

DEPARTMENT OF TRANSPORTATION

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October 10, 1995

Ms. Susan Hugo, Senior Hazardous Waste Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, CA 94502

ENVIRONMENTAL
PROTECTION
95 OCT 11 PM 12:28

Subject: Workplans and Health & Safety Plans for Monitoring Well Installation at Former
UST Sites in the Cypress Reconstruction Project

Dear Ms. Hugo:

Enclosed for your review and comments are the draft workplans and the health & safety plans for the installation of monitoring wells at two former underground storage tank (UST) sites involved in the Cypress freeway reconstruction project. Past soil and groundwater sampling at the former J&A Truck Repair (500 Kirkham Street, Oakland) and Thomas A. Short Company (3430 Wood Street, Oakland) sites have confirmed that the now-removed USTs at these locations leaked petroleum hydrocarbons into the sites' subsurfaces. As required by Alameda County, these sites will have monitoring wells installed around the former tank locations, and quarterly sampling and testing of the groundwater will be conducted for a year.

The workplans for installing the wells have been prepared by *Geocon Environmental*, who is serving as our consultant for the well construction. Well development and sampling will be performed by our office and the workplans covering those field activities will be submitted to your office for review shortly. The field work for installing the wells is scheduled to take place the week of October 23, 1995, and it is important to stay on schedule because of potential conflicts with freeway construction activities, so your cooperation in helping us stay on schedule is greatly appreciated.

Please call me with any additions or comments you may have on the well installation workplans at 286-5647.

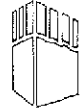
Sincerely,

Christopher R. Wilson

Christopher R. Wilson, P.E.
Office of Environmental Engineering

Enclosures

cc: file



Project No. S8100-06-40
October 3, 1995

California Department of Transportation
District 4
P.O. Box 23660
Oakland, California 94623

Attention: Mr. Christopher Wilson, Contract Manager

Subject: THOMAS A. SHORT COMPANY SITE
OAKLAND, CALIFORNIA
CONTRACT NO. 53W202
TASK ORDER NO. 04-192203-01
DRAFT MONITORING WELL INSTALLATION WORKPLAN

Dear Mr. Wilson:

In accordance with Caltrans Contract No. 53W202 and Task Order No. 04-192203-01, Geocon Environmental Consultants is submitting this Workplan for the installation of three groundwater monitoring wells at the above referenced site. This Workplan describes the scope of work requested by Caltrans and outlines procedures and methods to be employed by Geocon during the field activities.

PROJECT LOCATION AND SITE DESCRIPTION

The project site consists of the former Thomas A. Short Company (TASCO) facility, located at 3430 Wood Street in Oakland, California. The approximate site location is depicted on the Vicinity Map, Figure 1.

BACKGROUND

The information included in this section is based on a review of the referenced Task Order and information provided by Caltrans.

It is understood that TASCO manufactured and repaired marine valves and associated parts at the site for approximately 36 years. The site was purchased by Caltrans in 1994 as part of the I-880 realignment project.

One 4,000-gallon gasoline underground storage tank (UST) and one 1,000-gallon diesel UST were removed from the western portion of the site in January 1993. The approximate former UST locations are depicted on the Site Plan, Figure 2.

Approximately 175 cubic yards of petroleum hydrocarbon impacted soil was overexcavated after the tanks were removed. The results of confirmation soil samples indicated residual concentrations of petroleum hydrocarbons and lead. Groundwater was encountered at a depth of approximately 10 feet below the ground surface (bgs).

Groundwater sampled in February 1993 from a monitoring well (W-1) previously located adjacent to the USTs contained a reported total petroleum hydrocarbon as gasoline (TPHg) concentration of 1.3 mg/l and benzene, toluene, ethylbenzene and total xylenes (BTEX) concentrations of 80 µg/l, 6 µg/l, nondetect and 15 µg/l, respectively.

PURPOSE AND RATIONALE

The purpose of the work outlined in Task Order No. 04-192203-01 is to provide additional information regarding potential petroleum hydrocarbon soil impacts in the vicinity of the former USTs and to install groundwater monitoring wells for subsequent quarterly monitoring at the site.

The proposed groundwater monitoring well locations depicted on Figure 2 have been chosen by Caltrans to determine the groundwater quality and flow direction in the vicinity of the former USTs. It is understood that the wells will be developed, sampled and surveyed by another Caltrans subcontractor.

SCOPE OF SERVICES

The following scope of services have been prepared to achieve the objectives stated herein.

Pre-Field Activities

A Pre-work Site Visit was conducted on September 28, 1995 with the Caltrans contract manager, Mr. Christopher Wilson, and Mr. John Juhrend and Mr. Jeremy Westmark of Geocon, to inspect the work area. The Pre-work Site Visit Checklist was discussed and subsequently signed by Mr. John Juhrend, the Geocon project manager, and by Mr. Wilson. The following items will be completed prior to commencing field work:

- Obtain a well permit from the Zone 7 Water Agency.
- Notify the subscribing public utility agencies via Underground Service Alert a minimum of 48 hours prior to commencing the subsurface investigation to determine the location of any public buried utilities. Site specific utility plans (if provided by Caltrans) will be reviewed to attempt to locate buried utilities in proximity to the proposed drilling locations.
- Prepare a site specific Health and Safety plan to provide guidelines on the use of personal protective equipment (PPE) during the field activities.

Soil Borings

- Excavate three soil borings (MW-1, MW-2 and MW-3) to a maximum depth of 10 feet bgs utilizing a truck mounted, hollow stem auger drill rig. The approximate boring locations are depicted on the Site Plan, Figure 2.
- Collect soil samples at depths of 1, 5, and 10 feet bgs from within each boring. The soil samples will be obtained utilizing a modified "California" sampler equipped with 6-inch-long stainless steel sample tubes to facilitate sample handling and storage. Following sample collection, the tubes will be capped, labeled, chilled, and transported to Sparger Technology Incorporated, a California-certified environmental laboratory, utilizing standard chain-of-custody procedures.
- Perform headspace surveys on the soil samples collected using a portable organic vapor analyzer (OVA), equipped with a photo ionization detector (PID) or flame ionization detector (FID). Headspace readings represent qualitative indicators of the presence of organic vapors in the pore space of the soil samples collected. The headspace readings will be recorded on the boring/well logs.
- Collect onsite soil and rinseate water generated during the boring activities in 55-gallon drums and store onsite for disposal following regulatory protocol.
- Provide quality control/quality assurance (QA/QC) procedures during the field activities. These procedures will include cleansing/rinsing of the sampling equipment prior to each sampling effort, the cleansing/rinsing of the drill rig augers prior to and between borings and providing chain-of-custody documentation for each sample collected and transferred to the laboratory for analytical testing.
- The drilling, sampling, and related field activities will be performed under the supervision of the Geocon Project Manager who will be responsible for signing the final boring/well logs.

Monitoring Wells

- Install groundwater monitoring wells in each of the borings. The groundwater monitoring wells will be constructed using 2-inch diameter polyvinyl chloride (PVC) casing. The lower portion of the wells will be constructed using 8 feet of 0.020-inch slotted screen PVC casing. A filter pack consisting of No. 3 monterey sand will be placed around the screen from the bottom of the boring to an elevation of approximately 1 foot above the screen zone. A one foot thick seal consisting of hydrated bentonite chips will be placed above the filter pack. Traffic-rated security wellhead covers will be used to complete the well construction. A typical Monitoring Well Construction Diagram is presented as Figure 3.
- Coordinate the removal and disposal of soil cuttings and rinseate water from the site.

Laboratory Analyses

The laboratory analyses specified by Caltrans for soil samples collected under this Task Order are as follows:

- Soil samples will be tested for TRPH following EPA Test Method 418.1, total petroleum hydrocarbons as diesel and TPHg following EPA Test Method 8015 modified, VOCs following EPA Test Method 8240 and CAM 17 metals following EPA Test Method 6010.

Quality assurance/quality control (QA/QC) measures will be performed for each method of analysis with specificity for each analyte listed in the test method's QA/QC. QA/QC will include the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever is more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever is more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix, whichever is more frequent, with spike made at ten times the detection limit or at the analyte level.

Data Submittal

- Transmit copies of the boring/well logs, laboratory reports and chain-of-custody documentation to the Caltrans contract manager.

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DRAFT

If there are any questions concerning the contents of this Workplan, or if Geocon may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON ENVIRONMENTAL CONSULTANTS

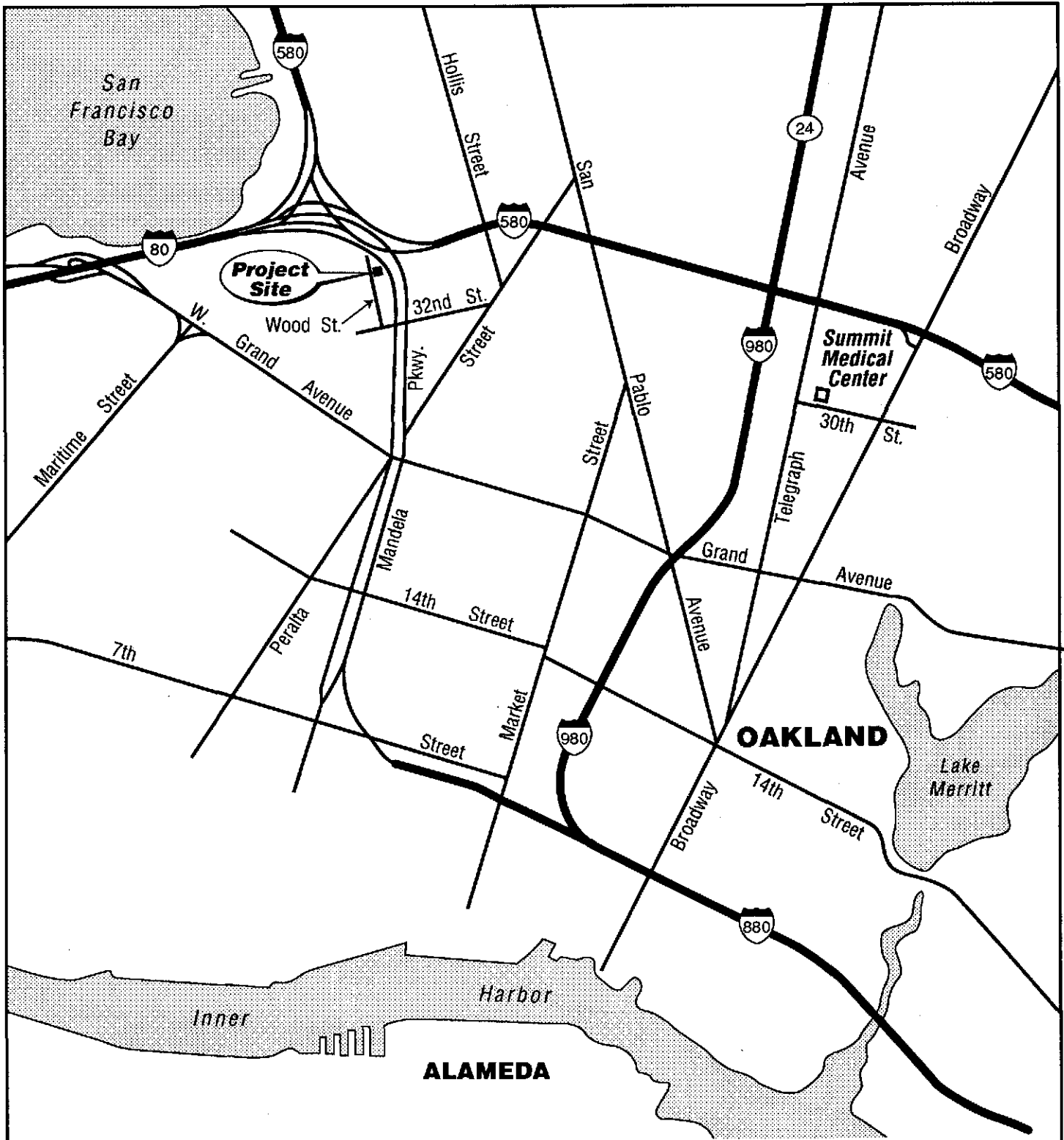
John E. Juhrend, PE, CEG
Project Manager

Jeremy Westmark
Environmental Scientist

JEJ/JW:mc

(5) Addressee

Attachments: Figure 1 - Vicinity Map
 Figure 2 - Site Plan
 Figure 3 - Monitoring Well Construction Diagram



GEOCON



ENVIRONMENTAL CONSULTANTS INCORPORATED
 3235 SUNRISE BLVD. - SUITE 6 - RANCHO CORDOVA, CALIFORNIA 95742
 PHONE 916 852-9118 - FAX 916 852-9132

Thomas A. Short Co.

3430 Wood Street
 Oakland, California

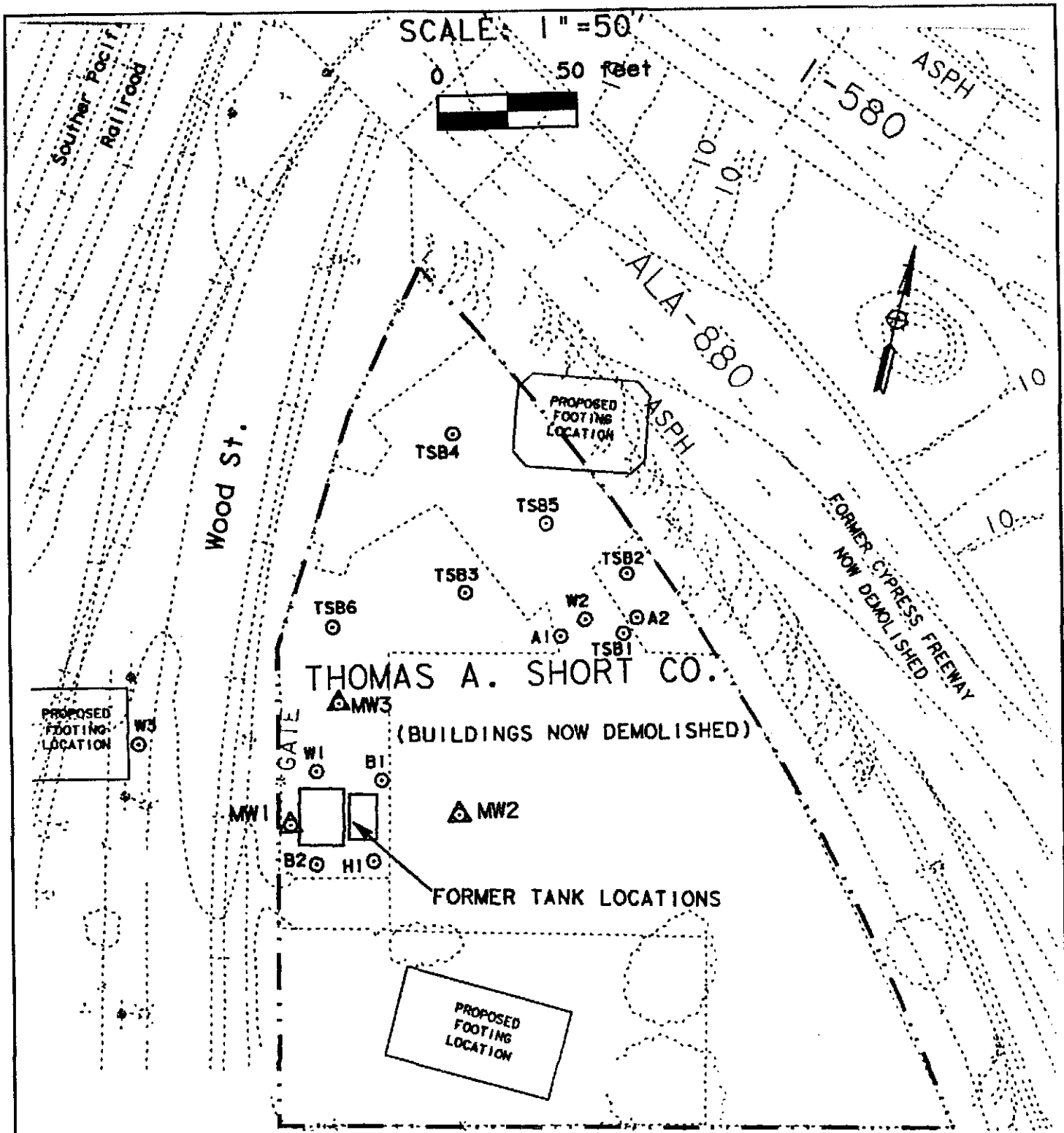
VICINITY MAP

GEOCON Proj. No. S8100-06-40

Task Order No. 04-192203-01



October 1995

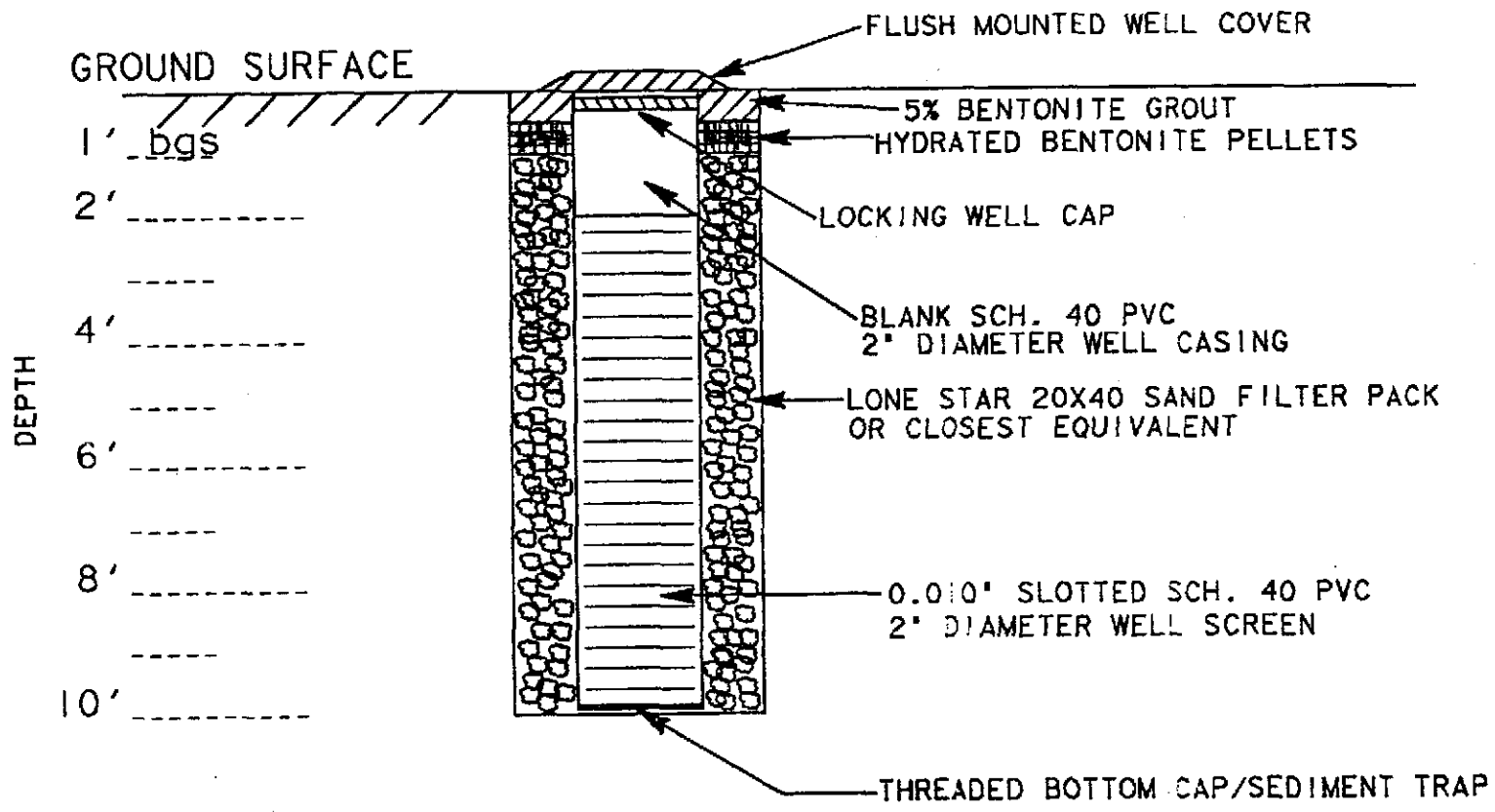
Figure 1



LEGEND

- ▲ Proposed Monitoring Well Location
- Past Boring Location by Aqua Sci. Eng. (2/93&10/93 or Geo/Resource (6/92).

 <small>ENVIRONMENTAL CONSULTANTS INCORPORATED 3235 SUNNIBS BLVD - SUITE 6 - HANCHO CONDOVA, CALIFORNIA 95742 PHONE 916 852-9118 - FAX 916 852-9132</small>		
Thomas A. Short Co.		
3430 Wood Street Oakland, California		SITE PLAN
GEOCON Proj. No. S8100-06-40		October 1995
Task Order No. 04-192203-01		Figure 2



NOT TO SCALE

GEOCON



ENVIRONMENTAL CONSULTANTS INCORPORATED
3235 SUNRISE BLVD - SUITE 6 - RANCHO CORDOVA, CALIFORNIA 95742
PHONE 916 852-9111 - FAX 916 852-9132

Thomas A. Short Co.

3430 Wood Street
Oakland, California

**MONITORING WELL
CONSTRUCTION
DIAGRAM**

GEOCON Proj. No. S8*00-06-40

Task Order No. 04-192203-01

October 1995

Figure 3

Prepared By:
Geocon Environmental Consultants
3235 Sunrise Blvd., Suite 6
Rancho Cordova, California 95742
Project No. S8100-06-40

DRAFT

**HEALTH AND
SAFETY PLAN**
Task Order No. 04-192203-01

for

Thomas A. Short Company

Oakland, California

Prepared for:
California Department of Transportation
District 4
Post Office Box 23660
Oakland, California 94623
Task Order No. 04-192203-01
October 3, 1995

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Figure:

1. Vicinity Map

Tables:

- I. Chemical Hazard Analysis
- II. Routes of Exposure, Symptoms and Target Organs
- III. References

SUMMARY - HEALTH AND SAFETY PLAN

Project: Thomas A. Short Company - District 4 UST Sites

Project No: S8100-06-40

Project Manager: John E. Juhrend

Corporate Health & Safety Specialist: Bruce D. Lazarus, CIH

Site Safety Officer: To be determined by the project manager

Planned Activities: Exploratory soil boring and limited soil sampling

Chemical Hazards: Petroleum Hydrocarbons and heavy metals (including lead)

Chemical Hazard of Principal Concern: Benzene and lead

Initial PPE: Level D (limited dermal protection)

Monitoring: Ambient air monitoring with OVA for organic vapors

Action Levels: Upgrade to Level C (half-face respirators equipped with combination organic vapor/dust cartridges) where ambient air measurements with OVA exceed 5 ppm. Stop work and contact project manager/project safety specialist if ambient air measurements exceed 1,000 ppm. It is recommended that field personnel position themselves upwind of the field activities, when possible.

Exclusion Zone: Boundary to be established initially at a distance of 25 feet from the location of field activities. The boundary will be modified to a distance where ambient air measurements with the OVA are detected at concentrations above background levels or will remain a distance of 25 feet from the field activities, whichever is further.

Emergency: 911

Hospital: 510.655.4000

From project location take 580 east to Broadway. Turn right on Broadway and right again on 30th. Summit Medical Center will be on the right past Summit Street.

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HEALTH AND SAFETY PLAN

GENERAL OVERVIEW

This Health and Safety Plan (Plan) describes the health and safety procedures to be implemented for the field activities associated with the project. The project location includes the former Thomas A. Short Company located at 3430 Wood Street in Oakland, California. The subject project includes the excavation of three soil borings to an approximate depth of ten feet below ground surface and limited soil sampling. The soil is potentially impacted by petroleum hydrocarbons as well as heavy metals (including lead). The field activities are planned to commence in October 1995.

Provisions of this Health and Safety Plan (Plan) apply to the employees of Geocon Environmental Consultants (Geocon) who will be participating in the above-noted field activities. Other personnel on the site including subcontractors, are expected to observe health and safety rules and regulations established as required by Title 8, CCR 5192 and 29 CFR 1910.120 by their respective organizations and, at a minimum, observe the procedures outlined in this Plan.

Personnel Disciplines and Responsibilities

Geocon personnel who have responsibility for the safe operation of this project include the PM (PM), Corporate Health and Safety Specialist (CHSS), and Site Safety Officer (SSO). The responsibilities of each of the above-referenced personnel as they relate to health and safety are summarized below.

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Project Manager (PM)

- Coordinating with the CHSS in preparing this project-specific Plan.
- Overall implementation and management of the health and safety program.
- Incorporating health and safety planning, implementation, and supply requirements into project plans, budgets, and activities.
- Selecting an SSO.
- Issuing responsibility to the SSO to implement the health and safety requirements summarized in this Plan. In addition, the PM shall require all project personnel to comply with the requirements set forth in this Plan.
- Informing the CHSS of violations of this Plan, and unsafe conditions, and will confer with the CHSS regarding changes to this Plan. If deemed necessary, the PM, SSO or the CHSS may stop work due to violations to this Plan or unsafe conditions.
- Coordination with client representatives.

Corporate Health and Safety Specialist (CHSS)

- Reviewing and approving this Plan and modifications to the Plan.
- Performing periodic audits of project activities to evaluate general compliance with the policies, procedures, directives, and guidelines presented in this Plan.
- Providing environmental health, safety and industrial hygiene consultation as needed.
- Evaluating site hazards with the PM for the preparation of this Plan.

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Site Safety Officer (SSO)

- Being knowledgeable of OSHA and Geocon health and safety protocols.
- Implementing this Plan under the authority of the PM.
- Providing onsite pre-work health and safety training for field personnel.
- Completing daily field logs and onsite health and safety training documentation.
- Monitoring onsite activities for violations to the provisions of this Plan and unsafe work conditions and reporting them to the PM.
- Procurement, inspection, and maintenance of health and safety equipment.

Project Field Staff

- Complying with the requests of the PM, the CHSS, the SSO, and the provisions of this Plan.
- Performing work in a manner that is conducive to good worker safety and health.
- Reading and being knowledgeable of this Plan.

Training

The CHSS will design a training program concerning the potential hazards associated with the proposed field activities. Components of the training program will include a review of the following:

- Potential chemical, operational and physical hazards present at the site
- Personal protective equipment (PPE)/Personal protection procedures
- Hazardous materials handling procedures
- Personal hygiene - general guidelines
- The buddy-system
- Personal and equipment decontamination procedures
- Emergency response procedures

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- Symptom awareness

Periodic meetings with project personnel may be conducted by the CHSS (or his designee) pending any changes to the scope of work or modification to this Plan.

Medical Surveillance Requirements

The Geocon project personnel who will be involved with onsite field activities will be required to have a medical examination and be proclaimed by a physician to be in good health prior to the commencement of work at the site. This examination shall include the following, as a minimum:

	INITIAL	ANNUAL
Medical History/Occupation History Review	X	X
Chest X-Ray	X	X
Pulmonary Function Test	X	X
Electrocardiogram	X	X
Blood Chemistry/Urinalysis	X	X
General Physical Examination	X	X
Skin Exam	X	X

As part of this examination, the physician will evaluate the examinee's ability to use negative- or positive-pressure respirators. Personnel who have been diagnosed as having medical conditions which could directly or indirectly be aggravated by either exposure to chemical substances suspected of being present at the site, or by the use of protective equipment, will not be allowed to participate in field activities onsite. In addition, personnel with injuries or illnesses involving open wounds may not be allowed onsite. Field personnel that develop an illness or injury during the project may be reexamined by a physician. The physician must assess that the employee is fit to return to work before they can continue to participate in the field activities onsite. In

HAZARD EVALUATION

To attempt to perform the subject field activities in a manner that is safe and in compliance with applicable laws and regulations, a preliminary hazard evaluation was performed to identify the existing site conditions. This evaluation was based on the following:

- Identification of the suspected hazardous materials/wastes onsite;
- Toxicological aspects of the suspected hazardous materials/wastes onsite;
- Suspected contaminant concentrations within the various media onsite;
- Topographical hazards;
- Operational hazards; and
- Climatic extremes.

Suspected Chemical Hazards

The results of a preliminary subsurface investigation and a second phase subsurface investigation performed for the subject site indicate that potential exposures to petroleum hydrocarbons and heavy metals (including lead) are of primary concern during the proposed onsite activities.

Inhalation of fugitive dust containing lead and volatile petroleum hydrocarbons are the exposure routes of primary concern. Potentially toxic substances may also enter the unprotected body by skin absorption, eye contact, and/or inadvertent ingestion.

Chemical exposures are generally divided into two categories: acute and chronic. Symptoms resulting from an acute exposure usually occur during or shortly after exposure to a sufficiently high concentration. Symptoms resulting from a chronic exposure generally occur following prolonged or repeated exposures to lower concentrations. The concentrations required to produce symptoms of exposure depend upon the medium in which the compounds occur, the duration of exposure, and the number of exposures. These factors can vary widely in uncontrolled environments.

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addition, either the CHSS or onsite employees can request additional medical testing if a site exposure is suspected.

Non-designated field personnel visiting the site will be restricted from entering potentially impacted areas unless evidence is presented that a medical examination has been conducted with satisfactory results and the policies and procedures outlined in this Plan are understood and followed.

GENERAL PERFORMANCE RECOMMENDATIONS

Performance Requirements

At least two persons shall be required to be together during the onsite activities.

General Hygiene Requirements

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-in-mouth transfer and ingestion of material is prohibited in any area designated as being potentially impacted by hazardous materials/wastes (Exclusion Zone -see section entitled "WORK ZONES").
- Personnel with improperly fitted respirators are not allowed onsite.
- Hands and face must be thoroughly washed upon leaving the work area, and before eating, drinking, or other non-project activities.
- Kneeling, sitting, leaning, or general contact with impacted surfaces, or with surfaces suspected of being impacted by hazardous materials/wastes (i.e., puddles, mud, leachate, etc.) should be avoided.
- Medicine and alcohol can potentiate the effects of exposure to toxic chemicals. Prescribed drugs should not be taken by personnel if the likelihood of such potentiation effects exists. Ingestion of alcohol is prohibited.
- Procedures for the proper set-up of, entrance to, and exit from the site should be planned and implemented prior to going on the site.

Generally, symptoms resulting from an exposure to the previously-noted volatile organic compounds (i.e., petroleum hydrocarbons including the aromatic volatile organics benzene, toluene, xylenes, and ethylbenzene) are first indicated by an intoxicating affect (i.e., lightheadedness, nausea, headache, etc.). Since many volatile organic compounds possess ideal warning properties (i.e., odors at low concentrations), harmful exposures via inhalation can be avoided. Harmful exposures to metal such as organic and inorganic lead via inhalation of fugitive dust may be avoided by the use of respirators equipped with dust filters. Levels of volatile petroleum hydrocarbons (including petroleum hydrocarbons possibly containing organic lead) will be monitored (see section entitled "Monitoring Program") to evaluate modifications to the use of the initial personal protective equipment and health and safety procedures outlined herein. In addition, it is recommended that all field personnel position themselves upwind of the field activities, when possible.

A summary of the NIOSH/OSHA ambient air standards to select volatile hydrocarbons and organic and inorganic lead is presented in Table I. The reported routes of exposure, symptoms and target organs for human exposure to the above-noted compounds are summarized in Table II.

Physical and Operational Safety Hazards

Potential physical hazards associated with the proposed field activities include excavation instability, explosion and fire, electrical shock and noise exposure hazards.

- Explosions and fires often arise spontaneously. However, they more commonly result from site activities where an ignition source (such as a spark from equipment) is introduced to an explosive or flammable environment (e.g., volatile organic vapors or relatively dry vegetation). The potential presence of volatile organic vapors at the project site requires special monitoring considerations as are outlined in the "Monitoring Program" section of this Plan.
- Electrical hazards include overhead power lines and buried cables which pose a danger of shock or electrocution if workers or equipment contact or sever them during site operations. A utility locating service should be retained prior to any excavation activity.

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- Noise hazards can be created by equipment that generates excessive noise. Excessive noise can result in physical damage to the ear. Onsite personnel are advised to wear hearing protection devices during the operation of heavy equipment onsite.

Heat Stress

In addition to chemical, physical and operational hazards referenced above, heat stress may present a potential hazard to onsite personnel during the onsite operations. Hazards can be created when individuals work in warm temperatures while wearing relatively impervious protective clothing. When ambient air temperatures at the site exceed approximately 75 degrees Fahrenheit, heat stress can result. If these conditions are encountered, the following precautions should be implemented:

- The SSO should regularly monitor ambient air temperature.
- Field team members will be observed for signs and symptoms of heat stress including: dizziness, profuse sweating, skin color change, increased heart rate and vision problems. Personnel who exhibit any of these symptoms will be removed from field work and requested to consume 2 to 4 pints of electrolyte fluid or cool water every hour while resting in a shaded area. The individual should not return to work until the symptoms are no longer recognizable. If symptoms appear critical, persist or get worse, seek immediately medical attention.

To control the potential occurrence of heat stress, preventive measures will be evaluated and implemented on a daily basis or as directed by the SSO. These measures may include:

- Frequent rest periods;
- Inducement of fluids (e.g., water, Gatorade, etc.); and
- Periodic cooling of personnel (e.g., via shaded areas, hose-downs with water, etc.).

The implementation frequency of these measures will be the responsibility of the SSO.

Health and Safety Meetings

Daily health and safety "tailgate" meetings will be held to address potential hazards at the project site. These meetings will include a discussion of:

- suspected chemical hazards
- physical and operational safety hazards
- directions to nearest hospital
- location of nearest phone for emergencies

WORK ZONES

Restricted work zones will be established to limit the spread of hazardous substances by workers from potentially impacted areas to non-impacted areas. Delineation of the work zones is as follows:

- **Exclusion Zone:** The Exclusion Zone is the area where the potential for contact with hazardous materials/wastes could occur. An Exclusion Zone boundary will be demarcated and established initially at a distance of 25 feet from the locations of the field activities. The boundary will be modified to a distance where ambient air measurements with the OVA are detected at concentrations greater than background levels or will remain a distance of 25 feet from the field activities, whichever is further. Monitoring for possible modification of the Exclusion Zone boundaries will be performed periodically at approximately one-half hour intervals during the field activities. Personnel working within the Exclusion Zone will be expected to follow protective measures as prescribed by the SSO.
- **Contamination Reduction Zone:** The Contamination Reduction Zone is a transition area between the potentially impacted areas and the non-impacted area. Decontamination of personnel, equipment and samples will be conducted in this area in order to reduce the probability of potentially hazardous materials/wastes transfer to a non-impacted area. The Contamination Reduction Zone shall be situated upwind of the Exclusion Zone.
- **Support Zone:** The Support Zone is the area, outside the Contamination Reduction Zone, where administrative and other project support functions are performed. The Support Zone shall be situated upwind of the Contamination Reduction Zone.

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PERSONAL PROTECTION

The use of personal protective equipment is intended to provide protection for onsite personnel from chemical, physical, and operational hazards which may not be controlled through other safety procedures. The personal protection equipment may include chemical protective clothing, respiratory protection, eye protection, and hearing protection.

The general use of personal protective equipment is required by OSHA regulations in Code of Federal Regulations (CFR), Title 29, Section 1910. The personal protection equipment/procedures for this project are described as follows.

Monitoring Program

Air monitoring will be performed utilizing a field operated, intrinsically safe organic vapor analyzer (OVA)-flame ionization detector (FID) and/or photoionization detector (PID) to assess potential levels of ambient organic vapors. The OVA is used in assessing appropriate health and safety protection levels. "Background" levels of volatile organics in air shall be assessed with the OVA in areas away from the influence of possible chemical releases from the activities performed in the exclusion zone or from diesel/gasoline combustion engine exhaust sources. Consistent readings exceeding 5 parts per million (ppm) above background for the OVA in the worker's breathing zone shall initiate upgrade to Level C respiratory protection (see section entitled Personal Protective Equipment).

Operations must also be suspended if the OVA readings go off scale at the instruments highest range setting (i.e., 1,000 ppm), thus indicating a potentially explosive condition. If corrective action cannot be taken, field personnel and other individuals in the area must be directed to move to a safe area. The CHSS and PM must also be contacted.

The OVA shall be calibrated before and after field operations and as deemed necessary during field operations. The instruments will be calibrated with the calibration gas recommended by the

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instrument's manufacturer. The calibration gas and the calibration readings (in ppm-equivalent) will be recorded in the field log book.

It should be noted that the OVA-FID hydrogen flame can extinguish in low oxygen environments. In addition, high humidity environments can cause an OVA-PID instrument to indicate lower organic vapor concentrations than actually exist.

The SSO shall be responsible for interpreting monitoring data and upgrading or downgrading the level of protection required during field activities.

Effective direct read-out field instrumentation is not presently available for monitoring of lead. Personnel potentially exposed to lead will have complied with requirements outlined in 29 CFR 1910.1025 and/or 29 CFR 1926.62. Exposure at action levels to lead will require blood level monitoring at six-month intervals.

Personal Protective Equipment

The level of protection required during the field activities will be dependent upon onsite conditions (e.g., results of ambient air monitoring). The EPA has formulated recommended levels of protection to be implemented under varying site conditions. The EPA levels of protection are divided into levels A, B, C, and D. These levels are used as a starting point for selection of personal protective equipment levels; however, personal protective equipment levels will be specified according to site conditions in order to provide the most appropriate level of protection. It is recommended that Level D protection measures be implemented prior to the initiation of the field investigation activities. This level shall be upgraded to Level C (i.e., limited respiratory protection) should ambient air monitoring readings (as outlined above) exceed 5 ppm.

The protective equipment to be donned by personnel working in the Exclusion Zone is listed below:

- Eye Protection: Eye protection will include the use of impact resistant safety glasses or full face air purifying respirators.
- Body Protection: Body protection will include the use of Tyvek coveralls where skin contact with impacted materials is probable. Non-metallic hard hats will be worn by onsite personnel at all times during the onsite activities.
- Hand Protection: Hand protection will include the use of nitrile or butyl outer gloves and disposable vinyl inner gloves.
- Foot Protection: Foot protection will include the use of neoprene rubber boots with steel toes and shanks.
- Hearing Protection: Hearing protection will include the use of disposable foam ear inserts.
- Level C Respiratory Protection (if warranted): Respiratory protective equipment will include MSHA and NIOSH approved half face or full face, air purifying respirators fitted with combination organic vapor/dust cartridges.

These levels shall only be upgraded or downgraded upon approval by either the SSO or the CHSS.

DECONTAMINATION PROCEDURES

The following personnel/equipment decontamination (cleansing) procedures have been developed with the intent of reducing the potential for the transfer of hazardous chemicals outside the Exclusion Zone.

Decontamination will be accomplished by passing personnel through various stages of contamination reduction procedures and removing potentially contaminated clothing and equipment in decreasing order of the degree of potential contamination. Personnel who have entered areas suspected of containing hazardous materials/wastes (exclusion zone) will be subjected to

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decontamination. These procedures pertain to the decontamination of protective clothing, respirators, and personnel only.

A decontamination station shall be established outside the Exclusion Zone in the Contamination Reduction Zone. It shall also be situated up-wind of the exclusion zone and downwind of the support zone so as to minimize the potential of exposure to impacted soils/particulates through wind transfer. A windrose obtained from the nearest established airport will be used in predicting seasonal air direction. Installation of a portable windsock will be used as a visual aid for determining wind direction.

The decontamination corridor may be comprised of the following twelve procedural stages. These stages/procedures are listed sequentially below.

Stage No. 1: Segregated Equipment Drop - All equipment and consumables which require either disposal or special handling (e.g., special decontamination) shall remain in this area and be disposed of with the excavated soils or other potentially impacted materials.

Stage No. 2: Boot and Outer Glove Wash - Boots and gloves shall be washed with a brush in a solution of trisodium phosphate or similar detergent. If a Tyvek garment is worn and possesses visible signs of impact, this too should be cleaned, regardless of whether or not it is intended for disposal.

Stage No. 3: Boot and Outer Glove Rinse - two tap water rinse of items washed in Stage No.2.

Note: If personnel are only returning from the exclusion zone for a respirator or respirator cartridge change, it should be done at this time.

Stage No. 4: Tape Removal (if necessary) - Removal of any tape used in securing wrist and ankle cuffs.

Stage No. 5: Boot Removal

Stage No. 6: Outer Glove Removal

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- Stage No. 7: Tyvek/Kleenguard Coverall Removal (if necessary)
- Stage No. 8: Inner Glove Wash - Mild soap/detergent wash.
- Stage No. 9: Inner Glove Rinse - Tap water rinse.
- Stage No. 10: Respirator Removal (if necessary)
- Stage No. 11: Inner Glove Removal
- Stage No. 12: General Field Wash - Personnel shall wash and rinse face and hands with hand soap and tap water before leaving the site and/or eating. If changing of other inner clothing is necessary, it shall be done at this time.

Following decontamination procedures, all disposable materials shall be bagged and labeled as "potentially hazardous" and left onsite for proper removal. Removal and hauling will be conducted utilizing proper manifesting and DOT hauling procedures.

EMERGENCY PROCEDURES

As indicated previously, the objective of this Plan is to reduce the potential for injury and illness through the implementation of operational guidelines and procedures.

As a minimum, the project shall have the following equipment available during all activities:

- First aid kit - Shall be available at the support zone at all times.
- Horn - A portable air horn or car horn shall be used as a non-verbal communication device and shall accompany the field team. One long blast of the horn shall signify immediate evacuation. Two short blasts of the horn shall signify a request for assistance.
- Emergency (portable) eye-wash bottle - Filled with either manufacturer's solution or deionized (DI) water and shall accompany the first aid kit at all times. Verification of fresh DI or sealed manufacturers solution will be part of check out process.

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- Copious amounts of potable water - Shall be readily available for both drinking purposes and for personal hygiene purposes (e.g., washing, rinsing, and cooling of face and body, etc.).
- Wind-direction indicators - Shall be available at the Command Post (within the Support Zone) to provide a means of verifying up- and down-wind locations for the proper placement of the Contamination Reduction Zone and the Support Zone. This will consist of a visible windsock (kite) visible at all times.
- Emergency references (e.g., nearest phone, emergency phone numbers and services, etc., as summarized in section entitled Emergency Response) - Shall accompany the first aid kit and shall be available at the Support Zone. Verification of this support will be ascertained in writing by the SSO prior to work start.
- Vehicle - Easily accessible for emergency transport.
- Canopy/shaded area - To provide shade to use as a resting spot.
- Communication - Radio and backup cellular verified as in working order prior to work start.

General Response Procedures

In the event of an emergency, the following procedures will be performed in the following order:

1. Assess the situation.
2. Perform emergency first aid, as appropriate; e.g.,
 - CPR
 - Artificial respiration
 - Treatment of severe bleeding, burns, shock, fractures, cuts, and poisoning/toxic exposures.
3. Arrange for offsite assistance and transport to an emergency medical facility.
4. Notify the project principals (e.g., PM, CHSS, Client).
5. Prepare an incident report.

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The above-noted emergency response procedures and potential onsite hazards will be reviewed/evaluated on a periodic basis. This is due to daily potential changes in wind direction, operational hazards and personnel availability which could have an effect on the ability to evacuate a site safely.

In the event of acute exposures to potentially impacted material, provide the following immediate treatment:

- Eye: Irrigate Immediately
- Skin: Wash with soap and water
- Breathe: Get to fresh air; artificial respiration if necessary

Emergency Response

Before the commencement of the field activities, an available phone in proximity to the site must be identified and the emergency reference list presented below must be posted nearby. If phones are not readily accessible, then provisions should be made for emergency communication devices (e.g., walkie-talkies, CB radio, mobile telephones, etc.).

Police	-	911
Fire	-	911
Ambulance	-	911
Hospital	-	510.655.4000
Poison Control Center	-	800.342.9293

Hospital Location: From project location take 580 east to Broadway. Turn right on Broadway and right again on 30th. Summit Medical Center will be on the right past Summit Street.

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PLAN APPROVAL

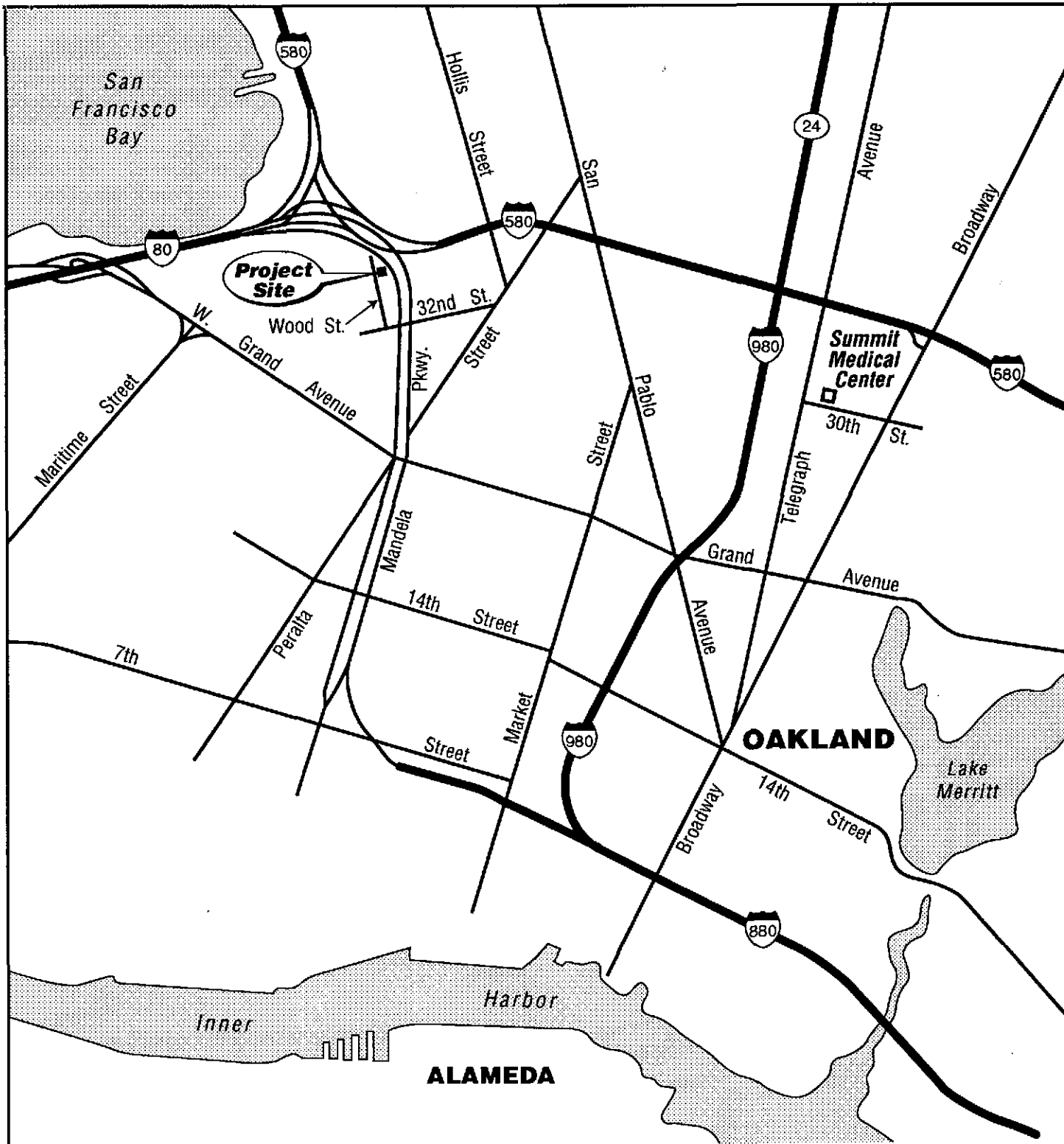
The Corporate Health and Safety Specialist has reviewed and approved this Plan prepared for field activities to be conducted on the subject site.

Bruce D. Lazarus, CIH

Date

The following employees involved with onsite field activities have reviewed this Plan and agree to follow the health and safety procedures described in this Plan.

EMPLOYEE	COMPANY	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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GEOCON



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VICINITY MAP

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Task Order No. 04-192203-01

October 1995

Figure 1

TABLE I
 CHEMICAL HAZARD ANALYSIS

CHEMICAL	(TLV-TWA)*	(TLV-STEL)**	CARCINOGEN
Petroleum Hydrocarbons, as Gasoline	300 ppm	500 ppm	Yes (due to presence of benzene)
Petroleum Hydrocarbons Fuel (toxic equivalent as Benzene)	0.3 ppm ^a	Not Established	Yes
Organic Lead	0.075 mg/m ³	N/A	No (conflicting) (tetraethyl lead)
Inorganic Lead	0.05 ppm ^a	N/A	No
<p>*(TLV-TWA) - Threshold Limit Value Time Weighted Average (8 hrs/40 hrs)</p> <p>** (TLV-STEL) - Threshold limit Value Short Term Exposure Limit (15 min./1 hr)</p> <p>^a Notice of Intent to Change</p> <p>N/A - Not Available</p>			

TABLE II
ROUTES OF EXPOSURE, SYMPTOMS AND TARGET ORGANS

Gasoline/Diesel Fuel, (Toxic Equivalent as Benzene)

- Routes of Exposure - Inhalation, skin absorption, ingestion, and eye contact.
- Symptoms - Symptoms of exposure may include but are not limited to eye, nose, and respiratory system irritation, giddiness, headache, nausea, staggered gait (walking style), fatigue, anorexia (loss of appetite), lassitude (weakness exhaustion), dermatitis (inflammation of the skin), bone marrow depression (blood cell production depression), abdominal pain.
- Target Organs - Target organs may include blood, central nervous system (brain, spinal cord), bone marrow, eyes, respiratory (breathing) system.

Organic (Tetraethyl) and Inorganic Lead

- Routes of Exposure - Inhalation, skin absorption, ingestion, and eye contact.
- Symptoms - Symptoms of exposure may include but are not limited to insomnia, lassitude (weakness, exhaustion), anxiety, tremors, hyperreflexia (involuntary reflex), spastic, bradycardia (decreased heart rate), hypotension (low blood pressure), nausea, anorexia (loss of appetite), low weight, hallucinations, convulsions, coma, eye irritation.
- Target Organs - Target organs may include central nervous system, cardiovascular system, kidneys, eyes.

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TABLE III
REFERENCES

National Institute for Occupational Safety and Health (NIOSH), Pocket Guide to Chemical Hazards. June 1994.

Encyclopedia of Occupational Health and Safety, Volumes I and II, Third Revised Addition, 1983.

Industrial Medicine Desk Reference. Tuer, David, F., Chapman and Hall, 1986.

Threshold Limit Values and Biological Exposure Indices for 1994-1995. American Conference of Governmental Industrial Hygienists.

Toxicology. Doull, Klaassen and Amdur, 1980.

Hazardous Chemicals Desk Reference, Irving Sax, 1987.