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**REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN VOLUME
II: SITE HEALTH & SAFETY PLAN REVISED MARCH 31, 1994**

03/31/94

**FERMCO DOE-FN
98
WORK PLAN**

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FERNALD ENVIRONMENTAL
RESTORATION MANAGEMENT CORPORATION

G-000-303.67

REMEDIAL INVESTIGATION/
FEASIBILITY STUDY
SITE HEALTH & SAFETY PLAN

EMERGENCY PHONE NUMBER OFF-SITE: 911
EMERGENCY PHONE NUMBER ON-SITE 738-6511
RADIO: "CONTROL"

APPROVALS:

 4-13-94
Paul Clay, Project Director

 4-6-94
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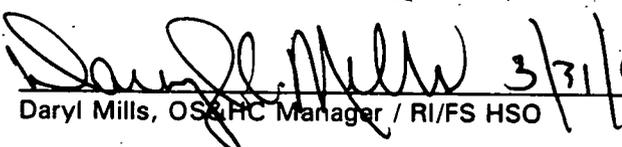
 3/31/94
Daryl Mills, OS&HC Manager / RI/FS HSO

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REFERENCES CITED

Hoist and Rigging Manual DOE/ID-10500 Section 1.2.0

FERMCO Comprehensive Environmental Occupational Safety and Health Program Manual, Volumes I and II, ESH-1-1000

29 CFR 1910 and 1926

FEMP Centralized Training Program Manual

MAPS

Map 1	Operable Units
Map 2	CRU1

ACRONYMS

AEDO - Assistant Emergency Duty Officer
ALARA - As Low As Reasonably Achievable
ANSI - American National Standards Institute
CERCLA - Comprehensive Environmental Response
CFR - Code of Federal Regulations
CGM - Combustible Gas Meter
CHSO - Construction Health and Safety Officer
CO - Contracting Officer
CRU - CERCLA/RCRA Unit
CSA - Criticality Safety Assessment
DAC - Derived Air Concentration
DOE - U. S. Department Of Energy
DOT - U. S. Department Of Transportation
EMS - Emergency Medical Services
EPA - U. S. Environmental Protection Agency
ERT - Emergency Response Team
ES&H or ESH - Environmental Safety and Health
f/cc - Fibers/Cubic Centimeters
F - Fahrenheit
FEMP - Fernald Environmental Management Project
FERMCO - Fernald Environmental Restoration Management Corporation
FM - Factory Mutual
FMPC - Feed Material Production Center
GET - General Employee Training
GFCI - Ground Fault Circuit Interrupter

$H_2SO_4NaOH - H_2SO_4$ = Sulfuric Acid, NaOH = Sodium Hydroxide

HASP or HSP - Health and Safety Plan

Hcl - Hydrochloric Acid

HNO₃ - Nitric Acid

HSO - Health and Safety Officer

IH - Industrial Hygiene

IIR - Incident Investigation Report

lbs - Pounds

LEL - Lower Explosive Limit

mg/m³ - Milligrams/Cubic Meter

MIE - Monitoring Instruments for the Environment, Inc.

MSDS - Material Safety Data Sheets

OS&H - Occupational Safety and Health

OS&HC - Occupational Safety and Health Compliance

OSHA - Occupational Safety and Health Administration

OU - Operable Unit

PIC - Person In Charge

PPE - Personal Protective Equipment

ppm - Parts Per Million

PSHSO - Project Specific Health and Safety Officer

PSHSP - Project Specific health and Safety Plan

RAM-1 - Real-Time Aerosol Monitor

RC - Radiological Control

RCRA - Resource Conservation and Recover Act

RCT - Radiological Control Technicians

RDA - Radiation Detection Alarm

RI/FS - Remedial Investigation/Feasibility Study

RPR - Radiological Preformation Requirements

RSO - Remedial Site Operation

RWP - Radiation Work Permit

SARA - Safety Analysis and Risk Assessment

SO₂ - Sulfur Dioxide

SOP - Standard Operating Procedure

SPR - Safety Performance Requirement

STEL - Short Term Exposure Limit

TLD - Thermoluminescent Dosimeter

TWA - Time Weighted Average

UL - Underwriters Laboratory

INTRODUCTION

Safety is an attitude and a belief that all injuries and occupational illnesses can be prevented. Fernald Environmental Restoration Management Corporation (FERMCO) management and supervision have adopted this attitude toward safety. But, the most important person to be committed to safety is the site worker. He/she must assume responsibility for working safely.

This Health and Safety Plan (HASP) is a tool to convey management's safety commitment to employees and inform them of the hazards they will encounter while working at the FEMP. The following topics will be covered:

- Chemical, physical, radiological, and biological hazards that are common to RI/FS activities.
- Controls for the chemical, physical, radiological, and biological hazards that are common to RI/FS activities.
- Decontamination.
- Emergency contingency plans.
- Medical requirements.
- Monitoring requirements.
- Site posting and control.
- Site training requirements.

This plan reviews the hazards common to RI/FS field activities and does not address hazards associated with specific tasks/operations conducted in RI/FS. For a specific task/operation, a Project Specific Health and Safety Plan shall be written. The PSHSP will evaluate the hazards and specify specific monitoring and training required. The PSHSP shall be completed before the start of an activity.

All FERMCO employees, visitors, vendors, contractors and subcontractors shall follow the requirements, designated protocols and procedures defined or referenced in this plan. Referenced documents are available from the Construction Health and Safety Officer (CHSO).

Before entering a defined work area, all personnel shall be orientated on this Health and Safety Plan and associated PSHSP. Personnel must sign an acknowledgement form (Attachment A) stating they understand the conditions of this plan. The site supervisor shall control the acknowledgment form.

1.0 RI/FS HISTORY AND CHARACTERIZATION

1.1 FEMP SITE HISTORY

Fernald Environmental Management Project (FEMP) is located in southwestern Ohio, approximately eighteen miles northwest of downtown Cincinnati, near the communities of Miamitown and Ross, Ohio. The site covers 1050 acres with 850 acres in Crosby Township (Hamilton County) and 200 acres in Ross and Morgan Townships (Butler County). It is owned by the U. S. Department of Energy (DOE) and operated by Fernald Environmental Restoration Management Corporation (FERMCO).

1.1 FEMP SITE HISTORY (Continued)

The FEMP was built between 1951 and 1952 and full operation started in 1952. Its mission was to refine uranium from natural ore concentrates for use in government defense programs. A wide variety of chemical and metallurgical process steps were used in the production of uranium metal products. Production stopped in 1989. Since mid 1991, the mission has focused on waste management and environmental restoration.

Uranium materials production at the FEMP was confined to a fenced, 136 acre tract of land known as the Production Area. As depicted on Map 1, this tract of land is located approximately in the center of the 1050 acre FEMP facility. Large quantities of liquid and solid process related wastes were generated and disposed within the Production Area and its various components.

Much of the known and suspect on-site and off-site releases of materials into environmental receptor media originated from past handling, storage and disposal activities within the Production Area.

1.2 CHARACTERIZATION

Since the ending uranium processing at the FEMP, the main objective of DOE has been the goal of performing environmental remediation at the location. The FEMP has been sub-divided into five CERCLA/RCRA Units (CRUs). FEMP RI/FS field activities consist of site characterization activities within the five CRUs.

The remediation effort has focused on the five CRUs, with the objective of determining the nature and extent of environmental degradation which may be attributable to waste disposal, storage, and handling of material that occurred within each CRU.

The following information provides a description of the five CRUs at the FEMP, a brief status of their components, the major environmental problems identified to date and the CRU locations.

1.2.1 CERCLA/RCRA Unit 1

CRU1 - CERCLA/RCRA Unit 1 is the Waste Pit Area of the FEMP. CRU1 components are located immediately west and northwest of the former FEMP Process Area. As Map 2 shows, CRU1 consists of Waste Pits 1 through 6, the Clearwell, and the Burn Pit. The waste pit numbering system is based on the chronological sequence in which the waste pits were constructed.

Waste Pits 1 through 6, contain a variety of liquid and solid wastes that were generated by the eight separate operations plants at the site. At the present time, pits 1 through 4 are covered with earth. Pits 5 and 6 contain water in addition to normal wastes and sludges associated with present and past processes utilized at the site. The Clearwell is an active settling basin which is a component of the site wastewater and storm water collection and treatment systems.

A more detailed description of the CRU1 components, their physical condition, approximate waste volumes and waste types is as follows:

1.2 CHARACTERIZATION (Continued)

Waste Pit 1 - Waste Pit 1 was used primarily for the disposal of dry solid wastes. The pit was constructed in 1952, and waste disposal was halted in 1959. The total capacity of Waste Pit 1 is approximately 46,415 cubic yards. Upon the cessation of disposal operations, the pit was backfilled and covered with clean fill dirt. Principal wastes disposed in Pit 1 were:

- Depleted Magnesium Fluoride Slag
- Slag Leach Filter Cake
- Depleted Sump Cake
- General Sump Sludge
- Debris and Scrap Metal
- Dust Collector Residues

Waste Pit 2 - Waste Pit 2 was used primarily for the disposal of dry solid wastes. The pit was constructed in 1957 and waste disposal was halted in 1964. Waste Pit 2 contains approximately 25,724 cubic yards of dry wastes, including an estimated 80 cubic yards of uranium, and approximately 0.045 cubic yards of thorium. Upon ending of waste disposal operations, the pit was covered with clean uncontaminated fill and graded to direct surface water runoff to the nearby Clearwell for subsequent discharge to the Great Miami River. Wastes disposed in Pit 2 include the following:

- Depleted Magnesium Fluoride Slag
- Slag Leach Filter Cake
- Depleted Sump Cake
- General Sump Sludge
- Dust Collector Residues

Waste Pit 3 - The primary purpose of Waste Pit 3 was for gravity settling of solids from wet waste streams. Waste Pit 3 was constructed in 1959, and disposal activities ceased in 1977. The capacity of the pit was approximately 248,500 cubic yards. The pit was operated as a settling basin from 1959 to 1968, and included a concrete spillway which discharged into the Clearwell. Upon pit abandonment, the pit was backfilled, and the surface mounded to direct surface water runoff to the Clearwell prior to discharge into the Great Miami River. The principal waste disposed in Pit 3 was neutralized raffinate.

Waste Pit 4 - Waste Pit 4 was operated as a landfill from 1960 to 1986. The pit has undergone interim RCRA closure, as certified by the Ohio Environmental Protection Agency, in 1989. Final closure has been deferred to the CERCLA program. Pit 4 is a RCRA waste storage facility due to the presence of an estimated 23,500 pounds of barium chloride. During interim closure, the pit was covered with soil and rock, overlain with 2 feet of clay and covered with a Hypalon liner.

1.2 CHARACTERIZATION (Continued)

The perimeter of the pit is surrounded by a drainage ditch and an earthen berm to control runoff. The principal wastes disposed in Pit 4 were:

- Slag Leach Filter Cake
- Neutralized Raffinate
- Dust Collector Residues
- Thorium Production Residues

Waste Pit 5 - Waste Pit 5 was constructed in 1968. In 1983, waste disposal was halted. It has not been covered. Pit 5 is lined with a 60 mil elastomeric membrane liner. The total capacity of the pit is approximately 115,000 cubic yards. The maximum depth of the pit is approximately 25 feet. The volume of waste contained in Waste Pit 5 is approximately 102,500 cubic yards. The pit, being open, is covered with accumulated rainwater. The principal waste disposed in Pit 5 is neutralized raffinate.

Waste Pit 6 - Waste Pit 6 was constructed in 1979. In 1985, waste disposal operations were halted. The pit base and sidewalls are lined with a 60 mil elastomeric membrane liner. The estimated total volume of Waste Pit 6 is 14,000 cubic yards, with a maximum depth of about 20 feet. The current waste volume of the pit is approximately 11,556 cubic yards, which consists of approximately 56 cubic yards of uranium. At present, the pit surface is covered with water to an approximate depth of 2 feet. The principal wastes disposed in Pit 6 are:

- Depleted Magnesium Fluoride
- Slag Leach Filter Cake
- Depleted Sump Cake
- General Sump Sludge
- Dust Collector Residues

Clearwell - The Clearwell has been in operation since 1952. The Clearwell has an approximate surface area of 30,600 square feet, and a capacity of about 4 million gallons. Approximately 1.5 million gallons of water remain in the Clearwell, and the bottom contains an estimated 11 feet of accumulated sediment.

Burn Pit - The Burn Pit was used for the disposal of combustible materials, which originated mainly as laboratory waste and waste oils. The Burn Pit was constructed in 1953, and was abandoned in 1969. A clay cover of varying thickness was placed over the Burn Pit surface. The Burn Pit had an approximate surface area of 35,000 square feet. Although the Burn Pit is located between Waste Pits 3 and 4, the boundary of the Burn Pit is no longer identifiable on the ground surface.

1.2 CHARACTERIZATION (Continued)

1.2.2 CERCLA/RCRA Unit 2

CRU2 - CERCLA/RCRA Unit 2 is comprised of solid wastes resulting from FEMP site operations. CRU2 facilities are located immediately northwest, west, and southwest of the former FEMP Process Area. As Map 1 shows, CRU2 consists of the following waste storage/disposal components:

- Inactive Flyash Disposal Area
- Active Flyash Disposal Area
- North and South Lime Sludge Ponds
- Solid Waste Landfill
- South Field Disposal Area
- Waste Pit Berms, Liners, and Soils within the CRU2 boundary

Waste storage/disposal components within CRU2 primarily consist of relatively large volumes of waste with lesser amounts of hazardous chemicals and radionuclides. The following is a brief description of the CRU2 waste storage/disposal components:

Inactive Flyash Disposal Area - The Inactive Flyash Disposal Area is located approximately 2000 feet southwest of the former production area. Flyash generated from the coal fired boiler plant activities at the FEMP is composed of approximately 70% bottom ash and 30% flyash. An estimated 78,500 cubic yards of flyash, and building demolition rubble (concrete, gravel, asphalt, and steel reinforcing bar) were disposed in this area until the mid-1960s.

Active Flyash Disposal Area - The Active Flyash Disposal Area is an uncovered storage/disposal area located just east of the South Field Disposal Area. It is estimated that some 59,000 cubic yards of flyash from the coal fired boiler plant is disposed of in this area.

North and South Lime Sludge Ponds - The North and South Lime Sludge Ponds are located in the southeastern corner of the waste storage area. The North and South Lime Sludge Ponds received lime sludge residues from water treatment operations, boiler plant blowdown neutralization, and coal pile storm water runoff. The North Lime Sludge Pond contains an estimated total lime sludge volume of 7,200 cubic yards, and is presently active. The South Lime Sludge Pond contains an estimated total lime sludge volume of 15,300 cubic yards and is dry and inactive.

South Field Disposal Area - The South Field Disposal Area is reported to have been used as a disposal site for construction rubble that may have contained low levels of radioactivity. Other wastes may have been deposited here as well, although supporting documentation is not available. For RI/FS purposes, the South Field Disposal Area is stated as covering an area of approximately 11 acres and contains a total volume of 109,000 cubic yards of waste material.

1.2 CHARACTERIZATION (Continued)

1.2.3 CERCLA/RCRA Unit 3

All FEMP process plants and support facilities that were involved in producing uranium metal products and in processing thorium for other DOE programs are included in CRU3. The primary contaminant of concern in CRU3 is uranium, although thorium and other hazardous materials were also extensively used in the process operations at the facilities.

CRU3 - CERCLA/RCRA Unit 3 consists of the former Production Area, and includes the following components:

- | | |
|----------------------|-----------------------------------|
| ● All Structures | ● Equipment |
| ● Utilities | ● Drums |
| ● Tanks | ● Solid Waste |
| ● Waste | ● Effluent Lines |
| ● K-65 Transfer Line | ● Wastewater Treatment Facilities |
| ● Fire Training Area | ● Thorium |
| ● Scrap Metal Piles | ● Feedstocks |
| ● Coal Pile | ● Product |

Map 1 shows the locations of the CRU3 components, and the location of CRU3 relative to other site features.

1.2.4 CERCLA/RCRA Unit 4

CRU4 - CERCLA/RCRA Unit 4 comprises the geographic area that includes the following components:

- The Two K-65 Silos (Silos 1 and 2)
- The Metal Oxide Silo (Silo 3)
- The Empty Silo 4
- The Decant Sump System
- The Buried Transfer Trench
- Soils and Perched Water Beneath the Silos

Map 1 shows the locations of the CRU4 components, and the location of CRU4 relative to other site features.

Silos 1 and 2 are concrete storage structures that contain radium bearing residues from past DOE operations. The two silos contain approximately 9,700 tons of residue remaining from the processing of uranium rich ores.

Silo 3 received only dry materials. Slurries from refinery operations were dried in a high temperature evaporator and reduced to a dry waste that was blown into the silo. These wastes were primarily metal oxides. Silo 4 was never used and, therefore, is not considered to be a past, current, or future source of contaminant release to the environment.

1.2 CHARACTERIZATION (Continued)

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1.2.5 CERCLA/RCRA Unit 5

CRU5 - CERCLA/RCRA Unit 5 is comprised of Environmental Media. CRU5 consists of the following components:

- Soils
- Flora and Fauna
- Surface Water and Sediments
- Groundwater

Map 1 shows the locations of the CRU5 components, and the location of CRU5 relative to other site features.

CRU5 is tasked with the responsibility of characterization of the above specified environmental media. This characterization is accomplished by a number of field investigative techniques, to include; well drilling, groundwater sampling, soil boring installations, soil sampling, waste material sampling, surface water and sediment sampling, and biological investigations.

The CRU5 realm of responsibility typically includes investigations in those offsite locations which may be adjacent to the FEMP property. These offsite investigations include all potentially affected environmental media.

1.2.6 Project Specific Health and Safety Plans

RI/FS field activities involve the characterization of the five CRUs by the sampling of building materials, wastes, surface and subsurface soil materials, surface water, perched water, and groundwater. Section 11.0 of this Health and Safety Plan provides more detailed information about the nature and types of materials typically encountered at the FEMP.

All RI/FS field work presently being done, or proposed to be done in the future will be performed according to a Project Specific Health and Safety Plan. This plan is designed to address health and safety needs specific to any one project. The Project Specific Health and Safety Plan takes into consideration the work functions and the known or suspect hazards associated with the work location.

In addition, RI/FS field activities ancillary to material sampling include the handling, transfer, and storage of wastes and other types of materials at the FEMP.

1.3 SCOPE/GOAL OF WORK

A study of the immediate environs on and around the FEMP property conducted to obtain information that will be used in evaluating remedial activities at the FEMP. The overall study includes field sampling, laboratory analysis, and related field tasks to support the evaluation/decision making process. The field activities include, drilling and soil boring, ground and surface water sampling, excavations, surface soil sampling.

1.3 SCOPE/GOAL OF WORK (Continued)

1.3.1 Short Term Goal

FERMCO proposes as a short term goal the adequate characterization of the FEMP Operable Units. The purpose of this effort is to provide sufficient information to make sound, informed decisions relative to site characterization, the remedial alternatives selection process, remedial design, construction, and full implementation of the alternatives selected. FERMCO is committed to expediting this effort safely and efficiently, and in accordance with all applicable federal, state, and local regulatory performance standards.

Health and Safety short term goals will be achieved by the successful continuation of the present Health and Safety policies and programs in existence at the FEMP, effectively training all FEMP employees about hazard identification and personal protection, and the periodic oversight of the Health and Safety program to ensure that it is dynamic and responsive to new or different requirements.

Because FERMCO anticipates the need for numerous site investigations within each CRU, FERMCO proposes to utilize Project Specific Health and Safety Plans. These plans will be developed concurrent with the Project Specific Plans which detail the nature of the field work to be done. FERMCO is of the belief that this type of approach will allow the nature of hazards associated with a given project to be identified and the hazards addressed by creating a health and safety plan which has been designed to the field work to be performed. In addition, this approach will allow the flexibility of incorporating any new regulatory performance standards as these new standards are identified.

Field activities which are anticipated by FERMCO as being necessary for further characterization within the five CRUs include the following:

- Removal Actions
- Remedial Operations
- Treatability Data Acquisition
- Technology Screening
- Modeling Investigations
- Bench and Pilot Studies
- Facility Component Upgrades

As required by future regulatory agency, DOE or FERMCO regulations and information needs, it may be necessary to perform additional construction, demolition, or investigative projects. These projects will be planned, implemented, and concluded according to protocols and guidelines established by the appropriate project work plans and health and safety plans.

1.3 SCOPE/GOAL OF WORK (Continued)

1.3.2 Long Term Goal

Long term objectives include the successful implementation of the site remediation selections and subsequent construction/demolition/removal activities in both a safe and effective manner. Ultimately, the post-remediation options selected and implemented and post-remediation goals determined for the FEMP facility will result in a site which has been remediated in accordance with all applicable environmental regulations.

FERMCO is cognizant of its responsibilities for site characterization and remediation at the FEMP, and is fully prepared to perform the required work in conformance with all existing and future regulatory, health and safety, federal, state, and local performance standards.

1.4 GOAL OF THIS PROJECT

The goal for projects associated with this HASP will be found in Section 1.0 of the PSHSP.

2.0 WORK AREA AND MANAGEMENT

2.1 WORK AREA

The RI/FS "work area" can be any part of the FEMP property or surrounding areas, which are identified by characterization studies.

The term "off-site" will refer to a work location located outside the FEMP property line. The term "on-site" or "site" will refer to an area managed by DOE where access can be limited for any reason. The site boundary encompasses Controlled Areas. For this document, work shall refer to any activity other than hands-off walk through inspections, supervisory tours, and safety inspections.

2.1.1 Site Specific Work Area

The site specific work area will be defined in the Project Specific Health and Safety Plan.

2.2 MANAGEMENT CHAIN-OF-COMMAND

2.2.1 RI/FS Director

Paul Clay

Mr. Clay has total responsibility for all activities within the FEMP RI/FS program. The FEMP RI/FS Director reports directly to senior management of the FERMCO.

2.2.2 RI/FS Health and Safety Officer (HSO)

Daryl Mills

Mr. Mills is responsible for auditing of all RI/FS safety programs to ensure compliance with all applicable safety and health requirements. The RI/FS HSO acts as the single point of contact for all Environmental, Safety, Industrial Hygiene, Fire and Radiological issues.

2.2 MANAGEMENT CHAIN-OF-COMMAND (Continued)

2.2.3 Project Specific Manager See Section 2.2 of the PSHSP

The project specific manager is responsible for all activities associated with the project work site.

2.2.4 Project Specific Health and Safety Officer See Section 2.2 of the PSHSP

The Project Specific Health and Safety Officer (PSHSO) shall be approved by the OS&HC Manager before the start of the project. The PSHSO is responsible for ensuring work site compliance with all federal, state and FERMCO health and safety requirements. He/she shall report safety concerns and incidents to the OS&HC Manager.

2.2.5 Field Operations Bruce Myers

2.2.6 Field Operations C. Brier

2.2.7 Site Characterization & Data Management Doug Harmel

2.2.7 Field Program Development Dan Stropes

3.0 GENERAL SAFETY REQUIREMENTS

All personnel conducting RI/FS related activities are responsible for working safely. Taking chances or risks concerning safety is not acceptable. Workers shall immediately report unsafe conditions to their supervisor for correction.

Supervisors are responsible for the safety and health of subordinate personnel. Supervision must ensure that all applicable safety, health, and environmental practices and policies have been considered when planning work and enforce all safety rules and regulations.

3.1 PERMITS AND POSTINGS

3.1.1 Permits

Tasks not covered by a standard operating procedure (SOP) shall require a permit. The permit system allows for written authorization and instructions before the start of work. The permit also formalizes the job safety planning between the supervisor, representatives of Environmental Safety and Health (ES&H) and workers. Permits are to be posted at the entrance to the work site.

Tasks and associated permit(s) are identified in the Hazards Assessment section (Section 11). FERMCO is responsible for the issuance of permits. Personnel working under the permit are required to sign the permit and comply with the requirements. See Section 7.0 for additional information on permits.

The Radiation Work Permit (RWP) is an administrative control and record. It establishes work controls to maintain personnel radiation dose As Low As Reasonably Achievable (ALARA) at the FEMP. Work in a controlled area, all excavations and breaching of potentially contaminated systems shall require a RWP.

3.1 PERMITS AND POSTINGS (Continued)

A work permit is required for any of the following tasks:

- Entry into a confined space
- Electrical work not covered by a FERMCO Safety Performance Requirement (SPR)
- Elevated work not covered by a FERMCO SPR
- First line breaks
- Trenching, excavations, well drilling or any floor penetration
- Welding or any work requiring an open flame
- Working with hazardous chemicals or materials that are not addressed by a FERMCO SOP
- Work involving asbestos containing materials
- Work with radioactive materials
- Work in a Controlled Area
- Work that requires an outage (for example, road closure, or interruption of sewer, water, telephone, fire protection system, or alarm systems)

The following is a listing of permits used at the FEMP. Included in the table are the issuing FERMCO department.

TABLE 1 PERMIT REQUIREMENTS		
PERMIT	RESPONSIBLE FERMCO DEPARTMENT	Safety Performance Requirement (SPR)
Asbestos Work Permit	Industrial Hygiene	SPR 5-2
Chemical Hazardous Materials Work Permit	Industrial Hygiene	SPR 5-16
Confined Space Evaluation/Permit	Industrial Hygiene	SPR 5-13
Construction Excavation/ Penetration Permit	Construction	SPR 3-9
Facility Outage Permit	Construction	
Hazardous Work Permit	Safety	SPR 2-57
Open Flame and Welding	Safety	SPR 2-57
Radiation Work Permit	Radiation Control	RPR 3-1

Permits required for RI/FS field tasks shall be stated in Section 11 of the PSHSP.

Refer to the FERMCO Comprehensive Environmental Occupational Safety and Health Program Manual (ESH-1-1000) for additional information.

3.1 PERMITS AND POSTINGS (Continued)

3.1.2 Postings

The following areas shall be clearly defined and posted according to FERMCO procedures:

TABLE 2 POSTED REQUIREMENTS		
Posted Area	Posted By	
	FERMCO	ORGANIZATION PERFORMING TASK
Confined Space	X	X
Construction Area		X
Exclusion Zone		X
Hazardous Noise Areas	X	X
Radiological Controlled Areas	X	
Support Zone		X

At the entrance to the work zone the following shall be posted:

1. The RI/FS HASP and the PSHSP for the activity.
2. The location of Material Safety Data Sheets (MSDS) for all hazardous materials used on the work site.
3. All active permits or the location of the permits.
4. Requirements for entry including the required safety equipment for entry.
5. OSHA/DOE Employee Rights poster (Attachment B).
6. Emergency Phone Numbers.
7. Evacuation routes.

3.2 SAFETY EQUIPMENT LIST

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3.2.1 Minimum Requirements

The following is a minimum list of safety equipment that shall be available at any RI/FS project site controlled by this HASP. Quantities and types will be based on anticipated needs.

- Personal protective equipment (PPE) as specified in Section 11 of the PSHSP
- Barricade marking tape and/or safety fence, safety signs
- Any/all field teams will be required to have available a method for dependable communication with FEMP site. This requirement can be satisfied by the use of a telephone, Cellular Phone and/or a two-way radio operating on the same frequency as the FEMP site radio system. This communications equipment must be tested daily to verify that it will serve its purpose, if needed.

3.2.2 Emergency Safety Equipment

Emergency safety equipment shall be located in the immediate work area. The Site Supervisor shall be responsible for ensuring that this equipment is accessible and maintained in proper working condition. The equipment shall be tested according to the manufacturer's requirements and FERMCO policies.

Employees shall know the location(s) of emergency safety equipment at the work site. The location of the emergency safety equipment shall be posted whenever possible.

- Eyewash/safety showers must be approved by American National Standards Institute (ANSI). The eyewash/safety showers shall be located within one hundred (100) feet or within ten (10) seconds of travel time from any operation where required. (For RI/FS field activities, a pressurized personal eyewash with drench hose will be the minimum required).
- Fire extinguishers shall be located near any point of hazardous (fire) operations.

Section 12 of this HASP provides additional information about emergency procedures.

3.3 HEAT STRESS

Heat stress may affect personnel with or without protective clothing when working in high ambient air temperatures. Heat stress is controlled by replacement of lost body fluids by increasing water intake, scheduling frequent rest breaks and recognizing symptoms of heat stress by supervision and fellow workers. It is important the personnel can recognize symptoms of heat stress in themselves and in fellow workers. The RI/FS HSO or his/her designee shall review heat stress prevention at regularly scheduled safety meetings.

When ambient air temperatures exceed 80°F, FERMCO Industrial Hygiene (IH) shall be contacted to review the work area. When temperature and work limits listed in SPR 5-5 are exceeded, heat control measures shall be carried out. Industrial Hygiene will help supervision in establishing control measures to minimize heat stress. The control implemented shall be approved by FERMCO IH.

3.4 COLD STRESS

RI/FS field tasks may be conducted when temperatures could present a potential cold stress hazard. Personnel should be made aware of the symptoms of cold stress and be able to recognize these symptoms in oneself and in other workers. The HSO or designee shall review cold stress at regularly scheduled safety meetings.

During cold weather, workers should dress in loose fitting layers of clothing. Clothing that becomes wet should be changed out. Specific attention will be given to the hands and feet to prevent frostbite. When equivalent chill temperature drops below 0° F, FERMCO Industrial Hygiene (IH) shall be contacted to review the work area. When temperature and work limits listed in SPR 5-5 are exceeded cold control measures shall be carried out. Industrial Hygiene will help supervision in establishing control measures to minimize cold stress. The control implemented shall be approved by FERMCO Industrial Hygiene.

3.5 MATERIAL SAFETY DATA SHEETS (MSDS)

MSDSs for all products shall be provided to IH for review before use. Since products or chemicals may be disapproved for use by FERMCO, or may require special work practices or PPE requirements, early submittal (at least one week before planned use) of MSDS is recommended.

During the initial usage of a product, all restrictions/precautions specified on the MSDS, or specified by FERMCO, shall be followed. The RI/FS HSO can upgrade or downgrade PPE, based on monitoring results. Changes in PPE will be documented on a FEMP work permit.

No hazardous substances shall be used on RI/FS activities without a MSDS. The MSDS shall remain on site as long as the material is used. The location of the MSDSs shall be posted at the work site. All workers working with, or near, a hazardous substance shall be trained per Section 5. Refer to SPR 5-6 in the FERMCO Comprehensive Environmental Occupational Safety and Health Program Manual (ESH-1-1000) for additional information.

Quantities of hazardous substances brought on site shall be kept to a minimum. Only the quantity of substance required to perform the work shall be brought on site. Planning shall include using all such materials or arranging for removal from the FEMP.

3.6 ILLUMINATION

Areas accessible to employees shall be illuminated to intensities listed in the following table while work is in progress.

TABLE 3 REQUIRED ILLUMINATION	
FOOT CANDLES per ft ²	AREA of OPERATION
5	General Site Areas, Drilling Site, Sampling Activity, Decon Area, Staging
3	Excavation and Waste Areas, Accessways, Active Storage Areas, Loading Platforms, Refueling, and Field Maintenance Areas.
5	Indoors: Warehouses, Corridors, Hallways, and Exitways.
10	General Shops (e.g., Mechanical and Electrical Equipment Rooms, Active Storerooms, Locker or Dressing Areas, and Indoor Toilets and Workrooms).

IH shall be contacted to evaluate work areas for the required illumination.

3.7 SANITATION AT TEMPORARY WORK SITES

An adequate supply of potable water shall be provided at the work site. Potable water containers shall be capable of being tightly closed and equipped with a tap. Any container used to distribute potable water shall be clearly marked as to the nature of its contents and not used for any other purpose. Lid/Top shall be secured to prevent "dipping" for ice.

All potable water locations in a radiological controlled area must be approved by Radiological Control (RC) and IH before use.

Under temporary field conditions, provisions shall be made to assure that toilet facilities are available and easily accessible.

Adequate washing facilities shall be available to employees engaged in operations where hazardous substances are encountered.

3.8 STANDARD OPERATING PROCEDURE

Work controlled by this HSP shall comply with all applicable OSHA regulations (29 CFR 1910 and 1926) FERMCO safety and health procedures, and PSHSP requirements. The FERMCO safety and health procedures can be found in the FERMCO Comprehensive Environmental Occupational Safety and Health Program Manual (ESH-1-1000) Volumes I and II. Appendix A contains the table of contents from the manual. A copy of referenced SPRs is available from RI/FS HSO.

4.0 SITE CONTROL

Each field team shall at the start of every shift notify the FEMP Communications Center to the teams work location and number of employees at the work site. A description of the work location must be clear and accurate to ensure emergency personnel can locate the work area.

At the conclusion of each work day, the field team shall notify the Communications Center the work activity for the day is complete.

4.1 FEMP REQUIREMENTS

A work zone or work area shall be clearly identified and delineated from non work areas by the installation of signs, ropes, barricade tape, flagging, or safety fencing. The type of required barricade/barrier is defined in ESH-1-1000, SPR 2-15.

Visitors are restricted from entering work zones or work areas until they have meet the requirements of Section 5.0.

The hazards identified and the location of the work determines the type of work zone or work area. Specific information on work zone/area will be addressed in the PSHSP.

4.2 WORK SITE REQUIREMENTS FOR ENTRY

All personnel performing RI/FS field activities shall be oriented to the hazards of the site and the control measures through:

- Orientation on this HASP and PSHSP at a safety meeting conducted by the RI/FS HSO or designee. Personal attending shall sign an acknowledgement from.
- Completion of the training required in Section 5.0.

For the duration of the job, the Acknowledgment Form will be maintained and available for review at the work area. Upon completion of the RI/FS project, the form will be transferred to the RI/FS HSO. He/she will file the form for a permanent record of the personnel who worked on the project.

4.3 DEFINITION OF WORK SITES

4.3.1 Safety Posting Zones

Work Area - A site physically separated from the public due to the hazards associated with the activity occurring at the site. The site may or may not have radiological or hazardous waste concerns. Access is restricted to workers trained per Section 5.0 and the PSHSP. Work areas shall be posted with signs stating "Hard Hats, Eye Protection Required." The signs shall be located around the perimeter of the defined area and at all entry locations. Signs shall be placed approximately every fifty (50) feet around the defined work area.

Support Zone

The Support Zone is the area immediately outside the exclusion zone. It is the laydown area for the activities occurring in the exclusion zone. The size of the zone will be based on the activities occurring in the exclusion zone. The support zone will be differentiated by the use of traffic cones approximately six (6) to eight (8) feet apart.

4.3 DEFINITION OF WORK SITES (Continued)

4.3.2 Radiological Areas

Entrances to, and perimeters of, radiological areas are defined by yellow and magenta rope or by physical structures, such as fences or buildings. All radiological areas can be identified by signs having the standard radiation symbol, the trefoil, on a yellow background. The symbol and lettering shall be magenta or black. Signs state the type of area and general entry requirements.

Anyone entering a Controlled Area of the FEMP shall wear a Thermoluminescent Dosimeter (TLD) as directed by RC.

Radiological area boundaries are subject to change at any time.

At the FEMP, posting of radiological areas is based primarily on contamination and airborne limits for natural uranium. However, limited amounts of more restrictive radionuclides, most notably thorium, are present at the FEMP. Table 2-2 of DOE/EH-0256T of Radiological Control Manual contains the posting limits for the various radionuclides.

The following paragraphs list the types and definitions of radiological areas encountered at the FEMP.

Controlled Area - A controlled area is an area, room, or enclosure where access is controlled to protect individuals from exposure to radiation or radioactive materials. Surface contamination, radiation, and airborne contaminants are less than applicable limits for further posting. The following radiological areas are found within Controlled Areas. The limits stated are from Table 2-2 of DOE/EH-0256T.

Radioactive Material Area - A radioactive material area is an area, room, or enclosure where radioactive material is used, handled, or stored.

Fixed Contamination Area - A fixed contamination area is an area, room, or enclosure where fixed contamination is over the limits, but removable contamination is less than the limits. These areas may be outside a Controlled Area.

Contamination Area - A contamination area is an area, room, or enclosure where removable contamination exceeds limits.

High Contamination Area - A high contamination area is an area, room, or enclosure where removable surface contamination exceeds 100 times the limit.

Airborne Radioactivity Area - An airborne radioactivity area is an area, room, or enclosure where airborne radioactivity exceeds 10% of exposure limits, expressed in Derived Air Concentration (DAC).

Radiation Area - A radiation area is an area, room, or enclosure where radiation exposure rates are greater than 5 mrem/hour.

4.3 DEFINITION OF WORK SITES (Continued)

High Radiation Area - A high radiation area is an area, room, or enclosure where radiation exposure rates are greater than 100 mrem/hour. These areas require supplemental dosimetry and stay time controls by RC.

All personnel entering any radiological area shall meet the requirements of Section 5.0 of this HASP and PSHSP.

4.4 EXCLUSION ZONES

An exclusion zone is a high hazard location where hazardous waste is either known or likely to be present. All activities conducted in an exclusion zone shall comply with 29 CFR 1910.120. Entry is restricted to authorized personnel that are properly trained per Section 5.0 of this HSP. These zones shall be designated by yellow caution tape. The area shall have a sign posted to specify the hazard(s) in the exclusion zone. When an exclusion zone contains radiological contamination, the zone will be controlled as a radiological "Controlled Area."

When a drill rig is used in an exclusion zone, the size of the exclusion zone shall be one and a half (1.5) times the height of the mast.

The restricted locations may be expanded any time.

Entrance to an exclusion zone(s) shall be controlled by the supervisor in charge at the work site.

4.4.1 Exclusion Zone

An exclusion zone shall be required when the following activities are conducted:

- Well drilling
- Soil boring
- Sampling wells
- Well development
- Water level measurement (if chemical or radiological hazards are anticipated)
- Excavations
- Hand auguring

Control of exclusion zone

Entry into the exclusion zone shall be controlled by the site supervisor or designee. During activities entry into the exclusion zone shall be limited to required sampling and drilling personnel, the site supervisor, and health and safety personnel. All personnel entering and exiting the exclusion zone shall sign a site log book. The log book shall be maintained by the site supervisor. At the end of the project the book shall be filed with all other project files.

For additional information on work and exclusion zones see Section 4.3.

5.0 TRAINING

All RI/FS activities are controlled by 29 CFR 1910.120. All personnel shall be trained to the level of General Site Worker.

5.0 TRAINING (Continued)

Most FEMP training requires an annual refresher course. Contact your training coordinator for additional information.

5.1 REQUIRED TRAINING FOR SITE ENTRY

5.1.1 General Site Worker, 40 Hour Training

Training required to conduct work in radiological contaminated areas and exclusion (29 CFR 1910.120) zones.

The General Site Worker shall receive the following training:

- General Employee Training (GET)
- Twelve (12) - Hour Site Worker Training
- Twenty-four (24) - Hour Radiation Worker II
- Three (3) days supervised field experience

5.1.2 Supervisor For RI/FS Activities

Training required to supervise work conducted in radiologically controlled areas and exclusion (29 CFR 1910.120) zones.

The supervisor shall receive the following training:

- General Employee Training (GET)
- Twelve (12) - Hour Site Worker Training
- Twenty-four (24) - Hour Radiation Worker II
- Three (3) days supervised field experience
- Eight (8) - Hour Site Supervisor Training
- Eight (8) - Hour Hazardous Waste Operations, Annual Refresher

5.2 REQUIRED TRAINING TO PERFORM WORK IN THE DEFINED WORK ZONES

All personnel shall be required to participate in:

- Orientation on the specific Material Safety Data Sheets (MSDS) related to the project
- Orientation on the HASP and PSHSP
- Attend a Pre-work/Kick-off meeting held before the start of the project to discuss work operations and safety considerations

Minutes of the Pre-work/Kick-off meeting shall be made available to FERMCO personnel. Personnel assigned to specific tasks may be required to attend task specific training before performing the work. Additional training will be defined in the PSHSP Section 5.0. The training will be based upon emergency procedures, equipment, potential hazards, and standard operating procedures. Examples of additional training include: asbestos, confined space, energy control, and hands-on fire extinguisher (fire watch) training.

5.3 OPERATIONAL TRAINING FOR DRILLING AND CONSTRUCTION TYPE EQUIPMENT

Employees operating construction or heavy equipment or any equipment that requires training (noted in manufacturers' manual or other requirements), shall have been trained in the operation of that equipment. Workers shall have for review the required certificates or certification cards, when applicable.

For subcontractors, the Project Specific Health & Safety Officer shall evaluate the training of all personnel that are operating heavy/specialized equipment. He/she shall write a letter to the FERMCO Construction Manager and RI/FS HSO, stating who is qualified to operate each piece of equipment. Documentation of the employee successfully completing the training shall be placed on file locally.

For FERMCO employees, their supervisor through the FERMCO training department shall evaluate the training of all personnel that are operating heavy/specialized equipment. Records of training shall be placed or maintained on file with the FERMCO training department.

5.4 REQUIRED SAFETY MEETINGS

All personnel involved in projects addressed by this HASP shall attend a Pre-work/Kick-off safety meeting before receiving authorization to work within the defined work zones. The Pre-work/Kick-off safety meeting shall review this HASP describing all of its requirements, noted hazards and required actions by the workers. The meeting is to be conducted by the RI/FS HSO, Project Manager, or designee assigned to the project.

At a minimum, safety meetings shall be held every day. The safety meetings will be conducted by the work site geologist, RI/FS HSO, site supervisor, or designee. Documentation on the briefings shall be recorded on the FEMP Minutes of Safety Meeting (Attachment C). Safety meeting attendance sheets will be maintained as part of the project. Copies shall be forwarded to the RI/FS HSO for review.

5.5 SAFETY MEETINGS AND DAILY WORK PLANS

The safety meetings shall address any new operations, tasks, procedures or changes in work practice. Briefings shall also be given to facilitate compliance with safety and health practices when performance deficiencies are identified.

All training conducted as specified by this HASP shall be according to the requirements in the FEMP Centralized Training Program Manual.

5.6 RECORDS OF TRAINING

Documentation of training attended from sources other than FEMP shall be submitted to FERMCO Construction Management for evaluation and approval. Construction Management shall consult with the Industrial Safety section and the Training Department.

5.7 VISITORS

A visitor to the site will be defined as anyone coming on FEMP property with the sole purpose of observation (hands-off inspections). Visitors shall not operate any equipment or supervise/oversee any work activity.

5.7 VISITORS (Continued)

5.7.1 Visitors who have been trained per Section 5.1 shall be orientated to the hazards of the site and the control measures through:

- Briefing on this HSP and PSHSP
- A briefing with the site supervisor on the current site activities and hazards

5.7.2 Visitors entering construction/work areas, radiologically controlled areas and fixed contamination areas, but not entering any contamination area or exclusion zones shall obtain the following before entry into the work area:

- Briefing on this Health & Safety Plan
- Escort by a person who has all the required training for the areas to be toured
- Shall watch the general site orientation video
- Shall read and sign the visitor brochure
- Shall wear a dosimeter badge as required

5.7.2.1 Visitors required to enter a contamination area (or Radiation or Airborne Radioactivity Areas) must receive authorization from the Manager of Radiological Control.

5.7.2.2 Visitors who need to enter an exclusion zone must receive authorization from the RI/FS Health and Safety Officer.

5.8 COMPETENT, DESIGNATED, QUALIFIED PERSON

Subcontractors shall provide to the FERMC0 Construction Manager and RI/FS HSO, the names and documentation of all competent, designated, qualified persons for work requiring the competent, designated, qualified person designation under OSHA 29 CFR 1910, 1926 and ESH-1-1000 SPR 2-2.

• 1926.20 (b)(2)	Job Site Inspections	• 1926.20 (b)(2)	Frequent and regular inspections of jobsites, materials, and equipment by a competent person
• 1926.50 (c)	Medical Services/First Aid	• 1926.650	Excavations-Inspections
• 1910.184 (12)(d)	Sling/Wire Rope Inspections	• 1926.354 (a)	Welding-Industrial Hygienist
• 1926.550 a(5)	Cranes-Annual Inspection	• 1926.552	Hoists-Inspections & Tests
• 1926.556 b(12)(xii)	Aerial lifts-Operations	• 1926.601 (b)(14)	Motor Vehicles-Daily Inspections
• 1926.550 (a)(6)	Drill rigs	• 1910.68 (b)(1)	Man Lifts
• 1910.180 (d)	Cranes	• 1910.255 (d)(2)(e)	Flash Welding, Cutting

6.0 MEDICAL MONITORING AND SURVEILLANCE

6.1 REQUIRED MEDICAL MONITORING

According to 29 CFR 1910.120, all personnel assigned to a FEMP project and performing actual tasks are required to participate in the FEMP Medical Monitoring Program. If examinations conducted by medical personnel other than FEMP personnel are planned, the subcontractor must receive prior written authorization from FEMP Medical Services concerning the necessary protocols and providers.

Medical surveillance examinations shall be conducted based upon the following frequency or as determined appropriate by FEMP Medical Services:

- Pre-assignment (baseline)
- Annual (within one year of previous physical)
- After incidents, potential exposures, or physician recommendation
- Exit (termination)

Additional medical monitoring may be conducted based on the chemicals to which workers may be potentially exposed. Please refer to Section 6.1 of the PSHSP for additional requirements.

All individuals required to wear respiratory protection must be medically approved, trained and fit tested. FERMCO will conduct the medical review, the training, the respirator fit test. FERMCO will issue a respirator fit test card to all personnel meeting the requirements.

FERMCO will authorize the use of respiratory protection from other organizations if proper documentation is provided to the Respirator Program Administrator. The documentation must be received in advance, and meet FERMCO requirements.

6.2 REQUIRED MEDICAL RECORDS

The Medical Department shall maintain all medical records as required by FERMCO policy.

6.3 RADIOLOGICAL BIOASSAY REQUIREMENTS

All personnel who enter contamination or airborne radioactivity areas must participate in the FEMP bioassay program. The radiation surveillance shall be conducted according to the following frequency:

- Baseline (site work)
- Periodic, as specified by dosimetry
- Following an incident
- Upon an individual's request
- Exit (end of project or termination)

7.0 HAZARD CONTROL

7.1 ENGINEERING CONTROLS

When feasible, engineering controls will be used to limit or eliminate the potential for exposure of site workers to physical, chemical, and radiological hazards. Engineering controls isolate the site worker from the hazard, and reduce or remove the hazard from the work area. These controls are to be designed into the project. Controls are task-specific and shall be part of the PSHSP. They include, but are not limited to the following:

- Control the release of airborne particulate at the point of generation
- Contain the spread of contaminants with enclosures and ventilation
- Shielding for radiation exposure

7.2 ADMINISTRATIVE CONTROLS

The following administrative controls shall be used to control physical, chemical, radiological hazards:

- RI/FS HASP
- FERMCO ESH-1-1000
- FERMCO Work Permits
- PSHSPs
- SOPs

7.3 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be used with engineering and administrative controls to protect site workers from exposure to physical, chemical and radiological hazards. The level of protection and the selection of PPE shall be made based on the hazards that will be encountered or created by the tasks. The PPE to be worn will be specified in Section 11, the PSHSP and/or on FERMCO work permits.

The RI/FS HSO, or designee, shall be responsible for ensuring that all personnel are wearing the required PPE. Periodic surveillance shall be conducted to ensure PPE is being worn correctly and is properly maintained.

Should deficiencies in the use of PPE found, the deficiency shall be corrected and brought to the immediate attention of the work site or construction manager. The deficiency shall be discussed at a safety meeting. If the situation or condition continues, then disciplinary actions will be enforced in accordance with ESH-1-1000 and FERMCO policies.

Modification to the specified PPE ensembles may be necessary for specific operations or when unexpected conditions arise. In those instances, changes shall be made based on a review of specific hazards, weather, work conditions, operating requirements, and air monitoring at the work area. The RI/FS HSO shall inform the Construction Engineer and direct him/her to note the change in their project log book and the HASP at the work site.

PPE requirements shall be reviewed daily. FERMCO Occupational Safety and Health Section (OS&H) and RCT field personnel (technicians and inspectors) have the authority to upgrade PPE. Upgrading of PPE shall be done by issuing a FEMP Work Permit or RWP. When PPE is upgraded, the RI/FS HSO and field personnel supervision shall be notified of the change.

7.3 PERSONAL PROTECTIVE EQUIPMENT (Continued)

Where feasible and can be done safely, ES&H management encourages downgrading of PPE. Field personal and project supervision shall agree to the downgrade. The OS&H and RCT field personnel do not have the authority to implement the downgrade without permission of the RI/FS HSO. When downgrades occur, field personal shall report the change to their supervision. Downgrading of PPE shall be done by issuing a FEMP Work Permit or RWP. Additional information can be found in Sections 3.1.1 and 13.1:

If FERMCO IH and RC PPE related requirements differ, the more restrictive requirement will apply.

All personnel engaged and helping in burning/welding/flame activities shall wear clothing with fire retardant characteristics.

Showers are available, but are required only when specified in the PSHSP or FEMP Work Permits.

7.3.1 Levels of Protection

The following are guidelines that shall be used to select appropriate PPE. Hazards may require the use of a combination of PPE from the different protection levels (i.e., Level B, C, or D). PPE selection is an ongoing process that is subject to change as additional information about the hazards and PPE performance is obtained.

7.3.2 Minimum Protection

The minimum protection for any work activity controlled by this HASP is: Level D.

This level of protection is used in areas where the risk from chemical contaminants is low to nonexistent. Personal clothing is not Level D. Level D protection consists of the following:

- FERMCO Issued Clothing
- Safety glasses with rigid side shields or goggles (safety glasses ANSI Z87.1 listed)
- Steel toed safety shoes (ANSI Z41 listed)
- Hard hat (ANSI Z89.1 listed)

In addition, the following safety equipment may be required:

- Boot Covers
- Disposable outer coverall (paper or chemical resistant or equivalent) or Cloth Anti-Cs
- Face shield
- Gloves (leather, water resistant, or chemical resistant)
- Hearing protection
- Vinyl inner gloves

7.3 PERSONAL PROTECTIVE EQUIPMENT (Continued)

7.3.4 Level C

When monitoring results, indicate readings that exceed radiological or industrial hygiene action levels listed in Section 11 or the PSHSP, Level C clothing will be required. Where work requires Level C or higher, workers shall wear FERMCO issued clothing. Level C protection consists of the following:

- Air purifying respirator with appropriate filter cartridges
- Chemical resistant outer gloves
- Disposable outer coverall (paper or chemical resistant or equivalent) or Cloth Anti-Cs
- Outer disposable boot covers
- Safety glasses with rigid side shields or goggles (safety glasses ANSI Z87.1 listed)
- Vinyl inner gloves
- Hard hat (ANSI Z89.1 listed)

7.3.5 Level B

Due to the physical properties of some chemicals and/or the monitoring results Level B may be required. Where work requires Level B protection, workers shall wear FERMCO issued clothing. Level B protection consists of the following:

- Supplied Air, Pressure Demand Respirator
- Chemical resistant outer gloves
- Disposable outer coverall (paper or chemical resistant or equivalent) or Cloth Anti-Cs
- Outer disposable boot covers
- Vinyl inner gloves

The exact PPE ensemble for each activity shall be specified in Section 11, the PSHSP or on FEMP permits.

8.0 REQUIRED MONITORING AND ACTION LIMITS

FEMP policy is to maintain exposures to radiation and chemical vapors and gases As Low As Reasonably Achievable (ALARA). To comply with this policy, air and surface sampling shall be conducted. The type of personnel and work place monitoring, monitoring equipment, and frequency of monitoring is specified in this HASP, the PSHSP, by FERMCO ES&H and by the RI/FS HSO.

8.1 AIR MONITORING

Air monitoring is conducted to determine the appropriate level of PPE for work tasks and to ensure compliance with the regulatory limits and FERMCO Action Levels.

8.1 AIR MONITORING (Continued)

Air sampling determines the amount of contaminant in the air. When the concentration of a contaminant reaches a predetermined Action Level, workers shall leave the area and changes in PPE or operations shall be implemented. Action Levels shall be established based the chemical and radiological concentration in the materials which site workers are potentially exposed to, and the nature of the field activities. All Action Levels shall be determined according to regulatory standards. FERMCO IH and RCTs shall provide real time monitoring support for all RI/FS field operations.

Initial requirements for monitoring shall be periodically reassessed during the project and modified as required. Changes shall be documented with RWPs and other FEMP Work Permits.

8.1.1 Ambient Air Monitoring

Air monitoring stations may be established throughout the work zone. These stations monitor the concentration of contaminants in the air. The type and frequency of air monitoring are based on the location of the work, the work task(s), and the materials workers are exposed to.

Table 2 lists' normal task/operations for RI/FS and the general monitoring requirements. Section 8.0 of the PSHSP and FEMP permits address specific hazards.

8.1.2 Site Worker Breathing Zone/Personal Monitoring

During the performance of field activities, personal air sampling may be conducted. Site workers will occasionally be required to wear personal air samplers to monitor their exposure to airborne contaminants. This is done to verify proper selection of PPE and maintain compliance with current regulatory standards. Materials to be monitored, frequency of monitoring and the sampling method will be decided by the RI/FS HSO and FERMCO ES&H.

Table 2 lists' normal task/operations for RI/FS and the general monitoring requirements. Section 8.0 of the PSHSP and FEMP permits will address specific hazards.

8.1.3 Perimeter Air Monitoring

Air monitoring stations may be established outside the designated work zone. These stations record the concentration of air contaminants in the vicinity of the work zone. The type and frequency of sampling are based on the location of the work zone, ambient conditions, the work task(s) and the material to which workers may be potentially exposed.

Table 4 lists' normal task/operations for RI/FS and the general monitoring requirements. Section 8.0 of the PSHSP and FEMP issued work permits shall address specific work zone hazards.

TABLE 4
INDUSTRIAL HYGIENE AMBIENT AIR MONITORING REQUIREMENTS

TASK/ OPERATION (1)	CONTAMINANT/ CONCERN (2)	FREQUENCY AND TYPE OF MONITORING	PERMISSIBLE EXPOSURE LIMIT	ACTION LEVEL (3)	ACTION (4)
Work with Hazardous Materials, media sampling, sample handling, sample preservation, decontamination of equipment and materials.	Organic vapors	As required	Varies based on the chemical being handled.	Detection to 10 parts per million (ppm) above background (5).	Air-Purifying Respirator (Magenta/ Yellow Cartridges).
				10 to 25 ppm above background (5).	Supplied Air Respirator
				Greater than 25 ppm above background (5).	Self Contained Breathing Apparatus or Withdraw.
Work with Hazardous Materials	Other chemical based on MSDSs and analytical results.	As required	Dependant on the chemical being used.	One-half of the established regulatory limit.	Contact FERMCO IH.
Entry into confined space	Carbon monoxide	Continuous	25 ppm	15 ppm	Withdraw and contact FERMCO IH.
	Explosive atmosphere	Continuous	N/A	Greater than 10% of the Lower Explosive Limit (LEL).	Withdraw and contact FERMCO IH.

TABLE 4
INDUSTRIAL HYGIENE AMBIENT AIR MONITORING REQUIREMENTS

TASK/ OPERATION (1)	CONTAMINANT/ CONCERN (2)	FREQUENCY AND TYPE OF MONITORING	PERMISSIBLE EXPOSURE LIMIT	ACTION LEVEL (3)	ACTION (4)
Entry into confined space	Oxygen content	Continuous	Less than 19.5% Greater than 23.5%.	Less than 20.5%, or greater than 21.5%.	Withdraw and contact FERMCO IH.
	Hydrogen sulfide	Continuous	10 ppm Time Weighted Average (TWA) 15 ppm Short Term Exposure Limit (STEL).	5 ppm	Withdraw and contact FERMCO IH.
Excavation, well drilling, abandonment, or any activity that would result in the suspension of particulate; grouting and sand pack installation in monitoring wells.	Nuisance Dust	As required Total Dust Monitoring.	10 milligrams/cubic meter (mg/m ³) (total dust)	5mg/m ³ (total dust)	Air-Purifying Respirator (Magenta Cartridges).
	Respirable Dust (< 1% silica)	As Required Personal Monitoring.	5 mg/m ³	2.5 mg/m ³	Air-Purifying Respirator (Magenta Cartridges).
	Silica (crystalline)	As required Personal and Area Monitoring.	0.1 mg/m ³ TWA (respirable dust)	0.05 mg/m ³ TWA (respirable dust)	Wet material Air-Purifying Respirator (Magenta Cartridges).

TABLE 4
INDUSTRIAL HYGIENE AMBIENT AIR MONITORING REQUIREMENTS

TASK/ OPERATION (1)	CONTAMINANT/ CONCERN (2)	FREQUENCY AND TYPE OF MONITORING	PERMISSIBLE EXPOSURE LIMIT	ACTION LEVEL (3)	ACTION (4)
Work with asbestos containing material	Asbestos	As required Personal and ambient monitoring	0.2 fibers/cubic centimeter (f/cc)	0.1 f/cc	Air-purifying respirator (magenta cartridges)
Other field work (media sampling, sample handling, sample screening) where uranium may be encountered.	Uranium	As required Area and Personal Monitoring.	Soluble 0.05 mg/m ³ TWA Insoluble 0.2 mg/m ³ TWA 0.6 mg/m ³ STEL or DAC levels listed in DOE 5480.11 which ever level is lowest.	Soluble 0.025 mg/m ³ TWA Insoluble 0.1 mg/m ³ TWA 0.3 mg/m ³ STEL (3)	Air-Purifying Respirator (Magenta Cartridges).

- (1) Project specific task will be identified in the PSHSP. See Table 2 of the PSHSP for additional monitoring requirements.
- (2) The need for monitoring for a specific contaminant will be determined by the FERMCO RI/FS Health and Safety Officer and the IH representative based on the material being handled.
- (3) The Action Level and required action will be dependent on the concentration of uranium in the material being handled.
- (4) The action may be upgraded or downgraded depending on the actual concentration found, the particular contaminant present, and protection factors of the PPE.
- (5) This Action Level will be used when monitoring for unknown volatile organic compounds.

8.2 RADIOLOGICAL MONITORING

8.2.1 Radioactive Materials Contamination

Radiological Control Technicians (RCTs) do routine radiation surveys for posting purposes.

8.2.2 Radiation

The RCT will do radiation surveys of the work area and determine maximum allowable stay times. This information will be specified on the RWP.

All employees working in radiologically controlled work areas are required to perform/participate in the following:

- Urinalysis and In-Vivo testing are required prior to initially working on site and upon termination.
- Wear a TLD in the Controlled Area as specified by Dosimetry.
- Submit routine urine samples at a frequency specified by Dosimetry.
- Participate in In-Vivo Monitoring and report for monitoring as requested.

8.2.3 Contamination Monitoring

Prior to the issuance of the RWP, contamination surveys of the proposed RI/FS field project location will be performed to evaluate PPE and respiratory protection requirements. Direct reading instruments, for total contamination and smear sampling techniques for detecting removable contamination are used.

RCTs perform routine monitoring of the work area, of disturbed soils, waste material, surface and groundwaters to ensure radiological conditions have not changed, and that present controls are adequate. The survey frequency of the work area will depend on the degree of hazard as determined by RC. If contamination is found where controls are inadequate the RCT will issue verbal stop work orders and notify the RI/FS HSO. Work shall not resume until proper controls are in place. Personnel shall monitor for contamination at control points established by RC. Site workers shall contact a RCT if personal contamination levels exceed posted limits. Personnel shall not leave the area until released by RC.

All materials and equipment shall be monitored by a RCT. See Section 10 of this PSHSP for more specific information about materials and equipment monitoring.

8.2.4 Airborne Radioactivity Monitoring

Routine area air monitoring and posting of areas are done according to ES&H Procedure SP-P-35-025. Supplemental air monitoring is performed, as determined by RC in and adjacent to the work area to monitor changing conditions. See Section 8.1 for more specific information about airborne radioactivity monitoring.

Respiratory protection requirements shall be established by RC. The requirement is based on the sample results, radionuclide(s) of concern, and stay time of the workers. Controls will be based on keeping worker exposure below 4 Derived Air Concentration (DAC) units per week.

8.2 RADIOLOGICAL MONITORING (Continued)

8.2.5 Dosimetry

Any circumstance or exposure incident which could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall be immediately reported to a Project Specific Manager or RCT. The Project Specific Manager or RCT shall immediately report the circumstance of possible radioactive materials intake to the ES&H Radiological Control Organization for evaluation. When the suspect isotope is uranium, the involved employee(s) shall report to the Urine Sampling Station at the end of their respective shift to complete an Investigative Report (IIR, Form FMPC-ES&H-1458), and submit an incident urine sample. The involved employee(s) shall also report to the Urine Sampling Station at the start of their next shift to submit a follow-up urine sample. When the suspect isotope is other than uranium, the involved employee(s) shall report to the Dosimetry Section of the Radiological Control Department for further determination of actions.

8.3 INSTRUMENTATION

8.3.1 Industrial Hygiene

8.3.1.1 Volatile Organic Compounds Monitoring

Air sampling for volatile organic compounds will be conducted as determined by Section 8.1 of this HASP and PSHSP, FEMP work permits, the RI/FS HSO, or IH representative. The photoionization detector will be one of the air sampling instruments used. Other industrial hygiene monitoring instruments may be used as determined to be appropriate.

Instrument:	Photoionization Detector.
Hazard Measured:	Many organic gases and vapors.
Application:	Detection of many organic gases and vapors.
Detection Method:	Ionizes molecule using ultraviolet radiation and producing a current that is proportional to the number of ions.
General Care:	Recharge or replace battery. Regularly clean lamp window. Regularly clean and maintain the instrument and accessories.
Calibration:	Daily.

8.3 INSTRUMENTATION (Continued)

8.3.1.2 Combustible Gas/Toxic Substance Monitoring

Air sampling for combustible gases and oxygen deficient atmospheres will be conducted as determined by Section 8.1 of this HASP and PSHSP, FEMP Work Permits, the RI/FS HSO, or IH representative. The air sampling instrument used will be a CGM Multi-gas monitor. Other industrial hygiene monitoring instruments may be used as determined to be appropriate.

Instrument: CGM Multi-gas Monitor or equivalent.

Hazard Measured: Combustible gases, % Oxygen, CO, and SO₂.

Application: Detects % LEL, % Oxygen, toxic gases in parts per million (ppm).

General Care: Recharge or replace battery. Regularly clean and maintain the instrument and accessories.

Calibration: Daily.

8.3.1.3 Draeger Tubes

Air sampling for inorganic and organic gases and vapors will be conducted as determined by Section 8.1 of this HASP and PSHSP, FEMP Work Permits, the RI/FS HSO, or designated IH representative. Direct reading Draeger tubes will be used. Other industrial hygiene monitoring instruments may be used as determined to be appropriate.

Instrument: Direct reading Draeger tubes.

Hazard Measured: Various inorganic and organic gases and vapors.

Detection Method: Color change in detection tube determines presence of chemical.

General Care: Detection tubes are to be stored in cool dry area.

Calibration: Pumps used draw air through detector tubes are calibrated annually.

8.3 INSTRUMENTATION (Continued)**8.3.1.4 Aerosols Monitoring and Total Dust**

Air sampling for aerosols will be conducted as determined by Section 8.1 of this HASP and PSHSP, FEMP Work Permits, the RI/FS HSO, or designated IH representative. The air sampling instrument to be used will be a MIE RAM-1 Real-Time Aerosol Monitor. Other industrial hygiene monitoring instruments may be used as determined to be appropriate.

Instrument: MIE RAM-1 Real-Time Aerosol Monitor.

Hazard Measured: Aerosols.

Detection Method: Light diffraction.

General Care: Recharge or replace battery. Regularly clean and maintain the instrument and accessories.

Calibration: Before and after each use.

8.3.1.5 Noise Monitoring

Noise monitoring will be conducted as determined by the PSHSP, FEMP Work Permit, the RI/FS HSO, or designated IH representative. Direct reading MetroSonic noise dosimeters will be used. Other industrial hygiene monitoring instruments may be used as determined to be appropriate.

Instrument: MetroSonic noise dosimeter.

Hazard Measured: Noise level.

General Care: Recharge or replace battery.

Calibration: Before and after use.

8.3 INSTRUMENTATION (Continued)

8.3.2 Radioactive Monitoring Instrumentation

8.3.2.1 Airborne Radioactivity

Air samples will be taken by FEMP RC personnel in the general area where work will be performed, as required by the RCT. Other radioactive monitoring instruments may be used as determined to be appropriate.

Instrument:	Air Sampler.
Hazard Measured:	Collects airborne particulate for laboratory measurement.
Application:	Measure of air activity when surface contamination is present and where the potential exist for an increase in airborne radioactivity.
Detection Method:	Low background proportional counter.
General Care:	Daily inspection.
Calibration:	Six months, low background proportional counter calibrated monthly.

8.3.2.2 Radioactive Surface Contamination

Radioactive surface contamination will be identified by FEMP RC personnel as they perform the survey for required radiation work permits. Soils, subsoils and waste materials shall be surveyed when disturbed by drilling or sampling. Other radioactive monitoring instruments may be used as determined to be appropriate.

Instrument:	Alpha Scintillators and Geiger-Muller pancake detectors.
Hazard Measured:	Alpha, Beta, and Gamma radiation.
Application:	Monitors surfaces for radioactive contamination.
Detection Method:	Alpha Scintillation and gas ionization, respectively.
General Care:	Daily source and battery check.
Calibration:	Six months.

9.0 HANDLING DRUMS AND CONTAINERS

9.1 INSPECTIONS

Drums which contain unknown materials shall be inspected according to FERMCO procedure SSOP-0039.

9.2 STORAGE

Storage of drums shall be done according to FERMCO procedure (SSOP-0075, FMPC-319, FMPC-579).

9.3 TRANSPORTATION

All lifting and movement of drums shall be mechanically assisted (fork truck, drum dolly, hoist, etc.). The workers that use the drum moving equipment shall be trained in the operation of the equipment. Material handling equipment used to transfer drums and containers shall be selected, positioned and operated to minimize sources of ignition.

Drums and containers used during the clean-up shall meet the appropriate DOT, OSHA, and EPA regulations for the wastes that they contain.

Drums and containers that cannot be moved without rupture, leakage, or spillage shall be emptied into a sound container using a device classified for the material being transferred.

Drums and containers which hold radioactive wastes shall not be handled until their hazard to employees is properly assessed.

9.4 MONITORING

Contact IH if monitoring of drums is required.

9.5 LABELING

All containers of hazardous materials shall be labeled according to SPR 5-6, FMPC-319, FMPC-2178. At a minimum, the name of the contents and hazard characteristic(s) shall be clearly labeled on the container.

10.0 DECONTAMINATION

10.1 SITE DECONTAMINATION REQUIREMENTS

Personnel can become contaminated with hazardous substances by:

- Contacting vapors, gases, mist, or particulate in the air
- Being splashed by materials during sampling or opening containers
- Walking through puddles of liquids or contaminated soil
- Using contaminated instruments or equipment.

Contamination should be avoided where possible by ensuring minimal contact between personnel, equipment and the contaminant. All instances of personnel radiological contamination must be reported to RC, the RI/FS HSO, and Assistant Emergency Duty Officer (AEDO). The following measures shall be employed to accomplish necessary decontamination upon exit from the radiological area:

Personnel and/or equipment will enter and exit the posted work area through a control point. Upon exit, personnel will remove protective clothing and monitor themselves for contamination. Any personal contamination will be reported to Radiological Control who will assist in personnel decontamination (Refer to SP-P-35-017).

Equipment shall be monitored by the designated RCT. Upon exiting a controlled point, any equipment found contaminated shall be taken to the FEMP Decontamination Facility for decontamination. Transport of material to the FEMP Decontamination Facility shall be accomplished according to SP-P-35-027.

10.1 SITE DECONTAMINATION REQUIREMENTS (Continued)

Should a life-threatening injury occur, decontamination controls shall not be implemented that would hamper the treatment or transportation of the victim. The victim's life takes priority over radiological and chemical controls. This does NOT preclude the implementation of controls that will minimize the spread of contamination or other consequences as long as such conditions do hamper medical efforts.

11.0 HAZARD [RISK] ASSESSMENT

This section addresses the known health and safety risks associated with the RI/FS project. Potential risks to site workers may originate from chemical, physical, radiological, biological and safety hazards at the FEMP.

This plan covers the hazards common to RI/FS, and is not intended to address hazards associated with specific task/operations conducted during the performance of RI/FS field activities. When specific tasks/operations are conducted, a PSHSP shall be written. The PSHSP will evaluate the hazards specific to each task/operation, and specify any necessary additional monitoring and training requirements. The PSHSP shall be completed before the start of any RI/FS field activity.

TABLE 5 HAZARDS BY JOB TASK Minimum Controls Required				
JOB/TASK	REQUIRED PERMIT	CONCERNS		CONTROLS
		SAFETY/FIRE	CHEMICAL/ RADIOLOGICAL	
Excavation, Penetration of the ground or building material.	Excavation/ Penetration Permit, RWP.	Presence of underground utilities.	Excavation can expose unknown hazards.	Evaluation and selection of appropriate level of PPE.
Entry into excavation or confined space	Confined space entry permit	Exposure to unsafe excavations	Hazardous atmosphere	Atmospheric monitoring
Welding, Open Flame.	Welding Permit.	Fire control, flammable and or combustible material.	Based on the base metal, coatings and the welding rod.	Follow permit requirements.
Disturbance/ handling of asbestos containing material.	Asbestos Permit.		Release of asbestos fibers - worker exposure.	Level C (unless the material is transient).

TABLE 5
HAZARDS BY JOB TASK
Minimum Controls Required

JOB/TASK	REQUIRED PERMIT	CONCERNS		CONTROLS
		SAFETY/FIRE	CHEMICAL/ RADIOLOGICAL	
Disturbance of loose contamination.	RWP		Uranium allowed to become airborne.	Follow permit requirements.
Hazardous Material.	Chemical Hazardous Materials Work Permit.	Emergency rescue procedures.	Based on the chemical in use.	Follow permit and MSDS and IH requirements.
Confined spaces.	Confined Space Evaluation/ Permit.	Emergency rescue procedures.	Confined space will be evaluated by field personnel.	Follow permit requirements.
Biological Hazards.			Worker exposure to plants, insects, animals and organic waste harmful to humans.	Recognize hazard and avoid contact, cover exposed skin, tape bottom of pants, and other clothing openings, use insect repellent, and respiratory protection.
	Chemical/ Hazardous Materials Work Permit.		Worker exposure to bird droppings (Histoplasmosis).	Follow permit requirements.
Well Drilling/Soil Boring activities.	Penetration Permit	Penetrate underground utilities.	Contact with concentrations of uranium, organic and inorganic materials.	Follow the protection levels requirements.
Water Sampling.			Contact with uranium, organic and inorganic materials.	Follow the protection levels required by the PSHSP

TABLE 5 HAZARDS BY JOB TASK Minimum Controls Required				
JOB/TASK	REQUIRED PERMIT	CONCERNS		CONTROLS
		SAFETY/FIRE	CHEMICAL/ RADIOLOGICAL	
Water Sampling			Contact with preservatives (HNO ₃ , HCl, H ₂ SO ₄ , NaOH)	
Soil Sampling.		Penetrate underground utilities.	Contact with uranium, organic and inorganic materials.	Follow the protection levels required by the PSHSP.
Drilling activity		Contact with rotating auger		Drilling shall be equipped with kill switch, wear tight clothing, keep alert-- watch pinch points. Don't stick anything in auger.
Working in remote areas.		Unable to contact help.		Use the buddy system, test communication at start of shift.

See also Attachment D Job Safety Analysis.

Task specific hazards will be addressed in Section 11 of the PSHSP.

11.1 INDUSTRIAL HYGIENE ISSUES

11.1.1 Asbestos

Asbestos can be found in building materials and pipe insulation. Asbestos is a human carcinogen that mainly affects the respiratory system. When working with asbestos containing material proper PPE, respiratory protection and an Asbestos Work Permit (see Section 3.1.1) will be required.

11.1 INDUSTRIAL HYGIENE ISSUES (Continued)

11.1.2 Biological Hazards

Biological hazards are plants or animals that cause an adverse reaction in humans upon exposure. A wide variety of biological hazards are present at the FEMP. These include, but are not limited to, ticks, poison ivy and oak, chiggers, bees, wasps and snakes. Site workers should avoid contact and adopt appropriate controls (see Table 3). Report allergic reactions caused by contact with plants and insect bites to FERMCO Medical Services.

11.1.2.1 Histoplasmosis

Histoplasmosis is an airborne disease caused by a fungus. The disease affects the lungs similar to influenza and tuberculosis. Failure to receive adequate and timely treatment for histoplasmosis can result in death.

The fungus that causes histoplasmosis is found in soil where birds roost and their droppings have collected. Work conducted in locations known or suspected to have a histoplasmosis concern, IH shall be contacted for appropriate PPE requirements and a Chemical Hazardous Permit.

11.1.3 Carcinogens

A carcinogen is a chemical substance that causes or is suspected of causing cancer. Known carcinogens shall only be used when no suitable substitute can be found. When work with a carcinogen is conducted the requirements found in ESH-1-1000, SPR 5-13 shall be followed.

11.1.4 Chemical Contaminants

Chemicals used during the performance of RI/FS field activities may be hazardous to site workers. MSDS's for these chemicals shall be provided to IH for review. IH will determine the PPE requirements before the use of such chemicals. See Section 3.5 for more specific information requirements.

11.1.5 Concrete/Cement

Uncured concrete is corrosive to both exposed skin and eyes. Dry cement powder can be both an eye and skin irritant. Knee-high boots, rubber gloves, and appropriate eye protection will be used during concrete placement and finishing.

11.1.6 Hydrochloric Acid

Hydrochloric acid is used as a preservative in water samples. It is a colorless, fuming liquid that is strongly corrosive. Hydrochloric acid is a corrosive irritant to the skin, eyes, and mucous membranes. Where contact or exposure could occur, use splash goggles and nitrile or PVC chemical resistant gloves.

11.1 INDUSTRIAL HYGIENE ISSUES (Continued)**11.1.7 Methanol**

Methanol is used to decontaminate sampling equipment. It is a clear, colorless, very mobile liquid with an alcohol distillate odor. Methanol is a human poison by ingestion and can cause blindness. It is an eye and skin irritant. Splash goggles and neoprene or PVC chemical resistant gloves are required when using.

11.1.8 Nitric Acid

Nitric acid is used as a preservative in water samples. Nitric acid is corrosive to the eyes and skin. The vapors cause upper respiratory irritation. Where contact or exposure could occur, use splash goggles and neoprene chemical resistant gloves.

11.1.9 Physical Hazards**11.1.9.1 Noise**

RI/FS field operations being performed may create a noise hazard. Excessive noise can occur during the operation of drilling equipment, pneumatic tools, generators, and other machinery. The RI/FS HSO will request IH to evaluate suspect hazardous noise operations.

11.1.9.2 Confined Spaces

A confined space is an area not designed for continuous human occupancy, large enough for a person to bodily enter, and has limited entry and exit. Tanks, pits, manholes, sewers, enclosures, trenches (more than 4 feet deep) are examples of such spaces. All such operations which involve entry and work in a confined space are required to be evaluated by IH prior to entry to determine if a Confined Space Entry Permit is required for the task.

As part of the evaluation, all confined spaces shall be monitored for Oxygen, Carbon Monoxide, Hydrogen Sulfide and Explosive atmosphere. If existing or potential hazardous atmosphere is identified, a Confined Space Entry Permit shall be required.

11.1.9.3 Heat Stress

Heat stress may affect personnel with or without protective clothing when working in high ambient air temperatures. Adequate water, rest breaks, and careful attention by the supervisor shall be used as control measures. Personnel shall become aware of symptoms of heat stress and be able to recognize these symptoms in oneself and in other workers. The RI/FS HSO or designee shall review heat stress prevention at regularly scheduled safety meetings.

When ambient air temperatures exceed 80°F, IH shall be contacted to review and/or add control measures to minimize heat stress.

11.1 INDUSTRIAL HYGIENE ISSUES (Continued)

11.1.9.4 Cold Stress

Tasks may be conducted when temperatures could present a potential cold stress hazard. Personnel shall become aware of symptoms of cold stress and be able to recognize these symptoms in themselves and in their fellow workers. The HSO or designee shall review cold stress at regularly scheduled safety meetings.

During cold weather, special care should be taken to dress appropriately for anticipated weather conditions. Specific attention will be given to the hands and feet to prevent frostbite. When equivalent chill temperature drops below 0° F, IH shall be contacted to review and/or add control measures to minimize cold stress.

11.1.10 Silica

Airborne silica may be generated by the demolition/disturbance of concrete or sandblasting operations. Also, grout contains silica. Silica is moderately toxic as an acute irritant dust, prolonged exposure can cause pulmonary fibrosis (silicosis). Dust control and approved PPE will be used as protection against this hazard.

11.1.11 Sodium Hydroxide

Sodium hydroxide is used as a preservative in water samples. Sodium hydroxide is corrosive to the skin and eyes. Where contact or exposure could occur, use splash goggles and nitrile or natural rubber chemical resistant gloves.

11.1.12 Sulfuric Acid

Sulfuric acid is used as a preservative in water samples. It is a colorless, odorless oily liquid. Sulfuric acid is a severe eye irritant and is corrosive to skin causing severe burns. Where contact or exposure could occur, use splash goggles and chemical resistant gloves.

11.1.13 Uranium

Uranium can be found in most buildings and in soil and surface and groundwater on-site. Uranium is a radioactive material and in its soluble forms is highly toxic. Soluble uranium is absorbed through the skin and affects the kidneys. Insoluble uranium is an inhalation and radioactive hazard. When working in areas where uranium is present, proper PPE, respiratory protection and a RWP will be required.

11.1.14 Volatile Organics

Volatile organic compounds are organic chemicals that readily change from a liquid state to a vapor. Organic compounds are an exposure concern because they are absorbed by the body and may cause damage to tissue. The hazard associated with organic compounds varies based on the type of compound, the level of exposure, the length of exposure, and the health of the exposed person. Volatile organic compounds of concern will be specified in the PSHSP. They will be determined from the MSDSs of the materials used on the job site and from results of past groundwater, surface water, soil, material, and air sampling.

11.2 RADIOLOGICAL SAFETY ISSUES

Uranium and uranium-bearing materials are stored or have been processed in almost all parts of the FEMP Production Area, Waste Storage Area, and Laboratory Building. Contamination from uranium has also been found buried or dumped at several locations outside the former process area, and the potential for contamination should be considered prior to penetrating any surface or soils on the FEMP property.

Thorium is stored and has been processed at the FEMP. Radium and elevated levels of radon and thoron gases can also be found. However, contamination above established DOE/FERMCO limits for personnel exposure from these isotopes is limited to a few areas of the site; contact Radiological Engineering for locations of areas posted for thorium or radium contamination.

The main sources of radiation exposure at the FEMP are inhalation and ingestion of radioactive contaminants. Also, elevated radiation levels can be found in several areas, the primary exposures from being in and near Thorium warehouses.

Worker training, contamination control practices, and personal protective equipment are used to control inhalation and ingestion of radioactive particles. ALARA principles are used to control worker exposure to radiation levels in Thorium storage areas and other Radiation or High Radiation Areas. At the FEMP the policies and objectives for controlling personnel exposure to ionizing radiation are implemented through the issuance of a RWP.

11.3 INDUSTRIAL SAFETY ISSUES

Listed within this section are some anticipated hazards or concerns that may be encountered. Additional concerns or hazards may be recognized during the completion of the tasks.

11.3.1 Lifting

Lifting is the most common task associated with low back pain. Many injuries do not result from a single incident, but develop over a time. This type of injury may result from repetitive lifting. Personnel should know their lifting limits and the object to be lifted should be limited by factors such as; the route and distance to be traveled, the amount of time required and the center of gravity necessary to handle the load safely.

A worker shall not lift more than 50 pounds (lbs) without assistance from another person or mechanical help.

11.3.2 Overhead Electrical Lines

Before any RI/FS field activity is to take place, all overhead obstructions must be identified by the Project Specific Manager or RCT in charge. When feasible, work shall be located away from the overhead lines. If the site cannot be moved, then the overhead lines should be moved, de-energized, or guarded as to protect against contact. Electric lines of 50kV or below the minimum safe clearance shall be ten (10) feet when operating. Electric power lines over 50kV the minimum safe clearance shall be determined by the following formula; add one (1) inch for every 1kV over 50kV, or twice the length of the power line insulator, but never less than ten (10) feet. The safe clearance for equipment in transit shall be six (6) feet, with the boom lowered.

11.3 INDUSTRIAL SAFETY ISSUES (Continued)

11.3.3 Slips, Trips, and Falls

Always walk where there is firm footing, taking short steps in slippery places. Avoid carrying anything bulky that obstructs line of site. Look for falling, slipping and tripping hazards, such as cluttered traffic areas, unguarded openings and manholes, unsteady or snow-and ice-covered platforms, loose materials underfoot, tools hidden in the grass, and slippery, wet, oily or worn walkways. Climbing over equipment to get other items and falling off/down steep slopes can cause serious and sometimes fatal accidents.

All work paths and work areas shall be kept clear of slip and trip hazards. If site workers must work in or near areas where these hazards exist, and the hazard cannot be removed, then proper barricades and signs shall be used to route personnel away from the hazards. Some common slip and trip hazards are; mud, trash, electrical cords/airlines lying in walkways, and improperly stored equipment.

The Project Specific HSO shall ensure that all personnel are afforded a clear walkway always. Exits and exit paths shall be maintained clear always. Poor housekeeping shall not be tolerated. See ESH-1-1000 SPR 2-11 & 2-18.

11.3.4 Power Tools

Proper eye and face protection shall be provided and worn while using all hand and power tools. Inspect all tools before using. Do not use defective tools. Use tools only for the application for which they were designed. Do not use tools with mushroomed heads, sloppy connections or broken handles. Use the proper strength tool for each job. The use of handle extensions or cheater bars is prohibited.

Disconnect tools and machines from their power source before adjusting or attachment changes. Do not remove guards or safety devices. Fuel powered tools (gasoline or diesel powered) shall be shut off before refueling. Ensure that blade guards are in place and working properly. Air-powered tools must have safety clips or retainers on all hose connections. Do not exceed manufacturers' safe operating pressure for all fittings. All portable power equipment shall be protected by GFCI. See *ESH-1-1000*, SPR 2-23 for addition information.

The Project Specific HSO shall inspect all tools on the job site. Tools found defective shall be tagged and removed from service.

11.3.5 Electrical Power

Ground Fault Circuit Interrupters (GFCIs) are required on all 15 and 20 amperes, 120 volt circuits at all work sites. The GFCI shall be placed at the source of the electrical service to protect both the cord and the devices connected.

All flexible cords (extension cords) shall be approved (UL listed) cord sets and be of a type rated for hard usage and damp locations. Only purchased cord assemblies will be permitted, field made cord-set are not permitted. All cords shall be located overhead to avoid damage from contact with the ground surface.

11.3 INDUSTRIAL SAFETY ISSUES (Continued)

Temporary wiring and lighting shall conform to the requirements of the latest edition of the National Electrical Code, except Article 305-4(b) which shall NOT apply. Note: All temporary lighting shall be securely mounted to the ceiling or other high point seven (7) feet or more from the floor.

No work shall be permitted within ten (10) feet of any live exposed electrical device, without a written work plan. The work plan shall be approved by the RI/FS HSO unless the personnel involved are electrically qualified for such work. The appropriate level of training shall be documented according to Section 5.3.

11.3.6 Lock and Tag

The contractor shall follow and be fully trained to the FEMP Energy Control Plan.

Before commencing work on any energized system or circuit, a lockout is to be completed according to the FEMP Energy Control Procedures.

11.3.7 Heavy Equipment

The number of personnel working around heavy equipment should be minimized. All mobile equipment shall be supplied with an electronic audio back-up alarm. All operators shall be qualified to operate their machine.

Equipment will be visually inspected at the beginning of each shift by the equipment operator, prior to use. Inspection results will be recorded on a daily check sheet to ensure all safety equipment and devices are fully operational. Written weekly safety audits shall be conducted at drilling sites. The audits shall be conducted by the PSHSP. Results of the audit shall be sent to the RI/FS HSO.

Certain tasks may require the use of drill rigs. The equipment shall operate safely. The equipment must be maintained and in good operating condition including backup alarms, as required by FEMP site procedures. In addition, the operator must be properly trained in the use of the equipment. All primary operating controls shall be clearly labeled for equipment/drilling operation.

11.3.8 Material Handling Equipment

All equipment used for hoisting and rigging operations shall be tested, inspected, and tagged with current annual test dates. All operators shall be qualified to operate the equipment. Equipment shall be inspected at the beginning of each shift by the equipment operator, before use. The inspection is conducted to ensure it is in proper operating condition and all safety equipment is in place and functional. The inspection results shall be recorded on a daily check sheet.

11.3 INDUSTRIAL SAFETY ISSUES (Continued)

All material handling equipment, mobile personnel lifts (both powered and manual) and specialized hand operated powered equipment shall have the factory approved operator/safety manual for use by the operator. This manual shall either be with the equipment at the time of use or shall be on file, available for reference when requested. Material handling equipment shall only be used as the manufacturer intended and with the loading limits defined by the manufacturer. Safety requirements within the manufacturer's manual shall be followed.

All rigging operations shall be performed by persons that are qualified to safely execute such work. The Project Specific HSO shall evaluate the training of all personnel involved in rigging operations. The PSHSO shall provide a letter to the FERMCO Construction Manager and FERMCO Health & Safety Officer, stating who has been verified to be a competent rigger. See *ESH-1-1000* SPR 2-36, 2-38, 2-39, 2-43, 2-44, 2-45, 2-46, 2-47, 2-48, 2-49, 2-50 and 2-51.

Any CRITICAL LIFT shall have an approved LIFT PLAN before the start of the lift. This plan shall be written by the contractor or FERMCO supervisor performing the work and approved by the RI/FS Project Director and RI/FS HSO. See the "Hoist and Rigging Manual," DOE/ID-10500-Section 12.0, for additional information on the Critical Lift Requirements.

11.3.9 Fall Protection

A positive means of fall protection is required for any fall of six (6) feet or more. Fall protection can be accomplished using appropriate barricade, full body harness, lanyard, etc. All work tasks shall have 100% fall protection. See *ESH-1-1000* SPR 2-17 for additional information.

NOTE: Safety Belts Are Not Permitted.

Before entry onto any roof, approval from the RI/FS HSO and the FERMCO Facility Owner shall be obtained.

11.3.10 Hidden Utilities

If the project work scope involves penetrating/excavation into the surrounding earth, roof, floors, and walls of the facility a FERMCO permit is required. Due to serious injury potential from contacting or breaching existing utilities, a FERMCO Excavation/Penetration Permit shall be completed before the start of excavation. Complete mapping/drawings of all hidden utilities shall be included with the permit. The Construction Manager and the Person In Charge (PIC) on the permit form shall ensure that any hazard is clearly marked and communicated to the workers involved. Extreme care will be taken when working near utilities. Project Management shall ensure that all penetration/excavation work is executed safely.

11.3 INDUSTRIAL SAFETY ISSUES (Continued)

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11.3.10.1 Off-site Utilities Notification

Where drilling or excavation is conducted off-site, the following groups shall be notified;

- Ohio Utilities at 1-800-362-2764 (Call before you dig)
- Butler Rural Electric at (513) 867-4400
- Water Association at (513) 863-0828

Notification shall be given at least 48 hours before the start of work.

11.4 FIRE PROTECTION ISSUE

The potential for fires and explosions may occur during task activities. Explosions and fires can result in intense heat, open flames, smoke inhalation, flying objects and release of toxic chemicals. Such releases can threaten both personnel on site and the nearby public. To protect against explosions and fires, monitor the environment for explosive atmospheres and flammable vapors; keep all potential ignition sources away from areas where explosive or flammable environments may occur; and use work practices that will minimize the agitation or release of chemicals or materials which may contribute to a fire situation.

Storage, use or transfer of flammable and/or combustible liquids shall be in accordance with NFPA 30, Flammable and Combustible Liquids Code, or approved by FERMCO Fire Protection. Flammable or combustible liquids with a flash point of 140° F. or less (i.e., gasoline, diesel fuel, solvents, etc.) shall be handled in Factory Mutual Approved safety cans with operable flame arrester and self-closing lid(s). All safety cans shall be properly marked with the name of the liquid contents. A label identifying the hazard of the material shall be affixed to the container.

All areas where flammable liquids are stored or paints are mixed shall have "NO SMOKING" signs posted and smoking shall not be permitted in the posted areas.

SPR 4-21 Flammable and Combustible Liquids shall be followed for all flammable/combustible liquid operations.

Liquefied Petroleum Gas (i.e., propane, butane, etc.) shall not be stored inside any FEMP building.

Combustible scrap and debris shall be removed at regular intervals during the course of construction and shall follow SPR 4-22 Control of Combustibles. Disposal shall be in accordance with established FERMCO requirements.

The storage of combustible materials shall be kept at least 50 feet from any building or structure.

Temporary heating equipment and appliances shall be Listed by UL or FM Approved and installed in accordance with the manufacturers' instructions and the FERMCO SPR 4-18 Portable Heaters.

Only flame resistant tarpaulins or approved materials of equal fire retardant characteristics shall be used for temporary enclosures. Contractors shall provide documented verification of fire retardancy to the CRU5 Health & Safety Officer upon request. All temporary enclosures shall follow SPR 4-31.

11.4 FIRE PROTECTION ISSUES (Continued)

All fire protection system impairments shall be conducted with regard to SPR 4-15 Fire Protection System Impairments.

11.4.1 Welding

Welding and cutting operations are called hot work. Before conducting "hot work," a permit shall be issued by FEMP Safety and Fire personnel. The purpose of the FEMP Hot Work Permit Procedure is to establish guidelines by which the use of any flame or spark producing equipment, including gasoline and electric powered equipment, may be safely used in the performance of RI/FS field activities. All welding and cutting shall be performed according to Chapter 3 "Control of Open Flames and Welding" of the Fire Protection Requirements in *ESH-1-1000*, SPR 4-19.

11.5 NUCLEAR SAFETY ISSUE

Nuclear safety concerns are not expected to be present in any of the RI/FS current and planned field activities. As part of the safety analysis process, nuclear safety items are reviewed. If nuclear safety controls are required, they will be documented in a Criticality Safety Assessment (CSA). A CSA is completed by the Nuclear Criticality Section of the Safety Analysis and Risk Assessment (SARA) Group. Also the PSHSP will define the location and limitation if nuclear controls are required.

11.6 NATURAL OCCURRENCE ISSUE (ADVERSE WEATHER)

Work will be stopped when lightning, heavy persistent rain, or adverse weather conditions are in the area. This includes any weather conditions whose impact is judged to be detrimental by the CRU Project Manager, Field Operations Manager, or the PSHSO.

Personnel performing RI/FS field activities in remote locations at the FEMP shall maintain radio contact with FERMCO CONTROL to monitor for adverse weather conditions. The personnel shall follow any instructions given on the radio net.

12.0 EMERGENCY/CONTINGENCY PLANS

12.1 REPORTING REQUIREMENTS

12.1.1 Emergency Numbers

12.1.1.1 For Off-site Emergencies -

NAME	OFF-SITE TELEPHONE NUMBER
Ambulance	911
Fire	911
Sheriff/Police	911
Emergency Response	911

12.1 REPORTING REQUIREMENTS (Continued)

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12.1.1.2 For On-site (FEMP) Emergencies -

TABLE 7 ON-SITE (FEMP) EMERGENCY PHONE NUMBERS		
NAME	FEMP TELEPHONE NUMBER	Radio
Ambulance	738-6511	Control
Hospital	738-6511	Control
Fire	738-6511	Control
Security	738-6511	Control
Emergency Response	738-6511	Control
RI/FS Health & Safety Officer	738-9089	
Industrial Hygiene	738-6207	357*
Radiological Control	738-6889	355*
Fire and Safety Inspectors	738-6235	303*
Assistant Emergency Duty Officer (AEDO)	738-6295 6431	Control 202*

* Call numbers listed are for FERMCO Frequency 2.

12.1.2 Site Notification Procedures

All off-site emergencies shall be reported to the appropriate local emergency agency to ensure rapid response. A means to report an emergency shall be available at all active work sites. A telephone or cellular telephone shall be used to summon help. This telephone shall be verified to be working properly each day before start of work.

All on-site (FEMP) emergencies shall be reported to FERMCO "Communication Center" to ensure rapid response. A means to report an emergency shall be available at all active work sites. This may be accomplished by one of the following methods:

- Telephone 738-6511
- Radio to "Control"
- Activate a local site fire alarm station

Any injury, no matter how minor, shall be reported immediately to FEMP Medical Services for evaluation or treatment (24 hrs/day - 303 or CONTROL after normal work hours). The RI/FS Project Director and RI/FS HSO shall be notified as soon as possible after the injury/accident has occurred.

12.1 REPORTING REQUIREMENTS (Continued)

Employees working on-site will be notified of emergency or abnormal conditions by the plant wide alarm system and radio announcements. This announcement follows the sounding of the site alarm horn signal, 3-3.

12.1.3 What to Report

The following are examples of emergencies that would justify calling and reporting an emergency:

- Serious Injury
- Injury Complicated by Contamination
- Chemical/Radiation Release
- Chemical Splash (Eye and Skin)
- Any Fire
- Major Property Damage

When an emergency or abnormal condition is observed, personnel shall contact the Communications Center at extension 6511 or via radio (CONTROL) for on-site emergencies. For any off-site emergencies, 911 is the proper telephone number. Stay on the phone line until the dispatcher hangs up.

The following information must be given to the Communications Center operator:

- Name
- Badge number (on-site only)
- Location where emergency has occurred
- Nature of the emergency
- Number of personnel with injuries
- Unusual conditions (odors, symptoms, vapors, smoke, etc.)

12.1.3.1 Additional Reporting Requirements

- Property damage
- Unusual occurrence

12.2 EVACUATION ROUTES/ACCOUNTABILITY

12.2.1 Rally Point Accountability

Should a situation require an emergency evacuation of the work area, all equipment should be turned off (if possible) and left in place. On-site personnel should immediately go to the nearest established rally point identified in Appendix B.

The RI/FS PSHSP shall contain information that defines the rally point before the start of the field activities. Personnel will assemble at a predetermined rally point a safe distance (at least 150 feet upwind) away from the work area.

12.2.2 In Place Accountability (Within the Security Perimeter)

When in place accountability is required, the site worker shall contact his/her supervisor and report their current position. The Project Specific HSO shall report the names of any unaccounted personnel to the Construction Manager within ten (10) minutes.

12.3 AVAILABLE EMERGENCY EQUIPMENT

12.3.1 Site Equipment (FEMP)

The FEMP Medical Facility is staffed and equipped to handle most types of medical emergencies that would occur during a task. The medical facility is staffed with Emergency Medical Technicians (EMT) and is equipped with an ambulance to transport the injured person to the nearest off-site hospital should extended or specialized treatment be necessary.

The location of the FEMP Medical Facility is identified in Appendix C.

12.3.2 Plant Equipment

This plant has the following safety/emergency systems:

- Manual Fire Alarms
- Radiation Detection Alarm (RDA)
- Evacuation System
- Fire Sprinkler System
- Plant Alarm System

12.3.3 Off-site Equipment

Any required emergency and/or first-aid equipment shall be obtained and maintained by the personnel involved in the work activity. At a minimum, the following shall be maintained:

- Fire Extinguisher or other fire fighting equipment
- Telephone or other effective means of communications to summon emergency assistance to the local 911 emergency center

12.4 EMERGENCY RESPONSE

Off-site

The local Police, Fire, or Emergency Medical Services (EMS) agency shall be the primary emergency response. This assistance can be contacted by a single telephone number, 911.

On-site

The FEMP Emergency Services will handle all on-site emergencies. Any request for emergency help should be requested by telephone. (738-) 6511 or on any FEMP radio frequency by calling "CONTROL."

12.4.1 Medical Emergencies

Off-site medical emergencies - The RI/FS Project HSO shall insure that provisions are made before commencement of the project for medical attention in case of serious injury. At a minimum, a person with a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training shall be available at the worksite to render first-aid. The training shall be verified by documentary evidence. This first-aid person can render aid within 3-4 minutes and have the required first-aid supplies to be considered available. Any local emergency ambulance service is not an acceptable substitute for the first-aid person.

12.4 EMERGENCY RESPONSE (Continued)

On-site Medical Emergencies - The FEMP Medical Department and emergency site ambulance shall serve as the first-aid person, as they can respond within 3-4 minutes to FEMP site emergencies. The contractor may also have a trained first-aid person, as defined above, at the worksite.

12.4.2 Fire Emergencies

All work sites shall maintain communication to summon fire fighting assistance. Access to the work area shall be maintained always to allow fire trucks and fire fighting crews to safely approach the fire emergency.

Only trained personnel shall attempt to operate any fire fighting equipment and only when the fire is clearly within the capability of the fire fighting equipment. Fire fighting efforts should only be executed if it is safe to do so and all the hazards of the materials involved are known.

Off-site Fire Emergencies - The RI/FS HSO shall insure before commencement of the project that the proper fire fighting equipment (fire extinguishers) and the required employee training is in place. The local Fire Department should be called for any fire emergency. The telephone number to call any of the local fire departments is 911.

On-site Fire Emergencies - The FEMP Emergency Response Team (ERT) will respond to all on-site fire emergencies. For any fire emergency at FEMP, call (738-)6511.

12.4.3 Explosion Emergency

When an explosion has occurred, the following actions are to be taken:

Off-site

- Evacuate work area
- Go to an appointed rally point or a safe distance from the work area
- If qualified, render first aid to any injured personnel
- Instruct all persons in transit to avoid the work area
- Contact the local Emergency Response Agency (911)
- Report to supervisor for accountability

On-site

- Activate nearest fire alarm if possible. Note: Notify other employees by alternate method if fire alarm is not available.
- Evacuate building or work area
- Go to an appointed evacuation point
- If qualified, render first aid to any injured personnel
- Instruct all persons in transit to avoid the work area and surrounding area
- Contact Control by radio or phone (6511)
- Report to supervisor for accountability

12.4.4 Chemical Emergency

12.4 EMERGENCY RESPONSE (Continued)

12.4.4.1 Splashes

Flush the effected area with clean water for fifteen (15) minutes. Report immediately to FERMCO Medical Services.

12.4.4.2 Personal Contamination

Wash the effected area with soap and water. Report to FERMCO Medical Services.

12.4.5 Radiological Emergencies

12.4.5.1 Releases

N/A

12.4.5.1 Personnel Contamination

Contact RC and remain at the monitoring location until a representative of RC arrives.

12.4.6 Weather Limitations/Adverse Conditions

Any outside work will be suspended if warnings for high winds, lightning or tornados are sounded. Any crane or drill rig operation will be suspended if wind velocity reaches steady 30 MPH.

12.4.7 Accident Investigations

Any injury or accident shall require the supervisor to complete an accident report. This report shall be completed within 24 hours of the event. Should a serious accident/injury occur, the involved area should not be disturbed until approved by the RI/FS HSO.

13.0 CHANGES/AMENDMENTS TO HEALTH AND SAFETY PLAN

The RI/FS HASP is based on information available at the time of preparation. It is important that personnel protective measures be routinely reassessed by the construction supervision, construction management and the RI/FS HSO. In addition, unexpected conditions/events may arise which require reassessment of the health & safety issues: Upgrading or downgrading of precautions, PPE, etc., identified in this plan must be approved by the RI/FS HSO, or designee, and can be implemented without an amendment.

FERMCO Occupational Safety and Health Section (OS&H) and RCT field personnel (technicians and inspectors) have the authority to upgrade PPE. Upgrading of PPE shall be done by issuing a FEMP Work Permit (RWP). When PPE is upgraded, the RI/FS HSO and field personnel supervision shall be notified of the change.

Where feasible and can be done safely, ES&H management encourages downgrading of PPE. Field personal and project supervision shall agree to the downgrade. The OS&H and RCT field personnel do not have the authority to implement the downgrade without permission of the RI/FS HSO. When downgrades occur, field personal shall report the change to their supervision. Downgrading of PPE shall be done by issuing a FEMP Work Permit (RWP). Additional information can be found in Sections 3.1.1 and 13.1.

13.0 CHANGES/AMENDMENTS TO HEALTH AND SAFETY PLAN (Continued)

Unplanned operations and/or changes in work scope shall require a review and may require an amendment to the PSHSP. All amendments must be approved by the RI/FS HSO.

13.1 CONTROL OF HEALTH AND SAFETY PLAN

To ensure that all personnel are informed of changes in the scope of this HASP, CONTROLLED copies of this document shall be maintained. Only essential personnel shall maintain controlled copies of this document. The following is the list of personnel who shall be issued controlled copies of this HASP.

- Director, RI/FS
- Manager Engineering, RI/FS
- Deputy Manager Engineering, RI/FS
- Health and Safety Officer, RI/FS
- Environmental Manager, RI/FS
- Construction Manager
- Construction Safety & Health Manager
- Site Characterization/Data Management Department Manager
- Field Operations Manager
- Field Program Development Manager
- CERCLA/RCRA Oversight Manager
- CRU Health and Safety Officers (1,2,3,4,5)

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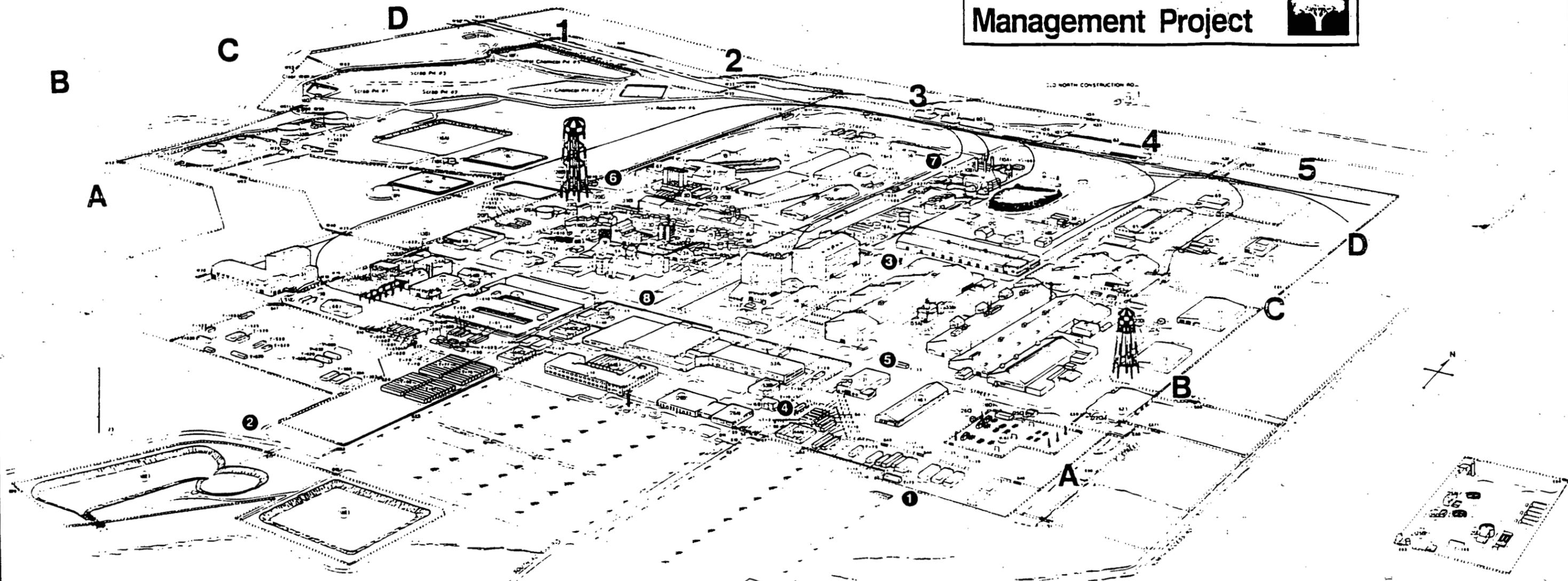
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APPENDIX B
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Fernald Environmental Management Project

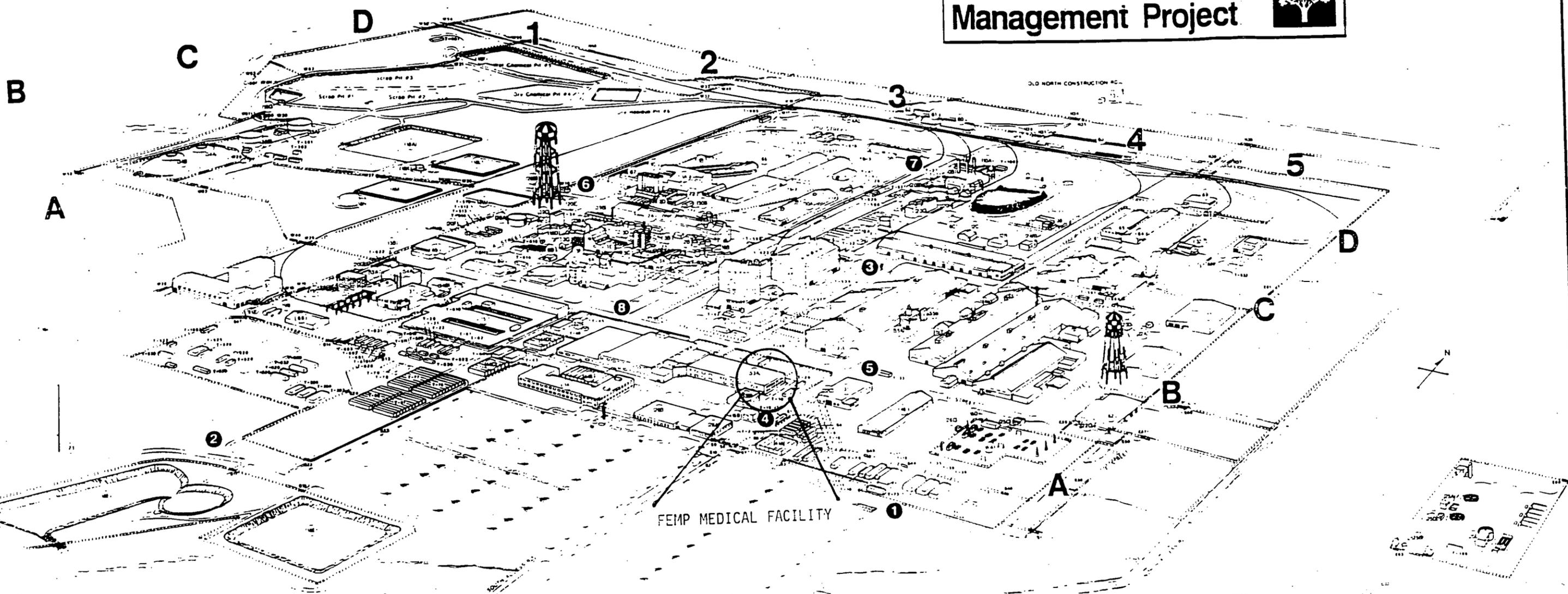
● RALLY POINTS

○ BUILDING IDENTIFICATION

Building No.	Area	Type	Room No.	Description	Area	Type	Description	Area	Type	Description
9	C-5	Special Products Plant	18n	High Nitrate Storage Tank	25c	A-1	Main electrical strainer house	24a	A-1	2-10 UF ₂ Reduction Facility I
10a	D-4	Preparation Plant	19a	Main Metal Tank Farm	25a	A-4	Security Building	24b	A-1	Plant 1 Warehouse
10b	D-4	Boiler Plant Maintenance Building	20a	Boiler Plant Ammonia Tank Farm	25b	A-4	Human Resources Building	25a	A-4	5a-d Recycling Plant
11	A-4	Service Building	20a	Pump Station and Power Center	25c	A-1	Chemical Warehouse	25b	A-4	5a-d Recycling Pit/Elevator
12a	C-4	Ore Refinery Plant	20b	Water Plant	25d	A-1	Chemical Storage Warehouse	25c	A-1	5a Storage Warehouse
12b	C-4	Lime Handling Building	20c	Cooling Towers	25e	A-1	Engine House - Garage	25d	A-1	Unitset #1
12c	C-4	Build Lime Handling Building	20d	Elevated Storage Tank (Potable H ₂ O)	25f	A-1	Engine House - Garage	25e	A-1	Unitset #2
12d	C-4	Metal Dissolver Building	20e	Well House #1	25g	B-1	Magnesium Storage	25f	A-1	Unitset #3
12e	C-4	Maintenance Building (Main)	20f	Well House #2	25h	B-1	45 Storage Tank - North	25g	A-1	402 Warehouse
12f	C-4	Cylinder Storage Building	20g	Well House #3	25i	B-1	45 Storage Tank - South	25h	A-1	Thorium Warehouse
12g	C-4	Lumber Storage Building	20h	Sump Pump House	25j	B-1	Water Oxide Storage Tank - North	25i	A-1	Old Plant 5 Warehouse
12h	C-4	Pilot Plant Wet Side	20i	Administration Building	25k	B-1	Water Oxide Storage Tank - South	25j	A-1	Old Plant 5 Warehouse
12i	A-3	Pilot Plant Maintenance Building	20j	Laboratories	25l	B-2	Plant Annex	25k	A-1	Thorium Warehouse
12j	A-3	Pilot Plant Maintenance Building	20k	Main Electrical Station	25m	B-2	Propene Storage	25l	A-1	Old Plant 5 Warehouse
12k	A-3	Maintenance Building	20l	Electrical Substation	25n	A-1	Generator Building	25m	A-1	Thorium Warehouse
12l	A-3	Ozone Building	20m	Surge Lagoon	25o	A-1	Water Storage Building	25n	A-1	Thorium Warehouse
12m	A-3	Control House	20n	General Sump	25p	A-1	Generator Building	25o	A-1	Thorium Warehouse
12n	A-3	NAR Towers	20o	Coal Pile Runoff Basin	25q	A-1	Generator Building	25p	A-1	Thorium Warehouse
12o	A-3	Hot Refineries Building	20p	Biodenitrication Towers	25r	A-1	Generator Building	25q	A-1	Thorium Warehouse
12p	A-3	Dioxidation Fume Recovery	20q	Storm Water Retention Basin	25s	A-1	Generator Building	25r	A-1	Thorium Warehouse
12q	A-3	Refrigeration Building	20r	Pit 5 Sluice Gate	25t	A-1	Generator Building	25s	A-1	Thorium Warehouse
12r	A-3	Refrigeration Building	20s	Cleanwater Pump House	25u	A-1	Generator Building	25t	A-1	Thorium Warehouse
12s	A-3	Refrigeration Building	20t	BDN Effluent Treatment Facility	25v	A-1	Generator Building	25u	A-1	Thorium Warehouse
12t	A-3	Refrigeration Building	20u	Methane Tank	25w	A-1	Generator Building	25v	A-1	Thorium Warehouse
12u	A-3	Refrigeration Building	20v	Low Nitrate Tank	25x	A-1	Generator Building	25w	A-1	Thorium Warehouse
12v	A-3	Refrigeration Building	20w	High Nitrate Tank	25y	A-1	Generator Building	25x	A-1	Thorium Warehouse
12w	A-3	Refrigeration Building	20x		25z	A-1	Generator Building	25y	A-1	Thorium Warehouse
12x	A-3	Refrigeration Building	20y		25aa	A-1	Generator Building	25z	A-1	Thorium Warehouse
12y	A-3	Refrigeration Building	20z		25ab	A-1	Generator Building	25aa	A-1	Thorium Warehouse
12z	A-3	Refrigeration Building	20aa		25ac	A-1	Generator Building	25ab	A-1	Thorium Warehouse
13	A-3	Maintenance Building	20ab		25ad	A-1	Generator Building	25ac	A-1	Thorium Warehouse
13a	A-3	Maintenance Building	20ac		25ae	A-1	Generator Building	25ad	A-1	Thorium Warehouse
13b	A-3	Maintenance Building	20ad		25af	A-1	Generator Building	25ae	A-1	Thorium Warehouse
13c	A-3	Maintenance Building	20ae		25ag	A-1	Generator Building	25af	A-1	Thorium Warehouse
13d	A-3	Maintenance Building	20af		25ah	A-1	Generator Building	25ag	A-1	Thorium Warehouse
13e	A-3	Maintenance Building	20ag		25ai	A-1	Generator Building	25ah	A-1	Thorium Warehouse
13f	A-3	Maintenance Building	20ah		25aj	A-1	Generator Building	25ai	A-1	Thorium Warehouse
13g	A-3	Maintenance Building	20ai		25ak	A-1	Generator Building	25aj	A-1	Thorium Warehouse
13h	A-3	Maintenance Building	20aj		25al	A-1	Generator Building	25ak	A-1	Thorium Warehouse
13i	A-3	Maintenance Building	20aj		25am	A-1	Generator Building	25al	A-1	Thorium Warehouse
13j	A-3	Maintenance Building	20ak		25an	A-1	Generator Building	25am	A-1	Thorium Warehouse
13k	A-3	Maintenance Building	20al		25ao	A-1	Generator Building	25an	A-1	Thorium Warehouse
13l	A-3	Maintenance Building	20am		25ap	A-1	Generator Building	25ao	A-1	Thorium Warehouse
13m	A-3	Maintenance Building	20an		25aq	A-1	Generator Building	25ap	A-1	Thorium Warehouse
13n	A-3	Maintenance Building	20ao		25ar	A-1	Generator Building	25aq	A-1	Thorium Warehouse
13o	A-3	Maintenance Building	20ap		25as	A-1	Generator Building	25ar	A-1	Thorium Warehouse
13p	A-3	Maintenance Building	20aq		25at	A-1	Generator Building	25as	A-1	Thorium Warehouse
13q	A-3	Maintenance Building	20ar		25au	A-1	Generator Building	25at	A-1	Thorium Warehouse
13r	A-3	Maintenance Building	20as		25av	A-1	Generator Building	25au	A-1	Thorium Warehouse
13s	A-3	Maintenance Building	20at		25aw	A-1	Generator Building	25av	A-1	Thorium Warehouse
13t	A-3	Maintenance Building	20au		25ax	A-1	Generator Building	25aw	A-1	Thorium Warehouse
13u	A-3	Maintenance Building	20av		25ay	A-1	Generator Building	25ax	A-1	Thorium Warehouse
13v	A-3	Maintenance Building	20aw		25az	A-1	Generator Building	25ay	A-1	Thorium Warehouse
13w	A-3	Maintenance Building	20ax		25ba	A-1	Generator Building	25az	A-1	Thorium Warehouse
13x	A-3	Maintenance Building	20ay		25bb	A-1	Generator Building	25ba	A-1	Thorium Warehouse
13y	A-3	Maintenance Building	20az		25bc	A-1	Generator Building	25bb	A-1	Thorium Warehouse
13z	A-3	Maintenance Building	20ba		25bd	A-1	Generator Building	25bc	A-1	Thorium Warehouse
14	A-3	Maintenance Building	20bb		25be	A-1	Generator Building	25bd	A-1	Thorium Warehouse
14a	A-3	Maintenance Building	20bc		25bf	A-1	Generator Building	25be	A-1	Thorium Warehouse
14b	A-3	Maintenance Building	20bd		25bg	A-1	Generator Building	25bf	A-1	Thorium Warehouse
14c	A-3	Maintenance Building	20be		25bh	A-1	Generator Building	25bg	A-1	Thorium Warehouse
14d	A-3	Maintenance Building	20bf		25bi	A-1	Generator Building	25bh	A-1	Thorium Warehouse
14e	A-3	Maintenance Building	20bg		25bj	A-1	Generator Building	25bi	A-1	Thorium Warehouse
14f	A-3	Maintenance Building	20bh		25bk	A-1	Generator Building	25bj	A-1	Thorium Warehouse
14g	A-3	Maintenance Building	20bi		25bl	A-1	Generator Building	25bk	A-1	Thorium Warehouse
14h	A-3	Maintenance Building	20bj		25bm	A-1	Generator Building	25bl	A-1	Thorium Warehouse
14i	A-3	Maintenance Building	20bk		25bn	A-1	Generator Building	25bm	A-1	Thorium Warehouse
14j	A-3	Maintenance Building	20bl		25bo	A-1	Generator Building	25bn	A-1	Thorium Warehouse
14k	A-3	Maintenance Building	20bm		25bp	A-1	Generator Building	25bo	A-1	Thorium Warehouse
14l	A-3	Maintenance Building	20bn		25bq	A-1	Generator Building	25bp	A-1	Thorium Warehouse
14m	A-3	Maintenance Building	20bo		25br	A-1	Generator Building	25bq	A-1	Thorium Warehouse
14n	A-3	Maintenance Building	20bp		25bs	A-1	Generator Building	25br	A-1	Thorium Warehouse
14o	A-3	Maintenance Building	20bq		25bt	A-1	Generator Building	25bs	A-1	Thorium Warehouse
14p	A-3	Maintenance Building	20br		25bu	A-1	Generator Building	25bt	A-1	Thorium Warehouse
14q	A-3	Maintenance Building	20bs		25bv	A-1	Generator Building	25bu	A-1	Thorium Warehouse
14r	A-3	Maintenance Building	20bt		25bv	A-1	Generator Building	25bv	A-1	Thorium Warehouse
14s	A-3	Maintenance Building	20bu		25bw	A-1	Generator Building	25bv	A-1	Thorium Warehouse
14t	A-3	Maintenance Building	20bv		25bx	A-1	Generator Building	25bw	A-1	Thorium Warehouse
14u	A-3	Maintenance Building	20bw		25bx	A-1	Generator Building	25bx	A-1	Thorium Warehouse
14v	A-3	Maintenance Building	20bx		25by	A-1	Generator Building	25bx	A-1	Thorium Warehouse
14w	A-3	Maintenance Building	20by		25bz	A-1	Generator Building	25by	A-1	Thorium Warehouse
14x	A-3	Maintenance Building	20bz		25ca	A-1	Generator Building	25bz	A-1	Thorium Warehouse
14y	A-3	Maintenance Building	20ca		25ca	A-1	Generator Building	25ca	A-1	Thorium Warehouse
14z	A-3	Maintenance Building	20cb		25cb	A-1	Generator Building	25ca	A-1	Thorium Warehouse
15	A-3	Maintenance Building	20cb		25cc	A-1	Generator Building	25cb	A-1	Thorium Warehouse
15a	A-3	Maintenance Building	20cc		25cc	A-1	Generator Building	25cc	A-1	Thorium Warehouse
15b	A-3	Maintenance Building	20cd		25cd	A-1	Generator Building	25cc	A-1	Thorium Warehouse
15c	A-3	Maintenance Building	20cd		25cd	A-1	Generator Building	25cd	A-1	Thorium Warehouse
15d	A-3	Maintenance Building	20ce		25ce	A-1	Generator Building	25cd	A-1	Thorium Warehouse
15e	A-3	Maintenance Building	20ce		25ce	A-1	Generator Building	25ce	A-1	Thorium Warehouse
15f	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25ce	A-1	Thorium Warehouse
15g	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15h	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15i	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15j	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15k	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15l	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15m	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15n	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15o	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15p	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15q	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15r	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15s	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15t	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15u	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15v	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15w	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15x	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15y	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
15z	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16a	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16b	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16c	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16d	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16e	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16f	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16g	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16h	A-3	Maintenance Building	20cf		25cf	A-1	Generator Building	25cf	A-1	Thorium Warehouse
16i	A-3	Maintenance Building	20cf		25cf					

APPENDIX C
LOCATION OF FEMP
MEDICAL FACILITY

Fernald Environmental Management Project

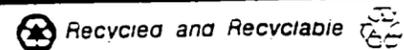


● RALLY POINTS

○ BUILDING IDENTIFICATION

Building No.	Location	Name	Category	Area (sq ft)	Volume (cu ft)	Notes
9	C-3	General	C-3	9		Social Products Plant
10a	D-4	Boiler Plant	D-4	10a		Boiler Plant
10b	D-4	Boiler Plant Maintenance Building	D-4	10b		Boiler Plant Maintenance Building
11	A-4	Service Building	A-4	11		Service Building
12a	C-4	Maintenance Building (Main)	C-4	12a		Maintenance Building (Main)
12b	C-4	Cylinder Storage Building	C-4	12b		Cylinder Storage Building
12c	C-4	Lumber Storage Building	C-4	12c		Lumber Storage Building
13a	A-3	Pipe Plant West Side	A-3	13a		Pipe Plant West Side
13b	A-3	Pipe Plant Maintenance Building	A-3	13b		Pipe Plant Maintenance Building
13c	A-3	Sump Pump House	A-3	13c		Sump Pump House
14	A-4	Administration Building	A-4	14		Administration Building
15	A-3	Laboratories	A-3	15		Laboratories
16a	A-5	Main Electrical Station	A-5	16a		Main Electrical Station
16b	A-4	Electrical Substation	A-4	16b		Electrical Substation
16c	C-2	Surge Lagoon	C-2	16c		Surge Lagoon
17	B-3	General Sump	B-3	17		General Sump
18a	B-3	Coal Pile Runoff Basin	B-3	18a		Coal Pile Runoff Basin
18b	C-4	Biodenitrification Towers	C-4	18b		Biodenitrification Towers
18c	B-3	Storm Water Retention Basin	B-3	18c		Storm Water Retention Basin
18d	D-1	Pit 5 Sluice Gate	D-1	18d		Pit 5 Sluice Gate
18e	C-1	Clearewell Pump House	C-1	18e		Clearewell Pump House
18f	B-3	BDN Effluent Treatment Facility	B-3	18f		BDN Effluent Treatment Facility
18g	B-2	Methanol Tank	B-2	18g		Methanol Tank
18h	B-2	Elevated Water Storage Tank	B-2	18h		Elevated Water Storage Tank
18i	B-2	High Nitrate Tank	B-2	18i		High Nitrate Tank
18j	B-2	High Nitrate Tank	B-2	18j		High Nitrate Tank
18k	B-2	High Nitrate Tank	B-2	18k		High Nitrate Tank
18l	B-2	High Nitrate Tank	B-2	18l		High Nitrate Tank
18m	B-2	High Nitrate Tank	B-2	18m		High Nitrate Tank
18n	B-2	High Nitrate Tank	B-2	18n		High Nitrate Tank
18o	B-2	High Nitrate Tank	B-2	18o		High Nitrate Tank
18p	B-2	High Nitrate Tank	B-2	18p		High Nitrate Tank
18q	B-2	High Nitrate Tank	B-2	18q		High Nitrate Tank
18r	B-2	High Nitrate Tank	B-2	18r		High Nitrate Tank
18s	B-2	High Nitrate Tank	B-2	18s		High Nitrate Tank
18t	B-2	High Nitrate Tank	B-2	18t		High Nitrate Tank
18u	B-2	High Nitrate Tank	B-2	18u		High Nitrate Tank
18v	B-2	High Nitrate Tank	B-2	18v		High Nitrate Tank
18w	B-2	High Nitrate Tank	B-2	18w		High Nitrate Tank
18x	B-2	High Nitrate Tank	B-2	18x		High Nitrate Tank
18y	B-2	High Nitrate Tank	B-2	18y		High Nitrate Tank
18z	B-2	High Nitrate Tank	B-2	18z		High Nitrate Tank
19	B-2	Main Electrical Strainer House	B-2	19		Main Electrical Strainer House
20	B-2	Security Building	B-2	20		Security Building
21	B-2	Human Resources Building	B-2	21		Human Resources Building
22	B-2	Chemical Warehouse	B-2	22		Chemical Warehouse
23	B-2	Drum Storage Warehouse	B-2	23		Drum Storage Warehouse
24	B-2	Engine House - Garage	B-2	24		Engine House - Garage
25	B-2	Magnesium Storage	B-2	25		Magnesium Storage
26	B-2	#5 Storage Tank - North	B-2	26		#5 Storage Tank - North
27	B-2	#5 Storage Tank - South	B-2	27		#5 Storage Tank - South
28	B-2	Water Uxide Storage Tank - North	B-2	28		Water Uxide Storage Tank - North
29	B-2	Water Uxide Storage Tank - South	B-2	29		Water Uxide Storage Tank - South
30	B-2	Plant Annex	B-2	30		Plant Annex
31	B-2	Propane Storage	B-2	31		Propane Storage
32	B-2	Generator Building	B-2	32		Generator Building
33	B-2	Enter Storage Building	B-2	33		Enter Storage Building
34	B-2	Generator Building Sprinkler Meter House	B-2	34		Generator Building Sprinkler Meter House
35	B-2	Water Complex - 20-Pies - East	B-2	35		Water Complex - 20-Pies - East
36	B-2	Water Complex - 20-Pies - South	B-2	36		Water Complex - 20-Pies - South
37	B-2	Water Complex - 20-Pies - North	B-2	37		Water Complex - 20-Pies - North
38	B-2	Water Complex - 10-Pies	B-2	38		Water Complex - 10-Pies
39	B-2	Plant 6 Warehouse	B-2	39		Plant 6 Warehouse
40	B-2	Plant 8 Warehouse	B-2	40		Plant 8 Warehouse
41	B-2	Plant 9 Warehouse	B-2	41		Plant 9 Warehouse
42	B-2	Plant 10 Warehouse	B-2	42		Plant 10 Warehouse
43	B-2	Plant 11 Warehouse	B-2	43		Plant 11 Warehouse
44	B-2	Plant 12 Warehouse	B-2	44		Plant 12 Warehouse
45	B-2	Plant 13 Warehouse	B-2	45		Plant 13 Warehouse
46	B-2	Plant 14 Warehouse	B-2	46		Plant 14 Warehouse
47	B-2	Plant 15 Warehouse	B-2	47		Plant 15 Warehouse
48	B-2	Plant 16 Warehouse	B-2	48		Plant 16 Warehouse
49	B-2	Plant 17 Warehouse	B-2	49		Plant 17 Warehouse
50	B-2	Plant 18 Warehouse	B-2	50		Plant 18 Warehouse
51	B-2	Plant 19 Warehouse	B-2	51		Plant 19 Warehouse
52	B-2	Plant 20 Warehouse	B-2	52		Plant 20 Warehouse
53	B-2	Plant 21 Warehouse	B-2	53		Plant 21 Warehouse
54	B-2	Plant 22 Warehouse	B-2	54		Plant 22 Warehouse
55	B-2	Plant 23 Warehouse	B-2	55		Plant 23 Warehouse
56	B-2	Plant 24 Warehouse	B-2	56		Plant 24 Warehouse
57	B-2	Plant 25 Warehouse	B-2	57		Plant 25 Warehouse
58	B-2	Plant 26 Warehouse	B-2	58		Plant 26 Warehouse
59	B-2	Plant 27 Warehouse	B-2	59		Plant 27 Warehouse
60	B-2	Plant 28 Warehouse	B-2	60		Plant 28 Warehouse
61	B-2	Plant 29 Warehouse	B-2	61		Plant 29 Warehouse
62	B-2	Plant 30 Warehouse	B-2	62		Plant 30 Warehouse
63	B-2	Plant 31 Warehouse	B-2	63		Plant 31 Warehouse
64	B-2	Plant 32 Warehouse	B-2	64		Plant 32 Warehouse
65	B-2	Plant 33 Warehouse	B-2	65		Plant 33 Warehouse
66	B-2	Plant 34 Warehouse	B-2	66		Plant 34 Warehouse
67	B-2	Plant 35 Warehouse	B-2	67		Plant 35 Warehouse
68	B-2	Plant 36 Warehouse	B-2	68		Plant 36 Warehouse
69	B-2	Plant 37 Warehouse	B-2	69		Plant 37 Warehouse
70	B-2	Plant 38 Warehouse	B-2	70		Plant 38 Warehouse
71	B-2	Plant 39 Warehouse	B-2	71		Plant 39 Warehouse
72	B-2	Plant 40 Warehouse	B-2	72		Plant 40 Warehouse
73	B-2	Plant 41 Warehouse	B-2	73		Plant 41 Warehouse
74	B-2	Plant 42 Warehouse	B-2	74		Plant 42 Warehouse
75	B-2	Plant 43 Warehouse	B-2	75		Plant 43 Warehouse
76	B-2	Plant 44 Warehouse	B-2	76		Plant 44 Warehouse
77	B-2	Plant 45 Warehouse	B-2	77		Plant 45 Warehouse
78	B-2	Plant 46 Warehouse	B-2	78		Plant 46 Warehouse
79	B-2	Plant 47 Warehouse	B-2	79		Plant 47 Warehouse
80	B-2	Plant 48 Warehouse	B-2	80		Plant 48 Warehouse
81	B-2	Plant 49 Warehouse	B-2	81		Plant 49 Warehouse
82	B-2	Plant 50 Warehouse	B-2	82		Plant 50 Warehouse
83	B-2	Plant 51 Warehouse	B-2	83		Plant 51 Warehouse
84	B-2	Plant 52 Warehouse	B-2	84		Plant 52 Warehouse
85	B-2	Plant 53 Warehouse	B-2	85		Plant 53 Warehouse
86	B-2	Plant 54 Warehouse	B-2	86		Plant 54 Warehouse
87	B-2	Plant 55 Warehouse	B-2	87		Plant 55 Warehouse
88	B-2	Plant 56 Warehouse	B-2	88		Plant 56 Warehouse
89	B-2	Plant 57 Warehouse	B-2	89		Plant 57 Warehouse
90	B-2	Plant 58 Warehouse	B-2	90		Plant 58 Warehouse
91	B-2	Plant 59 Warehouse	B-2	91		Plant 59 Warehouse
92	B-2	Plant 60 Warehouse	B-2	92		Plant 60 Warehouse
93	B-2	Plant 61 Warehouse	B-2	93		Plant 61 Warehouse
94	B-2	Plant 62 Warehouse	B-2	94		Plant 62 Warehouse
95	B-2	Plant 63 Warehouse	B-2	95		Plant 63 Warehouse
96	B-2	Plant 64 Warehouse	B-2	96		Plant 64 Warehouse
97	B-2	Plant 65 Warehouse	B-2	97		Plant 65 Warehouse
98	B-2	Plant 66 Warehouse	B-2	98		Plant 66 Warehouse
99	B-2	Plant 67 Warehouse	B-2	99		Plant 67 Warehouse
100	B-2	Plant 68 Warehouse	B-2	100		Plant 68 Warehouse

MAY 1992



ATTACHMENT A
ACKNOWLEDGEMENT FORM

569 4

ATTACHMENT B
OSHA/DOE
EMPLOYEES RIGHTS POSTER

000077

560 4

Occupational Safety and Health Protection for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities

Policy:

U.S. Department of Energy (DOE) contractor employees shall be provided with safe and healthful working conditions in accordance with the standards prescribed pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and the Department of Energy Organization Act of 1977; said standards shall be consistent with those promulgated under the Occupational Safety and Health Act of 1970, Public Law 91-596. Please refer to the Order DOE 5483.1A for details.

DOE Contractors:

DOE has determined that Fernald Environmental Restoration Management Corporation is subject to DOE Acquisition Regulation (DEAR), Subpart 970.23, and is, therefore, required to comply with applicable DOE-prescribed Occupational Safety and Health Administration (OSHA) standards listed therein. This Order and the standards are available for employee review at Safety & Health Building #53 as delineated by the Order DOE 5483.1A. The DOE contractor is required to:

1. Furnish to employees, employment and a place of employment which are as free from occupational safety and health hazards as possible.
2. Establish and implement programs and procedures to comply with the Order DOE 5483.1A. These shall include programs and procedures to monitor the workplace for known toxic materials and harmful physical agents which are used or produced at the facility, and maintain records of the data. As part of these programs and procedures:
 - (a) Advise employees or their representatives that they are to be provided with an opportunity to (1) observe monitoring or measuring for toxic materials or harmful physical agents, and (2) have access to the results thereof.
 - (b) Provide to each employee, former employee, or designated representative, within 15 days of the receipt of a written request, access to or copies of any monitoring or bioassay records relevant to the employee's potential exposure to toxic materials or harmful physical agents during employment.
 - (c) Notify employees promptly of any information indicating that an exposure to toxic materials or harmful physical agents may have exceeded the limits specified by the DOE-prescribed OSHA standards.

(d) Provide to each employee, former employee, or designated representative, within 15 days of the receipt of a written request, access to or copies of the employee's cumulative recorded occupational radiation dose during employment.

(e) Notify employees promptly of any information indicating that a radiation dose may have exceeded the limits specified by the DOE-prescribed OSHA standards.

*For purposes of access to an employee's monitoring, bioassay, or radiation exposure records, if the representative is not the recognized/certified collective bargaining agent, then he or she must have the employee's written authorization for such access.

Employees:

All employees are required to:

1. Observe the DOE-prescribed OSHA standards applicable to their work.
2. Report promptly to the contractor any condition which may lead to a violation of these standards.
3. Respond to warning signals which may be activated in the event of fire, radiation, or other possible emergencies.
4. Report emergencies using established procedures.

Inspections:

All activities under this contract are subject to inspection by DOE. When an inspection under the Order DOE 5483.1A is conducted, a contractor management representative and a representative authorized by the employees will be given an opportunity to accompany the DOE inspector.

Where there is no representative authorized by the employees, the DOE inspector will consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaints:

Employees may file a complaint with the contractor management or with the local DOE office using the form DOE F 5480.4 to request an inspection of the workplace. Complaints also may be filed by letter, telegram, or oral means. DOE F 5480.4 is available from Near the south entrance of the cafeteria

When an employee requests anonymity from the contractor, DOE shall honor this request.

Imminent Danger

For any condition or practice which presents an immediate hazard that could reasonably be expected to cause death or serious physical harm (permanent or prolonged impairment of the body or temporary disablement requiring hospitalization), the contractor and/or DOE shall take immediate and effective remedial actions to remove employees from the hazard and/or eliminate the hazard. As soon as possible, an inspection shall be conducted by the contractor and/or DOE to assure that appropriate actions have been taken to preclude recurrence of the hazard.

Nondiscrimination:

No contractor shall discharge or in any manner discriminate against any employee by virtue of the filing of a complaint, or in any other fashion exercising on behalf of himself or herself or others any action set forth in the Order DOE 5483.1A.

Inquiries:

Inquiries should be addressed to the contractor; however, additional inquiries may be addressed to the following local DOE official:

Mr. Thomas J. Rowland, Acting Manager
DOE Field Office, Fernald
P. O. Box 398705
Cincinnati, OH 45239-8705

Posting Requirements:

Copies of this notice must be posted in a sufficient number of places in Government-owned plants and facilities operated by DOE contractors subject to DOE Acquisition Regulation (DEAR), Subpart 970.23, to permit employees working in or frequenting any portion of the plant to observe a copy on the way to or from their workplace.



U.S. Department
of Energy

ATTACHMENT C
FEMP MINUTES OF
SAFETY MEETING

ATTACHMENT D
JOB SAFETY ANALYSIS FORMS

JOB SAFETY ANALYSIS

JOB		DATE		REV:	
JOB TITLE		DEPARTMENT		SECTION/GROUP	
SUPERVISOR		ANALYSIS BY		APPROVED BY	
RECOMMENDED SAFER JOB PROCEDURE					
SEQUENCE OF BASIC JOB STEPS		POTENTIAL ACCIDENT OR HAZARDS		RECOMMENDED SAFE JOB PROCEDURE	

000082

ATTACHMENT E
WEEKLY DRILL RIG INSPECTION CHECKLIST

INITIAL

DRILL RIG INSPECTION CHECKLIST

Date: _____

_____ Boring or Well No.

Company: _____

_____ Person Making Inspection

Jobsite
Location: _____

_____ Drill Rig Identification No.

- * Current drill rig company annual inspection certificate: yes no
- Support cables and wire ropes in operable condition: ~~yes~~ no
- Hydraulic lines and fittings in operable condition: yes no
- Backup alarm installed and functional: yes no
- Kill switches operable and clearly identified: yes no
- Exhaust pipes guarded or insulated: yes no
- Exhaust lines in good repair: yes no
- Cat head is in good condition: yes no
- Hoisting hook has latch and is serviceable: yes no
- Lifting straps/slings in good condition: yes no
- Two head lights: yes no
- Two tail lights: yes no
- Brake lights: yes no
- Gauges and pressure relief valves in operable condition: yes no
- Hoses in good condition: yes no
- Proper tension in chain drives: yes no
- All guards are present: yes no
- Operator's Manual: yes no
- Tires are inflated and in good condition: yes no
- Outriggers in good condition: yes no

All vehicles with cabs shall be equipped with windshields and power wipers:

yes no

Seatbelts in vehicle:

yes no

Fire extinguisher available:

yes no

First aid kit available if off DOE Property:

yes no

Levers and derrick labeled:

yes no

Non-skid surface on platforms, ladders and walkways:

yes no

Rig structure in good condition (bolts proper size and in place tight):

yes no

Safety clips attached to all hoses. (wires are prohibited):

yes no

Inspect sheaves and drums for wear and alignment:

yes no

Rated load capacities shall be conspicuously posted on all equipment:

yes no

* Must be completed on initial inspection and at least quarterly thereafter.

Comments: _____

Deficiencies corrected:

yes no

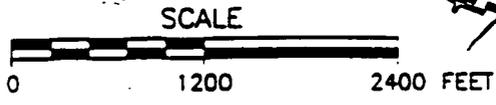
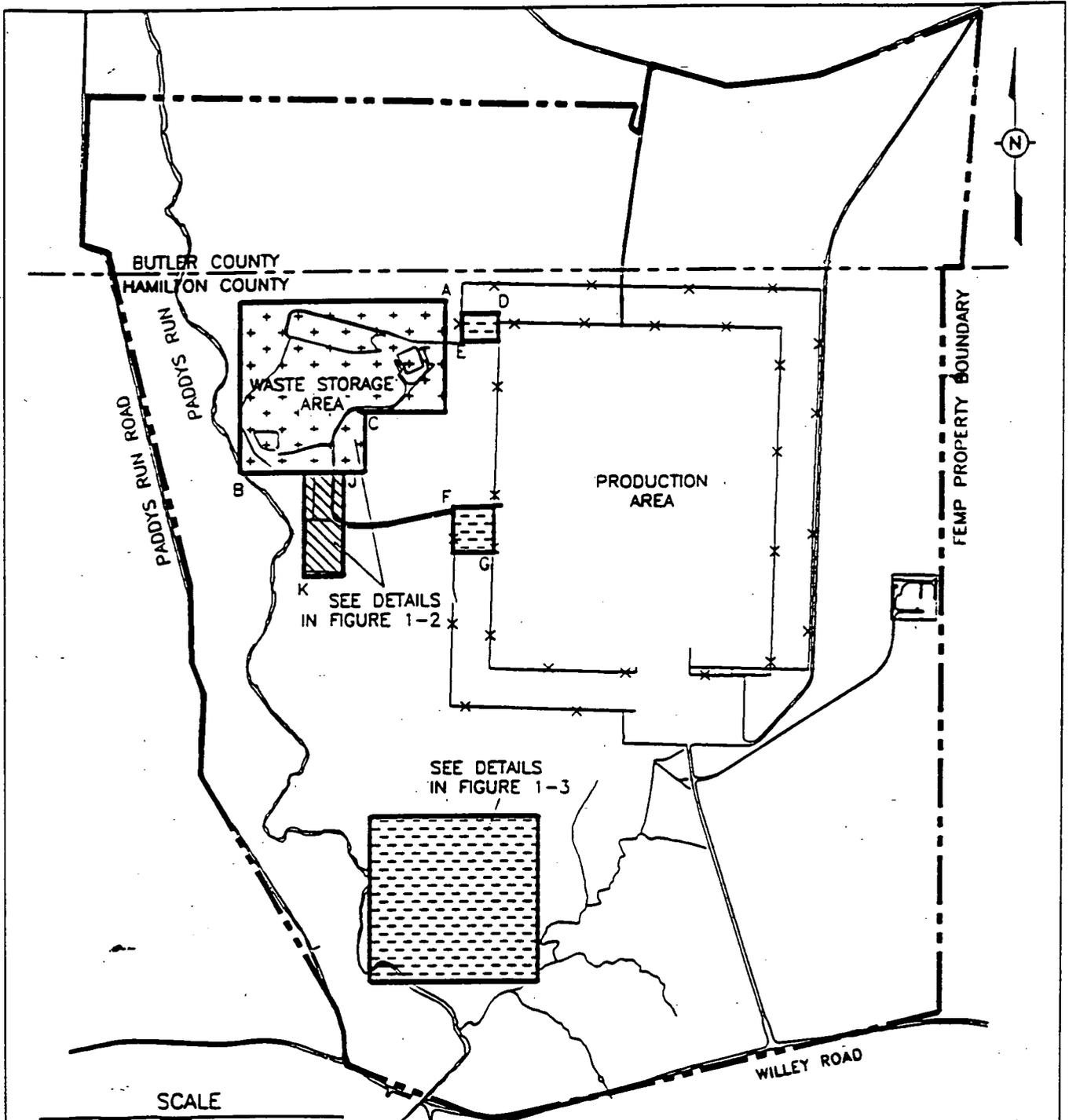
Drill rig approved for use:

yes no

FERMCO Compentent person: _____
signature

Subcontractor Rep.: : _____
signature

MAP 1
OPERABLE UNITS



NOTE:

OPERABLE UNIT 3 INCLUDES ALL BUILDINGS, PIPELINES, AND ABOVEGROUND STRUCTURES IN THE PRODUCTION AREA. OPERABLE UNIT 5 INCLUDES GROUNDWATER, SURFACE WATER, SOILS, FLORA AND FAUNA IN THE REGIONAL AREA AS WELL AS THE PRODUCTION AREA.

LEGEND:

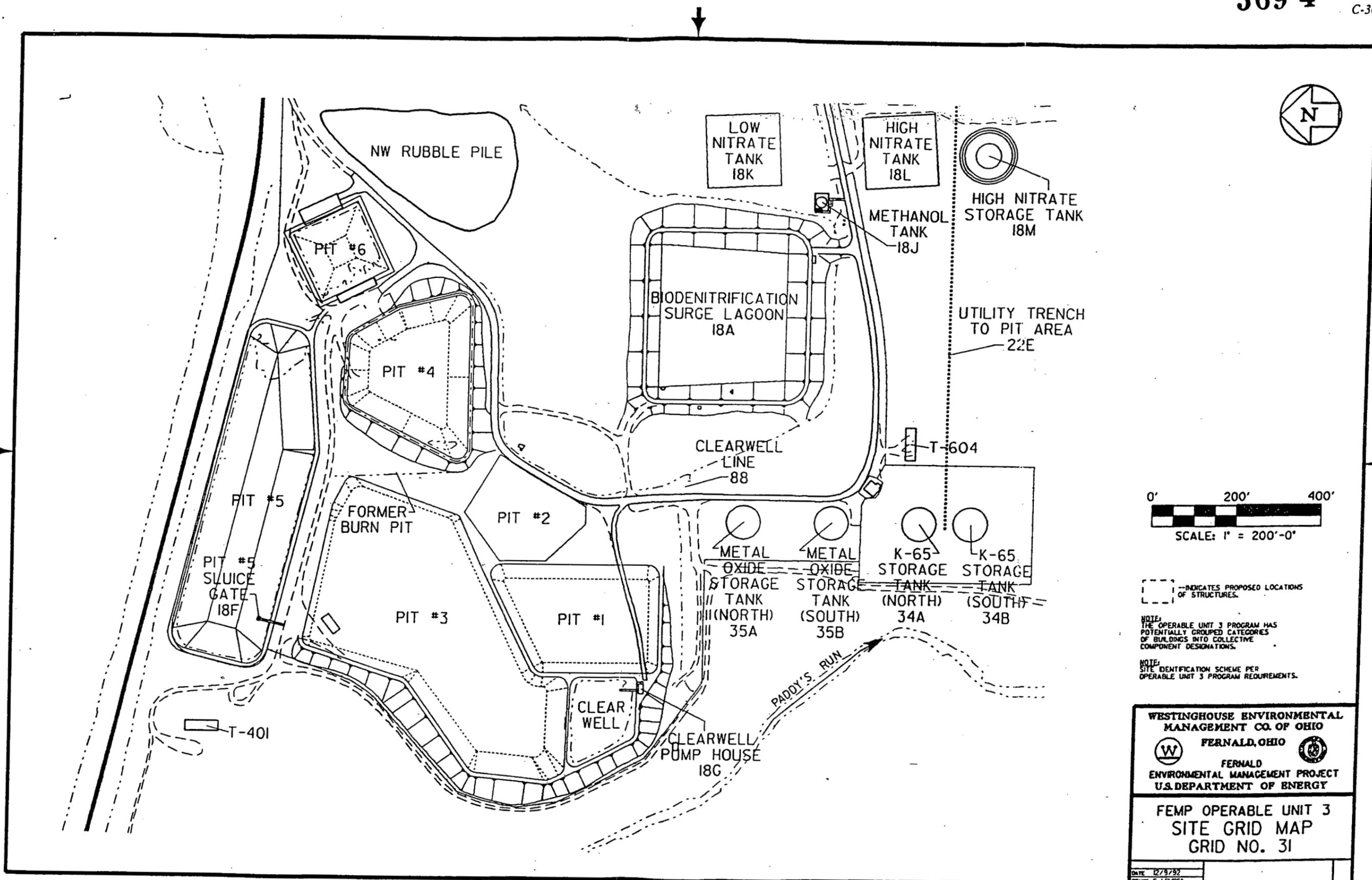
-  OPERABLE UNIT 1
-  OPERABLE UNIT 2
-  OPERABLE UNIT 4

STATE PLANAR COORDINATES

A	N482364	E1379432
B	N481033	E1377824
C	N481499	E1378812
D	N482264	E1379849
E	N482051	E1379568
F	N480756	E1379501
G	N480402	E1379819
J	N481033	E1378642
K	N480222	E1378329

502 A OP-UNITS2_BP_FMO

MAP 2
CRU1



---INDICATES PROPOSED LOCATIONS OF STRUCTURES.

NOTE: THE OPERABLE UNIT 3 PROGRAM HAS POTENTIALLY GROUPED CATEGORIES OF BUILDINGS INTO COLLECTIVE COMPONENT DESIGNATIONS.

NOTE: SITE IDENTIFICATION SCHEME PER OPERABLE UNIT 3 PROGRAM REQUIREMENTS.

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
 FERNALD, OHIO

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
 U.S. DEPARTMENT OF ENERGY

FEMP OPERABLE UNIT 3
 SITE GRID MAP
 GRID NO. 31

DATE: 12/9/92
 DRAWN BY: S. L. SWICK

