WATERSTONE ENVIRONMENTAL, LLC

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LOP 6558

Fax

To:	SUSAN HUGO	**From:**	CLIF DAVENPORT
Fax:	510 337-9335	**Date:**	10/20/98
Phone:		**Pages:**	21
Re:	**Berkeley Farms**: Health and Safety Plan	**CC:**	Karen Bellini

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

Here is the HASP submittal for the above-referenced site, per requirement #2 specified in your Risk Management Approval letter to Ms Karen Bellini, dated 10/16/98. Please let me know if you have any questions regarding the document.

Based on your letter, construction activities are authorized to begin. Thank you for your assistance on the project.

Clif

SITE HEALTH AND SAFETY PLAN
Berkeley Farms Truck Repair Shop & Yard
4575 San Pablo Avenue
Emeryville, CA 94608

By
WATERSTONE ENVIRONMENTAL, LLC.

2712 Rawson Street

Oakland, CA 94619

1.0 GENERAL INFORMATION

1.1 Administration Information

Site Name:	Berkeley Farms Truck Repair Shop & Yard
Site Location:	4575 San Pablo Avenue, Emeryville, CA 94608
Project Manager:	Clif Davenport
Site Health and Safety Officer:	Heike Müller

1.2 Safety Equipment Required

- Hard hat
- Eye protection (safety glasses)
- Ear plugs, disposable
- Coveralls, un-coated
- Gloves, vinyl (excavation work)
- Gloves, latex (when sampling)
- Dust masks (when dust is generated)
- Safety boots/shoes
- Fire extinguisher
- Portable organic vapor analyzer

2.0 INTRODUCTION

This plan establishes requirements and provides guidelines for worker safety and hazard identification during the soil excavation and potential groundwater removal activities to be conducted at the Berkeley Farms Truck Repair Shop located at 4575 San Pablo Avenue in Emeryville, California 94608. Soil will be excavated in order to build the foundation for a Kentucky Fried Chicken restaurant in an area where previously petroleum impacted soil had been removed around former fuel storage USTs. It is possible that not all of the impacted soil was removed, and significant concentrations of chemicals still reside in groundwater beneth the project area. As such, these chemicals may be encountered during construction activities that involve excavation or removal of soil. The purpose of this plan is to identify procedures appropriate for avoiding potential hazards from chemicals, equipment, or the environment, and for responding to serious injury or accident during excavation activities for the Kentucky Fried Chicken restaurant.

This HASP only addresses the area around the future restaurant location (southern area of the property) and should be updated if and when it is necessary to remove soil in the northern portion of the property. Because the safety rules given in this plan cannot cover every eventuality it is expected that all workers involved will exercise good judgment in safety matters, and each of the contractors working on the site will follow its own company health and safety plan as well as the intent of this plan. Waterstone Environmental, LLC (Waterstone) will inform the contractors and client as soon as possible about environmental conditions monitored by Waterstone when these conditions (such as increased vapor concentrations or observance of contaminated soils) may require appropriate actions. Under no circumstances will Waterstone direct the contractors' operation of equipment and adherence to their specific health and safety requirements. These directions must be given by the Subcontractor independent of information on environmental conditions provided by Waterstone.

Site Background

The Subject Site is located on the western side of San Pablo Avenue between 45th and 47th Streets in Emeryville, California. A service station, which operated several fuel storage USTs from the early-to-mid 1960s through 1985, used to be located in the southern portion of the Subject Site. Until recently, the site operated as a truck repair shop and yard for Berkeley Farms. Berkeley Farms conducted remedial activities, including soil removal and groundwater extraction in the southern portion of the Subject Site. In February 1998, one monitoring well was installed in the vicinity of the former UST location (and two monitoring wells were installed in the northern portion of the property, where former waste oil and gasoline USTs had been located). In April 1998, the former fuel storage tank pit in the southern portion of the property was re-excavated (approximate excavation dimensions: 34 feet north to south by 25 feet east to west). In the western half of the excavation (total depth: 11.5 feet) hydrocarbon impacted pea gravel was encountered feet. Groundwater subsequently entered the bottom of the excavation, stabilizing at 7.5 below ground surface (bgs).

A total of 15,000 gallons of groundwater and 400 cubic yards of soil were removed from the excavation. Sidewall samples were collected from the final excavation at depths of 7.5-8.5 feet bgs; only one sample contained 60 mg/kg of TPH as diesel. No other constituents were detected (i.e., TPH as gasoline, BTEX. Samples collected from well MW-1 in August 1998 showed that 96,000 ug/l of TPH as diesel, 38,000 ug/l of TPH as gasoline, 1,700 ug/l benzene, 1,000 ug/l of toluene, 2,400 ug/l of ethylbenzene, and 3,300 ug/l of xylenes were detected in groundwater in the vicinity of the former fuel storage USTs.

3.0 WORK ACTIVITIES

The following work activities will either be performed or overseen by Waterstone and its subcontractors:

- Periodic monitoring of soil excavation/removal activities during construction, including the use of a portable organic vapor analyzer to evaluate the potential presence of contaminated soil.
- Saw cutting, demolition, removal and stockpiling of concrete and asphalt.
- Implementation of storm water control measures (see details below).
- Removal and stockpiling contaminated soils, if any, covering the soil with plastic, and sampling of the contaminated soils.
- Removal, storage and sampling of groundwater, if necessary to facilitate construction activities.
- Soil and groundwater disposal, as appropriate.

In addition to these activities, all contractors working at the project should ensure that their workers wear dust masks when project soils are exposed. Further, all exposed soils and traffic lanes at the project should be kept damp at all times to eliminate potential exposure of construction workers and surrounding community to nuisance and/or potentially contaminated dust.

Soil Excavation

If soils deeper than 7.5 feet bgs are to be removed, or abnormally discolored or odiferous soils are uncovered during construction activities, properly trained Waterstone personnel will be on site to coordinated the removal and subsequent handling of potentially contaminated soil. If excess or potentially contaminated soil are generated during the construction activities, a soil management plan and a groundwater disposal plan (if appropriate) will be submitted to the Alameda County Department of Environmental Health for review. If soils deeper than 20 feet below grade (i.e., building foundation pilings) are excavated, Waterstone will recommend appropriate steps which should be taken to not create a vertical conduit between shallow (<20-25 feet) and deeper (>30 feet) groundwater.

Stormwater Management Plan

The purpose of the Stormwater Management Plan is to prevent surface water from entering or exiting the work area. Prior to excavation activities, all on-site storm drains and nearby off-site storm drains will be located and temporarily protected by placing a waterproof cover over the drains or by placing berms (e.g. sand bags) around the drains to prevent an unauthorized release. These temporary controls will be inspected daily to ensure proper placement and integrity.

During soil excavation activities and in case of heavy rainfalls, the construction area will be protected either by placing berms around the excavation area to prevent water run-on or runoff and/or sloping the excavated areas such that rain water falling onto bare soils will be directed internally to a low spot within the construction area. Soil piles suspected of being contaminated will be covered with plastic and surrounded by berms. If rain continues for several days, exposed soil areas of suspected impact will be covered to divert the rain water.

4.0 ASSESSMENT OF HAZARDS

4.1 Site Hazard Overview

Apparent Hazard		Type of Facility		Status of Facility	
Serious		Dump		Active	
Moderate		Landfill		Inactive	X[2]
Low	X	Open	X[1]	Unknown	
None		Enclosed			
Unknown		Other			

Waste Types		Waste Characteristics		Type/Form of Hazard	
Gas		Toxic	X[4]	Dust	X[5]
Liquid	X[3]	Corrosive		Liquid	X[6]
Sludge		Ignitable		Fumes	
Solid	X[3]	Volatile	X[4]	Vapors	X[4]
Unknown		Radioactive		Contact	X[6]
Other		Reactive		Respiratory	X[4]
		Unknown		Other	
		Other		IDLH	

[1] All work activities will be conducted in open areas.

[2] All work areas will be fenced and inaccessible to unauthorized persons.

[3] The removal action will involve soil and potentially groundwater.

[4] The chemicals of concern as listed in Table 4.2 may be toxic and have a tendency to volatilize.

[5] Dust may be generated during excavation.

[6] Chemical containing soil and/or groundwater may be contacted during work activities.

4.2 Potential Chemical Hazards

Materials	Potential Exposure Pathways	Acute Health Effects	Chronic Health Effects
Total Petroleum Hydrocarbons (gasoline & diesel)	Inhalation, Dermal, Ingestion	Eye, skin and respiratory irritant, CNS depression	Possible liver and kidney damage; dermatitis
Benzene	Inhalation, Dermal, Ingestion	Eye, skin and respiratory irritant, CNS depression, headache, nausea	Confirmed human carcinogen; leukemia, dermatitis
Toluene	Inhalation, Dermal, Ingestion	Eye, skin and respiratory irritant, CNS depression	Possible liver, kidney, and CNS damage; dermatitis

Xylene	Inhalation, Dermal, Ingestion	Eye, skin and respiratory irritant, CNS depression	Possible liver, kidney, and CNS damage; dermatitis
Ethylbenzene	Absorption, Dermal, Ingestion	Eye, skin and respiratory irritant, CNS depression	Dermatitis, possible CNS damage

4.3 Exposure Limits

Chemical name	PEL/TLV	Other Pertinent Limits	Warning Properties/ Odor Threshold
TPH (gasoline & diesel)	300/300 ppm	STEL = 500 ppm	None Cited
Benzene	1/10 (0.1) ppm (SKIN)	STEL = 5 ppm TLV-STEL = 0.3 ppm	Sweet solvent-like odor – 1.5 ppm
Toluene	100/50 ppm	STEL = 150 ppm C = 500 ppm (SKIN)	Rubbery, mothball odor – 2 ppm
Xylene	100/100 ppm	STEL = 150 ppm C = 300 ppm	Sweet odor – 0.1 ppm
Ethylbenzene	100/100 ppm	STEL = 125 ppm	Aromatic odor – 2 ppm

PEL = OSHA Permissible Exposure Limit' represents the maximum allowable 8-hour time weighted average (TWA exposure concentration.
TLV = ACGIH Threshold Limit Value'; represents the maximum recommended 8 hour TWA exposure concentration.
STEL = OSHA Short-term Exposure Limit; represents the maximum allowable 15 minute TWA exposure concentration.
C = OSHA Ceiling Limit' represents the maximum exposure concentration above which an employee shall not be exposed during any period without respiratory protection.
(SKIN) = Indicates a significant contribution of the total exposure by the cutaneous route.
REL = NIOSH Recommended Exposure Limit, based on a 10-hour TWA exposure.
TWA = Time-weighted average. Concentration that should not be exceeded during a 10-hour workday during a 40-hour work-week.
IDLH = Immediately dangerous to life or health concentrations

4.4 Air Monitoring Protocols

Conduct contaminant source monitoring prior to starting work to establish a baseline. Conduct breathing zone monitoring if source concentrations are near or above contaminant action level concentrations. Maintain log of air monitoring with recordings once ever 20 minutes for the first hour of each workday and when working conditions change, and once every hour thereafter.

Contaminant/ Atmospheric Condition	Monitoring Equipment	Monitoring Protocol	Breathing Zone* Action Level Concentrations	
			Monitored Level** For Mandatory Respirator Use	Monitored Level*** For Mandatory Work Stoppages
TPH, BTEX	PID	Periodic during	150 ppm	300 ppm

		sampling		
Benzene	CT-Draeger 0.5/c	If PID/FID exceeds 5 ppm for 2-3 minutes	0.5 ppm	2 ppm

* Monitoring performed at operator's breathing zone. Monitor at source first, if the source concentration is near or above the action level, monitor the breathing zone. Respirator use required if action level sustained for a minimum of 5 minutes.

** Use of an approved respiratory protection system required if concentrations consistent at specified limit.

*** Work stopped. Call to Project Manager required if concentrations consistent at specified limit.

4.5 Construction Hazards

Heavy machinery, moving traffic and foot traffic need to be considered during all work activities. Workers in all designated work area are required to wear, at a minimum, hard hats and steel-toed boots at all times.

Workers may come in contact with underground utility lines or pipes, which can cause a potentially fatal electrical or fire hazard. Typical hazards during excavation may include cave-in of trench walls, oxygen-deficient atmospheres, accumulations of heavier-than-air gases or vapors, and objects falling on workers from a higher elevation. Slips and falls are also prevalent inside trenches or from ground level into a trench. Heavy equipment in operation around a trench can cause serious accidents if all employees are not observant of heavy equipment safety rules.
Any person in a designated work area must follow, at a minimum, the following precautions:

- Follow standard construction safety procedures,
- Follow all requirements specified in this Health and Safety Plan,
- Wear hard hats, steel toed boots and any other required protective equipment dictated by work conditions.
- Observe standard heavy equipment safety protocols,
- Maintain good housekeeping,
- Utilize appropriate engineering controls (e.g., ventilation), work practices, and PPE as needed.

5.0 LEVEL OF PERSONAL PROTECTION AND SAFE WORK PRACTICES

5.1 Protection Level

Based on the type of work to be performed and chemical hazards that may be encountered, EPA Levels C and D personal protection have been selected to be adequately protective of personnel in work areas during work activities required for this project. Personal protective equipment requirements for each level of protection are summarized below:

Task(s)	Level of Protection	Required Protective Equipment
While present in any designated work area	Level D	➢ Steel-toed work boots ➢ Hard hat ➢ Ear protection (during the operation of heavy equipment or during loud operations) ➢ Eye protection (i.e., safety glasses)
During excavation of soil below the saturated zone or the handling of wet soil or water	Level D	➢ Steel-toed work boots ➢ Hard hat ➢ Ear protection (during the operation of heavy equipment or during loud operations) ➢ Coveralls (unlined tyvek acceptable) ➢ Eye protection (safety glasses, goggles or face shield) ➢ Gloves – type and need determined by the on-site Health and Safety Officer
When air monitoring shows that respiratory protection is required in work areas.	Level C	➢ Steel-toed work boots ➢ Hard hat ➢ Ear protection (during the operation of heavy equipment or during loud operations) ➢ Coveralls (unlined tyvek acceptible) ➢ Eye protection (safety glasses, goggles or face shield) ➢ Gloves – type and need determined by the on-site Health and Safety Officer ➢ Full-face or half-face, air-purifying respirator with combination organic vapor-particulate filter cartridges

Dust masks should be worn, exposed soils and traffic lanes should be watered to minimize exposure to dust during relevant construction activities.

5.2 Decontamination

Due to the volatile nature of the volatile organic compounds that may be encountered, level D protective clothing will be used. If the Site Health and Safety Officer has reason to believe clothes or equipment have been exposed to chemical, he/she may require thorough washing and rinsing of equipment, and possibly disposal of clothes. Soil will be brushed off of clothing and shoes and any equipment or vehicles leaving a designated work area. Additionally, typical industrial hygiene practices covered in HAZWOPER training will be followed at a minimum.

6.0 GENERAL HEALTH AND SAFETY REQUIREMENTS

6.1 Site Safety Meeting

Site safety orientation and training meetings must be convened (1 before the field team begins work at the site, (2) when there are modifications to the site safety plan that are applicable to the field personnel, and (3) when additional staff or subcontractors begin fieldwork. Safety meetings should be attended by all personnel involved in carrying out the project, and presided over by the Site Health and Safety Officer or his/her designee. A list of attendees will be provided to the Project Health and Safety Officer.

At a minimum, the meeting agenda must include:

- A discussion of the work activities,
- A discussion of the potential construction hazards,
- A discussion of the potential chemical hazards,
- A discussion of the required protective equipment,
- Accident reporting requirements, and
- Attendee signatures, acknowledging receipt and understanding of the plan and agreement to comply.

6.2 The Site Health and Safety Officer

The Site Health and Safety Officer is responsible for determining whether the health and safety requirements detailed in this plan are being followed and will promptly report all non-compliance to relevant personnel. The Site Health and Safety Officer will maintain a list of addresses and telephone numbers of emergency assistance units and insure that a list is posted and visible in each designated work area (ambulance service, police, hospitals, etc.).

6.3 Accident/Incident Reports

All accidents or injuries will be reported immediately to the Site Health and Safety officer, who is responsible to report to the Project Manager. The Project Manager will be responsible for ensuring that all lost time, accidents, or injuries are fully investigated and documented.

7.0 SAFETY AND HEALTH TRAINING

OSHA regulations under Title 29 CFR, Part 1910.120 include training requirements applicable to all employees who may be exposed to site hazards. Training requirements vary according to job assignment and potential for exposure to hazardous substances.

General site workers who engage in activities which have a high exposure potential are required to, at minimum, complete the following:

- Forty hours of off-site instruction;
- Three days of on-the-job training under the direct supervision of a trained, experienced supervisor; and
- Eight hours of annual refresher training.

Other workers who work only in areas which are not impacted by chemicals, indicating that no PPE is required would not be subject to the requirements of this HASP.

Personnel who supervise workers in high exposure potential activities are required to, at a minimum, complete the following:

- The same (or equivalent) training as required for the employees they supervise;
- Eight additional hours of specialized off-site supervisory training; and
- Eight hours of annual refresher training.

The new worker is naturally prone to accidents and can be a serious threat, both to himself/herself and to co-workers. Proper training that follows the following guidelines will help to reduce the potential of these dangers.

1. Inform the new worker of all work activities,
2. Give the new worker specific work instructions,
3. Show the new worker how to conduct the required work.
4. Watch closely as he/she does the work.
5. Correct any unsafe work practices.
6. Warn him/her of dangers.
7. Don't allow him/her to work alone until you are sure the new worker is capable of doing so.

The proper training of a new worker is particularly important since lack of proper training can be disastrous. A new worker cannot be expected to be familiar with all the hazards involved in doing a job. Therefore, he/she cannot be expected to look out for unknown hazards. The new worker may be so concerned with trying to master an unfamiliar job that surrounding hazards are not noticed.

8.0 EMERGENCY RESPONSE PLAN

8.1 Communication Procedures

Emergency procedures listed in this plan are designed to give the field team instructions in handling medical emergencies, fires and explosions, and excessive emissions during the operational activities. These emergency procedures will be carefully reviewed with the field team during the health and safety training session. Personnel in the Exclusion Zone should remain within sight of the Site Safety Officer. Repeated horn blasts will be the emergency signal to indicate that all personnel should leave the Exclusion Zone. The following standard hand signals will be used when vocal communication is not possible.

Hands gripping throat	Out of air, can't breath
Grip partner's wrist or both hands around waist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	OK, I am all right, I understand
Thumbs down	No, negative

8.2 First Aid

Move victim to fresh air and call emergency medical care. If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact with material, immediately wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site.

8.3 Hospital

The Oakland Children's Hospital is located at 747 52nd Street, approximately 1.5 miles northeast of the site. A map showing the route to this hospital is included within this HASp as Attachment D. Directions to the hospital from the site are:

1. Right (south) on San Pablo Avenue
2. Left on 43rd Street
3. Left on Lusk/West Street
4. Right on 52nd Street

Directions to the hospital and a list of emergency contacts will be available in a readily accessible place on-site. First-aid equipment and fire extinguishers will be available on-site at the command station and will be discussed during the safety meeting prior to the start of work. In the event workers are exposed to contaminated soil or water, the following first-aid procedures, but not necessarily in the following order, may be necessary.

1. Immediately remove the worker from the exposure area.
2. Wash extremities.
3. Give artificial respiration, if needed.
4. Get medical help as necessary.

8.4 Emergency Phone Numbers

Police	**911**
Fire	**911**
Hospital	**(510) 428-3240**
Waterstone Environmental, Inc.	**(510) 813-5624, (510) 533-6710, (510) 380-1147, (510) 420-0558**
Dig Alert	**(800) 422-4133**

8.5 Fire and Explosion Hazards

Fires on-site are of concern during remediation work due to the possibility of encountering flammable liquids. At least one multi-purpose fire extinguisher (A,B,C) will be available on-site at all times. If a fire occurs, the local fire agency will be contacted immediately.

8.6 Heat Stress

Please see Attachment C for a description of heat stress symptoms and suggested remedies

9.0 ACKNOWLEDGMENT OF POTENTIAL CHEMICAL HAZARDS AND APPROVAL / DISTRIBUTION OF HEALTH AND SAFETY PLAN

Position	Name	Signature
Project Manager Tel: (510) 533-6710, pager: (510) 380-1147; cell phone: (510) 813-5624; home (510) 533-6443	Clif Davenport	
Site Health and Safety Officer Tel: (510) 420-0558	Heike Müller	

Each onsite worker shall, at a minimum, be 40-hour trained per 29 CFR 1910.120, including annual refreshers. Waterstone's Health and Safety monitoring and communication to the Subcontractors will be limited to the following information:

- vapor concentrations in breathing space
- dermal protection vapor concentrations in breathing space
- determination of wheter suspect soils are potentiall impacted and require special handling
- evaluation of stormwater protection measures and communication of such information to the client

The following personnel have read and understand the provisions of this HASP:

Signature	Name	Company	Date

ATTACHMENT A: SITE ENTRY CHECKLIST FOR WORKERS IN POTENTIALL CONTAMINATED AREAS

1. Worker knows the names of the on-site safety and health personnel.
2. Worker knows the site hazards. (Reviewed reference materials)
3. Personal protective equipment (PPE) selected is appropriate for specific job task.
   - User is familiar with equipment and has successfully completed training.
   - User can recognize symptoms of heat strain related to work in PPE and knows preventive measures to avoid heat injury.
4. Chemical protective clothing selected is appropriate for hazards present and specific job task of user.
5. Personal protective clothing has been checked for contamination, signs of chemical degradation, tears, pinholes, or other defects, and replaced if faulty or cleaned if not decontaminated.
6. Respirators inspected for use.
   - Facepiece inspected for damage and to check fit.
   - Respirator decontaminated and disinfected since previous use.
   - Fresh cartridges or canister installed for APRs.
   - Air tanks full, and all system components checked for proper function for SCBA.
   - Airlines and escape air bottles inspected for SARs.
   - User has been successfully fit-tested with the appropriate respirator facepiece.
7. Worker knows safe work practices procedures for this project.
   - Confined space entry
   - Trenching and excavation
   - Drilling activities
   - Use of heavy equipment
   - Bulking of drummed wastes
   - Handling of containers
8. Worker is familiar with all communication systems used on-site.
9. Worker is familiar with use of the buddy system on-site.
10. Worker is familiar with site layout, site zoning system, zone boundaries, and the zone barrier or boundary and marking system use.
11. Worker knows what additional engineering controls are being used and why.
    - Dikes
    - Berms (earthen walls to segregate incompatible materials)
    - Ditches and excavations
12. Medical examinations have been conducted in compliance with medical surveillance requirements (29 CFR 1910.120).

13. Bodily symptoms which will alert worker to overexposure of chemicals, oxygen-deficiency, and other site hazards are known.

14. Familiar with decontamination procedures.
    - Decon station locations for equipment and personnel are known.
    - Contaminated equipment disposal locations are known.

15. The latest revision of the site emergency response plan has been reviewed during on-site training.
    - Site Emergency Response personnel, and notification procedures are known.
    - Worker is familiar with their specific role in a response.
    - Worker is aware of potential emergencies.
    - Worker can recognize a developing emergency (i.e., bulging drums, bubbling liquids, or heat generation) and knows appropriate preventive measures.
    - Emergency exit locations known.
    - Evacuation signals, and emergency alert signals are known.
    - Emergency decon procedures, if different from normal procedures, are known.
    - Site-specific procedures for responding in the event of injury to a worker, including decon and first aid, are known.

16. Spill containment procedures are known.
    - Worker knows what equipment is available on-site.
    - Worker knows location, the large quantities of materials on-site, and variety of containers.

17. Worker is familiar with safe trenching and excavation procedures, if applicable, on-site.

18. Worker is familiar with hazard monitoring procedures (including calibration and maintenance procedures for field equipment) which workers are required to use on-site.

19. Worker knows location of command post, and is familiar with the site safety plan.

ATTACHMENT B: FIRST REPORT OF INJURY

Site Name _____

Date of Incident _____

Name of Injured Person _____

Reported by _____

Job # _____

Scope of Work _____

Report of Injury to
(Site Health and Safety Officer): _____ Time: _____ Date: _____

DESCRIPTION OF INJURY:

ATTACHMENT C: HEAT STRESS PROCEDURES

The following information is provided to help minimize the negative effects associated with heat stress. There are four levels of heat stress:

1. Heat Rash
2. Heat Cramps
3. Heat Exhaustion
4. Heat Stroke

1. HEAT RASH

Results from continuous exposure to heat or humid air. The sweat ducts become plugged and inflamed due to the swelling of the keratin layer of skin.

A. Signs

Tiny red vesicles visible on the affected skin area

B. Treatment

Mild drying of the skin

2. HEAT CRAMPS

Occurs following prolonged exposure to heat with profuse perspiration and inadequate replacement of salt.

The individual satisfies thirst by drinking water without replacing lost electrolytes, causing a salt/water imbalance within the muscle tissue which results in uncontrolled spasms.

A. Signs

Spasms and pains in the muscles of the abdomen and extremities

B. Treatment

Intake of salted liquids orally or intravenously

3. HEAT EXHAUSTION

Occurs under sustained exertion in heat with dehydration from insufficient water and/or salt intake.

The muscles, brain, and skin require increased blood flow due to the heat stress condition. The cardiovascular system does not meet the needs of the body and places the patient into a mild shock.

A. Signs

Extreme weakness, fatigue, dizziness, nausea, headache; normal or subnormal body temperature; clammy, moist, and pale skin.

B. Treatment

Immediately move to a cooler environment, administer salted fluids and allow the person to rest in a supine position; seek medical assistance.

4. HEAT STROKE

Occurs after excessive physical exertion in heat with dehydration from insufficient water and/or salt intake.

The body's heat regulatory process fails, resulting in a shutdown of the sweating process and elimination of one of the body's primary cooling mechanisms. The individual's core temperature rises, resulting in destruction of cells, especially those of the brain and central nervous system.

A. Signs

Dizziness, nausea, severe headache, hot and dry skin, delirium, collapse, and coma.

B. Treatment

Immediately move to a cooler environment; immerse in chilled water and massage or wrap in a wet sheet and fan vigorously.

WATER AND SALT INTAKE

Workers in a hot environment can lose as much as 3 gallons of fluids and electrolytes in sweat, and therefore must be able to readily compensate for this loss.

Fluids should be replaced every 20 minutes and in amounts greater than are necessary to satisfy normal thirst. Water should be kept cool throughout the operation; a temperature of 50° – 60°F is recommended.

Lost salt can be compensated by using a 0.1% saline solution as drinking water (one gram salt per liter of water, or one level tablespoon per 15 quarts of water).

PREVENTION

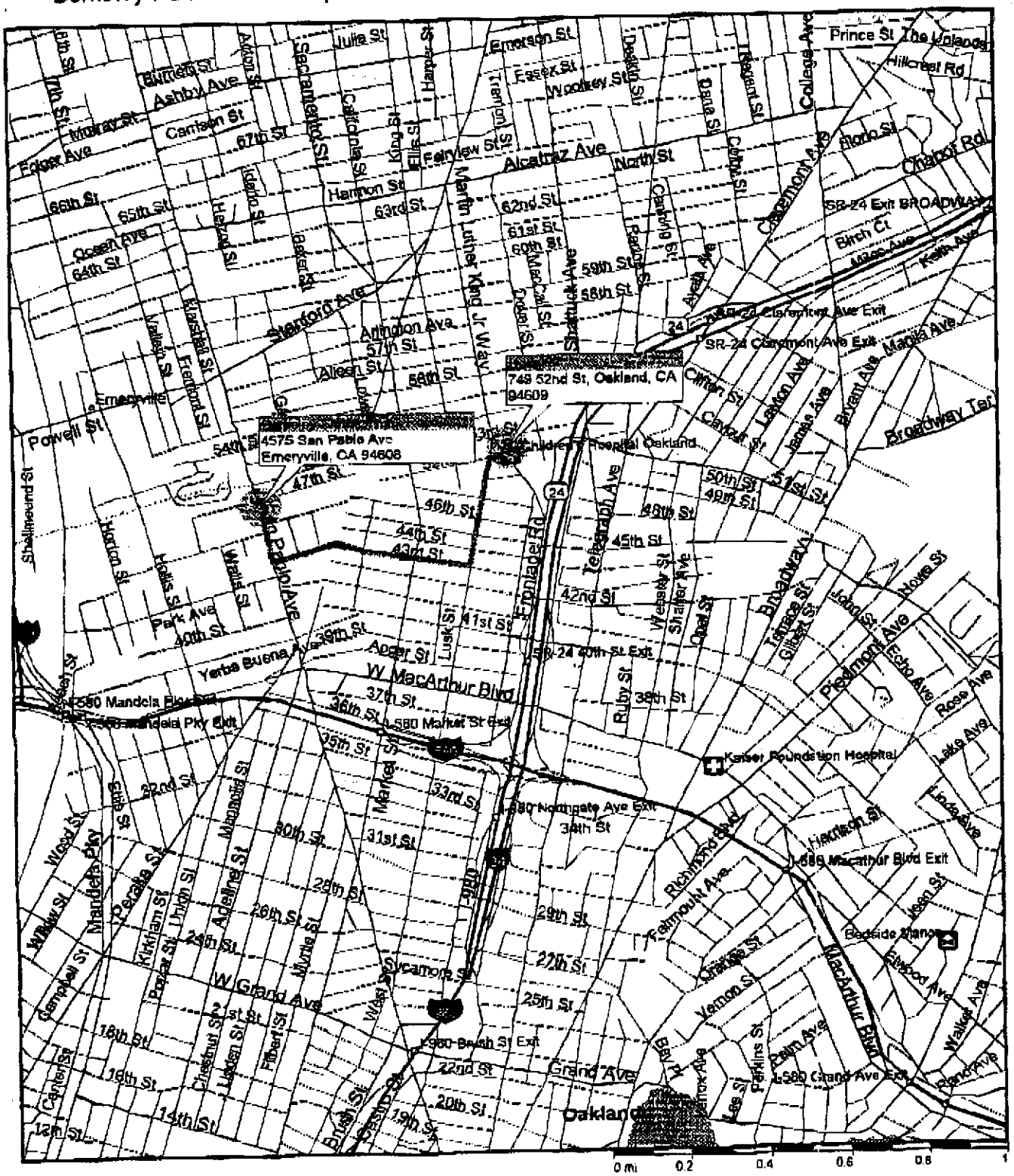
Certain precautions can be taken to reduce heat exposure and/or minimize its effects.

1. Schedule the more strenuous physical activities during the beginning and the end of the day when temperatures may be lower.
2. Do not perform work at midday. If possible, schedule work in split shifts.
3. An appropriate sun-screen lotion should be applied to a worker's exposed skin areas.
4. Potable water should be available in sprayer containers so that workers can cool down skin surfaces.
5. Provide workers with a cooled rest area. If possible, have an air-conditioned van available where workers can sit during breaks and lunch. If a vehicle is not possible, then a canopy area with table and chairs should be provided.

ATTACHMENT D: SITE LOCATION MAP/HOSPITAL ROUTE

Site Location and Hospital Route Map

Berkeley Farms Truck Repair Shop & Yard, 4575 San Pablo Avenue, Emeryville, CA



Streets98