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REMEDIAL INVESTIGATION FEASIBILITY STUDY SITE SAFETY AND HEALTH PLAN FOR  
SITE ST16 BASE SERVICE STATION NAS FORT WORTH TX  
4/1/1993  
ARMY CORP OF ENGINEERS

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**NAVAL AIR STATION  
FORT WORTH JRB  
CARSWELL FIELD  
TEXAS**

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**ADMINISTRATIVE RECORD  
COVER SHEET**

AR File Number 137

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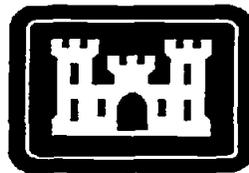
**CARSWELL AIR FORCE BASE**  
**REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)**  
**SITE SAFETY AND HEALTH PLAN**

**for**

**SITE ST16 BASE SERVICE STATION**

**PREPARED BY:**

**U.S. ARMY CORPS OF ENGINEERS**  
**Fort Worth District**



**APRIL 1993**

**PREPARED FOR:**

**CARSWELL AIR FORCE BASE**  
**TEXAS**

# SITE SAFETY AND HEALTH PLAN

## 1.0 INTRODUCTION

The purpose of this plan is to assign responsibilities and establish the overall site safety and health program for this project in accordance with OSHA 29 CFR 1910.120. This plan outlines the potential safety and health hazards which may result during the course of the remedial activities which consists of installing monitoring wells, subsurface soil surveys, surveying of monitoring wells and boreholes and ground water sampling in an area which is potentially contaminated.

This plan will apply to all personnel working in the immediate area as identified in the scope of the work. All personnel working in these areas shall follow the guidelines established by this specific plan. Any contractor personnel required to work at this site in association with the scope of this work shall submit a site safety and health plan in accordance with 29 CFR 1910.120.

## 2.0 SITE LOCATION

The work site location is the base service station and the immediately adjacent areas on Carswell AFB in Tarrant County within the city of Fort Worth, Texas. The base service station is located on the northwest corner of Rogner Drive and Jennings Drive on Carswell AFB.

## 3.0 PROJECT DESCRIPTION

Investigative activities planned in support of this project consist of subsurface soil surveys, monitoring well installation, surveying of monitoring wells and boreholes and ground water sampling.

## 4.0 HAZARD AND RISK ANALYSIS

The hazards associated with this operation are both chemical and physical. The chemical hazards are related to the potential contamination from unleaded gasoline and leaded gasoline. The components and properties of each these gasolines, unleaded and leaded, along with the exposure limits and health and safety hazards are listed in Table 1.

The physical hazards are related to the temperature and the related stress effects upon the workers. Appendix A addresses heat stress monitoring and related activities.

The biological hazards which may be present at this site are poisonous snakes, insects and poisonous plants. The awareness of the team members to their surroundings and the associated hazards will prevent undue risks. In the event of a sting, bite or contact with poisonous plants by a team member the emergency procedures as outlined in Appendix C shall be followed.

## 5.0 ORGANIZATIONAL CHART AND RESPONSIBILITIES

### Industrial Hygienist

The Fort Worth District Industrial Hygienists is responsible for the development and oversight of this SSHP. The COE IH is responsible for implementation of this SSHP and must approve all modifications to the plan. The IH will be responsible for any requirements to upgrade the level of protection during the work operation.

### SSHO (Site Safety and Health Officer)

The SSHO selected by the Industrial Hygienist is responsible for the on-site implementation of the SSHP and assuring that all portions of the SSHP are followed. The SSHO is responsible for site specific training, air monitoring and necessary required recordkeeping.

TABLE 1

HEALTH HAZARD RISK ANALYSIS

| <u>CHEMICAL</u>  | <u>OSHA PEL</u> | <u>OSHA STEL</u> | <u>TLV</u> | <u>HAZARDS</u>      |
|------------------|-----------------|------------------|------------|---------------------|
| TOLUENE          | 100 ppm         | 150 ppm          | 100 ppm    | Inh, Ing, Con       |
| XYLENE           | 100 ppm         | 150 ppm          | 100 ppm    | Inh, Ing, Abs, Con  |
| ETHYLBENZENE     | 100 ppm         | 125 ppm          | 100 ppm    | Inh, Ing, Con       |
| BENZENE          | 1 ppm           | 5 ppm            | 10 ppm     | Inh, Ing., Abs, Con |
| TETRAETHYL LEAD* | 0.75 mg/m3      | -                | 0.10 mg/m3 | Inh, Ing., Abs, Con |

\*denotes skin - which indicates the potential for dermal absorption

Routes of exposure

- Inh = Inhalation
- Ing = Ingestion
- Abs = Absorption
- Con = Skin or eye contact

Proper protective clothing is required while working with the above mentioned chemicals (see MSDS). Avoid all skin, eye, and inhalation contact. Benzene is a known carcinogen.

## Field Crews

All field crews are responsible for reading and following the provisions of this SSHP. They are also responsible for alerting the SSHO to any unusual condition during daily work operations.

## 6.0 TRAINING

All personnel who will be entering the site during the activities, as required by the scope of this job, shall have received the 40 hour OSHA Hazardous Waste Operations Training in accordance with 29 CFR 1910.120(e). Certificate of such training along with any required 8 hour update shall be submitted to the Contracting Officer prior to start of the job. The SSHO will conduct site specific training for all entering the site. Each person entering the site will be requested to read this plan and the SSHO will review it with them prior to entry (Appendix B form).

Additional site specific training will be conducted in the following areas prior to the start of field investigative activities and on a regular basis this information shall be logged on the form in Appendix B:

- Job duties and responsibilities
- Safety, health and other hazards present at the site
- Recognition and minimization of hazards
- Recognition of heat stress and related symptoms
- Monitoring to be conducted
- Safety and worker protection requirements
- Decontamination procedures
- Emergency decon procedures
- Biological hazards

### 6.1 Site Safety and Health Training

The Site Safety and Health Officer (SSHO) will conduct health and safety training on all items in the SSHP and any other

related to this specific site. All personnel will participate in the training before field operations begin and daily safety meetings will be held to discuss activities for the day along with any safety and health concerns. All visitors to this site during the field operations will receive safety and health briefings which shall include coverage of the SSHP.

## 7.0 WORK ZONES

### 7.1 Exclusion Zone (EZ) or "Hot Zone"

The exclusion zone will consist of a 30 foot radius around the designated work area (see map). This zone is considered the contaminated area and therefore personal protective gear may be required for entry. Air monitoring will determine the level of protection required. All personnel including visitors who have not received the 40 hour OSHA training and are not included in a medical surveillance program will not be allowed entry into this zone.

### 7.2 Contamination/Reduction Zone (CRZ) or "Decon Area"

The CRZ (contamination reduction zone) will consist of an area immediately outside the EZ (exclusion zone) for a radius of 25 feet. Decontamination will be conducted within this area. All items; i.e. equipment, ppe; used in the exclusion zone and/or potentially contaminated shall be decontaminated and/or placed in containers to be disposed of properly before leaving this zone.

### 7.3 Support Zone (SZ)

The support zone is the staging area for equipment and personnel. Visitors will remain in this area as well as any employee who has not received the appropriate training and is not in a medical surveillance program. Access to the other zones will be controlled through this zone.

## 8.0 PERSONAL PROTECTIVE EQUIPMENT

The following are worker protection levels in accordance with OSHA/EPA requirements:

### 8.1 LEVEL D (modified)\*\*

- Disposable chemical resistant gloves
- Hard Hat
- Steel toe work boots
- Safety Glasses
- Hearing protection (as needed)
- Safety Goggles or Faceshield (as needed)
- Hearing Protection (as needed)

### 8.2 LEVEL C

- Disposable chemical resistant clothing
- Disposable gloves - chemical resistant (inner and outer)
- Steel toe work boots
- Hard hat
- Safety glasses
- Respirator - full face with dual cartridge (HEPA & Organic Vapor combination)
- Chemical resistant boot covers
- Hearing Protection (as needed)
- Two way radio (communication)

### 8.3 LEVEL B

- Chemical resistant suit - full with hood
- SCBA
- Boot covers - chemical resistant
- Chemical resistant gloves (outer and inner)
- Hard hat
- Hearing Protection (as needed)
- Safety boots
- Two way radio (communication)

## 8.4 LEVEL A

Chemical resistant fully encapsulating suit  
SCBA  
Chemical resistant gloves (outer and inner)  
Chemical resistant safety boot  
Two way radio (communication)

\*\* Level D (modified) is the anticipated level of protection required during this operation. Monitoring during the work activities will determine the level of protection (see air monitoring section). If air monitoring determines that an upgrade in the level of protection is required, work will cease. The SSHO will consult with the IH for any changes in the requirements of the level of protection and prior to continuation of work when air monitoring results continue to be above the levels for modified D. The IH will determine if the work can continue or not at this level.

## 9.0 AIR MONITORING - TYPES AND FREQUENCY

### 9.1 Photoionization Detector (PID)

A PID will be used to monitor in the area and the breathing zone of the team members while work is being performed. Monitoring with the PID will be conducted at the beginning of each shift, every 30 minutes during any intrusive activities and continuously when a reading of 5 ppm over background is reached. If a reading at anytime exceeds 10 ppm over background, then work will cease and a detector tube will be used to determine potential specific contaminants.

The PID will be calibrated at the beginning and end of each shift. This information along with all readings shall be recorded on the daily monitoring log (Appendix B).

### 9.2 Combustible Gas/Oxygen Meter (CG/O2)

Monitoring for combustible gases and oxygen deficiency

will be conducted at the start of each shift, continuously while using any spark producing equipment, and during all intrusive work. Alarms on the meters are set at 10% LEL and 19.5% and 23% for Oxygen. If at anytime the alarm should activate, the team members shall cease all work and evacuate the immediate area. After 15-30 minutes the SSHO will remonitor the area. If the levels are within the safe working range, less than 10% LEL and between 19.5%-23% oxygen, then team members will be allowed to return to work. If the alarm continues to activate after the 15-30 minute period, then the Industrial Hygienist shall be consulted for further information. The CG/O2 meter shall be calibrated at the start of each shift and this shall be recorded on the daily log (Appendix B).

### 9.3 Detector Tubes and Pump

A hand held detector tube pump and tubes for low level Benzene shall be available for use. If the PID reading is 10 ppm over background all work will cease and a detector tube for low level benzene will be used to determine if the concentration of the contaminant is benzene. If a reading is obtained from the tube, the Industrial Hygienist will be contacted before proceeding any further. If no reading is obtained from the tube, then work may commence, but a detector tube for low level benzene will be used every 30 minutes as long as the PID reading is 10 ppm over background. Whenever a detector tube is used, the date, time, location, any reading and the tube type and number will be recorded on the daily monitoring log (Appendix B).

### 9.4 Temperature

The ambient air temperature shall be measured continuously throughout the day. The work rest cycle as published by the American Conference of Governmental Industrial Hygienist (ACGIH) for heat stress monitoring shall be followed (Appendix E) whenever the ambient temperature is above 78 F. If at anytime the level of protection required for the operation

is upgraded above the modified level D, additional precautions shall be taken and the IH shall be contacted prior to upgrading the protection level for additional requirements for heat stress monitoring.

## 10.0 SITE CONTROL

The site shall be designated by use of barricades and hazard warning tape. The site will be secured during all operations and no one will be allowed to enter the site unless qualified. If additional security is necessary, then base security shall be notified.

## 11.0 DECONTAMINATION PROCEDURES

All equipment and personnel will be decontaminated with wash water prior to leaving the CRZ area. The wash water will be containerized and sampled. All disposable PPE will be placed in containers in the CRZ. These containers shall be labeled to indicate that contaminated equipment and clothing are contained herein.

Once the wash water has been sampled for a determination of the level of contamination, disposal will be accordance with State and EPA regulations. All containers of contaminated equipment and clothing shall be disposed of in accordance with State and EPA regulations.

## 12.0 CONFINED SPACE

There is no confined space entry anticipated during this project. If any is encountered, the IH will be contacted for correct procedures prior to any entry.

## 13.0 EMERGENCY PROCEDURES

An emergency response plan is included in Appendix C. The

following is a list of agencies to be contacted in the event of an emergency.

EMERGENCY PHONE NUMBERS

|                            |                |
|----------------------------|----------------|
| Fort Worth Police          | (817) 335-4222 |
| Fort Worth Fire Department | (817) 332-4222 |
| Emergency Service          | 911            |
| Carswell Fire Dept.        | (817) 782-6330 |
| Carswell Security          | (817) 782-5200 |
| Poison Control Center      | 1-800-822-9761 |
| National Response Center   | 1-800-424-8802 |
| Texas Water Commission     | (214) 298-6171 |

14.0 SPILL CONTROL

In the event of a spill the National Response Center shall be notified along with the local HazMat Team. Any small spills will be contained and cleaned up. If the spill is of considerable size then the base HazMat Team or the Fort Worth HazMat Team will notified for help in containing and cleaning the site. The team members from the COE are not qualified to clean or contain a sizeable spill.

PLAN PREPARED BY:     MADELINE R. MORGAN  
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PLAN APPROVED BY:     RENE' MORADEL  
                                  CHIEF, SAFETY AND OCCUPATIONAL HEALTH OFFICE  
                                  U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT

# APPENDICES A - C

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## APPENDIX A

## HEAT STRESS AND RELATED HEALTH EFFECTS

Heat produced by the body and the environment together determine the total heat load. Therefore, if work is to be performed under hot environmental conditions, the workload of each job shall be established and the heat exposure limit pertinent to the workload evaluated against the applicable standard to protect the employee from exposure beyond the permissible limit. The American Conference of Governmental Industrial Hygienist's latest publication of Threshold Limit Values and Biological Exposure Indices shall be considered the standard.

Since measurement of deep body temperature is impractical for monitoring employees' heat load, the measurement of environmental factors is required which most nearly correlates with deep body temperature and other physiological response to heat. At the present time Wet Bulb Globe Temperature Index (WBGT) is the simplest and most practical technique to measure the environmental factors.

The following table represents the work/rest cycles along with the temperatures:

| Work Rest Regimen | WORK LOAD |          |       |
|-------------------|-----------|----------|-------|
|                   | Light     | Moderate | Heavy |
| Continuous Work   | 86        | 80       | 77    |
| 75% work/25% rest | 87        | 82       | 78    |
| 50% work/50% rest | 89        | 85       | 82    |
| 25% work/75% rest | 90        | 88       | 86    |

The following are signs and symptoms of various related heat stress conditions:

Heat Exhaustion - pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.

Heat Cramps - muscle spasms; pain in the hands, feet and abdomen.

Heat Stroke - red, hot, usually dry skin; lack of or

reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

Any employee exhibiting any of the conditions stated above shall be monitored by the SSHO. If the condition of the employee warrants, medical help shall be solicited.

If the employees must wear additional protective clothing, then added precautions shall be taken. Some protective clothing is not breathable and adds undue stress to the employees while performing their required tasks. If the employees are required to upgrade in the level of protection, the IH will then evaluate the clothing required and the requirements for heat stress monitoring.

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# COMBUSTIBLE GAS/OXYGEN METER

## CG/O2 METER DATA:

MODEL NO:

SERIAL NO:

CALIBRATION:

DATE:

TIME:

GAS USED:

READING:

READINGS:

LOCATION

%LEL

%O2

| READINGS: | LOCATION | %LEL | %O2 |
|-----------|----------|------|-----|
|           |          |      |     |
|           |          |      |     |
|           |          |      |     |
|           |          |      |     |
|           |          |      |     |
|           |          |      |     |
|           |          |      |     |
|           |          |      |     |

## DETECTOR TUBES

TYPE OF TUBE:

DETECTION

LIMITS:

TUBE NO.:

EXPIRATION

DATE:

LOCATION

READING

| LOCATION | READING |
|----------|---------|
|          |         |
|          |         |
|          |         |
|          |         |

# SITE SPECIFIC AND SAFETY TRAINING FORM

SITE NAME: \_\_\_\_\_

LOCATION: \_\_\_\_\_

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

CONDUCTED BY: \_\_\_\_\_

TOPICS DISCUSSED: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ACCIDENTS REVIEWED: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SUGGESTIONS/COMMENTS MADE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNATURES OF ATTENDEES: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### SITE SPECIFIC TRAINING RECORD

SITE NAME: \_\_\_\_\_

LOCATION: \_\_\_\_\_

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

CONDUCTED BY: \_\_\_\_\_

TOPICS DISCUSSED: \_\_\_\_\_

\_\_\_\_\_

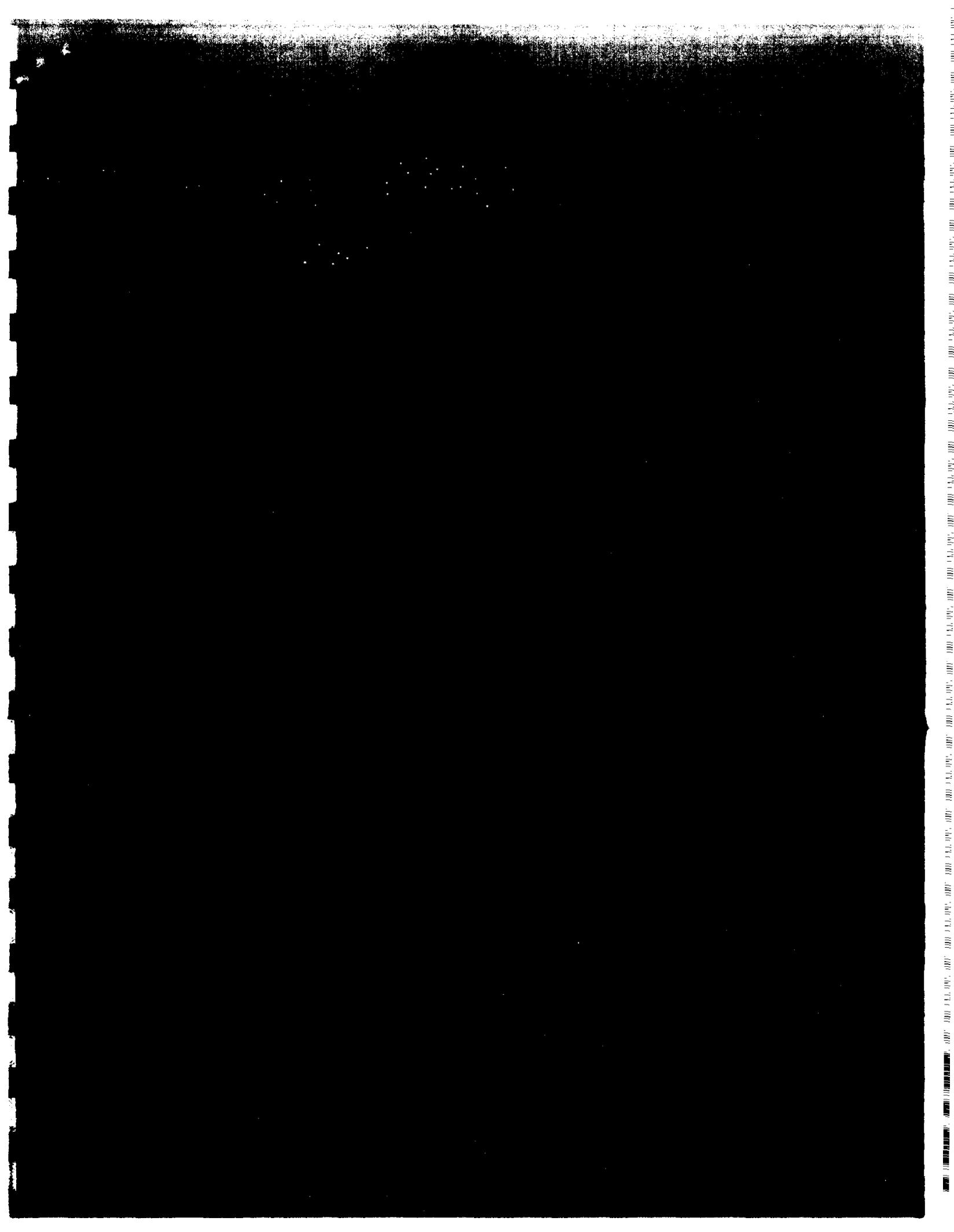
\_\_\_\_\_

I fully understand the Site Safety and Health Plan and the requirements contained therein. I shall comply with the requirements of this plan and adhere to the information provided by the Site Safety and Health Officer.

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_





## EMERGENCY RESPONSE PROCEDURES

The following are procedures to be followed in the event of an emergency. The potential for a fire and/or explosion is the predominant consideration during this job, along with the potential for exposure to vapors, dusts and/or gases.

### 1.0 Plan Implementation

The SSHO shall be responsible for implementation of this plan in the event of an emergency. The SSHO will be responsible for assuring the safe evacuation, emergency treatment, emergency transport of site personnel and notification of emergency response units and the appropriate agencies.

#### 1.1 Evacuation

In the event of an emergency, the SSHO who is also designated the Emergency Coordinator will notify all site personnel of the evacuation. All personnel on site will evacuate and assemble in the area designated by the Emergency Coordinator as a safe area. It will be the responsibility of the SEC to initiate proper action if outside services are required. Under no circumstances will incoming personnel, visitors or current personnel be allowed to proceed into the area once the emergency has been identified. All emergency equipment and personnel will be accessed through the SEC at his designated command post. All equipment will be shut down upon notification of the emergency and the personnel operating this equipment shall evacuate the area immediately.

In the event of personnel exposure the contaminated person shall be decontaminated prior to evacuation, unless the emergency is such that the life of the person exposed is in grave danger and decontamination might reduce possibility of survival, then the person shall be transported by Ambulance to the local hospital without decontamination. The Ambulance Company and the Hospital must be notified of the potential hazard that could be

encountered when treating the contaminated person.

### 1.3 Adverse Weather

In the event of adverse weather, the Site Safety and Health Officer will determine if work may continue without endangering the health and safety of site personnel. Some of the items to be considered prior to determining if work should continue are: extreme rainfall, potential for heat stress, tornadoes, limited visibility, electrical storms.

### 1.4 Incident Investigation

Upon receiving a report of an incident on the site, the Site Safety and Health Officer will investigate the circumstances surrounding the incident. In serious incidents the COE Safety and Occupational Health Office may be requested to participate in the investigation.

#### 1.4.1 Incident Reporting

All serious incidents which result in a fatality, emergency response, lost work time or medical treatment will be reported immediately by the SSHO to the COE Safety and Occupational Health Office. A written report will be forwarded to the COE Safety and Occupational Health Office within 48 hours of the incident. The following is the address and phone for the COE Safety and Occupational Health Office:

U.S. Army Corps of Engineers  
Safety and Occupational Health Office  
P.O. Box 17300  
Ft. Worth, Texas 76102  
Rene' Moradel, Chief of Safety and Occupational Health  
(817) 334-2195

**FINAL PAGE**

**ADMINISTRATIVE RECORD**

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