

RGW Construction shall inform employees, contractors, and subcontractors (or their representatives) actually engaged in hazardous waste operations shall be informed of the nature, level, and degree of exposure likely as a result of participation in such hazardous waste operations. Any information concerning the chemical, physical, and toxicological properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities.

The RGW Injury and Illness Prevention and Hazard Communication Programs shall be available in the job trailer. Employees, contractors, and subcontractors shall also be informed and shall share information on chemical hazards at the site, as required by the Hazard Communication standard. MSDS for all hazardous substances shall be made readily available to site personnel. Employees, contractors, and subcontractors working outside of the operations part of a site shall only be notified of chemical hazards as required by the Hazard Communication standard.

12.0 Material Handling

Hazardous substances and contaminated soils, liquids, and other residues shall be handled, transported, labeled, and disposed of in accordance with this section.

12.1 Drums and Containers

Drums and containers used during the clean-up shall meet the appropriate U.S. Department of Transportation (DOT), OSHA, and EPA regulations for the wastes that they contain. When practical, drums and containers shall be inspected and their integrity shall be assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions (i.e., buried beneath the earth, stacked behind other drums, stacked several tiers high in a pile, etc.) shall be moved to an accessible location and inspected prior to further handling.

If unlabeled drums and containers are encountered, they shall be considered to contain hazardous substances, work shall stop, and the Engineer shall be notified of the discovery.

Site operations shall be organized to minimize the amount of drum or container movement. Prior to movement of drums or containers, all employees exposed to the

transfer operation shall be warned of the potential hazards associated with the contents of the drums or containers.

DOT-specified salvage drums or containers and suitable quantities of proper absorbent shall be kept available and used in areas where spills, leaks, or ruptures may occur.

12.2 Shipping and Transport of Drums and Containers

Drums and containers shall be identified and classified prior to packaging for shipment. Drum or container staging areas shall be kept to the minimum number necessary to safely identify and classify materials and prepare them for transport. Staging areas shall be provided with adequate access and egress routes.

13.0 Decontamination Procedures

All employees leaving the contaminated area shall be appropriately decontaminated; all contaminated clothing and equipment leaving a contaminated area shall be appropriately disposed of or decontaminated.

Decontamination procedures shall be monitored by the site health and safety supervisor to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.

13.1 Personnel Decontamination Procedures

Upon exiting the Exclusion Zone, personnel shall remove all visible contamination from their PPE using soap, water, and brushes. Personnel shall use the following decontamination procedure:

Step 1: Hardhat removal
Step 2: Boot, glove, and coverall wash
Step 3: Boot, glove, and coverall rinse
Step 4: Tape removal
Step 5: Overboot removal
Step 6: Suit removal
Step 7: Outer glove removal
Step 8: Respirator removal (optional)
Step 9: Respirator cartridge removal (optional)
Step 10: Cotton inner glove removal
Step 11: Wash hands, face.

All disposable protective clothing shall be removed during decontamination and shall be disposed of in a lidded container lined with a labeled drum liner. All waste generated at the site shall be disposed of according to the hazard classification of the debris.

13.2 Equipment Decontamination Procedures

Upon exiting the Exclusion Zone, personnel shall drive equipment onto the decontamination pad in the Contamination Reduction Zone and remove all visible contamination from their equipment using soap, water, and brushes. The tracks and tires of equipment shall be scraped to remove the gross contamination before driving onto the decontamination pad. Water from the decontamination pad will be collected in a sump and transferred to a larger storage tank when full.

13.3 Location and Layout of Decontamination Facilities

Decontamination shall be performed in the southwest corners of each Exclusion Zone, adjacent to the Support Zone. This location will minimize the exposure of uncontaminated employees, areas, and equipment to contaminated employees or equipment. The decontamination facility shall be arranged in such a way that personnel and equipment must exit the Exclusion Zone only through the CRZ.

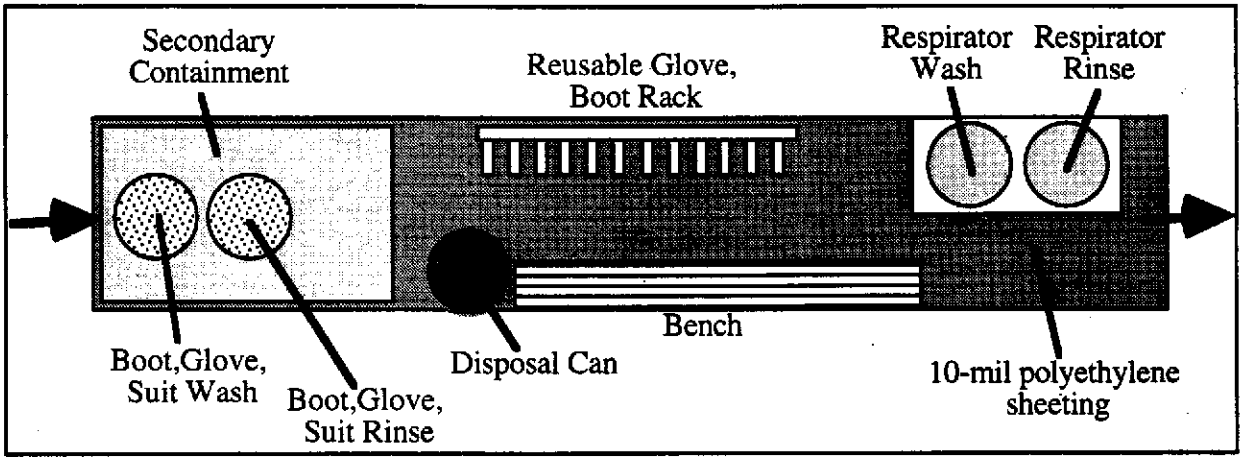

Figure 1 - Personnel Decontamination Layout

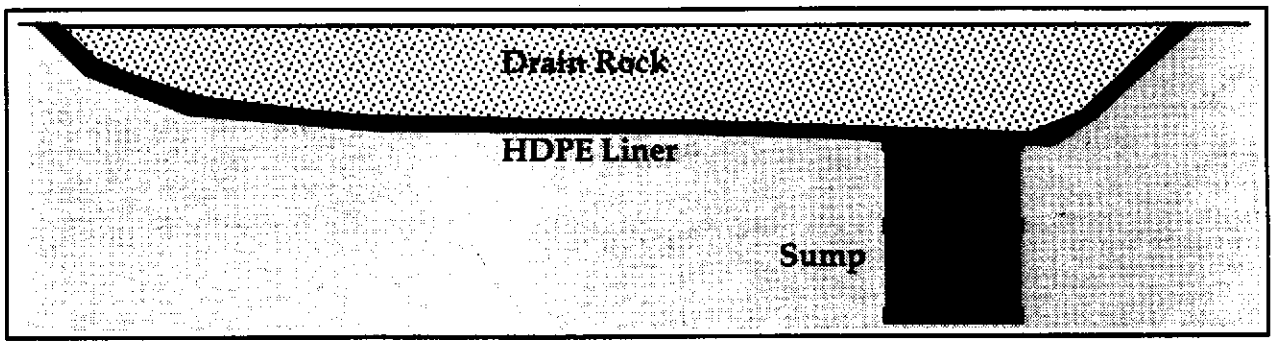

Figure 2 - Equipment Decontamination Layout

13.4 Employee Wash Facilities

After employee exit the Contamination Reduction Zone (where they have decontaminated and removed their PPE), they shall proceed to a wash facility to wash hands and face prior to eating, drinking, smoking, or leaving the site. Disposable towels shall be provided for drying.

13.5 Storage and Disposal of Decontamination Water

All water used for decontamination shall be contained and stored in storage tanks. All decontamination water shall be sampled for the contaminants of concern so that a proper disposal plan can be devised.

14.0 Emergency Response Plan

This emergency response plan explains how to handle anticipated emergencies prior to the commencement of hazardous waste operations.

14.1 Emergency Procedures

Employees may respond to low danger emergencies, such as administration of first aid, fighting small fires (with fire extinguishers), and clean-ups of small chemical spills (of less than 55 gallons or 500 pounds). All employees shall evacuate from the danger area when an emergency not listed above occurs, and shall not assist in handling the emergency.

Should outside medical or other emergency assistance be required, personnel shall notify the job trailer of the nature of the emergency and a call shall be to 9-1-1.

If the injury or illness appears to be minor, the affected person appears to be minor, the person may be driven to the emergency room of the nearest hospital.

14.2 Site Communications and Alerting Means for Emergencies

Temporary radio and telephone communications are be established at the job trailer and at the site. Emergency alerts shall be made using two-way radios from the job trailer to the site, or vice versa. Personnel working on the site shall be alerted by air horns using the following alerts:

3 short blasts in sequence..... Exit the work area
1 long blast..... All clear

14.3 Places of Refuge

All personnel, when alerted during emergencies, shall exit the Exclusion Zone through the Contamination Reduction Zone and muster in the Support Zone. Personnel are to remain in the staging area and await further instructions.

14.4 Identification of Nearest Medical Assistance

The nearest medical facility is:

Summit Medical Center
350 Hawthorne Avenue
Oakland, CA 94609

(510) 655-4000
Emergency 911

The Hospital Location Map and Emergency Telephone Numbers are found in Appendix B. They shall be posted at the site and at all phones in the main office trailer..

14.5 Status and Capabilities of Emergency Response Providers

Local emergency responders (fire department, medical providers and transporters) are on full time alert and have the capabilities to respond to any anticipated site emergency.

14.6 Pre-emergency Planning

The types of emergencies anticipated include personal injuries, fire, and small chemical spills. An OSHA-approved first aid kit shall be made available at the site. Also, two employees trained and currently certified in first aid and CPR shall be on site at all times. A charged and inspected fire extinguisher shall be available on each piece of equipment. Spill containment equipment will be made available if hazardous materials are stored on site.

14.7 Personnel Roles, Lines of Authority, and Communication

The Site Safety Officer shall act as the incident commander during an emergency response. He shall coordinate and direct emergency response procedures to all site personnel. An emergency shall be communicated to all persons on site by radio and/or verbal communications.

14.8 Emergency Recognition and Prevention

All site personnel shall be trained to recognize when an emergency situation has arisen and shall know how to notify the Site Safety Officer of the incident. Site personnel shall

use safe work practices to minimize the potential for an incident. Regular safety meeting shall be held to identify and communicate problem areas at the site.

14.9 Site Security and Control

During an emergency situation, all personnel are responsible for assuring the public's safety and shall keep all bystanders and unauthorized personnel from entering the site. All no time shall personnel give statements regarding an emergency to persons not associated with emergency response or management.

14.10 Decontamination of Injured Workers

Due to the relatively low levels of contamination at the site, decontamination procedures for injured workers may be limited to removal of outer coveralls and boots so long as such action will not aggravate the injury. If the injury is minor, and does not require immediate medical attention, workers may decontaminate as usual.

14.11 Accident Reporting and Follow-Up

All incident scenes shall be preserved so that a thorough incident investigation may be performed. All causes of the incident shall be investigated and the findings presented to site personnel to prevent future incidents.

15.0 Spill Containment

It is not anticipated that large volumes of hazardous materials will be stored on site. However, if large volumes of hazardous or potentially-hazardous liquids are stored on site, adequate secondary containment shall be provided around the storage area. In addition, spill containment equipment (absorbent socks, clay, and shovels, and a salvage drum) shall be kept at the site to respond to small spills of hazardous liquids or solids. Should a spill occur, immediate steps to contain the spill must be taken. Such steps include shutting of valves, closing doors or vents, protecting sanitary sewers and surface waters, or shutting off pumps. At no time shall a spill be contained if such action presents a hazard. The Site Safety Officer must then be notified of the situation so that he may direct the clean-up.

16.0 Sanitation at Temporary Workplaces

16.1 Potable Water

An adequate supply of potable water shall be provided on the site. Portable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap, and shall be otherwise designed, constructed, and serviced so that sanitary conditions are maintained. Water shall not be dipped from containers. Any container used to store, dispense, or distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

16.2 Non Potable Water

Outlets for non potable water, such as water for equipment decontamination, dust control, or firefighting purposes, shall be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes. There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing non potable water.

16.3 Toilet Facilities

A minimum of one separate toilet facility shall be provided for each 20 employees or fraction thereof of each sex. Such facilities may include both toilets and urinals provided that the number of toilets shall not be less than one half of the minimum required number of facilities. EXCEPTION: Where there are less than 5 employees, separate toilet facilities for each sex are not required provided the toilet facilities can be locked from the inside and contain at least one toilet. Under temporary field conditions, provisions shall be made to assure that at least one toilet facility is available.

If the site is not provided with a sanitary sewer, it shall be provided with one of the following toilet facilities unless prohibited by local codes:

- Chemical toilets
- Recirculating toilets
- Combustion toilets
- Flush toilets

Doors entering toilet facilities shall be provided with entrance locks controlled from inside the facility. Toilet facilities shall be kept clean, maintained in good working order, and provided with an adequate supply of toilet paper.

Washing facilities shall be on site for washing of hands and face following decontamination procedures. Such facilities shall be in near proximity to the CRZ.

17.0 Site Illumination

Table 7 - Minimum Illumination Intensities in Foot-Candles

Foot Candles	Area or Operations
5	General site areas.

3	Excavation and waste areas, accessways. active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: Warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas. (EXCEPTION: Minimum of 10 foot- candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Health and Safety Administration approved cap lights shall be acceptable for use in the tunnel heading.)
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dwelling rooms, dining areas, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

18.0 Confined Space Entry

In any confined space, dangerous air contaminants cannot always be prevented from accumulating or be removed by natural ventilation. Whenever an employee works in this type of environment, the chance always exists that an oxygen-deficient, explosive, or toxic atmosphere may be present upon entry or develop while working or even as a result of work being performed in the space.

Since all confined spaces represent a potential hazard, special precautionary measures must be implemented to protect the workers. This program outlines the precautionary measures necessary for each entry into a confined space. With thorough training, quality equipment, clear thinking, and responsible actions, the employee who enters the confined space should exit alive and unharmed.

18.1 Definitions of Confined Spaces

Federal OSHA's new regulation defines a confined space as a space that is:

- Large enough and so configured that an employee can bodily enter and perform work.
- Has limited or restricted means of entry or exit
- Is not designed for human occupancy

18.2 Permit-required Confined Spaces

The area presents or has the potential to contain hazards related to atmospheric conditions, engulfment, configuration or any other recognized serious hazard. The Site

Safety Officer shall conduct evaluations of the workplace and determine if there are any permit-required confined spaces. He/she then shall inform workers through signs or other means and prevent unauthorized entry.

18.2.1 Permit System

The Site Safety Officer shall act as entry supervisor. The entry supervisor must authorize entry, prepare and sign written permits, order corrective measures and cancel permits when work is completed. A permit is found in Appendix D.

18.3 Authorized Entrants

Authorized entrants must know the hazards, are able to recognize signs or symptoms of overexposure, and understand the consequences of exposure to hazards. Entrants must know how to use equipment, communicate and alert attendants and exit as quickly as possible when problems arise.

18.4 Entry Supervisor

The entry supervisor must know the hazards of confined spaces, verify that all tests have been conducted and procedures and equipment are in place. The entry supervisor shall terminate entry and cancel permits and verify that rescue service are available. He/she is also responsible for removing unauthorized workers who enter confined spaces and determine that acceptable conditions continue.

18.5 Rescue Services

The fire department shall be called whenever a confined space entry is performed. They shall be notified of the location and nature of the entry so that they can provide prompt assistance, if needed.

18.6 Lockout/Tagout Procedures

Any equipment (electrical or mechanical) that is capable of being reenergized remotely or dissipating potential energy must have all switches, valves, etc. capable of doing so physically disconnected or locked out prior to commencement of work.

The steps of a lockout/tagout procedure include:

- Inform the operator and all area personnel of work to be performed.
- Lockout device is attached, with tag, to switch, valve, or other actuator.
- All involved personnel attach separate locks to lockout device and pocket keys.
- All locks and therefore lockout device remain in place until work is complete and all personnel are clear of hazard.
- Lockout device is removed and operator and area personnel are informed of work completion.

18.7 Atmospheric Testing of Confined Spaces

18.7.1 List of Equipment

- MiniRAE model PGM-75K/IH photoionization detector equipped with a 10.6 eV lamp.
- Gastech Model 1314S catalytic hot wire combustible gas indicator and oxygen combination meter that reads in percent of the lower explosive limit that reads in percent oxygen.
- Ten foot non-sparking pole
- Tygon tubing

18.7.2 Testing for Explosive Atmosphere

Explosivity should always be the first test due to the immediate danger of explosion whether or not personnel actually enter the space. A hot wire combustible gas indicator should be used.

Warning

1. The catalytic hot wire LEL does not detect many hazardous gases.
2. Leaded gasoline and chlorinated solvents can poison the meter very quickly causing malfunction.
3. The LEL does not detect explosive dust atmospheres.
4. Nearby electrical equipment may cause erratic readings.

18.7.3 LEL Monitor Preparation

- The meter should be calibrated within 5 days of use.
- Start and check the meter according to manufacturer's instruction.
- Warm up and zero the meter in a clean area.
- Test the meter with a known positive source (such as an unlit butane lighter).
- Zero the meter at 5%. This allows the operator to see negative reactions which may indicate unexpected gases.

18.7.4 LEL Monitor Operation

It is best to provide a pole and a tube to collect the sample from a distance. The retention time for the tubing should be considered. Sample in an imaginary diamond very slowly.

- If the needle goes to 100% and then drops to zero, the UEL has been exceeded.
- If the needle quickly drops below zero, this indicates an oxygen deficient atmosphere.
- If the needle deflects upscale and then comes back down to zero, this any be caused by a gas that is heavier than air.

- If there is a constant upscale erratic deflection of the needle, there may be high levels of chlorinated solvents and some heavier inert gases.

- If more than 100% of the LEL, this is very dangerous and must be made explosive before it is safe to enter.
- If 100% of the LEL, it is immediately explosive and must be made ventilated before it is safe to enter.
- If more than 10% of the LEL, it is illegal to enter according to OSHA regulations and must be ventilated.
- If less than 10% of the LEL, it is legal to enter but may still be toxic.

18.7.5 Testing for Oxygen Deficiency

Monitoring for oxygen deficiency should be performed in the same manner as for explosivity.

- If oxygen concentration is less than 19.5%, it is oxygen deficient and illegal to enter according to OSHA regulations and must be ventilated.
- If oxygen concentration is more than 23.5%, it is oxygen enriched and illegal to enter according to OSHA regulations and must be ventilated.

18.7.6 Testing for Toxic Airborne Contaminants

If a toxic atmosphere is suspected, testing should be conducted for the contaminant(s) suspected and compared with their permissible exposure limits. Testing is most easily done using a photoionization detector.

18.8 Ventilation

Exhaust ventilation may be used to draw or push dense gases and vapors from bottom of space, allowing fresh air to replace them. The source of ventilating air must be uncontaminated. Consider destination of exhausted gases/vapors before beginning ventilation.

18.9 Extraction and Rescue Equipment

A rescue harness is to be worn at all times. A tripod shall be available for overhead rescue. Observer shall be in constant communication with entry personnel. The entry procedure shall be aborted at the first indication of difficulty.

19.0 Hot Work Permits

No hot work, including welding, torch cutting, and brazing shall take place without first acquiring a hot work permit from the Site Safety Officer. A copy of the hot work permit is in Appendix D.

20.0 Site Excavations

Site excavations created during initial site preparation or during hazardous waste operations shall be shored or sloped as appropriate to prevent accidental collapse in accordance with 8 CCR, Chapter 4, Subchapter 4, Article 6.

21.0 Safety Inspections

Inspections shall be conducted by the Site Safety Officer or, in the absence of that individual, another individual who is knowledgeable in occupational health and safety, acting on behalf of the employer as necessary to determine the effectiveness of the site health and safety plan. Any deficiencies in the effectiveness of the site health and safety plan shall be corrected by the employer. A record of the safety inspection are maintained in Appendix E.

Appendix A

Soil Test Results

Appendix B

Site Map
Hospital Location Map

Appendix C

Air Sample Data Sheets

Appendix D

Permits

Appendix E

Safety Inspection Forms

Appendix F

Code of Safe Practices

Appendix G

Safety Meeting Forms

Procedures for Working in PCBs - Contaminated Soil
New Ramp Area of Interim Parking Lot

1.0 Introduction

Soil sampling was conducted by Erler & Kalinowski, Inc. for Chiron to determine the extent of soil contamination in the new ramp area of the interim parking lot. Samples were collected on November 28, 1994.

2.0 Site Conditions

Polychlorinated biphenyls (PCBs) were discovered in the soil of the new ramp area at concentrations up to 890 mg/kg. The highest concentration was discovered three feet west of the retaining wall at 1.5 to 1.75 feet below ground surface. TEPH was also found at this location at 1100 mg/kg.

3.0 Risk Assessment

PCBs pose the greatest potential health threat to employees working at this location of the site during construction activities. While PCBs exist in two physical states - aerosol and vapor - theoretical airborne concentrations of total dust which could generate levels of PCBs exceeding its permissible exposure limit are shown below without regard to vapor evolution.

Contaminant	Maximum Concentration Found in the Soil	PEL-TWA	Total Dust Concentration Above Which PEL Would Be Exceeded
Chlorodiphenyl s PCBs (54% Cl)	890 mg/kg	0.5 mg/m^3	561.8 mg/m^3

Excluding vapor evolution, it is unlikely that the permissible exposure limit will be exceeded by dust generation since airborne dust concentrations will not exceed 5 mg/kg if proper dust control measures are employed. Given the low vapor pressure of PCBs, it is also unlikely that an overexposure will occur as a result of vapor evolution.

4.0 Personal Protective Equipment

The following personal protective equipment must be used in the new ramp area during removal of PCB-contaminated soil.

Location	Tasks	EPA Level	Equipment Required
Exclusion Zones	All tasks involving contact with contaminated groundwater.	C	• Half-mask air purifying respirator equipped with HEPA/organic vapor combination cartridges • Hard hat • Safety glasses. • Steel-toed shoes • Tyvek coveralls • Rubber overboots, • Nitrile gloves • Cotton inner gloves
Contamination Reduction Zone	All tasks.	D	• Hard hat • Steel-toed shoes • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves
Support Zone	All tasks.	D	• Hard hat • Steel-toed shoes

5.0 Air Monitoring

Air monitoring of personnel and the downwind side of the excavation area will be performed in accordance with Section 10.0 of the Health and Safety Plan.

6.0 Decontamination

Decontamination of personnel and equipment will be conducted in accordance with Section 13.0 of the Health and Safety Plan.