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Rec'd from Mansour Sepehr on 5/11/98

Proj 2173

Health and Safety Plan For The Former Westinghouse Electric Corporation Facility Emeryville, California

April 6, 1998

Prepared for

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CERTIFICATION AND LIMITATIONS

This Health and Safety Plan has been prepared by SOMA Environmental Engineering, Inc. (SOMA) for the exclusive use of WEBCOR Builders (WEBCOR) for their construction and excavation activities at the former Westinghouse Electric Corporation Facility, located in Emeryville, California. SOMA has provided its professional services using the degree of care and skill ordinarily exercised by other scientists and engineers practicing in this field. No other warranty, express or implied, is made as to the conclusions and professional opinions and recommendations contained in this document.

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HEALTH AND SAFETY PLAN
FOR
THE FORMER WESTINGHOUSE ELECTRIC CORPORATION FACILITY

1.0 Introduction

This health and safety plan addresses all aspects of construction-related activities associated with the development of the former Westinghouse Electric Corporation Facility located in Emeryville, California (Emeryville Facility). Development and associated construction activities will occur in a phased approach. Phase-specific health and safety issues and procedures will be incorporated into the site-wide health and safety plan through an addendum for each particular phase of construction. As shown in Figure 1, the Emeryville has been subdivided into four sites for the purpose of future construction activities. Construction activities are presently planned for Site1, designated as "Proposed Building #1" in Figure 1. This proposed construction site is bounded: 1) to the north by 59th Street; 2) to the east by Peladeau Street; 3) to the south by Powell Street; and 4) to the west by Landregan Street.

2.0 History and Background

The Emeryville Facility is located at 5899 Peladeau Street in Emeryville, California (Figure 1). The Emeryville Facility was used in the past for a variety of purposes, including repair and limited manufacturing of transformers and other electrical apparatus. Since 1981, a number of environmental investigations have been performed to assess soil and groundwater contamination, particularly with respect to polychlorinated biphenyls (PCBs). Soil and groundwater in the northwest portion of the Emeryville Facility was found to contain significant levels of PCBs, which resulted in the construction of a slurry wall and engineered cap in 1985 in order to minimize the potential migration of PCBs (depicted as Site 4 in Figure 1). Operations at the Emeryville Facility were discontinued in 1992 and all structures were removed in 1993.

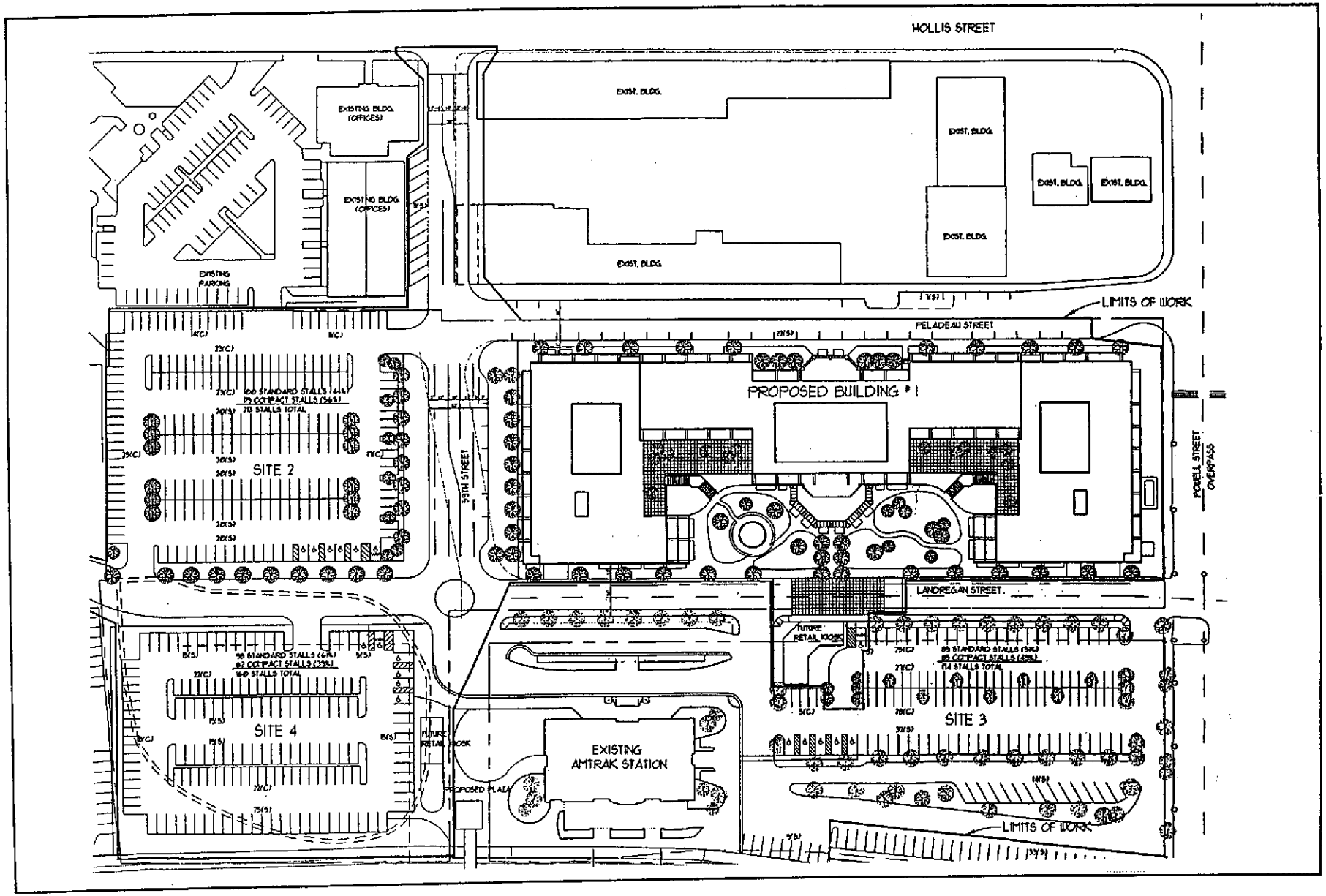

Figure 1: Site Map Showing Construction Area

2.1 Project Staffing

SOMA industrial hygienist Philip Bumala, CIH, will act as the Site Safety Officer and will conduct air monitoring during excavation activities. The SSO will conduct a pre-construction health and safety meeting prior to commencing excavation operations, and will work with onsite staff to implement exposure prevention measures.

Since the workers conducting the excavation in the area designated "Proposed Building #1" (Figure 1) are not trained to handle hazardous waste (e.g., OSHA 40-Hour Hazardous Waste Operations and Emergency Response Certified), the SSO will most likely not require workers to wear respirators. If air monitoring indicates that Level-C or higher personal protective equipment (PPE) is necessary, construction/excavation activities will be suspended until OSHA 40hour trained workers can be obtained to continue site activities. This will occur only if engineering controls cannot be feasibly or adequately implemented to reduce air concentrations of PCBs, arsenic, beryllium, total chromium and lead below the levels specified in Table 1.

Table 1

Recommended Air Concentrations of Soil Contaminants

SOIL CONTAMINANT OF CONCERN	OSHA PERMISSIBLE EXPOSURE LIMIT (TWA) (mg/m^3)	ACGIH TLV FOR OCCUPATIONAL EXPOSURE (mg/m^3)	NIOSH RECOMMENDED OCCUPATIONAL EXPOSURE LIMIT (mg/m^3)
PCBs	0.5		0.001
Arsenic	0.5	0.2	0.002 (15 min. ceiling)
Beryllium	0.002	0.002	0.0005
Chromium, total	1.0 (total Cr) 0.5 (Cr^{+3})	0.5 (Cr^{+3})	0.5 (Cr^{+3})
Lead	0.05	0.15	0.1

2.2 Site Characterization

The upper 2- to 4-feet of soil is comprised of "artificial fill" material of a sandy clay nature. Below the fill material layer is a 3to 6-foot layer of black, soft, highly compressible, silty clay known locally as "Recent Bay Mud." The nature and extent of contamination at the Emeryville Facility has been well characterized, especially for PCBs. In addition to PCBs, low levels of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals have been reported in soil samples.

Based on previous site investigations, groundwater is encountered at depths between 2 and 4-feet below ground surface (bgs). Groundwater generally flows west toward the San Pablo Bay. PCBs, VOCs and SVOCs were the major classes of contaminants detected in groundwater.

2.3 Human Health Risk Assessment

In March 1996, SOMA Environmental Engineering, Inc. (SOMA) conducted a quantitative human health risk assessment (HHRA) to evaluate potential impacts which might result from exposure to chemical contaminants in soil and groundwater at the Emeryville Facility. The following exposure scenarios were evaluated quantitatively:

- Current on-site, outdoor worker
- Current off-site, outdoor worker
- Current off-site, nearest downwind resident
- Future on-site, indoor and outdoor workers
- Future on-site, resident and apartment dweller (adult and child)
- Future construction worker
- Future on-site, utility worker

The potential exposure routes evaluated in the HHRA were ingestion, inhalation and dermal contact. All exposure scenarios were defined to estimate the highest exposure that is reasonably expected to occur at the site. Almost all of the

estimated risk was attributable to PCBs in soil (greater than 99 percent of the risk). VOCs, SVOCs, metals and TPH in soil and groundwater were not considered to pose a threat to human health under any of the exposure scenarios evaluated.

2.4 Remediation of PCBs in Soil

Based on the results of the HHRA, PCB soil cleanup levels of 0.5, 2.9 and 59 mg/kg were established for residential use, industrial use and a utility worker, respectively.

In 1996, 0.5 acres in the northeast corner of the Emeryville Facility was remediated for PCB contamination. Cleanup was accomplished by excavation and disposal of: 1) soils having PCB concentrations greater then 0.5 mg/kg within the top 2-feet and 2) soils having PCB concentrations greater than 50 mg/kg between the top 2- to 4-feet of soil. Because of the absence of a credible, long-term exposure pathway for soils deeper than 4-feet, cleanup goals excluded excavation below this depth.

2.5 Site Work Recommendations

Workers should be informed prior to site work of the potential hazards associated with exposure to site-related contaminants, especially PCBs in soil. Continuous air monitoring for total suspended particulate, metals and PCBs will establish the level of actual worker exposure to these compounds during construction/excavation operations. If air monitoring indicates that more stringent PPE is required, all construction/excavation operations will stop until OSHA 40-hour trained workers are available to continue construction activities. This will only occur if engineering controls can not be feasibly or adequately implemented to the levels presented in Table 1. Additional recommendations will be made onsite, as necessary by the SSO.

3.0 Site Safety Authority

Site Name:	Former Westinghouse Electric Corporation Facility 5899 Peladeau Street Emeryville, California
Owner:	CBS, Formerly Westinghouse Electric Corporation Gordon Taylor (412) 642-3957
Prime Contractor:	WEBCOR Builders Phil Barlow, Project Manager (415) 349-2727
Environmental Contractor:	SOMA Environmental Engineering, Inc. (925) 244-6600
Site Safety Officer:	Philip Bumala (925) 244-6600 Pager: (925) 677-7971

3.1 Duties of the Site Safety Officer

The Site Safety Officer (SSO) has the primary responsibility for on-site implementation of the Health and Safety Plan (HSP). Additional responsibilities include, but are not limited to:

- Verify that contractor/subcontractor personnel are aware of hazardous materials protection procedures and have been instructed in proper work practices and emergency procedures

- Verify that appropriate PPE is available and is properly used by contractor/subcontractor personnel

- Monitor contractor/subcontractor activities and ensure that required safe work practices are followed

- Conduct daily safety meetings prior to commencing operations. Meetings will cover:
    1. Expected site conditions
    2. Daily activities
    3. Safety deficiencies noted previously
    4. Changes in safety and/or emergency procedures

4.0 Job Hazard Analysis

The following sections describe the potential hazards associated with construction/excavation activities at the Emeryville Facility. For these identified hazards, procedures to mitigate these hazards are presented in Section 5.

4.1 Chemical Hazards

Based on the site characterization summary presented in Section 2.2, PCBs, metals, VOCs and SVOCs were detected in soil and groundwater at the Emeryville Facility. Based on the HHRA (Section 2.3), VOCs, SVOCs, metals and TPH in soil and groundwater were not considered to pose a threat to human health, even under the most conservative exposure scenarios evaluated. Therefore, these compounds will not be discussed further in this section. The following presents a discussion of the potential hazards associated with PCBs and metals and how a worker might come into contact with these contaminants.

Polychlorinated Biphenyls (PCBs)

PCBs are a group of synthetic organic chemicals that contain 209 individual compounds with varying health effects. PCBs were used industrially as coolants and lubricants in transformers, capacitors and other electrical equipment. Based on evidence of their accumulation in the environment and their harmful health effects, PCB manufacture was discontinued in 1977. Studies in the workplace suggest that exposure to PCBs may cause skin irritation (e.g., acne and rashes), and irritation of the nose and lungs. Lifetime

studies in animals resulted in toxicity to the liver, stomach, thyroid gland and liver cancer. Studies of workers who had long-term exposure to PCBs provided no evidence that PCBs cause cancer in humans.

The most likely routes of exposure to PCBs at the Emeryville Facility during construction/excavation activities are through dermal contact with soil, dermal contact with water during dewatering and inhalation of dust. Since these activities will be of a short duration, the most likely potential hazards are irritation of the skin, nose and throat. For those areas where PCB exposures might occur, such as Site 2 (Figure 1), appropriate PPE and air monitoring will be implemented to reduce or eliminate any possible exposures.

Metals

Arsenic, beryllium, chromium and lead are naturally occurring elements found in rocks, soil, plants and food. These particular metals were evaluated in the HHRA because the levels detected in soil were relatively high. However, these levels are consistent with levels measured in other industrial areas close by.

Direct skin contact with inorganic arsenic will result in irritation with some redness and swelling. Inhalation of inorganic arsenic may cause irritation of the throat and lungs. Long-term exposure may increase the risk of cancer in the lung, liver, bladder and kidney. Potential exposures during construction/excavation activities at the Emeryville Facility would most likely be through inhalation of dust and dermal contact. Based on the short duration of exposure, the potential hazards would be irritation of the skin, throat and lungs. Exposures below the PEL would not be expected to produce any adverse effects.

Long term exposure to beryllium through inhalation can produce lung damage resembling pneumonia. Potential exposures during construction/excavation activities at the Emeryville Facility would most likely be through inhalation of dust and dermal contact. Based on the short duration of exposure, no adverse health effects would be expected.

The form of chromium at the Emeryville Facility (Cr^{+3}) is an essential human nutrient and has a very low order of toxicity. Long term exposure to high concentrations of chromium may result in skin irritation and sensitization. Based on the low overall toxicity and short duration of exposure, no adverse health effects would be expected during construction/excavation activities.

In adults, long term exposure to high concentrations of lead may result in decreased reaction time and possibly affect memory. These effects have not been observed with low lead exposures. Based on the short duration of exposure at the Emeryville Facility, no adverse health effects would be expected during construction/excavation activities.

4.2 Physical Hazards

The potential physical hazards associated with work at the Emeryville Facility would be those that are common to all construction/excavation projects, including noise hazards, electrical hazards and mechanical hazards. These physical hazards, along with potential hazards associated with fire causing agents, can be reduced or eliminated through implementation of safe working practices.

5.0 Hazard Prevention Procedures

The following summarizes the general procedures to be followed during construction/excavation activities at the Emeryville Facility in order to minimize or mitigate potential chemical hazards, physical hazards, hypothermia, fire and biological hazards.

5.1 Chemical Hazards

Procedures to mitigate potential chemical hazards are listed below.

Dust Control: Dust control measures will be implemented when necessary, through application of water over the areas where excavation, stockpiling, and loading operations are in progress. In addition, soil that will be stockpiled for an extended period of time will be covered with plastic to minimize airborne suspension of dust.

Inhalation: General safe work practices will be employed to minimize contact with potentially contaminated soil. If significant contamination is encountered (e.g., above the permissible exposure limits), the SSO will stop work and will require additional worker protection measures to be implemented.

Dermal Contact: Potential chemical absorption through the skin will be prevented by using Level D protection, as described in Section 6. If significant contamination is encountered, the SSO will require Level C or greater protection. Skin will be washed as frequently as possible, at a minimum, before eating and before leaving for the day. In the event that dermal exposure occurs, the skin must be decontaminated immediately. Should the conditions warrant, immediate medical attention will be required.

Ingestion: Accidental ingestion will be prevented by prohibiting eating, drinking, smoking or application of cosmetics in established work zones. Work zones will be established as described in more detail in Section 7. Recommended decontamination procedures will be established as described in more detail in Section 8.

Injection: Chemical exposure through accidental injection or puncturing of the skin can be prevented by use of protective clothing and gloves as necessary and by observing safe work practices.

5.2 Physical Hazards

Procedures to mitigate potential physical hazards are listed below.

Acoustical Hazards: Hearing protection, such as ear muffs and ear plugs, will be worn because of potential noisy activities, such as operation of heavy equipment.

Electrical Hazards: If the work becomes unavoidably close to buried or overhead lines, the power will be turned off with circuit breakers locked and tagged. All electrical equipment must be properly grounded. Workers must not stand in moisture, water or rain when operating electrical equipment. Workers shall be familiar with specific operating instructions for each piece of equipment.

Mechanical Hazards: All surfaces that a person could reasonably contact should be free of splinters, nails or protrusions that might cause injury. All contractor/subcontractor personnel and equipment shall be kept out of traffic lanes and access ways. Workers shall not stand near excavators/loaders, trucks or other earthmoving equipment. Workers/operators shall verify that all equipment is in good condition. Workers must be mindful of on-site equipment at all times.

5.3 Hypothermia

When working in cold conditions, workers should:

- Wear layers of clothing made of tightly woven fibers that trap warm air against the body.
- Wear a head covering to prevent body heat from escaping into the cold air.
- Protect other areas of the body, such as fingers, toes, ears and nose.

In the event of hypothermia, warm the body gradually by wrapping in blankets or putting on dry clothing.

5.4 Fire

Workers and visitors should refrain from smoking and other fire-causing activities throughout the project site.

5.5 Biological Hazards

Workers should refrain from sitting on or near piles of debris and vegetation that might house vermin. Workers and visitors should also refrain from approaching animals that wander onto the project site.

6.0 Personal Protective Equipment

For construction/excavation activities associated with the first site designated "Proposed Building #1" on Figure 1, there is limited potential for airborne exposures from PCBs, metals, VOCs and SVOCs. Therefore, it is anticipated

that Level D protection will be adequate during this first phase of work. Similarly, for Sites 3 and 4, this level of protection is anticipated to be adequate during these phases of construction. Site 2 (Figure 1) has been previously remediated. However, PCBs were removed only down to 4-feet bgs. Consequently, if construction/excavation or dewatering below 4-feet occurs at Site 2, additional worker protection will be required (e.g., Level C or B PPE). Level C or B PPE will be employed should air monitoring results indicate the presence of PCB, arsenic, beryllium, chromium or lead concentrations in excess of their respective recommended exposure limits (Table 1). The corresponding levels of protection are summarized as follows:

Level-D Protection

- Steel-toed/shanked boots
- Uncoated Tyvek coveralls or work overalls
- Nitrile/Neoprene gloves with latex undergloves (if necessary)
- Hard hats
- Safety glasses/goggles (as necessary)
- Ear plugs

Level-C Protection

- Air-purifying respirator (e.g., half-face) with appropriate cartridges/filters
- Steel-toed/shanked boots with latex overboots or steel-toed rubber boots
- Tyvek coveralls taped over boots (disposable light chemical clothing)
- Neoprene gloves (taped at wrist) with latex undergloves
- Hard hats
- Safety glasses/goggles
- Ear plugs

Level-B Protection

- Self-contained breathing apparatus (SCBA) outside of suit
- Hooded chemical suit
- Inner chemical gloves
- Outer chemical gloves
- Chemical boot with steel toe
- Hard hat
- Two-way radio

7.0 Work Zones and Site Security

The following sections are included in the event contaminated materials are discovered during the excavation operation which have to be stockpiled, loaded, transported and disposed of in a landfill.

The site work zones are security measures intended to prevent the transfer of contaminants off-site by workers, visitors and equipment used in project operations. These measures are also designed to prevent unprotected workers, visitors and the general public from entering contaminated areas. All movement into and out of the work zones will be monitored and controlled by the SSO and project manager.

7.1 Exclusion Zone (Contaminated Zone)

The exclusion zone is based on the amount of area required to perform the intended work safely. This includes all loading operations, open excavations, contaminated soil stockpiles, swing radii for equipment, remediation operations, cleaning operations and loading operations of bulk soils. Within the exclusion zone, Level-D or higher PPE must be worn by all workers and visitors. The appropriate level of protection for each phase of construction will be established by the SSO. The zones will be set at the beginning of the day and changed as

required by activities. The exclusion zone will be marked with warning tape and signs.

7.2 Contamination Reduction Zone

The contamination reduction zone (CRZ) is the buffer zone immediately adjacent to the exclusion zones. The CRZ is between the exclusion zone and uncontaminated areas. The zone thickness will depend on the threat of airborne contamination and will be established by the SSO based on air monitoring results. Personnel and equipment decontamination will occur within the CRZ. This zone will prevent or minimize the transfer of potentially hazardous materials from the exclusion zone. The CRZ will be delineated with warning tape and signs.

7.3 Support Zone

The support zone consists of all uncontaminated and inactive areas of the site where PPE is not required. This zone will be used for staging and storage. The size of the support zone will be established by the SSO and delineated with fencing, signs and/or K-rails.

7.4 Security Measures

Traffic control measures (e.g., signs, barricades, flagmen etc,) required for public protection will be employed as appropriate. Entry into the work site will be controlled as required, and all site access will be monitored by the SSO.

The only persons authorized to enter the exclusion zone are:

- Representatives of SOMA Environmental Engineering, Inc.
- Authorized WEBCOR representatives and subcontractors
- Authorized visitors

Visitors to the work site, including any inspectors from regulatory agencies, are required to abide by the health and safety requirements set forth in this HSP.

On-site personnel and subcontractors shall require visitors to have the proper training and PPE prior to any activities necessitating entry into the exclusion zone.

No one is permitted in the exclusion zone or contamination reduction zone without clearance from the SSO. Clearance may be revoked at any time by the SSO.

8.0 Decontamination Procedures

Decontamination procedures are established to prevent transfer of potentially contaminated materials across the CRZ into the uncontaminated or "clean" zones.

8.1 Equipment Decontamination

For Level-D work, tools, equipment and safety boots should be scrubbed with long-handled brushes and high-phosphate detergent (e.g., Alconox or TSP). Boots should be rinsed off with water, repeating the rinsing as often as necessary. The rinsate will be disposed of along with the contaminated material.

8.2 Personnel Decontamination

Decontamination and removal of any contaminated PPE will take place at the perimeter of the exclusion zone. The contaminated items and rinsate will be contained in lined drums for proper disposal. All personnel should shower as soon as possible after leaving the site. On-site cleaning equipment will include washbasins, plastic drop cloths, high-phosphate detergent, rinse water, scrub brushes, benches or stools, and towels.

9.0 Training Requirements

All workers and visitors in the exclusion zone or CZR must have received OSHA 40-hour training (as per 29 CFR 1910.120). Operators of heavy equipment,

specialized equipment, and special instruments will also be certified for that particular piece of equipment.

Employees involved in disturbance of soil known or suspected to contain potentially hazardous chemicals shall have received training covering the following items:

- Site safety plans
- Safe work practices
- Nature of anticipated hazards
- Handling emergencies and self-rescue
- Rules and regulations for vehicle use
- Safe use of field equipment
- Handling, storage and transportation of hazardous materials
- Employee rights and responsibilities
- Use, care and limitations of PPE

10.0 Emergency Response and Contingency Plan

On-site emergencies will be indicated by a horn blast. Upon hearing this emergency signal, all workers will stop work and proceed to a designated point (established by the SSO).

In the event of an unpredicted occurrence or accident while site personnel or visitors are on-site, SOMA and subcontractor personnel will evaluate the incident and site response capabilities and proceed with the appropriate emergency response actions. Four types of unpredictable events may occur that would require implementing the emergency action plan:

1. Fire
2. Physical injury
3. Chemical exposure
4. Natural catastrophe

Only in the case of minor injuries or exposures will it be considered suitable to transport the injured persons to a medical clinic or emergency room. In all other cases, an ambulance will be summoned by calling 911

10.1 Fire

In the event of any fire caused by on-site activities or in close proximity to Site activities, work will stop immediately and the site will be evacuated. The fire department will be summoned by calling **911.**

10.2 Physical Injuries

For physical injuries, emergency medical assistance will be summoned by calling **911**.

10.3 Chemical Exposure

Should unexpected chemicals be encountered that result in chemical exposure, the following procedures will be followed:

- Precautions should be taken to avoid unnecessary exposure of other individuals.
- If necessary, the victim should be transported to the nearest hospital or medical center by ambulance.
- All chemical exposure incidents must be reported to the SSO.
- The following steps will be taken to determine the identity and extent of the unknown chemical:
    1. A sample of the chemical will be taken in an air-tight bottle to a forensic testing laboratory for identification;
    2. After chemical identification, appropriate on-site screening will be used to quickly ascertain the extent of contamination;
    3. Confirmatory samples will be collected to ensure that the spatial extent of contamination has been adequately defined;

4. Workers will not be allowed to re-enter the area until the substance has been identified and appropriate health and safety procedures adopted.

10.4 Summary of Emergency Resources

Nearby emergency resources and their telephone numbers are summarized in Table 2.

Table 2

Emergency Resources and Telephone Numbers

RESOURCES/DEPARTMENTS	EMERGENCY TELEPHONE NUMBERS
Fire Department/Police Department	911
Ambulance or Lifeline	911
Alta Bates Hospital[1]	(510) 204-4444
Cal OSHA	(415) 557-1677
SOMA Environmental	(925) 244-6600
National Response Center	(800) 424-8802
TSCA Hotline	(800) 424-9065
Poison Control Center	(800) 962-1253

1 Directions to Alta Bates: Proceed north on Hollis Street, about 3 miles; turn right onto Ashby Avenue (east), about 4 miles. The hospital is located on the south side of Ashby Avenue.