

CONSOLIDATED TECHNOLOGIES
WORKPLAN FOR PRELIMINARY SUBSURFACE
SITE INVESTIGATION

SUBJECT ADDRESS: 706 HARRISON STREET, OAKLAND,
California.

PROJECT MANAGERS: TRACY BENNETT, DAVID HOBBS &
SCOTT ZACCOR.

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ENVIRONMENTAL SERVICES
BY
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&
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CONSOLIDATED TECHNOLOGIES
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- Project Management
- Tank Removal
- Engineering
- Site Assessment
- Soil Remediation

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**PROPOSAL/WORK PLAN FOR A
LIMITED SUBSURFACE INVESTIGATION**

INTRODUCTION

This proposal/work plan describes the work perform a preliminary investigation for the extent of petroleum hydrocarbon contamination in the soils at 706 Harrison Street, Oakland, California (hereafter referred to as "site"). See enclosed plate 1; Site Vicinity Map. The contaminated soils at this site are believed to be associated with apparent unauthorized discharges of petroleum hydrocarbons from six underground fuel storage tanks formerly located at the site. These actions are part of the requirements by the California Regional Quality Control Board--San Francisco Bay Region (RWQCB) and the Alameda County Environmental Health, Hazardous Materials Division (ACEH), as this unauthorized discharge appears to have impacted the soils at the site, and could potentially impact groundwater.

SITE DESCRIPTION

The site is located at the north east corner of Harrison and seventh streets, in the southeastern portion of Oakland city limits. The Alameda/Oakland Harbor is located approximately one half mile south of the site. Land use of the general area is predominantly commercial, mixed with residential.

The site is estimated to be one-quarter acre in size, and is rectangular in shape (see Plate 2, Site Schematic). Harrison and Seventh Streets bound the western and southern portions of the site respectively. A gasoline service station borders the northern limits of the site. A private residence borders the sites eastern limits.

On April 18, and June 15, 1991, CT performed two visual inspections of the site and the immediate surrounding area. The site is currently vacant and primarily unpaved. The site's surface appeared relatively flat. Three pits (from the removal of underground storage tanks) were also observed at the site. There were no evidence of existing water wells (domestic or monitoring) at the site. CT believes that depth to ground water is 20 to 25 feet below grade, and flows in a southerly direction. Reportedly, public utilities service the site.

SUMMARY OF SITE HISTORY

You reported that you leased the site from ARCO beginning in 1963, and have occupied the site since that time. You also reported purchasing the site in 1978. It is the understanding of CT that the site was used as a gas station previous to your occupation of the property. The station contained four 1000-gallon leaded gasoline tanks, one 100-gallon automotive waste oil tank and two dispenser/pump islands at the time of your association with the site. You stated that two 6000-gallon tanks were installed in 1976, however, the age of the other storage tanks or station is not known. The approximate location of these former features are indicated on plate 3 Historic Site Schematic. It is the understanding of CT that there is no as-built plans or diagrams available for the installation of the tanks or related piping, and no tank testing or monitoring records are available. You reportedly are not aware of any unauthorized discharge from these tanks.

You stated that you used the station facilities at the site up to 1985, and the facility has been closed since that time. Reportedly you provided for the removal and recycling of the product from the underground storage tanks in July of 1988. This work was performed by Waste Oil Recovery Systems. You also reported that structures existing on the site were demolished and removed from the site December, 1990.

PREVIOUS SITE WORK: (Tank removal)

Information provided to CT reveals that there were ~~six (6)~~ ^{seven w/w.o.} underground storage tanks removed in January by Tank Protect Engineering, located in Union City, California; see attachment 2, Results of tank closure samples. It is our understanding that Tank Protect Engineering has not supplied you with details of the tank pull activities, however, available information indicates that 13 soil samples were recovered from the tank pits, and two samples from beneath a former pump island. These samples are indicated as S1-N, S1-S, (recovered from the "northern" 6,000-gallon gasoline tank), S2-N, S2-S, S3-s, S4-N, S5-N, S5-S, (recovered from the four 1,000-gallon tanks), S6-E, S6-W, (recovered from the "Southern" 6,000-gallon gasoline tank), WO-1 (recovered from the Waste oil tank), I1-S, and I1-N (apparently recovered from the pump island). The approximate locations of these soil samples are indicated on plate 4, Tank Closure Soil Samples. Chemical analysis results are presented in attachment 2, and below in table 2, Chemical Analysis Results of Tank Closure Soil Samples. ^{tanks}

TABLE 2

CHEMICAL ANALYSIS OF
TANK CLOSURE SAMPLES

ANALYTE (PARTS PER MILLION)

SAMPLE DESCRIP.	TPH GASOLINE	TPH DIESEL B	T	EB	X	PB	<i>total</i>
6000-gal. North:							
S1-S	390 ✓	--	0.69 ✓	0.56 ✓	3.1 ✓	8.7 ✓	ND ✓
S1-N	ND ✓	--	0.070 ✓	0.063 ✓	0.013 ✓	0.054 ✓	ND ✓
1000-gal. North:							
S2-N	6,800 ✓	--	75 ✓	290 ✓	98 ✓	540 ✓	ND ✓
S2-S	5,700 ✓	--	82 ✓	280 ✓	85 ✓	460 ✓	5.5 ✓
1000-gal. CNTR. North:							
S3-N	3,600 ✓	--	19 ✓	100 ✓	53 ✓	280 ✓	ND ✓
S3-S	4,600 ✓	--	30 ✓	210 ✓	78 ✓	470 ✓	ND ✓
1000-gal. CNTR. South:							
S4-N	ND ✓	--	0.013 ✓	0.010 ✓	ND ✓	0.026 ✓	ND ✓
S4-S	8,000 ✓	--	7.9 ✓	56 ✓	84 ✓	450 ✓	ND ✓
1000-gal. South:							
S5-N	9,400 ✓	--	17 ✓	160 ✓	97 ✓	650 ✓	4.7 ✓
S5-S	12 ✓	--	0.023 ✓	0.016 ✓	0.053 ✓	0.19 ✓	3.3 ✓
6000-gal. South:							
S6-W	ND ✓	--	0.010 ✓	0.010 ✓	ND ✓	0.030 ✓	ND ✓
S6-E	400 ✓	--	0.21 ✓	0.57 ✓	5.0 ✓	9.8 ✓	4.3 ✓
Island:							
I1-N	ND ✓	--	ND ✓	0.0088 ✓	ND ✓	0.022 ✓	370 ✓
I1-S	ND ✓	--	0.0050 ✓	0.012 ✓	0.0092 ✓	0.050 ✓	45 ✓
Waste Oil							
WO-1	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	ND

mg/kg {Metals: Cadmium-ND ✓ Chromium-33ppm ✓ Lead-28ppm ✓ Nickel-26ppm ✓
Zinc-710ppm ✓ Halogenated Volatiles: ND ✓ Semi Volatile ND

O+G ND

8010

8270
except 100ppb benzo(a)pyrene₃

110ppb fluoranthene
150ppb pyrene



Organics Benzo pyrene-100 ppb; ✓ Fluoranthene-110 ppb; ✓
Pyrene-150 ppb; ✓ Open Scan- ND

ND-Non detected, PPM-Parts Per Million, PPB-Parts Per
Billion; -- - Not Analyzed.

Results from the soil samples recovered from the four leaded gasoline tanks , reveal relatively high level concentrations of gasoline, and related compounds. Detectable levels of hydrocarbon gasoline were also found in samples collected from the 6,000-gallon unleaded gasoline tanks.

Detectable levels of semi-Volatile Organics, Cadmium, Chromium, lead, Nickel and Zinc were found in the soil sample recovered from the waste oil tank. These levels appear relatively low.

SCOPE OF WORK

The following proposed work shall be performed to verify and/or investigate the extent of petroleum hydrocarbon soil contamination in the vicinity of the former tanks. the scope of work is as follows:

1. Obtain necessary permits from local agencies and perform liaison between site owner and state and local agencies.
2. Excavate existing tank pits to a approximately three to five feet in each direction (three sides and floor of tank pit)., Due to the extent of existing excavation under side walk there will be no further excavation in that general direction although we will sample at the floor/side wall interface in the sidewalk direction (north eastern wall/floor interface) see plate #2 for sampling map.
3. Soil samples will be delivered to a state certified laboratory, Sequoia Analytical Laboratory, located in Redwood city, California. Soil samples from sampling targets S-1 to S-7 will be chemically analyzed for TPH as gasoline (EPA Method 5020 or 5030), with BTEX distinction (EPA method 8020). Samples from target S-8 will chemically analyzed for Metals: Cadmium, chromium, lead, nickel, Zinc. and Semi Volatile Organics (EPA Method 8270).
4. A technical report will be prepared of the findings and field observations. A copy should be submitted to the Regional quality Control Board and the Alameda county Health, Hazardous Material Division for their review and consideration for further action.

PURPOSE OF WORK

The purpose of the work outlined above is to verify the presence of petroleum hydrocarbon levels indicated in the tank closure soil samples, and/or investigate the extent of chemical soil contamination in the immediate vicinity of the former underground tanks. It is our understanding that you are planning to excavate the contaminated materials, and remediate these materials on site, if conditions permit. The results of this investigation will be used as guidelines for excavation activities to remove the contaminated soil materials. A work plan for any additional required work will be submitted to the RWQCB in a timely manner, prior to commencement of work.

EXCAVATION

A geologic excavation log will be maintained of the materials encountered and sample locations in each excavation. The log will include field description of the soil properties, lithologic variations, moisture conditions, and any unusual characteristics noted that may indicate the presence of chemical contamination.

All soil spoils will be laid on petroleum resistant liners and covered with same to meet the Bay area Air Quality emission requirements.

The materials will be variously screened by a Gastector hydrocarbon detection field instrument.

SOIL SAMPLING

All chemical sampling, handling, and storage will be conducted in accordance with Environmental Protection Agency and Regional Water quality Control Board guidelines for the investigation of suspected underground storage fuel leaks. If required, an inspector from the Alameda County Health, Hazardous Materials Division will be on site to witness sampling activities.

Soil sampling will commence at or near the 13 to 15 foot level after the existing excavation has been cleared of degraded soil that may currently exist. We feel the current tank pit has been open for at least 8 months in permeable type soil (sand) and in all probability most if not all TPH-G soil contamination has evaporated. The sampling will be performed with the assistance of an Extend-A-Hoebackhoe, thereby eliminating any need for entering the tank pit by the person recovering the samples for analyses.

Samples are collected by the backhoe bucket the person collecting the samples will drive (with a wooden mallet) a 2-inch (O.D.) by 6-inch (length) clean brass sample casing into the excavated bucket of undisturbed soil. All samples will be properly sealed, labeled and identified, in the field. The ends of the samples liners will be capped with aliminium foil, and sealed with caps and aluminized duct tape. Samples will be delivered to the laboratory within two days of their aquisition. Samples will be continuously kept on dry ice during the transport to the laboratory. Unless otherwise requested by the laboratory, no other preservatives will be added to the sample. Sealed samples will only be opened by laboratory personnel who will perform the chemical analysis. Samples will be analyzed within two weeks from their collection date.

SAMPLE CUSTODY

All samples collected will be labeled with the following information: job name, sample number, location, date and time collected, name of collector, and any pertinent remarks. Field records of soil samples will be maintained on a field log. All field records will be written in ink. Copies of all field documentation will be maintained in an on-site file and the originals will be kept at the CT offices. Samples will be kept in an ice chest cooled to approximately four degrees centigrade, by ice, during the temporary storage and transportation to the laboratory.

Chain of custody forms will be filled out by the sample collector before releasing the sample for storage or transportation. The form will then be routed with the samples through storage, transportation and laboratory analysis. Copies of the completed chain of custody forms will be presented to the laboratory.

When the samples arrive at the laboratory, a laboratory representative will sign the chain of custody forms and enter a laboratory identification number on to the sample label and chain of custody form. The identification number will be used by the laboratory for its internal tracking system, thus the status of a particular sample can be determined at any time by referring to the laboratory log books. Both the laboratory identification number and field sample numbers will be cited when the analytical results are reported.

All samples collected during this project will be analyzed by a State Department of Health Services (DHS)-certified laboratory for the selected parameters in accordance with standard E.P.A. approved methods. All laboratory assurance/quality control (QA/QC) information will be made available in a Summary Report prepared by the laboratory. Laboratory quality control measures will include those required by the DHS under their Hazardous Waste Laboratory Certification Program.

The following additional sample control may be utilized dependent upon the scope of work. Ten percent of the soil samples will be split and analyzed separately as duplicates. One set of samples will be submitted to the laboratory as a blind duplicate. In addition a trip blank obtained from the laboratory and/or a field blank will be submitted for analysis.

DATA VALIDATION AND REPORTING

Data collected and used in project reports will be appropriately identified and will be included in a separate appendix in the final report. All data will be reviewed. Apparent abnormalities (e.g., unexpected order-of-magnitude difference among samples and/or instrument readings) will be investigated by reviewing procedures, field instrument procedures and calibrations, and laboratory QC results.

SITE CONDITIONS AND ASSUMPTIONS

The site conditions and assumptions for this investigation are indicated below.

1. Site/soil conditions allow for the excavations and sampling to be completed by standard excavation and sampling equipment. Site and/or weather conditions will allow for the completion of soil excavation work within (1) day upon commencement
2. Free ground water is no deeper than 25 feet below grade.
3. Client shall provide or arrange access to the site necessary for completion of the job. All work is to be performed during normal business hours.
4. Client shall indicate to CT and be responsible for the accuracy of the legal property lines and for the location of hazardous material or underground facilities that may affect site conditions. CT shall not be responsible for, but shall exercise reasonable care to minimize or prevent damage to underground utilities, or installations caused by excavations or the sampling activities.

CONSOLIDATED TECHNOLOGIES

SITE SPECIFIC SAFETY PLAN

INTRODUCTION

This document describes the health and safety procedures for the activities planned in performing a preliminary site investigation at 706 Harrison Street, Oakland, California. All personnel and subcontractors will follow this plan. The prime responsibility for employee safety lies with each company that is involved in the work for it's own employees. It is expressly intended that all project work will comply with applicable sections of the California Occupational Health and safety code. All parties working on this project will maintain a general responsibility to identify and correct any health and safety hazards and are responsible for working in a safe manner.

Key Personnel

Project personnel who will have overall responsibility for the safe operation of this are:

Site Contact: Mr. Bo Gin
(415) 763-2096

Consolidated Tech.
Project manager and
Site Safety Officer Mr. Tracy Bennett
(408) 973-9532

Project Manager and Safety Officer Responsibilities:

- * To conduct initial site safety training for all project field team members as described in this document,
- * To assure all field team personnel have read and understand the Health and Safety Plan,
- * To assure that all work performed on this project is conducted in a safe manner,
- * To coordinate with field personnel fire-watch, traffic control and site security,

- * To monitor activities to assure the proper use of protective equipment such as Hard hats, protective eyewear, Gloves, Coveralls, Respirators, etc.
- * To monitor ambient hydrocarbon vapors,
- * To shut down or modify field work activity based on criteria in the site safety plan.

SUB-CONTRACTOR Responsibilities

- * To read, understand and accept this Health and Safety Plan,
- * To assure all members of it's crew attend the safety training program,
- * To make certain all equipment and other machines are properly inspected and maintained and are in compliance with applicable sections of the California Health and Safety Code,
- * To supply and maintain safety related protective equipment such as hard hats, safety boots, Protective Coveralls gloves, safety eye wear, respirators, etc., as specified in this plan,
- * To assure each employee working at this read and comply with this Health and Safety Plan, and
- * To enforce corrective action under the direction of the Site Safety Officer.

FIELD TEAM MEMBER RESPONSIBILITIES

- * To read, understand and follow this plan,
- * To perform work safely,
- * To cooperate with key personnel,
- * To report any unsafe conditions to the Site Safety Officer and,
- * To be aware and alert for signs and symptoms of potential exposure to site contaminates and heat stress.

HAZARD CRITERIA

Hazard Evaluation

- * As air, water, soil and chemical substance monitoring data become available for all site work, the information will be evaluated by the site safety officer. Appropriate action in the of Health and Safety Modifications will be initiated by the Safety officer if necessary.

The anticipated activities of this project include:

- * Drilling\Excavation and sampling of borings or excavations,
- * Collection of soil samples,
- * Monitoring of ambient hydrocarbon concentrations during project activities.

The general types of hazards associated with this project are:

- * Mechanical hazards: swinging objects, machinery, etc.,
- * Electrical hazards: buried cables, overhead power lines,
- * Chemical hazards: gasoline, diesel, waste oil,
- * Fire hazards: natural gas and product lines, flammable petroleum hydrocarbons, and motor driven equipment,
- * Thermal hazards: heat stress,
- * Acoustical hazards: excessive noise created by machinery.

Job hazard analyses associated with each major work activity are presented in the following sections.

Hazard Evaluation: Soil Borings

Drilling soil borings and installing groundwater monitoring wells in contaminated soil will potentially expose field personnel to the following known hazards:

Chemical hazards:

Exposure to various chemical substances, including but not limited to, petroleum hydrocarbon liquids and vapors from gasoline and diesel fuel, waste petroleum oil and grease.

Physical hazards:

- * operating machinery,
- * falling objects, and
- * exposure to outside temperature extremes.

Fire, Electrical and Noise Hazards:

- * Underground gas and product lines, and
- * excessive machinery noise.

Due to the nature of drilling, there is a risk for electrical shock from over head and underground electrical lines. There is also a risk of physical injury from moving machinery and heavy drilling equipment. Explosive hazards exist when fuel concentrations in the bore hole reach explosive levels; > 10% LEL.

Hydrocarbon Vapors

Hydrocarbon vapors expected to be encountered consist of gasoline and diesel fuel. Exposure to elevated levels of hydrocarbon vapors presents potential health risks that need to be properly controlled. Work practices and methods will be instituted to limit exposures. Where elevated exposures persist, respiratory protection will be the primary control method to protect personnel from inhalation of hydrocarbon vapors. The hydrocarbon vapors expected to be encountered during project activities are composed of a variety of volatile refined petroleum compounds. The majority of these have limited toxicity requiring minimal controls at the concentrations expected.

Petroleum fuel consists of hundreds of chemical compounds. There are certain compounds such as Benzene that present significant hazards and must be properly controlled. To do so, a working limit of 100 ppm total hydrocarbon is proposed as the maximum acceptable level of exposure without respiratory protection. In a typical situation with 1% of the hydrocarbon vapors being benzene, a 100ppmv concentration of total hydrocarbon will result in a breathing zone of less than

1 ppmv benzene. This level is one tenth of the current occupational Permissible Exposure Limit (PEL) for an 8 hour exposure to benzene.

Action Levels Of Hydrocarbon Components in Petroleum Fuel:

Gasoline	>300ppm	PEL	LEL > 10%
Benzene	> 1ppm	"	Oxygen <19.5%
Toluene	>100ppm	"	
Xylene	>100ppm	"	
Ethyl Benzene	>100ppm	"	

A hydrocarbon vapor analyzer will be used to measure real time breathing zone concentration for comparison with the 100 ppmv working limit. When a persistent level of 100 ppmv is observed, appropriate respirators will be donned and other vapor measurements will be made. If hydrocarbon vapors exceed 1000 ppmv or 10 ppm benzene, work will be stopped. The field crew will be instructed to stay up wind and methods will be applied to subdue fugitive vapor emissions such as sprinkling soil with water, or the use of copus blower. The site Safety Officer will make such determinations.

If LEL is >10% in or around the tank, work must stop and not commence until determined safe and/or LEL% <10%.
If oxygen levels in the immediate work area are < 19.5%, work must stop until determined safe and/or levels are >19.5%.

Symptoms Of Acute Overexposure: Gasoline and gasoline vapors maybe irritating to the skin, eyes and respiratory tract. Gasoline vapors may effect the central nervous system and may cause headaches and dizziness.

Oxygen Deficiency:
May cause dizziness.

Heat Stress and Noise

A hazard exists when individuals are required to work in warm temperatures, particularly while wearing impervious protective clothing. When the ambient air temperature exceeds 65 degrees, heat stress may become a problem. If these conditions are encountered, the following precautions on the next will be taken:

- * During day-to-day field work, the on-site supervisor will be alert for the signs and symptoms of heat stress.

Field workers will be observed for the following signs and symptoms of heat stress.

- * profuse sweating, or complete lack of sweating,
- * skin color change,
- * increased heart rate,
- * body temperatures in excess of 100 degrees as measured by thermometers, and
- * vision problems.

Any team member who exhibits any of these signs or symptoms will be removed immediately from field work and be requested to consume electrolyte fluid or cool water while resting in a shaded area. The individual will be instructed to rest until the symptoms are recognizable. If the symptoms appear critical, persist or get worse, immediate medical attention will be sought.

When working around mechanical equipment the potential exists for exposure to excessive noise. To deal with the health hazards of excessive noise, ear plugs will be provided.

Personal Protective Equipment Requirements

This section specifies personal protective equipment required for the various tasks of this project.

Soil Borings and Sampling

Respiratory Protection: All field personnel will be required to have available an air purifying respirator with organic vapor cartridges. The respirators will be required based on criteria presented in this safety plan. All respirators must be NIOSH approved, canister-equipped for all organic vapors up to 1000 ppm.

Protective Clothing: All field personnel who handle contaminated soil or liquid will wear impervious coveralls and butyl rubber gloves. Impervious coveralls will not be required if soil or water is not visibly contaminated, or if vapor measurements are below 500 ppmv. Level "D" protective clothing and equipment will be worn at all times on the job site. All employees will have level "C" protective equipment available at all times. The site safety officer will monitor air borne contaminate levels for determination of when to don level "C" equipment.

Head Protection: Field personnel will wear non-metallic safety helmets.

Foot Protection: Field Personnel will wear neoprene rubber boots with steel toes. Under non-liquid exposure conditions, leather boots with steel toes and shanks are permissible.

Ear Protection: Field Personnel, based on noise levels, may be required to wear earplugs during soil excavation.

Eye Protection: Field Personnel will wear chemical-resistant safety glasses with attached side shield where splashes of potentially hazardous liquid or particles are likely.

Work Zones

During soil excavation and well drilling operations, a work zone around the immediate vicinity of the project will be established and taped off. Only authorized personnel will be permitted to enter the work zone. Authorized personnel will include those who have duties requiring their presence in the work zone and have read this site safety plan. Work zones are also created to aid in the decontamination of equipment and personnel. The following describes the zones to be established:

Exclusion Zone: A 75 foot around the work area will be defined before work starts. The area inside the circle will constitute the "Exclusion Zone". The Exclusion Zone constitutes the area where the potentially hazardous air borne contaminants and physical hazards to the workers exist. Full personal protection must be available to all personnel in this area. The size of the Exclusion Zone may be changed to accommodate site conditions and to assure contaminate containment.

Contamination Reduction Zone: A formal decontamination zone should not be required during the preliminary investigation. However, an area will be designated in the event extreme gasoline contamination is encountered. The decontamination zone will be an area where personnel can clean protective equipment. A waste container will be placed outside of the exclusion zone so contaminated equipment can be placed inside and covered.

Support Zone: A Support Zone, the outermost zone, must be defined for each field activity. Support equipment is located in this uncontaminated or clean area. Normal work clothes are appropriate within this zone. The location of this zone depends on factors such as accessibility, wind direction (it should be up wind of excavation), and resources (e.g. roads, utilities, shelter).

Decontamination Procedures

Petroleum hydrocarbon liquids and vapors are anticipated. Due to the volatile nature of hydrocarbons that may be encountered during the initial excavation and sampling operations, decontamination of equipment and vehicles will be of minimal importance since the volatile hydrocarbons will rapidly vaporize. Therefore, no formal decontamination procedure will be followed with the exception of general cleaning no eating, drinking or smoking will be permitted in the exclusion zone. All personnel involved in work activities will be instructed to wash their hands, face, neck and forearms at the end of the work day. Soap, water and towels will be provided at the site for this purpose. The field personnel will also be instructed to shower at home at the end of each work day.

As work progresses, the nature of materials handled and the extent of contamination may possibly require formal decontamination procedures and delineated work/clean zones. However, we do not expect that such formal procedures will be necessary at this site and will only proceed at the Safety Officer discretion. In the event extreme contamination is encountered, decontamination of personnel, equipment and vehicles will be important to insure that contamination dose not spread to unsuspecting people and property. Personal decontamination mainly involves personal hygiene. Contamination should not be present on the skin if the proper protective methods specified in this plan are used. However all field personnel will be instructed to follow these guidelines to insure that contamination dose not remain on equipment, sample containers or in contact with their bodies.

The field team should remove their personal protective clothing in the following sequence:

Step 1: Move out of the exclusion zone and into the decontamination zone. Do not remove personal protective equipment.

Step 2: Obtain decontamination solutions and decontaminate the spades, shovels and other equipment by brushing them under a water rinse. A high-pressure steam cleaner may also be used for decontamination. All wastes and spent decontamination liquids will be properly contained.

Step 3: Remove outer gloves and coveralls and place them inside a garbage bag. Keep the air purifying respirator on.

Step 4: Move to the support zone and remove the respirator.

Monitoring Program

Personal exposure to ambient airborne hazards will be monitored to assure that personnel exposures do not exceed acceptable limits and that appropriate selection of protective equipment items is made. Airborne hydrocarbon vapor concentrations will be measured primarily by the use of a hydrocarbon vapor meter. If concentrations approach criteria levels, all personnel will be notified of possible site safety changers. Audits will be conducted by the Safety Officer to insure compliance with the Safety Plan and to provide additional support as required.

Ambient Vapor Reading

A hydrocarbon vapor detector will be used during drilling and excavation activities. this instrument will be used to measure both excavation and breathing zone concentration of hydrocarbon vapors. the instrument will be calibrated on a regular schedule using known calibrated gases.

Readings will be taken in the area where the field team members are working and surrounding down-wind areas. Measurements will be taken every 30 minutes where hydrocarbon vapors indicate levels above 30 ppmv. All readings will be recorded in a field notebook.

Emergency Procedures listed in this plan are designed to give the field team instruction on how to handle medical emergencies and fires and explosions. The emergency procedures will be carefully reviewed with the field team during the health and safety training session.

Emergency Response Plan

Fire Dept.	911
Ambulance	911
Police	911
Hospital - Merrit (Hawthorn & Webster Aves)	(415) 655-4000
Site or Client Phone	(415) 763-2096
Poison Control Center	(415) 428-3248
Chem Trec	(800) 424-9300
EPA Emergency Response	(415) 974-7500
State Office of Emergency Services	(800) 852-7550
Emergency Response/ (Erickson)	(415) 235-1393
Clean-up (H and H)	(415) 543-4835

* Note: Prior to start work, note the nearest location of functional telephone - See shell station.

Injuries

Medical problems occurring on site will be handled quickly. Emergency telephone numbers will be written down and posted in the passenger compartments of the field vehicles. The local emergency numbers are:

Police, Fire and Rescue Dial 911

Emergency First Aid Procedures:

Eye Contact: Flush with clear water for 15 minutes or until irritation subsides. See a physician.

Skin Contact: Wash thoroughly with soap and water.

Inhalation: Remove from area away from vapor/exposure. Call physician and start resuscitation IMMEDIATELY if breathing has stopped.

Ingestion: DO NOT INDUCE VOMITING; call a physician immediately.

Oxygen Deficiency: Move out of oxygen deficient area into fresh air. Call physician IMMEDIATELY and induce resuscitation if breathing has stopped.

The field team will be instructed to seek immediate professional medical attention for all serious injuries. A first aid kit will be present at the work site in case of minor injuries. If anyone receives a splash or particle in the eye the field team will be instructed to irrigate the eye for 15 minutes. Instruction will also be provided to wash any skin areas with soap and water if direct contact with contaminates has occurred.

Fire and Explosion Hazards

Fires on site are of particular concern during soil drilling and sampling activities during the possibility of encountering flammable petroleum hydrocarbon liquids or vapors. During these activities the site safety officer will be present and equipped with an explosive vapor monitor for area monitoring and a multipurpose (A, B, C,) fire extinguisher.

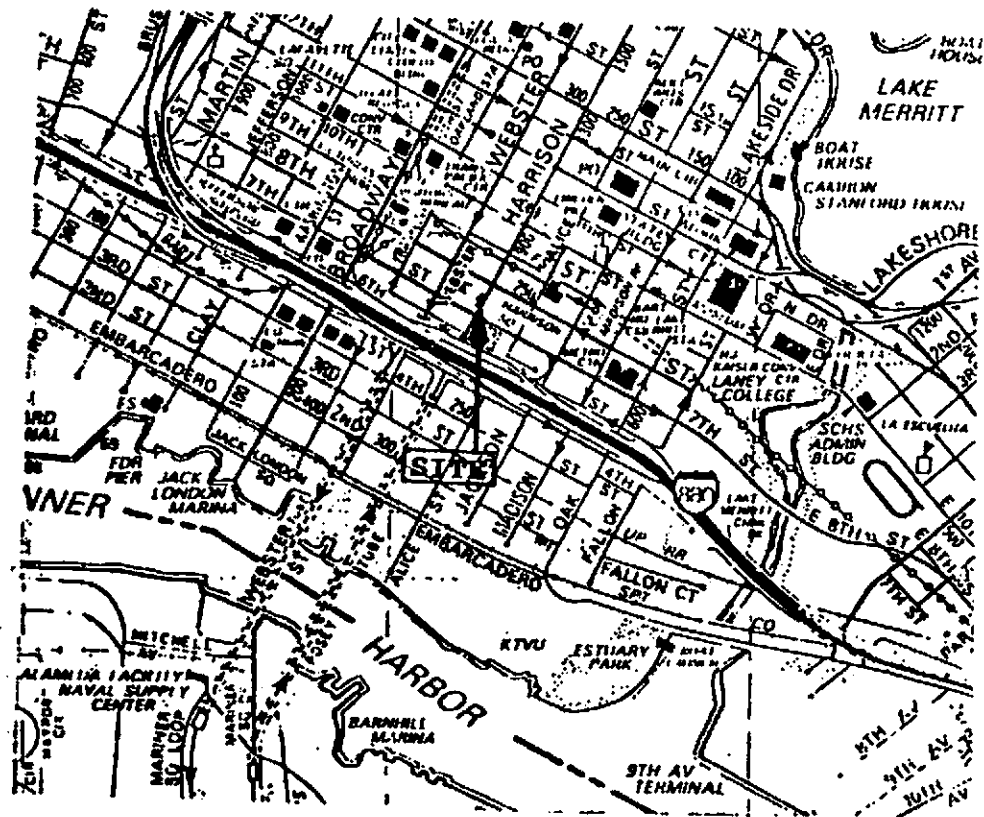
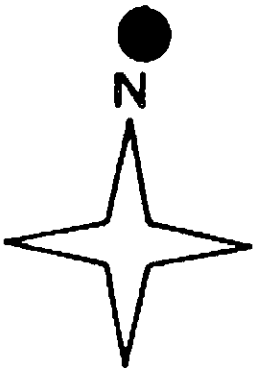
Flammable materials will be cleared away from the site prior to the start of work. If a fire does occur, the local fire dept. will be contacted immediately.

Operation Shutdown

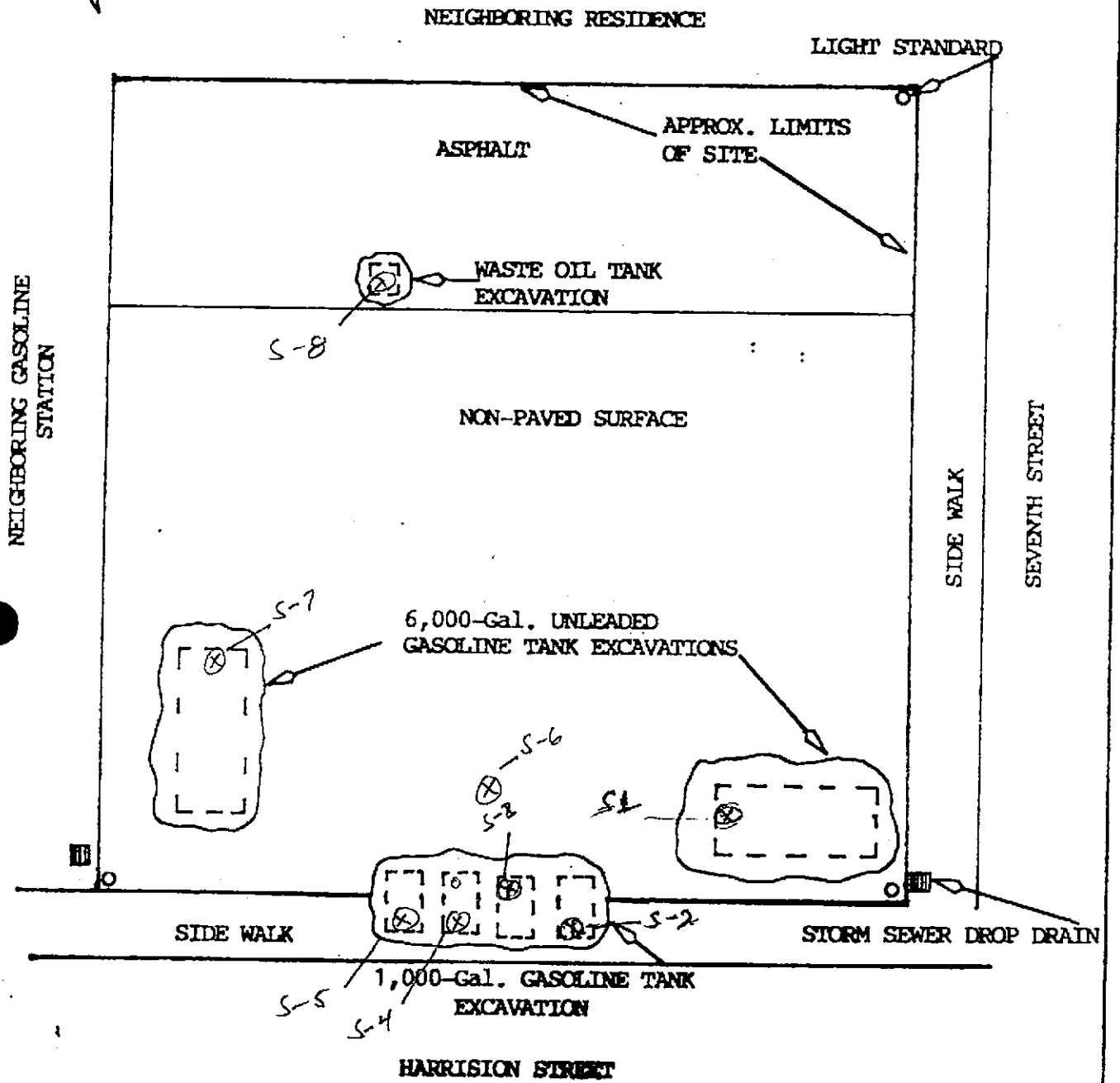
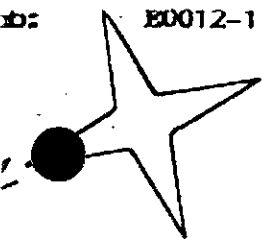
Under extreme circumstances the on-site supervisor, safety officer, or project manager may request that operations be temporarily suspended while the underlying hazard is corrected or controlled. If vapor measurements with the explosive vapor monitor show levels approaching explosive limits, operations will be stopped while the area is controlled. During this activity, all personnel will be required to stand up wind to prevent exposure to fugitive vapor emissions. The safety officer will have ultimate authority for operation shutdown.

Community Protection

To assure the community is protected from health and fire hazards, up wind and down wind vapor monitoring will be performed if the general work area has hydrocarbon levels exceeding 100 ppmv. If down wind monitoring indicates persistent levels of 30 ppmv at the perimeter of the work area, work will be shutdown and vapor control efforts will be instituted until measurements indicate levels have dropped below 30 ppmv. An alternative approach of expanding the taped off area zone may be used to provide additional community protection.



SCALE: None		APPROVED BY:	
DATE: 8-23-91		DRAWN BY	
		REVISED	
SITE LOCATION MAP 706 Harrsion Street Oakland, California			
			DRAWING NUMBER
			Plate # 1

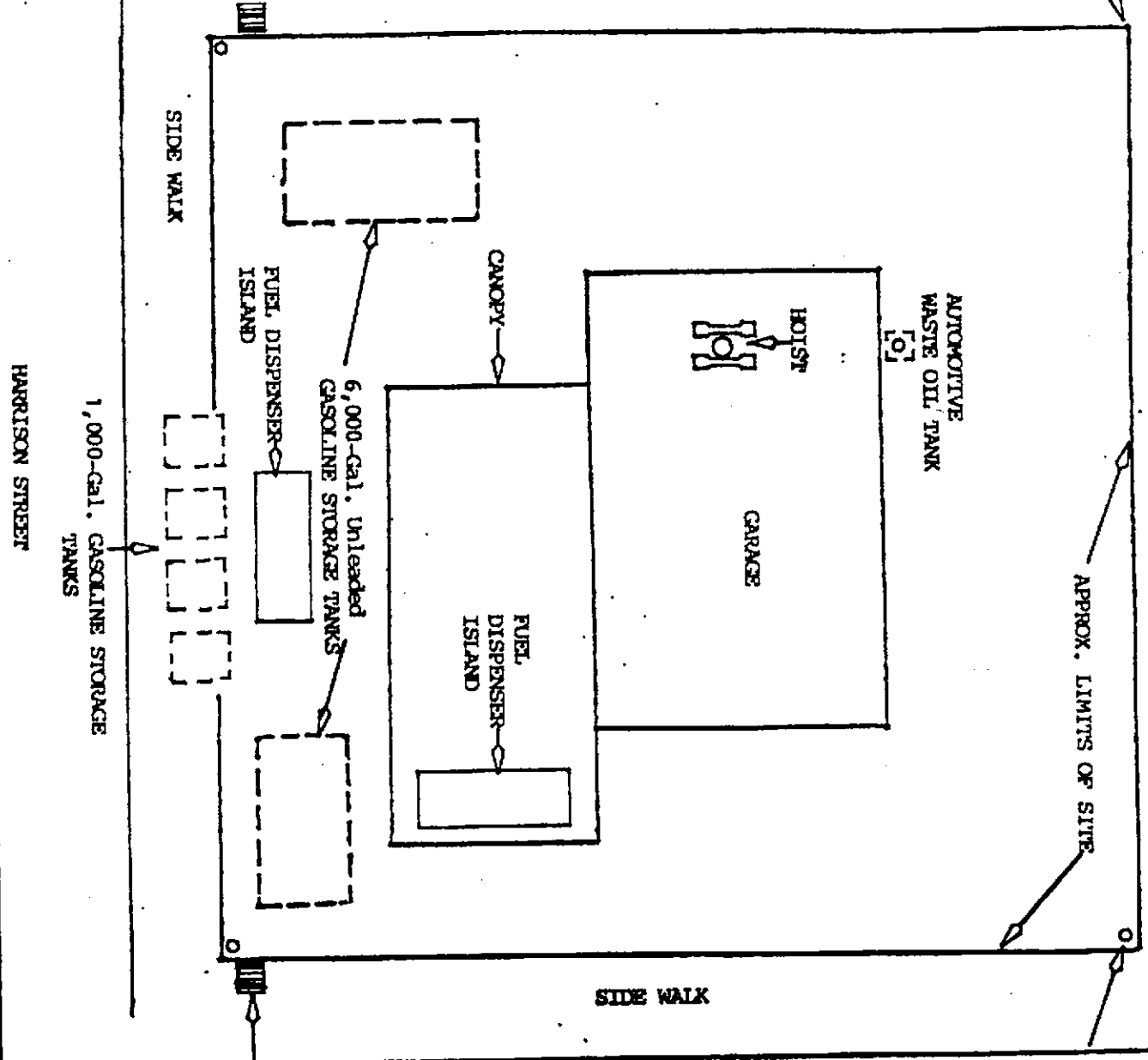


SITE SCHEMATIC
 706 Harrison Str.
 Oakland, California

PLATE #2



NEIGHBORING PROPERTY (GASOLINE STATION)



HARRISON STREET

1,000-GAL. GASOLINE STORAGE TANKS

SIDE WALK

FUEL DISPENSER ISLAND

6,000-Gal. Unleaded Gasoline Storage Tanks

FUEL DISPENSER

FUEL DISPENSER ISLAND

CANOPY

HOIST

GARAGE

AUTOMOTIVE WASTE OIL TANK

APPROX. LIMITS OF SITE

SIDE WALK

SEVENTH STREET

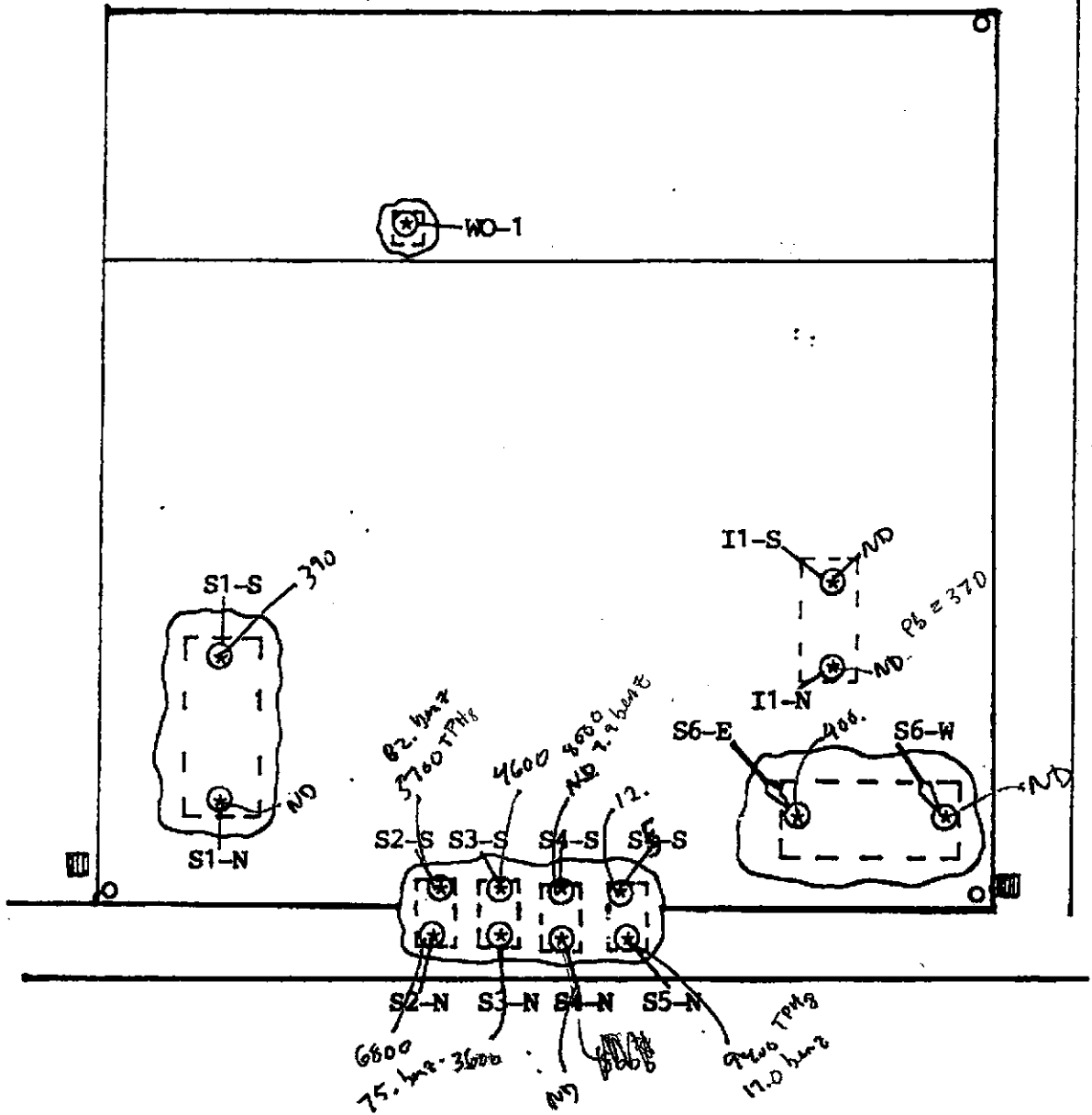
LIGHT STANDARD

STORM SEWER DROP DRAIN

HISTORIC SITE SCHEMATIC
706 Harrison Str.
Oakland, California

Scale: None

(Plate 3)



⊛ APPROX. LOCATIONS OF SOIL SAMPLES

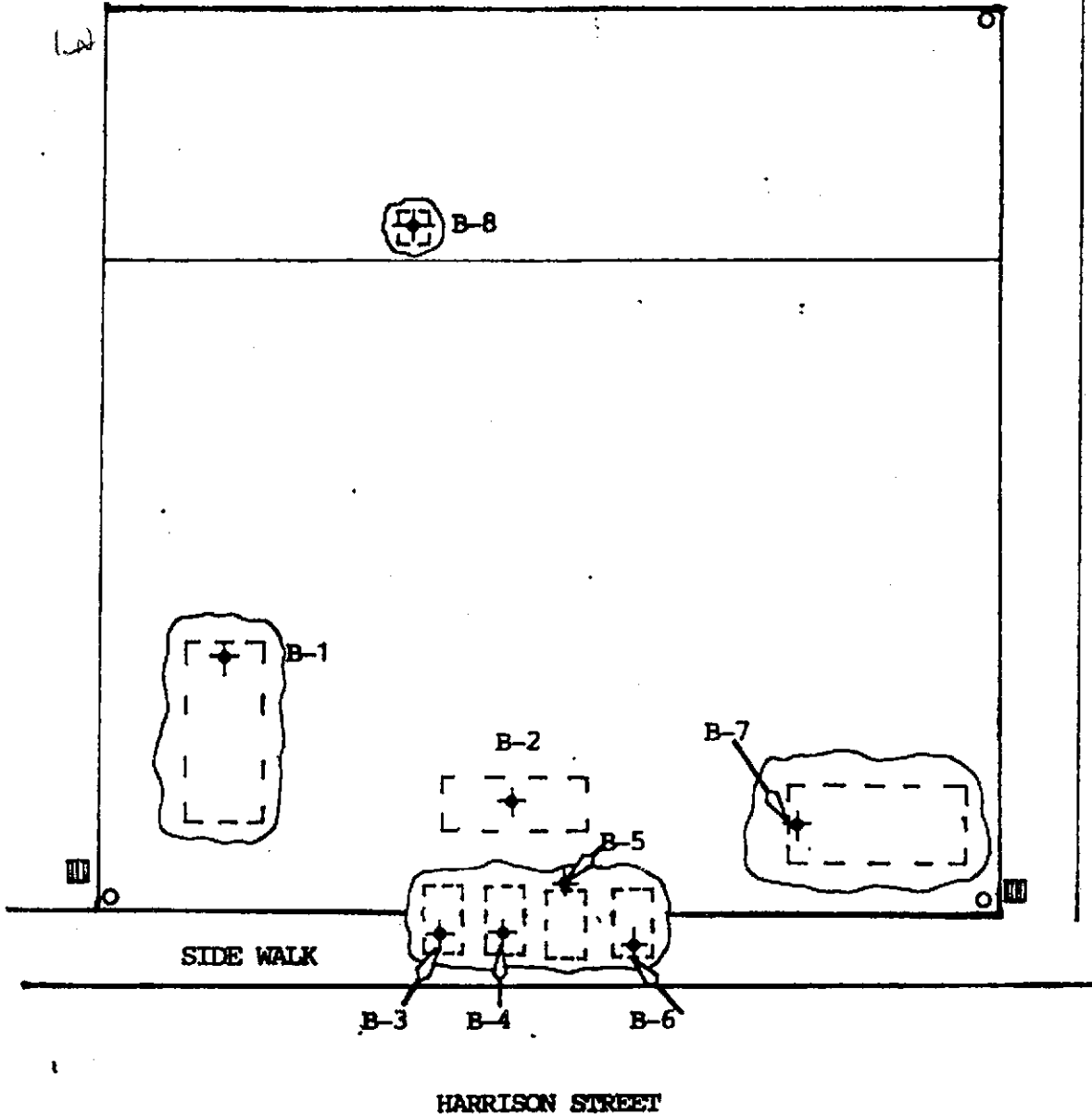
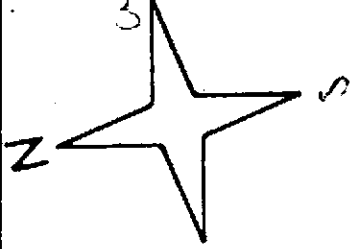
TANK CLOSURE SOIL-SAMPLE LOCATIONS

706 Harrison Str.
Oakland, California

Scale: None

(Plate 4)

Job: E0012-1



 PROPOSED SOIL BORING LOCATIONS

PROPOSED BORING AND
SOIL SAMPLE LOCATIONS
706 Harrison Str.
Oakland, California

(plate 5)