California Integrated Waste Management Board
Site Safety and Health Plan

Disposal Gardens

Gas Investigation
Torrance, California

March 2006

TABLE OF CONTENTS

1. Introduction

The California Integrated Waste Management Board (CIWMB) recognizes that employees performing field duties may be exposed to hazardous environments. The purpose of this document is to provide CIWMB staff with a Site Safety and Health Plan (SSHP) for the investigation of solid waste disposal sites required for enforcement and potential clean-up activities. This SSHP addressed health and safety policy and procedures for CIWMB staff to follow when installing temporary gas probes at Closed, Illegal and Abandoned Sites (CIA).

The purpose of this SSHP is to prevent occupationally related accidents, exposures and illness for personnel performing work activities related to this site. This SSHP provides guidance for employees when performing fieldwork when dealing with toxic, hazardous and infectious materials/wastes and physical hazards. The policies set forth in this SSHP are:

- Provide a safe and healthful work environment,
- Comply with applicable government regulation,
- Prevent accidents, injury and illness,
- Ensure communication of all hazards associated with the site, and
- Establish mandatory safety procedures and personal protection standards.

2. Facility Background

Location

The Disposal Gardens site (Site) also known as Torrance Sand and Gravel is located in the City of Torrance California. The approximate center of the site is at Latitude N 33.79411 and Longitude W 118.34404. The Site is approximately 125 acres extending from Crenshaw Boulevard on the east to Hawthorne Boulevard on the west. North of the Torrance City line and possibly south of Pacific Coast Highway however the northern boundaries are not clearly defined.

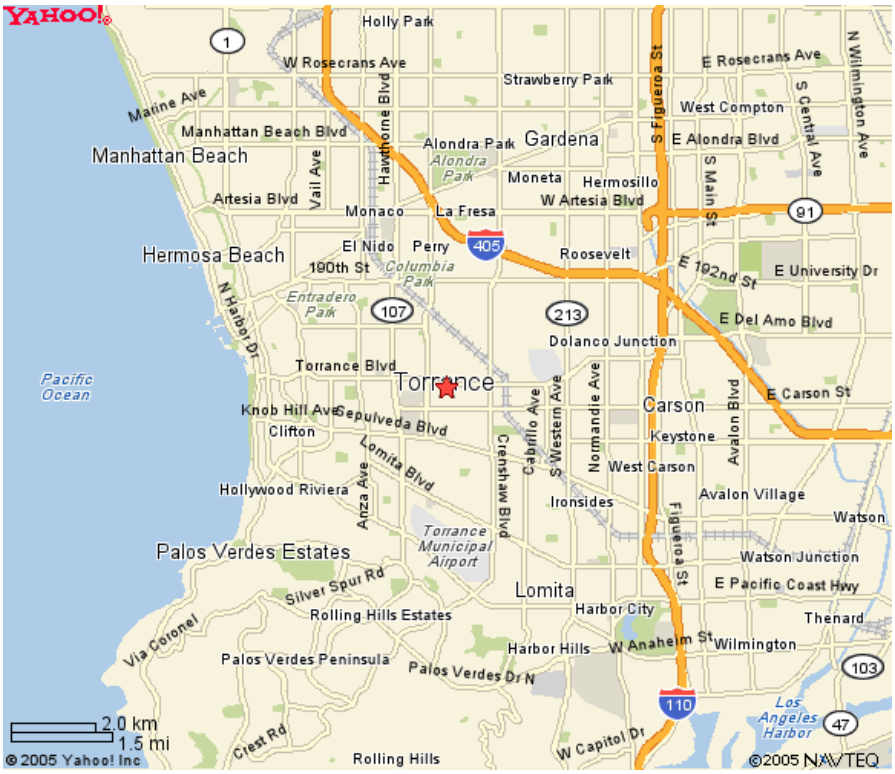
Site Description

The current land use for Disposal Gardens consists of a residential community, a park, and a commercial retail center. Records indicate that the area now known as Disposal Gardens is approximately 125 acres but a more in depth evaluation is needed. See Figures 1 & 2 for location.

The Site was operated as a gravel pit since the late 1920's into the 1960's.

Historical aerial photos from 1928 indicate the presence of two gravel pits; a larger pit and a second smaller pit adjoining to the west. Sometime after 1945, the larger pit was utilized for the disposal of waste oil and drilling mud. Dikes were constructed to help contain and prevent spills. Records indicate that slides did occur spilling the waste oils. During its active years, the Site also received some type of unknown waste. Statements made by the City of Torrance indicate the possibility of inert waste materials or some other "fill" material.

Figures 1 & 2.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Holly Park
W Rosecrans Ave
Strawberry Park
E Rosecrans Ave
Marine Ave
Manhattan Beach Blvd
Manhattan Beach
Hawthorne Blvd
Alondra Park
Gardena
West Compton
E Alondra Blvd
S Central Ave
N Wilmington Ave
Vail Ave
Moneta
Hermosillo
W Artesia Blvd
Artesia Blvd
Monaco
La Fresa
S Main St
91
Hermosa Beach
El Nido
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405
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190th St
Columbia Park
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E University Dr
N Harbor Dr
Entradero Park
107
213
E Del Amo Blvd
Dolanco Junction
Torrance Blvd
Pacific Ocean
Torrance
Carson
E Carson St
Knob Hill Ave
Sepulveda Blvd
Clifton
Lomita Blvd
Crenshaw Blvd
Cabrillo Ave
S Western Ave
Normandie Ave
Keystone
Avalon Blvd
West Carson
Hollywood Riviera
Anza Ave
Ironsides
Avalon Village
Watson
Torrance Municipal Airport
Palos Verdes Estates
Figueroa St
Watson Junction
Silver Spur Rd
Lomita
E Pacific Coast Hwy
Rolling Hills Estates
Harbor City
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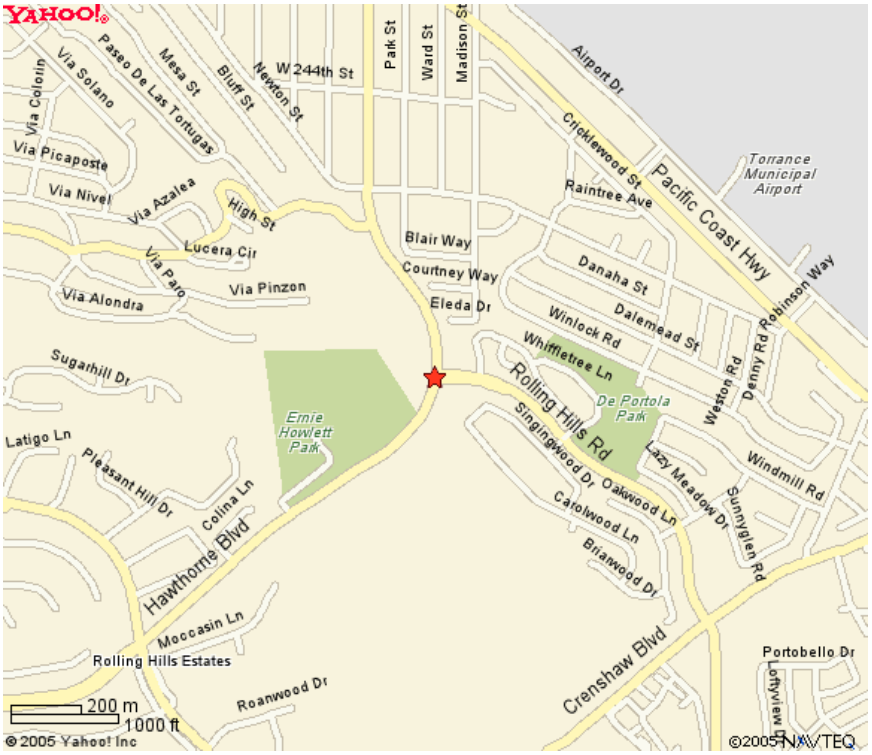
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Via Colorin
Via Picaposte
Via Nivel
Via Azalea
High St
Cricklewood St
Raintree Ave
Torrance Municipal Airport
Pacific Coast Hwy
Lucera Cir
Via Pario
Via Alondra
Via Pinzon
Blair Way
Courtney Way
Eleda Dr
Danaha St
Dalemead St
Winlock Rd
Whiffletree Ln
Robinson Way
Denny Rd
Weston Rd
Sugarhill Dr
Ernie Howlett Park
De Portola Park
Rolling Hills Rd
Latigo Ln
Pleasant Hill Dr
Singingwood Dr
Oakwood Ln
Lazy Meadow Dr
Windmill Rd
Sunnyglen Rd
Colina Ln
Carolwood Ln
Briarwood Dr
Hawthorne Blvd
Moccasin Ln
Rolling Hills Estates
Roanwood Dr
Crenshaw Blvd
Portobello Dr
Lofty View Dr
200 m
1000 ft
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3. Scope of Work

The Remediation, Closure & Technical Services (RCTS) Branch and the Los Angeles County Local Enforcement Agency (LEA) have determined that intrusive investigation and soil sampling are necessary in order to protect the public health and safety and the environment.

The objective of this investigation is to determine if this site is producing methane gas and if the gas is migrating up to the surface. The CIWMB will install gas probes and implement a one-year gas-monitoring program. Based upon the results of the one-year gas study, the Los Angeles County LEA might direct the landowner to continue the gas-monitoring program. The landfill gas well locations will be selected by the CIWMB in conjunction with their environmental consultant Ninyo and Moore (N&M). The following will be performed as part of this site investigation:

- Evaluate site conditions and gas migration potential,
- Advance borings to facilitate construction of landfill gas monitoring wells,
- Collect representative gas samples,
- Collect soil/waste samples during drilling,
- Evaluate and summarize gas generation data,
- Recommend gas control options (if necessary).

Sampling will be conducted in general accordance with applicable portions of California Code of Regulations, Title 22, and Section 66261.10 et. seq. for characterizing hazardous waste. The CIWMB will use applicable regulatory levels established by DTSC and applicable federal levels to evaluate and characterize the buried waste.

4. Key Personnel & Responsibilities

It is the policy of the CIWMB to provide safe and healthful working conditions for employees when performing field activities. All CIWMB personnel on-site during the gas investigation are responsible and accountable to adhere to standard safety policies. Each employee is responsible for reporting any injuries, incidents, and safety infractions to the Site Safety and Health Officer (SSHO) so treatment can be obtained and/or corrective action taken.

KEY PROJECT PERSONNEL

Project Manager:	Glenn Young, PE Senior Engineer CIWMB/CIA Section (916) 341-6696
	Abel Centeno-Martinez (Acting Supervisor) Waste Management Engineer CIWMB/CIA Section (916) 341-6724
Onsite Project Lead:	Dawn Owen, WMS CIWMB/CIA Section (916) 341-6723
Project Safety & Health Officer:	Diane Kihara, CIH, CSP CIWMB/Health & Safety Section (916) 341-6392
Site Safety & Health Officer:	Andy Marino, AIH/ Diane Vlach AIH CIWMB/Health & Safety Section (916) 341-6713/ (916) 341-6393

Project Manager/Onsite Project Lead

The Project Manager/Onsite Project Lead is ultimately responsible for site safety and health, and will provide the materials and maintenance of equipment necessary to enhance and maintain safe site and work conditions. Responsibilities of the Project Manager/Onsite Project Lead include project scheduling, cost updating, and overall project direction and overseeing site safety. In addition, the Project Manager/Onsite Project Lead is responsible for determining the extent and level of input required for technical issues that arise during the tenure of the project. The CIWMB Project Manager/Onsite Project Lead will serve as the primary point of contact. In the event that the Site Safety & Health Officer is not present at the Site the Project Manager/Onsite Project Lead will assume all Safety and Health responsibility of the Site.

Project Health & Safety Officer

The Project Safety and Health Officer will be responsible for review and approval of the Site Safety and Health Plan (SSHP), and will assist and advise the Site Safety and Health Officer (SSHO). He/she has the authority to stop unsafe operations, recommended the removal of unqualified personnel from the work area, and approves changes to the Site SSHP.

The Project Safety and Health Officer will have responsibility for integrating all aspects of the Site Safety and Health Plan. His/her duties include advising the SSHO on all related Health and Safety aspects, reviewing any Site Specific Plans for compliance and completeness, and establishing and monitoring all related Health and Safety procedures through site safety audits.

The Project Safety and Health Officer will coordinate with the SSHO to ensure overall compliance with the SSHP. The SSHO will provide ongoing communication with Project Safety and Health Officer on issues related to site operations.

Site Safety and Health Officer (SSHO)

The SSHO is responsible for overseeing work areas and identifying conditions that may pose a hazard to personnel or the public. The SSHO is required to conduct regular safety inspections and implement and enforce the project safety program and procedures. The SSHO will work closely with the Project Manager/Onsite Project Lead to ensure that all site personnel review and comply with the terms of the SSHP. The SSHO performs duties such as confirming the personnel have appropriate training, coordinating emergency medical care, conducting a daily site safety inspection (if required), and inspecting health and safety equipment. In addition, the SSHO is responsible for maintaining safety equipment, posting air monitoring results, providing site orientation safety training for all personnel actively involved in site work, and other site safety documentation.

The SSHO takes the following action(s) when appropriate:

- Orders the immediate shutdown of site activities in the case of a medical emergency or unsafe practice.
- Ensures protective clothing and equipment are properly stored, used, and maintained.
- Ensures that the environmental and personnel monitoring operations are ongoing and in accordance with technical specifications and required procedures.
- Restricts visitors from areas of potential exposure to harmful substances.

The SSHO will maintain the safety log for all activities at the site. This log will include any daily safety meeting topics, training given, air monitoring information, first aid administered, visits of all outside personnel and any incidents of a health and safety nature. The SSHO will investigate all accidents and prepare an accident investigation report that will be forwarded to the Project Manager/Onsite Project Lead.

Subcontractor Management and Personnel

Subcontractor management is responsible for the compliance of their personnel with this SSHP. Since subcontractors are hired for their specific expertise, they must assume primary responsibility for the health and safety of their personnel. The subcontractor's Field Supervisor will also be responsible for performing regular safety inspections of their operations. Subcontractors must supply health and safety related training and medical surveillance documentation to CIWMB for each onsite worker prior to commencing work at the project site if requested by the Project Manager/Onsite Project Lead.

Subcontractors must also:

- Comply with all applicable Occupational Safety and Health Administration (OSHA) regulations as defined in CCR, Title 8 and Hazwoper certified.
- Perform all work in accordance with this SSHP.
- Conduct weekly toolbox safety meetings and submit the minutes to the SSHO or the Project Manager/Onsite Project Lead.

5. Logs, Reports and Record keeping

The following logs, reports, and records will be developed and maintained for this site by the SSHO.

- Daily Safety Meetings
- Site Specific Health and Safety Plan
- Injury and Illness Prevention Program Records

6. Hazard Assessment

This section addresses the potential hazards identified with gas characterization of the site, which includes but is not limited to chemical, physical, and environmental hazards. Hazard characterization of the site and selection of worker protection methods has been determined from previous waste characterizations investigations at other sites and site history.

HAZARD ASSESSMENT

To provide protection for personnel on-site, the following potential hazards have been identified at the Disposal Gardens Site related to the gas characterization: chemical hazards, biological hazards, and physical safety hazards. This determination is based on information provided related to the contaminants identified at the Site and based on the work tasks performed.

CHEMICAL HAZARDS

A number of chemical hazards of concern that may be present in the soil and potential landfill gas at the site are discussed below. The information that follows provides a discussion of the hazard concerns that may be present at the site. This SSHP includes the OSHA permissible exposure limits (PELs), which are the regulatory exposure limits for workplace safety. The PELs are time-weighted average (TWA) exposure concentration. When applicable, the short-term exposure limits (STELs), and concentrations in the air that would be immediately dangerous to life or health (IDLH), are also provided. STELs are TWA 15-minute exposure concentrations that should not be exceeded at any time during a workday, even if the 8-hour exposure limit is not exceeded.

A. **Landfill Gas Constituents**

Landfill gas is generated as a result of the waste breakdown at a landfill. Typically, landfill gas constituents contain, by volume:

LANDFILL GAS CONSTITUENTS[1]
38-58% methane gas
0.2-1% oxygen
2-10% nitrogen
30-48% carbon dioxide
0-1% hydrogen
<1% non-methane organic carbons (NMOC) *NMOC constituents: benzene, ethyl benzene, toluene, vinyl chloride, dichloromethane, trichloroethylene, 1,2,-cis-dichloroethylene, tetrachloroethylene*

[1] CIWMB Landfill Gas Characterization Study

Methane is the major component of gas generated during biodegradation of solid waste buried in landfills. It is an odorless and colorless gas. It does not chemically react with the body, but may cause asphyxiation by displacing the oxygen in the air. The primary concern is its flammability. Because of its classification as simple asphyxiant methane has no established exposure limits, however, a threshold concentration or TWA of 1000 ppm is commonly assumed.

Waste decomposition is known to produce various landfill gas constituents. Staff should continue to use precaution when working in landfill areas. Personal protective equipment requirements combined with the requirement to wash arms, face, and hands before eating, drinking, smoking and prior to leaving the Site will help prevent exposure through absorption and ingestion pathways.

The following summary, Table 2 – Landfill Gas, provides exposure information for landfill gas.

Table 2
LANDFILL GAS[2]

Chemical Name	Exposure Limit	IDLH	Relative Response	LEL	Route of Entry
Benzene	PEL: 1 ppm	500 ppm	Irritation eyes, skin, nose, respiratory; dizziness; headache;	1.2 %	Inhalation, Absorption, Ingestion, skin/eye
Ethyl benzene	PEL: 100 ppm STEL: 125 ppm	800 ppm	Irritation eyes, skin, mucous membrane; headache	0.8%	Inhalation, Ingestion, skin/eye
Hydrogen sulfide	PEL: 10 ppm STEL: 15 ppm Ceiling: 15 ppm	100 ppm	Irritation eyes, respiratory; apnea, coma, convulsions	4.0%	Inhalation, Ingestion, skin/eye
Toluene	PEL: 50 ppm STEL: 150 ppm Ceiling: 500 ppm "skin"	500 ppm	Irritation eyes, nose; weakness, confusion, euphoria, dizziness	1.1%	Inhalation, Absorption, Ingestion, skin/eye
Vinyl Chloride	PEL: 1 ppm "skin"		Weakness, abdominal pain, gastrointestinal bleeding	4.0%	Inhalation, skin/eye
Dichloromethane (methylene chloride)	PEL: 25 ppm STEL: 125 ppm	2300ppm	Irritation eyes, skin; weakness, drowsiness dizziness	13%	Inhalation, Absorption, Ingestion, skin/eye
Trichloroethylene	PEL: 25 ppm STEL: 100 ppm Ceiling: 300ppm	1000ppm	Irritation eyes, skin; headache, visual disturbance	8%	Inhalation, Absorption, Ingestion, skin/eye

[2] Permissible exposure limits, California Code of Regulations, Title 8, General Industry Safety Orders, Airborne Contaminants, §5155

1,2-Dichloroethylene	PEL: 200ppm	1000ppm	Irritation eyes, skin; headache, visual disturbance	5.6%	Inhalation, Ingestion, skin/eye
Tetrachloroethylene (perchloroethylene)	PEL: 25 ppm STEL: 100 ppm Ceiling: 300 ppm	150ppm	Irritation eyes, nose, throat; flush face, neck;	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact
Methane	None		At high concentrations methane acts as an asphyxiant without other adverse effects.	5.5%	Inhalation
Xylene	100 ppm	900 ppm	Irritation eyes, skin; headache, visual disturbance	1%	Inhalation, skin absorption, ingestion, skin and/or eye contact

B. Other Potential Chemical Hazards

Gasoline is a mixture of petroleum-derived chemicals. Benzene, toluene, xylene and ethylbenzene are the airborne contaminants of most concern. Health hazards associated with gasoline exposure are mild irritation and effects on the central nervous system. It is an **explosive** hazard!

Diesel is a fuel oil and a refined petroleum solvent that is mixture of paraffins and aromatics. Health hazards associated with diesel exposure are mild irritation to the eyes, skin, and throat.

Polynuclear Aromatic Hydrocarbons (PNA) form a class of diverse organic compounds each containing two or more fused aromatic rings of carbon and hydrogen atoms. Most PNAs enter the environment via the atmosphere from a variety of combustion processes and pyrolysis sources.

Evidence that mixtures of PNAs are carcinogenic to humans comes primarily from occupational studies of workers following inhalation and dermal exposure. Data is unavailable for the oral route of exposure for humans [3].

[3] Permissible exposure limits, California Code of Regulations, Title 8, General Industry Safety Orders, Airborne Contaminants, §5155

Polynuclear Aromatics (PNAs)					
Chemical Name	Exposure Limit	IDLH	Relative Response	LEL	Route of Entry
Anthracene	PEL = 0.2 mg/m³		Bronchitis, Dermatitis Potential Carcinogen		Contact/inhalation
Benzopyrene	PEL = 0.2 mg/m³	IDLH = 80 mg/m³	Bronchitis, Dermatitis Potential Carcinogen		Contact/inhalation
Chrysene	PEL = 0.2 mg/m³	IDLH = 80 mg/m³	Bronchitis, Dermatitis Potential Carcinogen		Contact/inhalation
Naphthalene	PEL = 10 ppm STEL = 15 ppm		Irritant eyes, confusion, Malaise, nausea, vomiting	0.90%	Contact/inhalation Absorption, inhalation
Phenanthrene	PEL = 0.2 mg/m³	IDLH = 80 mg/m³	Bronchitis, Dermatitis Potential Carcinogen		Contact/inhalation
Pyrene	PEL = 0.2 mg/m³	IDLH = 80 mg/m³	Bronchitis, Dermatitis Potential Carcinogen		Contact/inhalation

Polychlorinated Biphenyl (PCB) is mixtures of synthetic organic chemicals with the same basic chemical structure and similar physical properties ranging from oily liquids to waxy solids. Due to their non-flammability, chemical stability, high boiling point and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics and rubber products; in pigments, dyes and carbonless copy paper and many other applications. More than 1.5 billion pounds of PCBs were manufactured in the United States prior to cessation of production in 1977. Concern over the toxicity and persistence in the environment of Polychlorinated Biphenyls (PCBs) led Congress in 1976 to enact §6(e) of the Toxic Substances Control Act (TSCA) that included among other things, prohibitions on the manufacture, processing, and distribution in commerce of PCBs.

This substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion. Repeated or prolonged contact with skin may cause dermatitis and the substance may have effects on the liver.

PHYSICAL HAZARDS

A. Physical Safety Hazards

There are numerous physical hazards associated with this project which, if not identified and addressed, could present operational problems as well as accidents and personal injury to the work force. In order to minimize physical hazards, standard safety protocols

have been developed and will be followed at all times. The SSHO will observe the general work practices of all personnel and enforce safe procedures to minimize physical hazards.

1. Tripping, Slipping, and Falling Hazards

CIWMB personnel will be reminded daily to maintain sure footing on all surfaces. In order to minimize tripping hazards caused by debris, job supplies, and equipment, material will be removed daily from the work areas and stockpiled in their respective storage areas. This "housekeeping" effort will be enforced by the SSHO throughout the day.

2. Head and Back Injuries

As a minimum requirement, hard hats will be donned and worn while performing any site activities. This will prevent minor injuries that may be caused by overhead obstructions. Personnel are to use proper lifting techniques whenever they lift heavy objects.

3. Heavy Equipment and Traffic

The use of heavy equipment for drilling, debris removal, excavation, or lifting presents a potential safety hazard for personnel. ALL SITE PERSONNEL WILL WEAR VISABLE PROTECTIVE CLOTHING. Only qualified personnel will operate heavy equipment. All other on-site personnel shall remain a safe distance from heavy equipment.

Personnel needing to approach heavy equipment while operating will observe the following protocols:

a. Make eye contact with the operator (and spotter),
b. Signal the operator to cease heavy equipment activity,
c. Approach the equipment and inform the operator of intentions.

All equipment must be in good working condition when in use at the Site. Equipment that does not appear to be in good repair or appears to be unsafe will not be put into service until all necessary repairs are made.

B. Gas Probe Installation Safety Precautions

Hazards associated with probe installations are cave-ins; striking of underground utilities; falling tools, materials, and equipment; and hazardous air contaminants

Prior to any probe installation onsite all underground utility lines shall be clearly identified. It is the responsibility of the project manager to ensure all underground lines have been identified through a Regional Notification Center, such as Underground Service Alert (USA) - (800) 227-2600. Notify all underground utility owners who are not

members on the Regional Notification Center. Underground utilities lines shall be color-coded following California marking guidelines delineation.

Color	Demarcation
White	excavation boundary
Blue	water line
Orange	communication line
Purple	reclaimed water line
Red	electric line
Yellow	gas line
Green	sewer line

C. Heat Stress

With the possible combination of ambient factors such as high air temperature, low air movement, high radiant heat, and protective clothing, the potential for heat stress is a concern. All on-site personnel will be made familiar with the symptoms of heat stress and the conditions during which they may occur. Heat stress symptoms may include elevated heart rate, nausea, headache, lightheadedness, and lack of coordination or decreased job performance or slurred speech.

Heat Stress Condition	Causes & Symptom
Heat rash	Also known as prickly heat, skin remains wet as sweat does not evaporate.
Heat cramps	Painful muscle spasms that are caused by lack of salt in the body. Usually a result from sweating heavily and drinking large amount of water without replacing the body's salt loss
Heat exhaustion	Continues loss of fluids and salt from sweating can cause hat exhaustion. Symptoms include heavy sweating, cool and moist skin, and a weak pulse. Possible fainting, weakness, dizziness, nausea, diarrhea, blurred vision and a normal or slightly high body temperature. Advanced stages can cause vomiting or loss of consciousness.
Heat stroke	Most serious heat illness – when sweating no longer helps the body regulate its internal temperature. Skin is hot, may or may not be dry. Often red or spotted. Individual is slightly confused & disoriented, delirium, convulsions, or even unconsciousness may occur. Body temperature may be 105 degrees F˚ or higher.

Currently, Cal/OSHA does not have a regulatory standard for heat stress. The American Conference of Governmental Industrial Hygienists (ACGIH) provides recommendations on heat stress situation, which this SSHP will follow.

At 75 degrees Fahrenheit ambient temperature, the SSHO will become keenly aware of the effects of heat stress on project personnel, and will alert the crew to become aware

of any symptoms. The SSHO shall be responsible for performing all heat related monitoring for his employees in accordance with this document. The symptoms of heat-related disorders and preventive measures will be discussed during a safety "tailgate" meeting. Workers are encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade during warm weather.

If a heat stress condition develops the SSHO shall monitor for heat stress. Site personnel shall follow the appropriate work practices and monitor their potential heat stress condition. At a minimum, workers will break every 2 hours for 10 to 15 minute rest periods. In addition, workers are encouraged to take rests whenever they feel any adverse effects, especially those effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSHO. Also, if resting pulse rates exceed 110 beats after a 3-minute waiting period, then additional breaks will be taken. Workers are encouraged to drink small volumes of cool water about every 20 minutes for rehydration. Other possible monitoring methods include core temperature and ambient conditions.

D. Noise Hazards

Employees may not be exposed to noise greater than the levels established by Cal/OSHA (90 dBA TWA for an 8 hour day). If levels are higher than this, engineering, administrative, or work practice controls are required. When the noise levels cannot be controlled through these methods hearing protection will be provided. The SSHO will monitor employee noise exposure and take appropriate action. Hearing protection will be provided. Go above 85 dBA institutes a hearing protection program. As a general rule, keep everything below 85 dBA.

BIOLOGICAL HAZARDS

The following table summarizes the potential biological hazards:

Hazard	Avoidance
Animal and insect bites or stings: ➢ **Bees** ➢ **Wasps** ➢ **Ticks** ➢ **Snakes** ➢ **Spiders**	Animal and insect bites and stings can cause localized swelling, itching, and minor pain that can be handled by first aid treatment. In sensitive individuals, however, effects can be more serious such as anaphylactic shock that can lead to severe reactions in the circulatory, respiratory, and central nervous system, and in some cases, even death. Do not attempt to capture any wild or semi-wild animals such as cats, rats or snakes due to the possibility of a bite or parasitic infestation.

7. Safety Inspections

The SSHO and/or his designee will perform daily safety inspections. A report including results of the inspection and any corrective actions taken will be filed in the project files, with a copy to the CIWMB Project Manager/Onsite Project Lead. Identified safety and occupational health deficiencies and corrective measures shall be recorded.

8. Standard Field Activity Procedures

To ensure the safety of personnel in the work area, the following field activity procedures:

- Stay upwind and a safe distance away from the source of the hazard whenever possible.

- Do not touch or attempt to collect samples of soil, waste material or debris of any kind without appropriate personal protective equipment.

- Avoid all heavy equipment or machinery operations that can pose a safety hazard. If heavy equipment or other vehicles are present, stay out of traffic routes. If staff needs to remain in high traffic areas, the SSHO and/or his/her designee will advise equipment operators of your presence. Make sure they see you and stop the equipment before you approach them.

- Never put notebooks or other equipment down in waste areas.

- Avoid wet or muddy areas.

- Avoid dust clouds and dusty operations. Stand upwind and out of the dust plume area. Leave dusty areas immediately and reenter only after dust has settled or after dust control is in effect. Avoid being splashed by the water truck or entering freshly sprayed areas.

- Whenever dusty operations are anticipated, control measures shall be used; such as a water truck.

- Avoid loud or sustained high noise levels. If you cannot hear the person next to you or the sound is loud enough to be uncomfortable leave the area immediately and do not reenter without adequate hearing protection.

- Do not enter enclosed areas, including buildings, sumps, drains or any low areas where gas may collect without closely monitoring, continuously, air quality at all times.

- Avoid low or partially enclosed or covered areas where landfill decomposition gas may collect, both known or suspected, that may be detected by either instrumentation or by observation. This includes ground water wells, storm drains or other sub-grade conduits.

- Stay clear of steep slopes. Slopes greater than 10% should be avoided altogether.

- Driving with your boots on can be hazardous and may cause lose of control of the vehicle.

- Avoid contaminating the interior of vehicles. Whenever possible, do not enter the vehicle with contaminated boots or clothing.

- Remember to use all personal protective equipment according to manufacturer's instructions.

- Observe site conditions and wind direction. Note traffic patterns, work areas, unusual activities.

- Keep vehicles away and upwind of all hazards including: traffic, dust, landfill gas collection, venting or flame-off areas, etc.

- Entry into any excavation, trench, or confined space is prohibited. Watch for openings on the ground and avoid stepping into the spoils from excavations or trenches.

Personal Hygiene

- Always practice good personal hygiene.

- Avoid hand or body contact with waste materials or any dirty or contaminated surfaces.

- Application of makeup is prohibited at the work area.

- Avoid touching eyes, nose or mouth with or without gloved hands. Hands and face should be washed with a disinfectant soap, immediately after leaving the work site. Always wash up thoroughly before leaving the site or as soon as possible thereafter.

- Be sure to containerize all contaminated materials in a plastic bag until you can properly dispose of them.

- Disposable gloves may not be reused.

- Always carry boots in plastic bags separately from other personal clothing.

- Water from sealed containers or coolers may be consumed if done carefully and away from contaminant sources. If possible, remove all personal protection equipment before entering any office to get drinking water.

- Eating and smoking are prohibited while at a solid waste facility, except in designated areas.

- Wash hands before eating or using the restroom. Partial or complete personal decontamination may be required to prevent transfer of contaminants to yourself or facilities.

- Always double check to insure that no uncontrolled contaminants leave the site with you.

- Whenever possible dispose of all collected waste materials you may have generated contaminated or not.

9. Work and Support Areas

To prevent migration of contamination caused by tracking of personnel or equipment, work areas and personal protective equipment will be clearly specified prior to beginning operations. CIWMB has designated work areas or zones as suggested by the NIOSH/OSHA/USCG/EPA's document titled, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities."

Upon entrance into the site, Team members will control access to site work zones. At the project site, each work area will be designated into one of three zones: exclusion or "hot" zone, a contamination reduction zone (CRZ), and a support zone.

EXCLUSION ZONE

The exclusion zone is considered the zone of contamination and is the areas where inhalation, oral contact, or dermal contact with contaminants will be possible.

CONTAMINATION-REDUCTION ZONE

The contamination-reduction zone CRZ or transition zone will be established between the exclusion zone and support zone. In this area, personnel will perform decontamination of personnel and equipment to remove any contamination.

SUPPORT ZONE

At the SSHO discretion the support zone will consist of an area where the support equipment and personnel donned in the appropriate level of personal protective equipment will be located. Smoking, drinking, and eating will be allowed only in designated areas in the support zone. Location of the support zone may be changed in the event of a sustained change in the prevailing wind direction or other unpredictable events.

ACCESS CONTROLS

The SSHO shall establish the physical boundaries of each zone daily and shall instruct all workers and visitors on the limits of the restricted areas. No one shall be allowed to enter the restricted area without the required personal protective equipment for that area. The SSHO shall ensure compliance with all restricted area entry and exit procedures.

The SSHO shall also designate a decontamination point for personnel to exit from the contaminated area and enter into the clean area where personnel may rest and drink.

VISITOR ACCESS

Visitors should check in immediately upon arrival with the SSHO. Only authorized visitors will be allowed access to the contaminated areas. Each Team member will be required to provide and wear the appropriate level of personal protective equipment. Other site visitors will not be admitted to the exclusion and contamination reduction zones.

Failure to comply with this site entry procedure will result in expulsion from the site. A visitor's log will be kept by the SSHO.

10. Personal Protective Equipment

All personnel entering the exclusion or contamination reduction zone must wear the appropriate level of protection as designated by this SSHP. It has been determined that personal protective equipment will be used by personnel when performing activities related to waste characterization sampling of this site. When personnel can control their exposure through engineering or administrative controls they shall do so.

The level of protection required shall be upgraded or downgraded based on the results of personal air monitoring, action levels from direct reading instruments or a change in site conditions. Changes in protection levels must be determined by the SSHO and approved by the Project Manager/Onsite Project Lead and Project Health and Safety Officer.

LEVELS OF PROTECTION

Personnel at the site will use the following levels of protection*:

- Level D: Used only as a work uniform and in an area where no skin protection is required.

As identified in the CIWMB's Respiratory Protection Program, Section 4.0 Selection of Respirators, the following are criteria that should be met before choosing a respirator:

General Considerations

The selection of a respirator for any given situation shall require consideration of the following factors:

- The nature of the hazard;
- The characteristics of the hazardous operation or process;
- The location of the hazardous area with respect to a safe area having respirable air;
- The period of time for which respiratory protection may be provided;
- The activity of the workers in the hazardous area;
- The physical characteristics, functional capabilities and limitations of various types of respirators; and/or,
- The respirator protection factors and respirator fit.

*Field staff is expected to take and use the air monitoring instrumentation. If conditions at the site changes, field staff may be advised by the SSHO to upgrade their level of protection including but not limited to the use of respiratory protection.

LEVELS OF PROTECTION WORN IN THE EXCLUSION ZONE

Level D is required for all personnel in the exclusion zone

Protective Clothing: Visible protective clothing
Head: Hard hat when necessary
Hand: Leather outer, Nitrile inner when necessary
Foot: Steel toe boot
Hearing: Earplugs when necessary
Eye: Safety glasses
Respiratory: Respirator when necessary

LEVELS OF PROTECTION WORN IN THE SUPPORT ZONE

Personnel working in the support zone will use the following personal protective equipment:

Protective Clothing: Visible protective clothing
Foot: Steel toe work shoes
Hearing: Earplugs when necessary
Eye: Safety glasses

11. Decontamination Procedures

All personnel and equipment must be free from contamination when they leave the work site.

PERSONNEL DECONTAMINATION

Any personal protective equipment that comes in contact with contaminated soil will undergo decontamination. Decontamination of personnel shall be accomplished to ensure that any material, which personnel may have contacted in the exclusion zone, is removed in the contamination-reduction zone.

EQUIPMENT DECONTAMINATION

Any equipment and vehicles that come in contact with contaminated soil will undergo decontamination. Each party will be responsible for final decontamination of their equipment.

WASTE HANDLING

Contaminated clothing will be bagged and disposed of at the end of the waste characterization project. Wastewater generated on site will be disposed of onsite. Solid wastes will be disposed of in temporary waste storage areas set up within the exclusion zone. Wastes will be removed from the site at the end of the day, and disposed of in municipal waste dumpsters.

12. Air Monitoring

AIR MONITORING

Air monitoring shall be performed by CIWMB staff to evaluate air emissions at the site. The SSHO shall determine if industrial hygiene or additional sampling is needed to assess health and safety at the site. The SSHO will assist the Project Manager/Onsite Project Lead on determining when monitoring shall be performed to ensure site health and safety.

Continuous air monitoring to determine the presence of combustible gas, H_2S, or oxygen deficiency shall be performed with an appropriate air monitoring instrumentation, such as a GMI 422 Gas Surveyor, Gem 2000, and/or Scott Scout. As noted in section 10, personal protective equipment, field staff is expected to take and use the air monitoring instrumentation.

If combustible gas readings are greater than 20% of the lower explosive limit (LEL) of methane (1% by volume) work will stop and an assessment will made to determine the potential risk of explosion.

The “mini RAE”/photo ionization detector (PID) indicates if volatile organic compounds are present. The PID should not be used to detect semi-volatile compounds including but not limited to Polychlorinated biphenyls (PCBs) and Polycyclic Aromatic Hydrocarbons (PAHs). If mini Rae readings are greater than 10 parts per million (ppm), work will stop and an assessment will made to determine the potential risk.

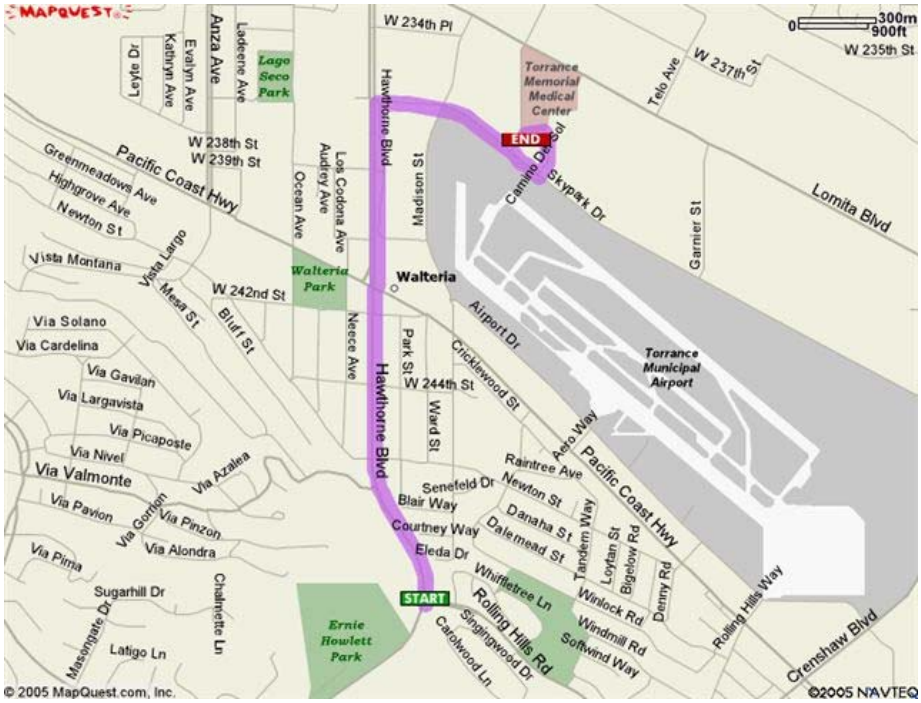
All instruments used for air monitoring shall be calibrated prior to use and the calibration log and sampling results shall be properly maintained.

13. Emergency Response

Prior to field activities, all personnel shall review emergency egress routes for the site. All personnel shall follow direction of the Project Manager/Onsite Project Lead and/or SSHO when an emergency situation arises.

EMERGENCY ASSISTANCE INFORMATION

Emergency Contact	Telephone Number
Fire/Police/Ambulance	9-1-1
Del Amo Hospital 23700 Camino Del Sol Torrance, CA 90505	(310) 530-1151
Cal-OSHA **Torrance** 680 Knox Street, Suite 100 Torrance, CA 90502	(310) 516-3734



Directions

1. Start on HAWTHORNE BLVD (at ROLLING HILLS RD & HAWTHORNE BLVD in TORRANCE) going toward VIA VALMONTE - go 1.2 mi
2. Turn R on SKYPARK DR - go 0.4 mi
3. Turn L on CAMINO DEL SOL - go < 0.1 mi
4. Arrive at 23700 CAMINO DEL SOL, TORRANCE, on the R

EMERGENCY SERVICES

All personnel shall be provided concise and clear directions and accessible transportation to local emergency services. Emergency equipment will be kept in contamination reduction zone when field activities are performed. A map showing directions to the nearest hospital will be posted on site. Fire extinguishers and an industrial first aid kit shall be present on the site at all times.

MEDICAL EMERGENCY PROCEDURES

The following procedures should be observed if an accident occurs:

Minor Injury

- Notify the SSHO.
- Have qualified first aid personnel treat injury.
- Record injury and include name of injured person, nature of injury, and treatment given.

Serious or Major Injury

In the event of a medical emergency when actual or suspected serious injury occurs, the following procedures shall be implemented:

- Survey the scene and evaluate whether the area is safe for entry.
- Remove the exposed or injured person(s) from immediate danger.
- Render first aid if necessary. Decontaminate affected personnel after critical first aid is given.
- Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.
    1. Call 9-1-1.
    2. Identify location, request medical assistance, provide name and telephone number.
    3. Request assistance from emergency medical service and/or additional assistance.
- Other personnel in the work area shall be evacuated to a safe distance until the SSHO determines that it is safe for work to resume. If there is any doubt regarding the condition of the work area, work shall not commence until all hazard control issues are resolved.
- Fill out accident reporting forms and associated documents.

If a fatal injury occurs, the following additional steps will be followed:

- Notify immediate supervisor.
- Notify Project Health and Safety Manager.
- CIWMB will initiate contact with Cal/OSHA and other appropriate agencies.
- All work activities on the project must be stopped on the project for 24 hours
- Assist Cal/OSHA as directed.

FIRST AID

Qualified personnel only shall give first aid and stabilize an individual needing assistance. Life support techniques such as cardiopulmonary resuscitation or CPR and treatment of life threatening problems such as airway obstruction, and shock will be given top priority. Professional medical assistance shall be obtained at the earliest possible opportunity.

To provide first-line assistance to field personnel in the case of sickness or injury, the following items will be immediately available:

- First Aid kit.
- Portable emergency eyewash.
- Supply of clean water.
- Blanket.
- The location of the above items will be established prior to beginning work and will be discussed in detail at the site safety orientation meeting.

SPILL RESPONSE PROCEDURES

CIWMB does not expect a risk of leaks or spills of contaminated liquids or hazardous liquids.

In the case of a spill of such contaminated or hazardous materials, the following procedures shall be followed:

- Determine a spill has occurred.
- Notify the SSHO
- Identify protective clothing or equipment required to respond.
- Contain the spill.
- Document incident.
- CIWMB staff should initiate clean-up!

EARTHQUAKE RESPONSE

If an earthquake should occur during the course of site activities, the following steps should be taken:

- Stop working.
- Remain calm and do not panic.
- If indoors, stay indoors away from windows and take cover under heavy furniture or door jam if possible.
- Do not use or do anything that might be a source of ignition, i.e., smoking, cutting, or welding.
- If outdoors, stay away from power lines, power poles, and windows.

SITE EVACUATION PLAN

In the general case of a large fire, explosion, or toxic vapor release, the site must be evacuated. Personnel must evaluate the situation and assess the upwind direction. Personnel must evacuate to an upwind location following these steps:

- All personnel will assemble in an upwind area when the situation permits; a head count will be taken.
- Determine the extent of the problem. Dispatch a response team in appropriate protective clothing to evacuate any missing personnel or to correct the problem.
- The above procedures will apply to all Team members and will be discussed with them prior to the commencement of work.

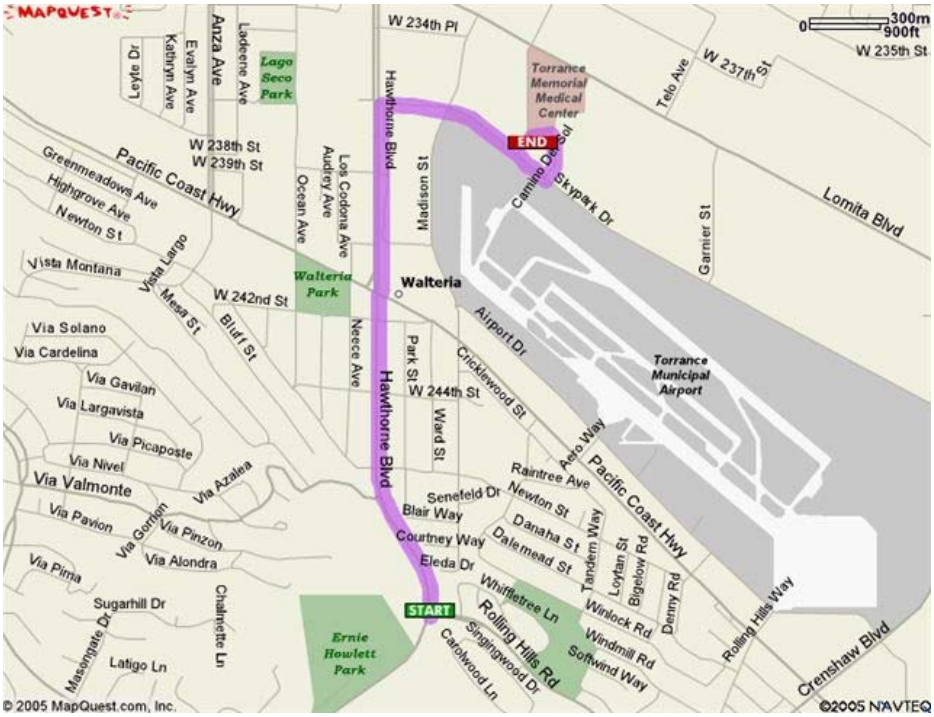
EMERGENCY WARNING SIGNAL

In the event of an on-site emergency, the Health and Safety Program has purchased a warning horn which will be the indicator to abort and/or evacuate the job site and to assemble at a pre-determined location. This location will be pre-determined at the tailgate meeting before work commences on site.

14. Emergency & Hospital Information

The nearest hospital to the job site is:

Del Amo Hospital
23700 Camino Del Sol, Torrance, CA 90505
310-530-1151



15. Training and Medical Surveillance Requirements

TRAINING

All CIWMB shall comply with the CIWMB's Health and Safety Field Policy training requirements.

All personnel are required to have current training in the following areas:

- 40 hour hazardous waste operations and emergency response (or equivalent)
- 8-hour Haz-woper refresher training, if applicable
- First Aid/CPR

MEDICAL SURVEILLANCE

All CIWMB shall comply with the CIWMB's Health and Safety Field Policy – medical surveillance requirements. CIWMB staff may view the Health and Safety policy at: http://Boardnet/HealthSafety/.

16. Site Specific Pre-Job Safety Orientation

All personnel entering the exclusion zone will be trained in the provisions of this SSHP and shall meet the requirements for the CIWMB's Health and Safety Policies, be required to sign the sign-in sheet and attend a site safety orientation meeting where the following topics will be covered:

- Key personnel and their responsibilities for site
- First aid and CPR trained personnel
- Site hazards
- Personal protective equipment/required levels of protection
- Location of safety equipment; such as fire extinguishers
- Site standard operating procedures and safe work practices
- Work zones and site control measures
- Emergency and spill response and contingency plans

Approvals

PREPARED BY:

_____
Diane Vlach, Associate Industrial Hygienist

PEER REVIEWED BY:

_____
Vera Liou, CIH, CSP

The undersigned personnel certify that this health and safety plan will be utilized for the protection of the health and safety of workers during the field investigation of the Site.

_____ _____
Diane Kihara, CIH, CSP Date

_____ _____
Dawn Owen, IWMS Date

_____ _____
Abel Martinez-Centeno, PE Date

_____ _____
Scott Walker, PE Date

The undersigned personnel have been briefed about the contents of this health and safety plan, and intend to comply with its provisions:

Signature	Name	Date