Woodward-Clyde

Engineering & sciences applied to the earth & its enviroment

Vec
10/25

① Sample stkpl soil 1/50 cy for disposal OR 1/20 for re-use

October 20, 1995

Mr. Rich Haavisto
Corps of Engineers - Sacramento District
CESPK-ED-EC
1325 J Street
Sacramento, California 95814-2992

Subject: Amendment to the "Final Work Plan for Tank Removals at Buildings 770, 1135, 1136, and 1180" dated September 27, 1994
Parks Reserve Forces Training Area (PRFTA)
Dublin, California
Project No. 7112

Dear Mr. Haavisto:

Woodward-Clyde is pleased to submit this amendment to the Final Work Plan for Tank Removals at Buildings 770, 1135, 1136, and 1180 dated September 27, 1994. This amendment has been prepared by Woodward-Clyde for the U.S. Army Corps of Engineers - Sacramento District (USACE) to provide engineering services at PRFTA, Dublin, California. This report has been prepared under Contract Number DACA05-92-D-0032, Deliver Order 0012, Modification Number 8.

This amendment describes the additional field activities necessary to achieve closure of the UST excavations at Buildings 1135 and 1136 (see Figure 1). The scope of work includes the following tasks: 1) Excavation and Sampling at the Building 1136 excavation, 2) Soil Stockpile Sampling at both the Building 1135 and 1136 stockpiles, 3) Excavated Soil Disposal and Waste Manifesting, and 4) Closure Report Preparation. The scope of work includes the removal and disposal of the previously stockpiled soil generated during

Woodward-Clyde Federal Services
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removal of the USTs and the soil to be generated during the additional excavation activities at Building 1136. The Final Work Plan (September 1994) contains the following information: Site Location and Description, Site Background, Hydrogeologic Setting, Regulatory Requirements, Soil Sample Collection Procedures, and Decontamination Procedures.

Aronson Engineering (Aronson) has provided a site specific Health and Safety Plan covering activities to be conducted by Aronson. Woodward-Clyde has prepared a standardized supplemental Health and Safety Plan covering activities subsequent to the tank removals. Both plans are included as attachments.

BACKGROUND

The Draft Closure Report for Tanks at Buildings 770, 1135, ~~1135~~ 1136, and 1180 (February 1995) describes the field activities conducted during the investigation which included: tank and piping excavation and removal, soil sample collection and handling, and the generation of the existing soil stockpiles. The report also includes the analytical results of the soil samples collected from the tank excavations and soil stockpiles.

Please send

The analytical results from the confirmation soil samples collected immediately after removal of the UST at Building 1136 (T1136-S1) indicated that Total Petroleum Hydrocarbons as Diesel (TPH-D) were present in the soil at the bottom of the excavation at a concentration of 2,000 mg/Kg. The analytical results from the confirmation soil samples collected from the excavation stockpiles at Building 1135 (SP1135-S1 and SP1135-S2) indicated that TPH-D was present at a concentration of 350 mg/Kg in SP1135-S1. The laboratory noted that the concentration reported as diesel for sample SP1135-S1 is primarily due to the presence of heavier petroleum product of hydrocarbon range C18-C36, possibly motor oil. These concentrations are in excess of the 100 mg/Kg TPH-D action level enforced by the lead agency, the Alameda County Department of Environmental Health (ACDEH). The soil samples collected from the tank

excavation at Building 1135 (T-1135-S1) and the soil stockpile generated from the tank excavation at Building 1136 (SP1136-S1) did not contain concentrations of TPH-D above the laboratory detection limit. The soil samples collected during this investigation were also analyzed for BTEX. Concentrations of BTEX were not detected above the minimum detection limit in any of the soil samples analyzed.

SCOPE OF WORK

The following tasks will constitute the scope of work for this amendment:

Excavation and Sampling at Building 1136

Woodward-Clyde will supervise the excavation of additional soil from the tank excavation associated with Building 1136. The soil removed from the excavation will be screened in the field for petroleum hydrocarbon contamination using an Organic Vapor Meter (OVM) or equivalent and PetroFlag Hydrocarbon Analyzer field screening test kits. Field screening results will be used to direct the excavation activities. Excavation activities will be performed by Aronson in accordance with the Final Work Plan dated September 1994.

When field screening results indicate that the petroleum hydrocarbon affected soil has been removed, confirmation samples will be collected for submittal to Curtis & Tompkins, Ltd., Analytical Laboratories. One soil sample will be collected from each of the four side walls and one sample will be collected from the bottom of the excavation (see Figure 2). The soil samples will be analyzed for TPH-D using EPA Method 3550/mod.8015 and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 5030/8020. Soil sample collection will be conducted in accordance with the Final Work Plan dated September 1994.

Soil generated during the additional excavation activities will be stockpiled on plastic sheeting adjacent to the excavation separately from the previously excavated soil stockpiles. The soil stockpile will be covered with plastic pending the analytical results of the soil stockpile samples as described below.

If analytical results from the first day of sampling indicate that TPH-D is still present in the excavation at concentrations above 100 mg/kg, Woodward-Clyde and Aronson will mobilize to PRFTA for an additional day of excavation and sampling. The second day of excavation and sampling will be performed as described above.

Soil Stockpile Sampling (Buildings 1135 and 1136)

Sample 1/50cy for disposal 1 of 1/20cy for re-use

Woodward-Clyde will collect and analyze soil samples collected from all of the soil stockpiles generated during previous and recent activities to profile the stockpiles for disposal. Three soil samples will be collected from each of the existing soil stockpiles (three existing stockpiles at Buildings 1135 and 1136, one to be created during the preceding task at Building 1136). Each set of three samples will be composited at the laboratory into a single sample for analysis. A total of four samples (one sample per stockpile) will be analyzed. The samples will be analyzed for TPH-D using EPA Method 3550/mod.8015 and for BTEX using EPA Method 5030/8020. Samples will be submitted to the laboratory in accordance with the Final Work Plan dated September 1994.

Waste Manifesting (Soil Stockpiles from Buildings 1135 and 1136)

Woodward-Clyde will review the analytical data for the soil stockpile composite samples collected during the proceeding task, provide the data to Aronson, and assist Aronson in the preparation of waste manifests associated with the soil stockpiles. Aronson will mobilize to PRFTA to remove the soil stockpiles at Buildings 1135 and 1136. Aronson will also backfill and compact (using clean fill) the excavations at Buildings 1135 and 1136.

Closure Report Finalization

Woodward-Clyde will finalize the report titled: "Draft Closure Report for Tanks at Buildings 770, 1135, 1136, and 1180, Parks Reserve Forces Training Area, Dublin, California." The data and documentation generated during the excavation, sampling, disposal, and backfilling activites completed at Buildings 1135 and 1136 will be included in the finalized report.

If you have any questions regarding this amendment please call Jared Mickel or Laurie Israel at (916) 368-0988.

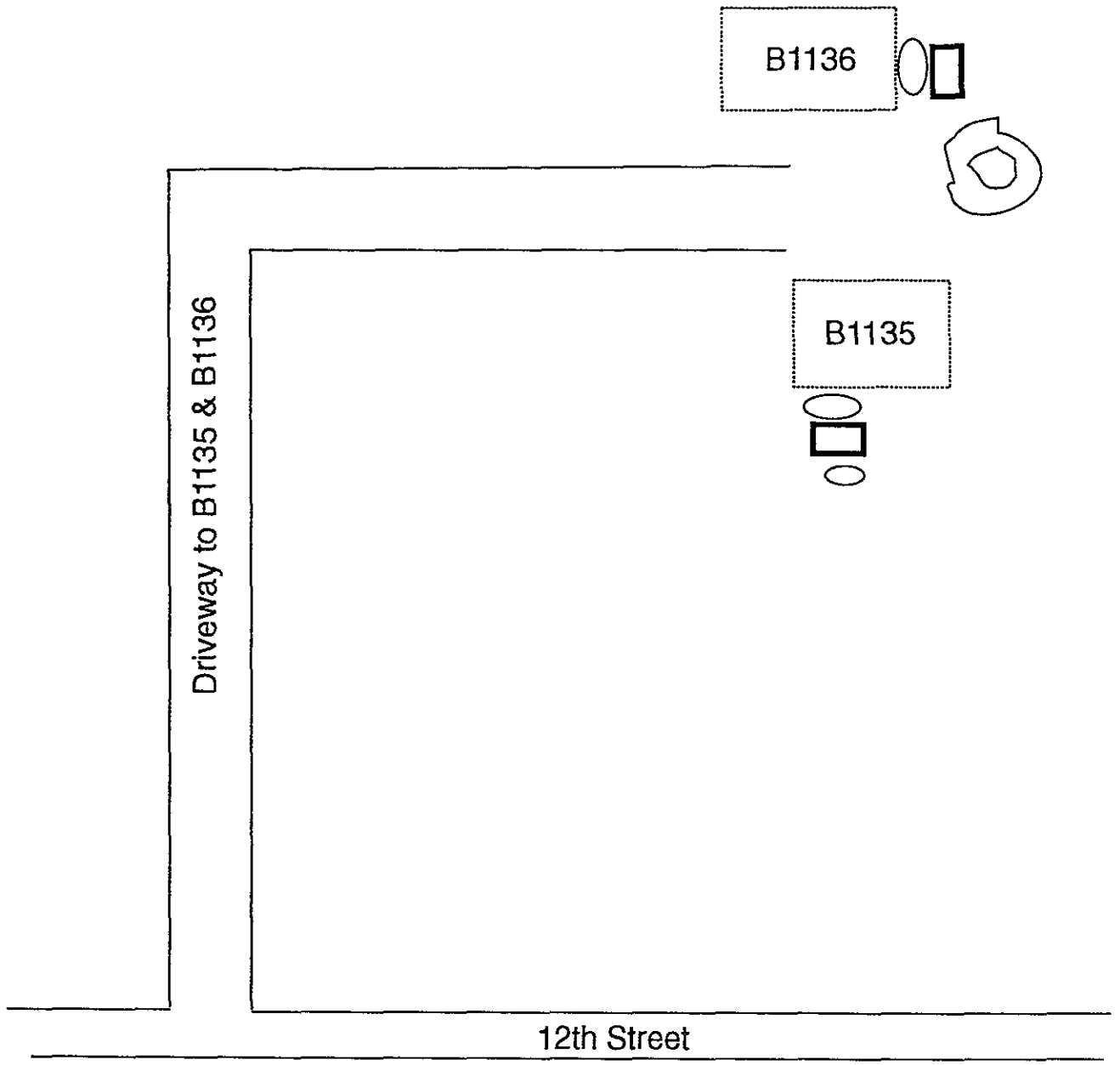
Very truly yours,
WOODWARD-CLYDE

Jared P. Mickel
Geologist

Laurie B. Israel, R.E.A.
Assistant Project Manager

LBI:km

Enclosures
cc: J. Michael Sartor, Woodward-Clyde
Tom Murray, Aronson Engineering
Eva Chu, ACDEH



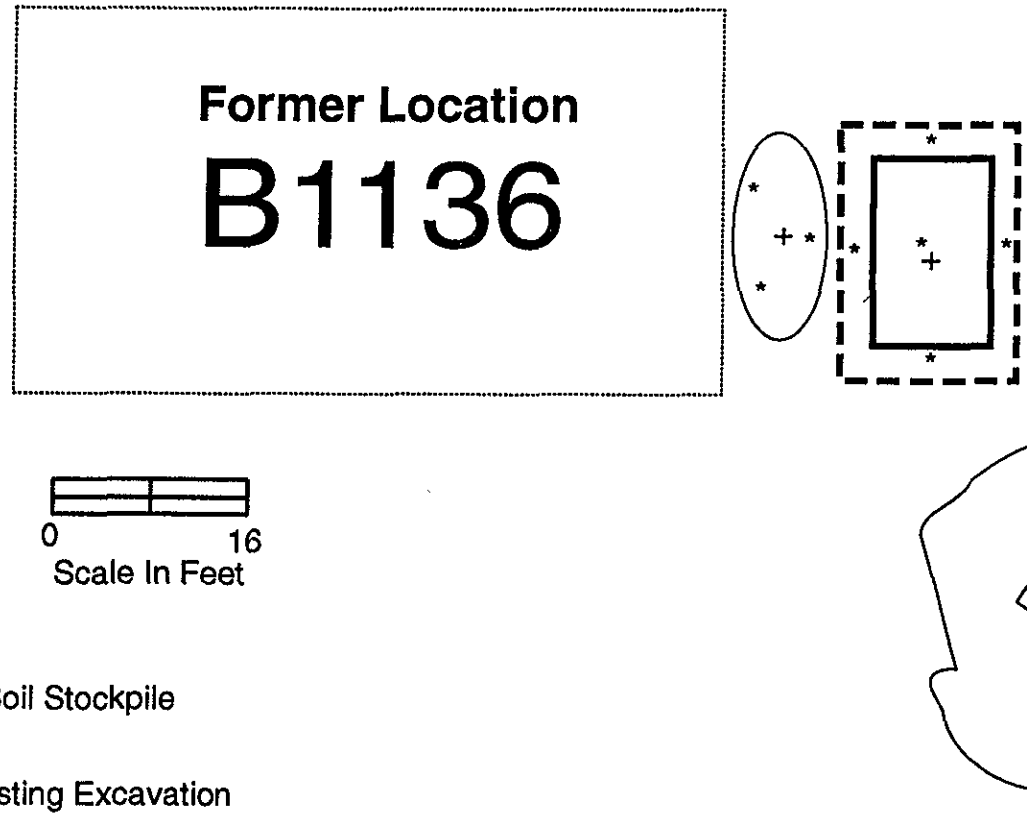
Legend

- Former building location
- UST excavation
- Stockpiled soil
- Tree

0 60
Approximate scale in feet

N

Project No. 7112	Parks Reserve Forces Training Area Dublin, California	SITE LOCATION MAP FOR UST SITES AT THE FORMER LOCATIONS OF BUILDINGS 1135 AND 1136	Figure 1
Woodward-Clyde			



Project No. 7112	Parks Reserve Forces Training Area Dublin, California	BLDG. 1136 EXCAVATION MAP WITH HISTORIC AND PROPOSED SAMPLING LOCATIONS
Woodward-Clyde		Figure 2

ARONSON ENGINEERING, INC.

SITE SPECIFIC HEALTH AND SAFETY PLAN

FOR

UNDERGROUND STORAGE TANK REMOVAL

LOCATED AT

PARKS RESERVE FORCES TRAINING AREA

DUBLIN, CALIFORNIA

PREPARED BY: ARONSON ENGINEERING
6809 MCCOMBER STREET
SACRAMENTO, CA. 95828

TABLE OF CONTENTS

I. INTRODUCTION

a. Purpose

The primary purpose of this Site Health and Safety Plan is to provide Aronson Engineering field personnel and Pacific Bell field personnel with an understanding of the potential chemical and physical hazards that exist or may arise while the tasks of this underground gasoline storage tank removal project are being performed. Secondarily, this information defines the safety precautions necessary to respond to such hazards.

A copy of this site health and safety plan will be on site at all times. An additional copy will be kept and transported along with any injured worker to the medical facility for use by medical staff.

b. Objective

The objective of this health and safety plan is to ensure the safety of all field personnel, and the surrounding community. Accordingly, all personnel assigned to this project will read and sign the acknowledgement statement at the end of this plan, to certify that they have read, understand and will abide by the health and safety plan.

c. Tailgate Meetings

A tailgate meeting will be conducted by the job superintendent/site safety officer. No work will be performed before this meeting has taken place. The tailgate meeting will be conducted prior to each days activities to review the following:

- location of the health and safety supplies on-site
- location of nearby telephones
- emergency procedures
- review procedures for working around heavy equipment
- establish exclusion zone

Any personnel who may need to enter an exclusion or contamination zone must have completed an OSHA 40 hour hazardous waste operations training. All visitors must check in with the site safety officer.

II. SITE LOCATION

Park Reserve Forces Training Area Dublin, California

III. SCOPE OF WORK

The removal of (3) existing 500 gallon underground diesel storage tanks (UST's), apprurtenance and associated piping and (1) aboveground storage tank (AST). The excavation will be cordoned off for the protection of all personnel. The fuel tank will be pumped empty and the product lines will be flushed back to tank. The residual gasoline left in the tank will be disposed of under manifest, in accordance with applicable regulations. The tank will then be triple rinsed, cleaned and the rinseate disposed of under manifest in accordance with applicable regulations. The tank will be uncovered down to the top of tank. The soils over the tank will stockpiled on and covered by visqueen. During the project, the excavation, trenches, and stockpile areas will be secured with barricades, and temporary chain link fence. Once the tank is uncovered, all lines, fittings and attachments will be removed. Plugs will be placed in all openings, one plug will have a 1/8" bleed hole, to allow for vapor dispersal. The tanks will be rendered inert by inserting a minimum of 20 pounds of dry ice per 1,000 gallons of tank volume. After the dry ice has been introduced a minimum of one hour will lapse to allow for oxygen displacement which will be checked using a lower explosion limit (LEL) and oxygen meter, manufactured by Gastech. Once the LEL is at or below 10% and the oxygen level is at or below 6% and verified by the on-site representatives of the Alameda County Environmental Health Department and U.S. Army Corp of Engineers, and the approvals are given the tank will be removed from the excavation with the appropriate lifting equipment, and loaded onto a truck provided by the environmental company for proper disposal. Aronson Engineering will assist the environmental company under the direction of the Alameda County Environmental Health Department in taking samples. The samples will be analyzed at a lab provided for by the environmental company. After the results are known with the approval of the Alameda County Environmental Health Department and the owner the excavation will be backfilled.

IV. ON-SITE ORGANIZATION

Job Superintendent/Site Safety Officer:

Paul Demontigny, Aronson Engineering
- Responsible for implementing the project and obtaining any necessary personnel or supplies to complete the project safely and in a timely manner.
- Monitors and adheres to this site health and safety plan. Halts operations if the plan is being violated or if a hazardous condition arises at the site.

Aronson Engineering Project Employees:
Thomas Murray, Project Manager
Paul Demontigny, Job Superintendent/Safety Officer
Bob Miller Mike Burke, or Gary Fryer, Equipment Operator

V. SAFETY TRAINING

- All personnel OSHA 40 Hour Certified
- All personnel 8 hour refresher (if applicable)

a. First Aid and Safety Equipment
- All personnel on-site must use the Buddy System
- First Aid Kit
- Two Fire Extinguisher
- Visqueen
- Personal Protective Equipment Level D (Anticipated)
- Personal Protective Equipment Level C (Available on-site)
- LEL/Oxygen Meter
- Barricades
- Caution Tape

b. Buddy System

All on-site personnel shall use the buddy system. Site workers shall maintain visual contact with each other. Personnel must observe each other for signs of heat stress or toxic exposure such as:

1. Changes in complexion and skin discoloration
2. Changes in coordination or demeanor.
3. Excessive salivation and pupillary response.
4. Changes in speech pattern.

Personnel shall inform their supervisor of nonvisual effects of toxic exposure such as:

1. Headaches, dizziness, blurred vision.
2. Nausea, cramps
3. Irritation of eyes, skin or respiratory tract.

VI. PROJECT SPECIFIC PRACTICES

To prevent personnel exposure to heat stress during all tasks, the practices outlined in this plan shall be followed. The work area must be marked in such a way as to prevent traffic from passing within 10 feet of the work area. Barricades, caution tape, and temporary chain link fence, or other means must be used to define the work area. All on-site personnel must wear steel-toed safety boots, hard hats, and long pants or trousers.

a. Site Preparation

The first priority for project personnel during site preparation should be to post and secure the area, particularly from motor vehicle traffic. The barricaded work area will include the support, contamination reduction and exclusion zones.

b. Excavation Safety

All excavation and tank removal conducted will comply with the applicable OSHA regulations governing excavation and trenching. All excavation shall be performed from a stable ground position.

All spoils shall be located at least two feet from the edge of the excavation, to prevent it from falling back into the excavation. The excavation shall be guarded on all sides by barricades, caution tape or temporary fencing, as per contract specifications.

If excavating equipment is located in the vicinity of overhead power lines, a distance of fifteen feet must be maintained between the lines and any point of the equipment. If the lines have appreciable sag, or if windy conditions exist, this distance shall be twenty feet.

d. Confined Space Entry

The removal of an underground storage tank may require personnel to enter an excavation. A confined space entry must be approved by Aronson Engineering Company Safety Officer. Contaminated soil excavations may pose additional hazards such as air contamination, flammable or explosive atmosphere, and oxygen deficiency. Entry into trenches and excavations meets the definition of a confined space. All confined space entries shall be in accordance with the following procedures.

No site workers will enter the tank, or an excavation over 5 feet in depth. Should it become necessary to enter the tank a confined space entry permit will be obtained from Aronson Engineering Company Safety Officer prior to the entry of any worker into a confined space, and the standard operating procedure (SOP) for confined space entry shall be followed.

- Ensure that all pipes entering into the confined space have been disconnected and sealed.
- Remove any liquids or sludges from the confined space.
- Ventilate the confined space with fresh air. The ventilation mechanism should be explosion proof.
- Test the atmosphere of the confined space with a oxygen/combustible meter. The oxygen content of the space must be between 19.5 and 22.0% and the LEL indication below 10% before personnel can enter the confined space.
- Monitor the concentration of Benzene, Toluene, Xylene, and Ethel Benzene in the space. If the concentration of Benzene exceeds .005 ppm, or any other the other vapors exceed 100 ppm, do not enter the space.
- Personnel entry into any excavation five feet deep or greater is only permitted if the walls are properly shored or sloped. A ladder shall be provided and placed at an angle not more than 30 degrees from vertical, and secured as necessary. Ladder side rails shall extend at least three feet above the ground surface.
- Install extraction devices over the confined space.
- Provide a stand-by person for the confined space entry.
- Hold a pre-entry meeting to discuss the work task, on-site communications, and emergency procedures.

Monitoring of the confined space shall be on-going throughout the entry.

e. Backfilling and Compaction.

Since no chemical hazards are anticipated during this phase there is no need for chemical protective measures. While traffic control barriers are to remain in place, the internal contamination control zones can be removed. The excavation safety requirements described in this plan will apply.

Minimum protective clothing for this phase of operations is the same as previously prescribed, (Level D).

VII. Personal Injury Emergencies

In the event of an emergency situation, immediate action must be taken by the first person to recognize the event. The First Aid Kit is located in the company vehicle designated as the emergency vehicle. Immediately after emergency procedures are implemented, notify Emergency Response at 911.

Hospital: SAN RAMON REGIONAL HOSPITAL(510)275-9200
6001 NORRIS CANYON ROAD, SAN RAMON, CA.

(See Attached Map)

a. Treatment for Chemical Exposure

1). Ingestion

Do not induce vomiting unless instructed to do so by emergency medical personnel. Note the ingested substance (bring the container if possible and immediately transport to Highland General Hospital, or call emergency response services at 911.

2). Inhalation

If you can do so without harming yourself, move the injured worker away from the source of the contaminant. If breathing has stopped, perform artificial respiration on the victim. If the heart has stopped perform CPR. Call for emergency response services 911 immediately.

3). Skin Contact

Immediately rinse the affected skin with water. Remove any contaminated clothing and rewash the skin if necessary. If irritation persists or the skin is damaged, transport the victim to Highland General Hospital.

4). Eye Contact

Contact Lenses are not allowed on this project. Hold eyelids open and rinse the eye(s) with large amounts of water. Do not flush the contaminants from the injured eye into the unaffected eye. Never rub irritated eyes. If the irritation persists of the eye(s) appear damaged, transport the victim to Highland General Hospital.

5). Physical Trauma

There are several emergency response procedures to assist with victims of physical trauma. Injuries resulting in broken bones, lacerations, unconsciousness, shock, etc... should be addressed by personnel trained in First Aid and CPR. A through description of First Aid procedures for the above listed emergencies is beyond the scope of this Health and Safety Plan. Victims of physical trauma should be treated by site personnel trained in First Aid and CPR call 911 to arrange for transportation to Highland General Hospital.

6). Solar (Non-Ionizing) Radiation

Since most work will be performed outdoors, the hazard of non-ionizing radiation will be present. Sunburns ranging from red, inflamed skin to blisters can occur. Sunscreen can be found in the First Aid kit with the health and safety supplies. It is urged that workers apply the sunscreen to protect any exposed skin during work activities.

7). Heat Stress

Because heat related disorders can occur even when outside temperatures are moderate the following heat stress conditions and First Aid Procedures are mentioned.

Condition	Symptoms	First Aid
Heat Rash	Chaffed skin caused by the rubbing of warm, damp clothing.	Discontinue work. Apply topical First Aid ointment; change clothes if possible before resuming work.
Heat Cramps	Spasms and pain in the extremities and abdomen.	Discontinue work. Massage the affected muscle. Give half glass of water every 15 minutes. Do not resume work unless completely recovered.
Heat Exhaustion	Shallow breathing, pale moist skin, profuse sweating and dizziness.	Discontinue work; victim's body must be cooled down; if conscious give half a glass of water every 15 minutes; call Emergency Response Service (911)
Heat Stroke	This is the most serious type of heat stress. Red hot, dry skin, no sweating nausea, dizziness, rapid pulse and confusion.	Discontinue work; victim;s body must cooled down immediately treat for shock and give nothing by mouth, call for Emergency Response Services (911)

VIII. PROCEDURES FOR THE TREATMENT OF INJURED WORKERS

a. if the injury is minor;

Administer First Aid
Locate a site worker trained in First Aid
Monitor the condition of the victim in case they need to be transported to Highland General Hospital.

b. if the injury is major:

Administer First Aid (if possible)
Locate a site worker trained in First Aid
Call emergency response services 911.

IX. EXCLUSION ZONE EMERGENCIES

The exclusion zone is the work area where the greatest level of contamination is expected to be encountered. For this closure plan the exclusion zone will include that tank and piping excavations and the stockpiled soil. If conditions within the exclusion zone become dangerous due to an unexpected chemical, physical or other hazard, the exclusion zone must be excavated. All workers should decontaminate themselves to the best extent possible and retreat to the support zone.

X. SITE-WIDE EMERGENCIES

Upon notification of a fire, explosion or other site-wide emergency, all site personnel shall stop work, decontaminate themselves to the best extent possible and listen for broadcasted emergency instructions.

XI. HAZARD EVALUATION

a. Non-Chemical Hazards

Noise
Slip/Fall Hazard
Lifting Hazard
Heavy Equipment
Heat Stress

Accidental ingestion of chemicals.	Eating, smoking and drinking are not allowed within the exclusion or decontamination zones. Wash hands and faces prior to eating and drinking.
Lifting Hazards	Lift heavy loads correctly with the head up, back straight and knees bent whenever possible use drum dollies or forklifts to move heavy objects
Heavy Equipment	Be aware of heavy equipment as it moves about the site. As a bystander, stay away from all operating heavy equipment.
Noise	Eardrum protection (plugs) are located in the health and safety supplies, will be provided to, and worn by all workers exposed to noisy machinery.
Fire/Explosion	Flammable liquids and fuels will be stored in appropriate containers away rom tank removal activities. No smoking or other ignition sources are allowed within 50 feet of the excavation, tank or stockpiled soil. Workers will use non-sparking tools in the exclusion zone. Workers should avoid standing near the ends of the tank, since the ends typically fly out away from the tanks during tank explosions. The oxygen level within the tank must be below 10% prior to tank removal from the excavation. Organic vapors within the tank will be vented away from the work area and possible sources of ignition.
Heat Stress	Rest periods. Shaded rest area. Mandatory breaks to replenish fluids.
Burns from Dry Ice	Workers will wear gloves when handling dry ice.

Site workers are expected to maintain the site in a condition that optimize health and safety. For example, mitigating small spills with absorbent material, barricading excavations and picking up tripping hazards.

The excavation and stockpile soil will be secured with temporary chain link fencing, and caution tape for the protection of Pacific Bell personnel. Stockpiled soil will be stored on and covered with visqueen to prevent any liquid runoff from potentially contaminated soil during rainfall.

b. Fire Protection

All flammable liquids must be stored in appropriate containers. Gasoline and Diesel-driven engines must be shut down prior to refueling. No smoking or possible sources of ignition (i.e. motor vehicles or welding) are allowed within 50 feet of the excavation tank of the stockpiled soil.

c. General Health

- The drinking of alcoholic beverages on-site is prohibited.
- Driving at excessive speeds on-site is prohibited.
- Unless approved by a physician, medication should not be taken by workers prior to tank removal activities.
- It is required that contact lenses not be worn by tank removal personnel.
- Eating or drinking is permitted only in the support zone and only after proper personal decontamination.
- No smoking except in the support zone.

d. Environmental Site Contaminants

Gasoline fuel contamination of the soil may be encountered during tank removal activities. A material safety data sheet (MSDS) for gasoline fuel is included as part of this plan. (See attached)

Chemical and (PEL)	Matrix	Symptoms of Exposure	Route of Entry
Diesel Fuel (PEL is 100 ppm)	Soil	Irritated eyes, nose, throat; unconsciousness	Inhalation, skin or eyecontact

XII. HAZARD REDUCTION

The potential for unknown hazards cannot be eliminated. The following are potential site hazards and their corresponding hazard reduction procedures:

POTENTIAL HAZARD	HAZARD REDUCTION
Inhalation of organic vapors	Workers should stand upwind of any source of contamination whenever possible.
Skin and eye contact with contaminated liquids and soil.	The appropriate chemical-resistant gloves, suits and goggles will be worn if workers handle or are exposed to gasoline fuel contaminated soil or liquids. Avoid unnecessary contact with contaminated soil and liquids.

a. Equipment Failure

The site safety officer must be notified of any equipment failure and will determine the effect of this failure on the tank removal operations. If the failure prevents the safe implementation of the closure plan, all personnel will discontinue work and decontaminate themselves while the situation is evaluated.

XIII. PERSONAL PROTECTION EQUIPMENT

a. Level D

Work will be performed in Level D PPE unless unforeseen site conditions warrant an upgrade of PPE. If an upgrade of PPE is ordered by the site safety officer, this Site Health and Safety Plan will be amended by the Site Safety Officer to address the additional health and safety concerns.
Level D is the lowest level of PPE and is suitable when respiratory protection is not required and physical contact with chemical contaminants is unlikely. Level D equipment consists of the following:

- Hard Hats
- Safety Goggles
- Work Uniform
- Work Gloves
- Steel Toed Boots
- Ear Protection

XIV. WORK ZONES

a. Exclusion Zone

This is the area where contamination does or could occur. Level D PPE must be worn in this area. The perimeter of this zone will be access only through the decontamination zone.

b. Exclusion Zone Activities

Exclusion zone activities will consist of underground storage tank removal, including disconnecting and flushing of the fuel lines, soil excavation, inerting of the tank , tank removal and soil sampling.

c. Decontamination Zone

This is a transition zone between the exclusion zone and the support zone. Sampling equipment and tools are cleaned or disposed of in this zone. PPE is sequentially removed and or cleaned as workers move from the exclusion zone to the support zone.

d. Support zone

This zone is used for the storage of sampling equipment and supplies. Workers should don PPE in this zone (prior) to entering the decontamination and exclusion zones.

xv. HEALTH AND SAFETY COMPLIANCE STATEMENT

The undersigned certify that they have read and understand the procedures and requirements contained in the Site Health and Safety Plan prepared for this project.

Further, the undersigned have received proper training under the Occupational Safety and Health Act (29 CFR 1910.120) prior to conducting any activities at the site.

NAME/TITLE	SIGNATURE	DATE

NOTE: This plan is for Aronson Engineering use only. It will be provided to subcontractors personnel for information. They are, however, responsible for their own health and safety programs.

FORM HS-507
SITE SAFETY PLAN
FIELD INVESTIGATION OF UNDERGROUND FUEL SPILLS
pg 1 of 2

ADMINISTRATIVE INFORMATION

Project Number 7112-9610 Project Name Parks RFTA, Bldg 1136

Project Manager Mike Sartor/Laurie Israel Operating Unit Sacramento

Site Safety Officer Jared P. Mickel Health & Safety Officer Kathleen Fischer

Date of Issue Aug 10, 1995 Effective Dates Aug 10, 1996

SITE INFORMATION (attach map of site)

Location: Parks Reserve Forces Training Area, Dublin CA Bldg 1136

Pertinent History: A ≈ 500 gallon heating oil underground storage tank has been removed. Confirmation sampling from the bottom of the excavation indicates that TPH-D exists (2000ppm). Soil Stockpiles also contain TPH-D.

Material(s) Spilled:

Heating Oil

FIELD ACTIVITIES

Supervise excavation of additional soil, collect confirmation samples from the backhoe bucket, Sample soil stockpiles.

EMERGENCY TELEPHONE NUMBERS

Fire Department	(510) 828-3817
Ambulance	(510) 828-3817
Hospital	(510) 847-3000
Project Manager	(510) 874-3173
Health & Safety Officer	(303) 796-4616
~~Hospital~~	

FORM HS-507
SITE SAFETY PLAN
FIELD INVESTIGATION OF UNDERGROUND FUEL SPILLS

HOSPITAL INFORMATION

Name: Valley Care Hospital

Address: 55 Santa Rita Road, Pleasanton

Route: Exit Camp Parks through the West Gate. Turn left (south) onto Dougherty Road. Travel on Dougherty Rd. to Hwy 580. Travel east on Hwy 580 to Santa Rita Rd. Exit south onto Santa Rita Rd. Valley Care Hospital is on the right.

AUTHORIZED FIELD PERSONNEL

Jared P. Mickel	Laurie Israel
Mark List	Steve Ball
Andrew Cho	Eric Schmidt
Alex Lauren	

NAME OF SUBCONTRACTORS (field work)

Name: Aronson Engineering Telephone Number: (916) 631-1646

Address: 11297 Coloma Rd., Rancho Cordova, CA 95670

Authorized Representatives: Tom Murray

Name: _____ Telephone Number: _____

Address: _____

Authorized Representative: _____

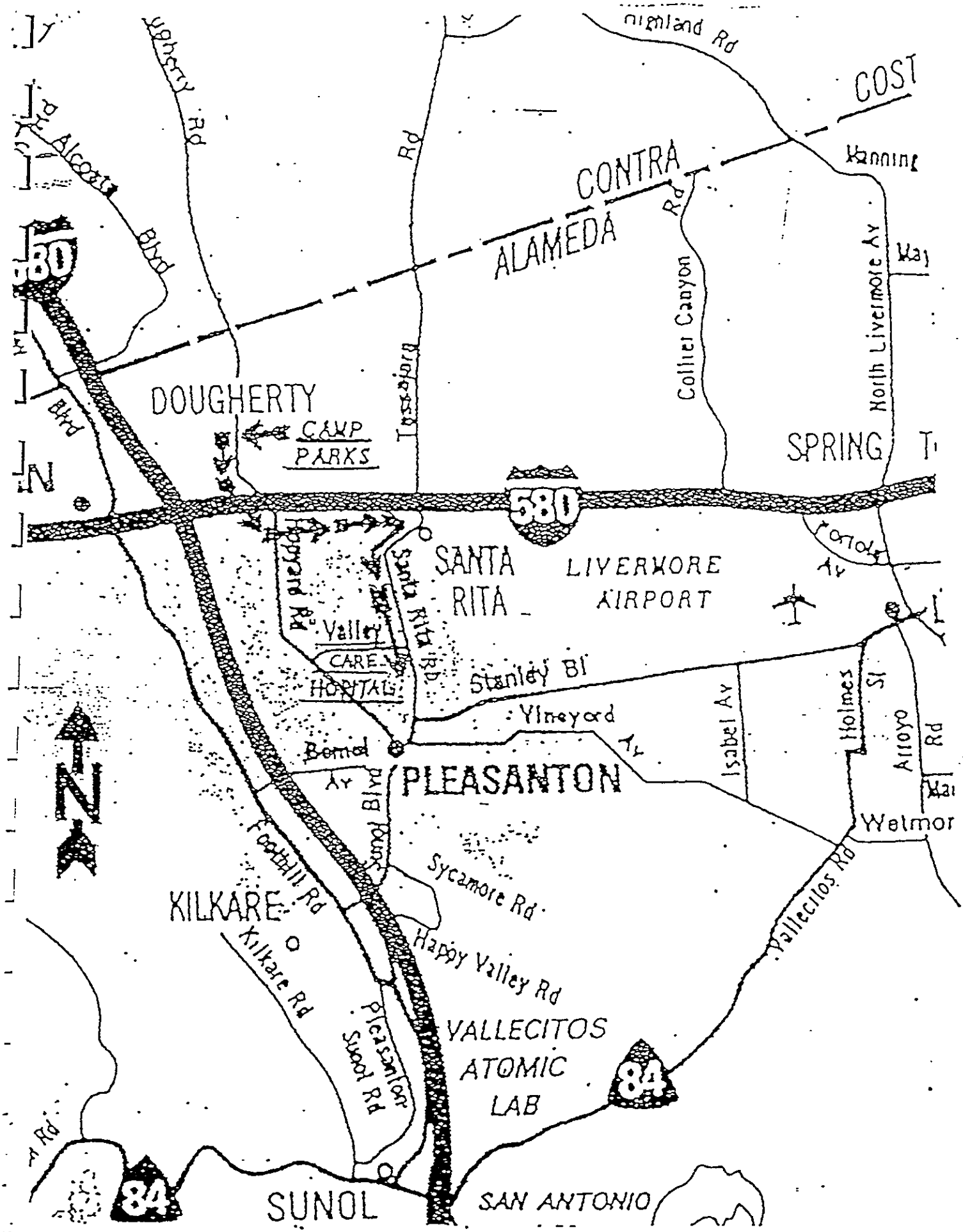
APPROVALS

_____ _____
Project Manager Date

Kathleen Fisch 8/10/95
Health & Safety Officer Date

_____ _____
Corporate Health & Safety Officer* Date

* Signature required only for modified plans.



EMERGENCY HOSPITAL ROUTE FROM CAMP PARKS

TO VALLEY CARE HOSPITAL

OPERATING PROCEDURE NO. HS-507

507.0 PROCEDURES FOR FIELD INVESTIGATIONS OF UNDERGROUND SPILLS OF GASOLINE AND OTHER PETROLEUM DISTILLATE FUELS

507.1 PURPOSE

The purpose of this procedure is to establish sound and uniform health and safety procedures and guidelines for field operations associated with investigations of leakage of petroleum hydrocarbon fuels from underground storage tanks and pipes. When this procedure is used, Form HS-507 must be completed and approved and attached to the front of this procedure. Together the procedure and completed form shall comprise a site-specific safety plan.

507.2 SCOPE

This procedure identifies the types of fuels and field activities to which it applies, assesses the hazards of fuels, and describes risk control measures.

507.3 APPLICABILITY

This procedure applies to: collection of samples of surface and subsurface soil; construction, completion, testing, and abandonment of groundwater monitoring wells; collection of water samples from new and existing wells; and observing removal of underground fuel pipes and storage tanks at facilities that currently dispense or store:

(1) leaded gasoline,
(2) unleaded gasoline,
(3) gasohol,
(4) Numbers 1, 1D (diesel), 2, 2D (diesel), 4, 5, or 6 fuel oils,
(5) jet A, jet A-1, jet B, JP-1, JP-3, JP-4, and JP-5 fuels,
(6) crankcase oil,
(7) methanol (when used as a motor fuel), and/or
(8) stoddard solvent.

This procedure shall not be used for confined space entry or for installing or operating pilot and full-scale fuel recovery systems. This plan may be used for the installation of vapor extraction systems only by appropriate modification and proper health and safety approvals. It is also not applicable to field work performed at refineries, sites where spills of chemicals other than the substances listed above have occurred, sites of unusual hazard, and any other site or activity for which the use of this plan is identified as inappropriate by the Operating Unit Health and Safety Officer (HSO).

This plan is applicable to work involving the removal of underground fuel pipes and storage tanks only when used with and attached to the American Petroleum Institute (API) Recommended Practice 1604, Second Ed. 1987 as revised March 6, 1989, Removal and Disposal of Used Underground Petroleum Storage Tanks (attached).

This plan is applicable to work involving borings with power equipment only when used with and attached to Woodward-Clyde Operating Procedure HS-203, Safety Guidelines For Drilling.

This plan is applicable to work involving entry into excavations by Woodward-Clyde (W-C) or Woodward-Clyde subcontractor personnel only when used with and attached to Woodward-Clyde Operating Procedure HS-204, Safety Procedures for Trenching/Excavation.

507.4 RESPONSIBILITY AND AUTHORITY

A completed Form HS-507 shall be approved by the Project Manager and HSO prior to beginning work.

The Project Manager (PM) has overall responsibility for safe conduct of all field work, including ensuring full implementation of this procedure by the site manager, project staff and subcontractors assisting with field work. The PM shall assign (with the concurrence of the Operating Unit HSO or Health and Safety Coordinator (HSC)) a Site Safety Officer (SSO) to attend to day-to-day health and safety matters in the field. The PM may elect, if qualified, to serve as SSO. The SSO must be on-site whenever work by employees of W-C or its subcontractors is being performed at the site.

Both the PM and SSO are authorized to suspend work when working conditions become unacceptable and are authorized to remove from the site any W-C and subcontractor employee whose conduct endangers the health and safety of the employee or of others.

507.5 HAZARD EVALUATION

Petroleum distillate fuels are mixtures of aliphatic and aromatic hydrocarbons, the constituent concentrations of which can vary significantly dependent upon the crude feedstock, refining process, and seasonal variations. The predominant types of compounds in fuels are paraffins (e.g., pentane, hexane), naphthenes (e.g., cyclohexane) and aromatics (e.g., benzene, toluene, polynuclear aromatics). Gasoline contains about 80 percent paraffins, 6 percent naphthenes, and 14 percent aromatics. JP-1 and 4 contain up to 48 percent paraffin, 38 percent naphthenes, and 20 percent aromatics. Fuel oils and certain jet fuels (JP-3 and 5) contain about 10 percent paraffin, up to 23 percent naphthenes, and up to 78 percent non-volatile aromatic hydrocarbons. Gasohol is gasoline containing 10 to 40 percent ethyl alcohol. Methanol as it is used as a motor fuel typically contains up to 20% gasoline to improve cold starting characteristics as a safety factor to provide a visible flame. To improve their burning properties, compounds such as tetraethyl-lead, methyl tertbutyl ether (MTBE) and ethylene dibromide (EDB) are often added to automotive and aviation fuels.

Petroleum distillate fuels exhibit relatively low acute inhalation and dermal toxicity. Concentrations of 160 to 270 ppm gasoline vapor have been reported to cause eye, nose, and throat irritation in people after several hours of exposure. Levels of 500 to 900 ppm have been reported to cause irritation and dizziness in one hour and 2,000 ppm has been reported to cause mild anesthesia in 30 minutes. Gasoline, kerosene, and some jet fuels will cause severe eye irritation on contact with the eye and low to moderate skin irritation on contact with the skin. Methanol can be toxic by either skin or inhalation exposure, and is unique in that it attacks the optic nerve. Methanol blindness can be irreversible.

Ingestion of 10 to 15 grams (2 to 3 teaspoons) of gasoline has caused death in children. In adults, ingestion of 20 to 50 grams may produce severe symptoms of poisoning. The most dangerous aspect of ingestion of these motor fuels is the development of chemical pneumonia from the aspiration of gasoline or other fuels aspirating into the lungs. Aspiration of very small quantities of these motor fuels into the lungs is often fatal. Some gasoline additives,

such as ethylene dichloride, ethylene dibromide, and tetraethyl- and tetramethyl-lead are highly toxic materials; however, their concentrations in gasoline are so low that their contribution to the overall toxicity of gasoline is negligible in most instances.

Benzene is a minor component of petroleum distillate fuels with concentrations ranging from non-detectable to 5%, with gasoline typically at 1%. Benzene has been classified a known human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH) based on the increased incidence of leukemia in certain oil refinery workers.

Petroleum distillate fuels are flammable. Under certain conditions, this property presents a greater risk than toxicity. Six of the fuels covered by this procedure are classified by the Federal Department of Transportation as flammable liquids as all six typically have flash points of 100 degrees F or less. These fuels are gasoline, gasohol, Jet B, JP-1, JP-4, and No. 1 fuel oil. Lower explosive limits of the fuels range from 0.6 to 1.4 percent (6,000 to 14,000 ppm).

507.6 HEALTH AND SAFETY CLEARANCE

W-C employees as well as subcontractor employees assigned to perform field activities covered by this procedure must be currently approved for hazardous waste field work, including:

- Current medical clearance to conduct hazardous waste field work and to wear a respirator;

- Successful completion of a respirator fit test within the last 12 months for the make and model of the respirator assigned to that individual for use at that site;

- Completion of training as required by Title 29 Code of Federal Regulations (CFR) 1910.120(e), including either:

  - 40 hours of hazardous waste worker basic instruction within the last 12 months, or,

- 8 hours of hazardous waste worker refresher training within the last 12 months, subsequent to completion of 40 hours of basic hazardous waste worker training.

507.7 HEALTH AND SAFETY BRIEFING

Before field work begins, all field personnel, including subcontractor employees, must be briefed on their work assignments and the provisions of this procedure, and each person briefed must be given a copy of this document and each must acknowledge receipt and willingness to comply by submitting a signed safety compliance agreement to the W-C Project Manager. Individuals refusing to sign the agreement will be prohibited from working at the site.

507.8 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Equipment listed below must be available on-site in appropriate sizes for use when needed.

1. National Institute for Occupational Safety and Health (NIOSH) approved full- or half-face respirator with organic vapor cartridges. Respirators must be worn when airborne hydrocarbon action levels are reached or exceeded.

2. Saranex or polyethylene coated Tyvek coveralls. Coated coveralls must be worn when product quantities of fuel are encountered and when fuel-saturated soil is handled.

3. Safety goggles or glasses. Must be worn when working within 10 feet of operating heavy equipment (e.g., drill rig, backhoe). Must be splash-proof when handling concentrated fuel product.

4. Nitrile or neoprene gloves for all fuels except methanol. Workers handling methanol must wear butyl gloves. Gloves must be worn when handling contaminated soil or water, or when drilling or digging into contaminated soil. Confirm with your HSO the applicability of model and brand of gloves!

5. Neoprene or butyl rubber safety boots, calf-length. Must be worn when walking on obviously contaminated soil and when working within 10 feet of operating heavy equipment.

6. Hard hat. Must be worn when working within 10 feet of operating heavy equipment.

507.9 ORGANIC VAPOR MONITORING

507.9.1 Monitoring Instruments

One instrument is required for this work:

1) Photoionization (PID) field survey instrument (HNU, ThermoEnvironmental 580A, Photovac Microtip, or equivalent)*, or, Flame ionization (FID) field survey instrument (Foxboro OVA or equivalent).

*PID instruments cannot readily detect methanol, and therefore may NOT be used on sites where methanol is or may be encountered.

507.9.2 Toxicity Action Levels

The toxicity action levels given below are set to comply with Occupational Safety and Health Administration (OSHA) Permissible Exposure Levels and ACGIH Threshold Limit Values (TLV). Gasoline averages approximately 1% benzene. Therefore, for fuels which may contain benzene, the action levels specified below are also set to comply with the proposed TLV of 0.1 ppm. These action levels are also adjusted for the relative response of common PID or FID instruments to motor fuel vapors.

Respirators must be worn when meter readings averaged over 10 minutes equal or exceed the action level for upgrade to Level C PPE. Workers must be evacuated from the area when organic vapor concentrations exceeding respiratory protective equipment protection factors are encountered.

507.9.2.1 Toxicity Action Levels for Fuels other than Gasoline and Jet B

TOXICITY ACTION LEVELS
FUELS OTHER THAN GASOLINE, METHANOL AND JET B
(in PPM)

Instrument	Calibration Gas	Action Upgrade to Level C	Evacuate
Photoionization meter# (10.0 to 10.2 eV lamp)	HNU calibration gas* or Benzene	20	100** 600***
Photoionization meter# (10.0 to 10.2 eV lamp)	Isobutylene	35	200** 600***
Flame ionization meter (OVA-128)	Methane	100	300** 600***

Photoionization instruments do not work and shall not be used for work in high (>90%) humidity or rainy weather.

* Although the calibration gas purchased for the HNU is isobutylene, the concentration identified on the cylinder for calibration of HNU's with 10.2 eV lamps is a benzene equivalent.

** for workers wearing half-face respirators.

*** for workers wearing full-face respirators.

All instruments shall be calibrated both immediately prior to commencing the day's field work and after work ceases for the day. Calibration and monitoring records shall be kept in the project file and provided to the operating unit HSO. Records shall include:

- Worker's name,
- Date,
- Time,
- Location,
- Temperature and humidity, and
- Calibration gas identity and concentration.
- Exposure data (time, location, and concentration)

507.9.3 Explosion Hazard Action Levels

The explosivity action levels below are set to prevent the creation of flammable or explosive atmospheres. Measurements should be taken at all locations where personnel are present or power/hand tools are in use. API procedures shall be followed for measurements in tanks or piping.

EXPLOSIVITY ACTION LEVELS
(% of the LEL)

Instrument	Action Level (Evacuate)
Combustible Gas Indicator	20%

The Combustible Gas Indicator (CGI) alarm must be set to sound at the action level. For this work it is highly recommended that hexane or methane to a pentane standard be used for calibration.

When measurements with a CGI indicate the presence of combustible gas levels equal to or exceeding the explosivity action level in the work area, the following action must be taken:

1. Extinguish all possible ignition sources in the work area and shut down all powered equipment.

2. Move personnel at least 100 feet away from work area.

3. Contact the Health and Safety Officer.

4. At the instruction of the HSO and after waiting 15 minutes for organic vapors to dissipate, the SSO or PM may use the CGI to, cautiously and with prudence, approach the worksite to determine the extent and concentration of organic emissions. The SSO or PM shall not enter any area where CGI readings exceed the explosivity action level, nor shall the SSO or PM make any approach if there is possibility of fire or explosion.

5. Personnel may reenter the work area only by clearance of the HSO after the cause of the emission has been determined and the source abated.

6. Prepare incident report and submit to the HSO.

507.9.4 Monitoring Guidelines

Personnel exposure monitoring should be performed as often as necessary and wherever necessary to protect field personnel from hazardous concentrations of organic vapors. Monitoring must be performed by individuals trained in the calibration, use and care of the required instruments.

Toxicity action levels are considerably lower then explosivity action levels. Therefore, initial and periodic monitoring should be conducted with the PID or FID. Monitoring shall be conducted in the worker's breathing zone, which is a 1 foot diameter sphere surrounding the worker's head. The alarm on this instrument should be set to sound at the action level. If vapors are measured continuously and the instrument must be unattended, the detector inlet should be located as close to the worker's breathing zone as possible. Decisions regarding respirator use should be based on breathing zone vapor concentrations of personnel expected to have the greatest exposures. Particular effort should be made to monitor personnel exposures while trenching, boring or tank inerting progresses.

Explosivity monitoring should be continuous, with the detector set at a location near and

downwind of the source of emission. Additional monitoring with the CGI should be performed when organic vapor concentrations exceed the ppm range of the PID or FID instrument. If the alarm sounds while continuously monitoring with a CGI, initiate shut-down and evacuation procedures immediately.

507.10 AREA CONTROL

Access to hazardous and potentially hazardous areas of spill sites must be controlled to reduce the probability of occurrence of physical injury and chemical exposure of field personnel, visitors, and the public. A hazardous or potentially hazardous area includes any area where (1) field personnel are required to wear respirators, (2) borings are being drilled with powered augers, or (3) excavating operations with heavy equipment are being performed.

The boundaries of hazardous and potentially hazardous areas must be identified by cordons, barricades, or emergency traffic cones or posts, depending on conditions. If such areas are left unattended, signs warning of the danger and forbidding entry must be placed around the perimeter if the areas are accessible to the public. Trenches and other large holes must be guarded with wooden or metal barricades spaced no further than 20 feet apart and connected with yellow or yellow and black nylon tape not less than 3/4-inches wide. The barricades must be placed no less than two feet from the edge of the excavation or hole.

Entry to hazardous areas shall be limited to individuals who must work in those areas. Unofficial visitors must not be permitted to enter hazardous areas while work in those areas is in progress. Official visitors should be discouraged from entering hazardous areas, but may be allowed to enter only if they agree to abide by the provisions of this document, follow orders issued by the site safety officer, and are informed of the potential dangers that could be encountered in the areas.

507.11 DECONTAMINATION

Field decontamination of personnel and equipment is not required except when contamination is obvious (visually or by odor). Recommended decontamination procedures follow.

507.11.1 Personnel Decontamination

Gasoline, kerosene, jet fuel, and gasohol should be removed from skin using a mild detergent and water. Hot water is more effective than cold. Liquid dishwashing detergent is more effective than hand soap.

507.11.2 Equipment Decontamination

Gloves, respirators, hard hats, boots and goggles should be cleaned as described under Section 507.11.1; however, if boots do not become clean after washing with detergent and water, wash them with a strong solution of trisodium phosphate and hot water.

Sampling equipment, augers, vehicle undercarriages, and tires should be steam or high pressure washer cleaned. The steam cleaner is a convenient source of hot water for personnel and protective equipment cleaning.

507.12 SMOKING

Smoking and open flames are strictly prohibited at sites under investigation.